Atmospheric Intervention? The Climate Change Crisis and the *Jus ad Bellum* Regime

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I. INTRODUCTION

An increasing number of governments are characterizing climate change as a threat to national security. More specifically, governments are identifying some of the consequences of climate change, such as damage to military and strategic infrastructure caused by extreme weather activity and rising sea level, as constituting direct threats to national security; and they are identifying as indirect threats other consequences of climate change, such as the increased interstate tension and armed conflict likely to result from the shifting availability of water and fertile land, increasing migration flows, and other major climate-based causes of socio-economic and political disruption.[1] In addition, there is the growing awareness that under certain predictive models, based on current projections of greenhouse gas ("GHG") emissions and consequent temperature rise, climate change may constitute a threat to our civilization, and over the longer term, even humanity itself.[2] As a result, there

[1] *See infra* Part II(A).

[2] *See* Kurt M. Campbell & Christine Parthemore, *National Security and Climate Change in Perspective*, *in* CLIMATIC CATACLYSM: THE FOREIGN POLICY AND NATIONAL SECURITY IMPLICATIONS OF CLIMATE CHANGE 1, 14 (Kurt Campbell ed., 2008); and *see generally infra* Part II(A).

have been some calls for the U.N. Security Council, the international institution with primary responsibility for addressing international peace and security, to take up climate change as an issue.[3] But as dire as some of the climate change models are, most publics around the world have yet to comprehend the full magnitude of the looming crisis.[4] Thus, even those governments that have expressed grave concern about the looming danger have had difficulty implementing costly mitigation policies.[5] The nature of the threat posed by the crisis has not yet become politically salient, and the international law regimes related to international peace and security have not yet been implicated by calls for action on climate change.

In this article I suggest that this is likely to change, and possibly change quite radically, in the not too distant future. As the consequences of the climate change crisis begin to manifest themselves in ever worsening ways, the relationship between climate change and national security will become much more viscerally understood, not only by governments, but also by the general public in countries around the world. The ignorance, denial, and apathy that has characterized most public responses to climate change will be replaced by fear, a sense of crisis, and escalating demands that governments take urgent action. In the face of massive migration, pandemics, and increasing conflicts over the shifting availability of water and food, tribalism and nationalism will increase. We are already seeing early trends in this direction in response to immigration pressures.[6] States will

[3] See Michael Ramsden, *"Uniting for Peace" and Humanitarian Intervention: The Authorising Function of the U.N. General Assembly*, 25 WASH. INT'L L.J. 267, 267 (2016); *see infra* Part III(A).

[4] Surveys suggest that there is fairly high awareness of the issue in developed countries, but that concern lags behind awareness rates, and the issue is a high political priority in very few countries. *See*, *e.g.*, *Global Survey: Where in the World is Most and Least Aware of Climate Change*, CARBON BRIEF (July 27, 2015), https://www.carbonbrief.org/global-survey-where-in-the-world-is-most-and-least-aware-of-climate-change [https://perma.cc/T62F-TTUF].

[5] France is the most obvious recent example of this. *See, e.g.*, Elisabeth Zerofsky, *The Complicated Politics of the Gilet Jaunes Movement,* NEW YORKER (Dec. 13, 2018), https://www.newyorker.com/news/news-desk/the-complicated-politics-of-the-gilets-jaunes-movement [https://perma.cc/7PDY-L6HW].

[6] *See, e.g.*, Fareed Zakaria, *Populism on the March: Why the West is in Trouble*, 95 FOREIGN AFF., Nov.–Dec. 2016 at 9, 14–15.

begin to see not only the *consequences* but also the *causes* of climate change as a national security threat. That is, they will begin to view those countries that are recklessly contributing to climate change, in flagrant violation of their international climate change law obligations—what we may for short call a "climate rogue state"—as also constituting a very specific threat to national security.

The law will provide the criteria and legitimizing framework for characterizing such climate rogue states. The international climate law regime, comprised of a growing body of treaties and customary international law, provides a web of increasingly specific obligations of both conduct and result in relation to the mitigation of GHG emissions, reducing the destruction of carbon sinks, and other contributions to climate change.[7] States already have clear obligations to reduce their contributions to climate change, to cooperate with other states in order to achieve the collective climate change objectives committed to in a number of treaties, and to prevent activity within their jurisdiction that would cause significant harm to other states and the global commons.[8] At the same time, the response to climate change at both the domestic and the international level has been hampered by the complexity and cost of required action, the psychological inability of publics to fully comprehend the magnitude of the threat or the urgent need for action, the differentiated vulnerability to and perceived responsibility for the crisis, and the enormous collective action and free-rider problems involved.[9] These problems are exacerbated by ideas of national sovereignty, and the notion that states are free under international law to choose whether and to what degree they will cooperate in collective efforts to address the threat.[10] Thus, the climate change legal regime is not currently mobilizing

[7] *See infra* Part II(B).

[8] *See id.*

[9] *See generally, e.g.*, GLOBAL COMMONS, DOMESTIC DECISIONS (Kathryn Harrison & Lisa McIntosh Sundstrom eds., 2010); FRANK P. INCROPERA, CLIMATE CHANGE: A WICKED PROBLEM (2016).

[10] Epitomized most recently by President Bolsonaro of Brazil. Dom Phillips, *Bolsonaro Declares 'the Amazon is ours' and Calls Deforestation Data 'Lies'*, GUARDIAN (July 19, 2019), https://www.theguardian.com/world/2019/jul/19/jair-bolsonaro-brazil-amazon-rainforest-deforestation [https://perma.cc/5Z52-JAWW].

sufficient compliance to meet our climate change objectives and forestall the coming crisis, but it is sufficiently well developed for us to identify recklessly excessive contributions to the problem and flagrant violations of the legal obligations.[11] As the crisis deepens and the threat is more acutely felt, the tolerance for such conduct will diminish. Under public pressure governments are going to call upon the international community to take collective action against climate rogue states in order to mitigate the threat they pose, by coercing the rogue state back into compliance with its international climate change law obligations.[12]

I suggest that as the consequences of the crisis intensify over the coming decades, there will be increasing arguments that the U.N. Security Council should formally declare the conduct of climate rogue states as comprising a threat to international peace and security under Article 39 of the U.N. Charter, and that the Security Council not only provide authorization for collective action such as increasingly punitive economic sanctions, but that it go so far as to authorize the threat or use of force under Article 42 of the Charter.[13] If and when that fails, the pressure will mount for the legitimization of unilateral action against climate rogue states. A road-map for how such claims will likely develop is provided by the arguments advanced over the last two decades for adjusting the *jus ad bellum* regime to permit the use of force in response to purportedly new and novel threats, such as the development of weapons of mass destruction ("WMD"), the harboring of transnational terrorists, emerging cyber attack capability, and humanitarian crises.[14] We can foresee a day when there will similarly be pressure on the *jus ad bellum* regime to adapt in ways that would permit collective action in the absence of U.N. Security Council authority—either through the expansion of the right of collective self-defense, or the creation of a new exception to permit collective but unilateral "atmospheric intervention."[15]

[11] *See id.*
[12] *See infra* Part II(C).
[13] *See infra* Part III(A).
[14] *See infra* Part III(B).
[15] *Id.*

How would such a use of force actually be executed? By way of illustration, let us consider a possible hypothetical scenario in 2030. The Brazilian government has remained in the hands of the Social Liberal Party since Jair Bolsonaro won the presidency in 2018. It has continued to reject the validity of climate change science, and to promote policies that have markedly increased Brazil's contribution to climate change—both through the direct production of GHG emissions, and by allowing an accelerating deforestation of the Amazon rain forest.[16] Brazil missed by wide margins its 2025 and 2030 targets under the Paris Climate Agreement, and it is increasingly adopting policies that violate the object and purpose of the United Nations Framework Convention on Climate Change ("UNFCCC") regime. The new president, elected in 2028, doubled down on these policies by announcing the construction of new coal-fired power plants, and the elimination of virtually all regulations prohibiting the deforestation of huge swathes of the Amazon.

In the face of mounting international outrage, the U.N. Security Council took up the issue in 2028. The Security Council passed a resolution recognizing that the destruction of the Amazon would pose a threat to international peace and security, condemned the recent policy announcements, and authorized economic sanctions against Brazil. But it could not agree on authorizing any further action, given that several permanent members are also offside their own obligations. Increasingly, severe economic sanctions have not altered Brazilian policy in the year and a half since they were initiated, and the first of the new coal-fired plants is nearing completion. The Brazilian government has used the global criticism and sanctions to inflame nationalist passions within Brazil, and thereby deflect public focus from its own failings. In the United States, there is an unprecedented climate refugee crisis emanating from South and Central America, with the media daily covering scenes of hundreds of thousands of desperate migrants being held at bay by armed troops at the Southern border. The entire region is

[16] For Brazil's current contributions, and the allocation between GHG emissions and land use, *see The Carbon Brief Profile: Brazil*, CARBON BRIEF (Mar. 7, 2018), https://www.carbonbrief.org/the-carbon-brief-profile-brazil [https://perma.cc/4L24-47ZF].

beset with fear and anxiety over mounting droughts, sea-level rise, and extreme weather events. The public pressure for action is irresistible. Governments eager to deflect attention from their own past failures to address the crisis leap at the chance to scapegoat Brazil, calling its Amazon policy a threat to the "lungs of the planet" and characterizing the country as a "climate rogue state." A coalition of Organization of American States countries led by the United States threatens Brazil with military action if it does not move to protect the Amazon and suspend plans to commission the coal-fired energy plants. The Brazilian government, now boxed in by its nationalist stance, rebuffs the demands. At 0300 hours on a Sunday morning, when no civilian workers are likely to be present, an American *Zumwalt*-class stealth destroyer several hundred miles North of the Brazilian State of Maranhão, fires five cruise missiles towards the São Luis power plant complex. They strike with great precision, destroying not only two of the plants under construction, but also incapacitating a 360 MW coal-fired plant that has been operating in São Luis since 2013.[17] There is outrage inside Brazil and very mixed reactions around the world, but the U.S. led coalition relies on recent developments in the *jus ad bellum* regime to provide legal justifications for its use of force, and threatens to escalate such action if the Brazilian government does not adjust its policies.

In thinking about how and in what possible way the *jus ad bellum* regime could be adjusted to authorize such a strike, it will be objected that the novel threats posed by nuclear proliferation, transnational terrorism, or cyber attacks are qualitatively different from the threat posed by the consequences or causes of climate change. While the use of force in response to these other threats may have stretched the doctrine of self-defense, the use of force in response to excessive contributions to climate change is entirely beyond the scope of self-defense and could only be justified, if at all, in terms of something like the doctrine of necessity—and of course necessity is no justification for a use of force in either domestic or

[17] For a map of current and future coal-fired generating plants, *see Mapped: The World's Coal Power*, CARBON BRIEF (March 25, 2019), https://www.carbonbrief.org/mapped-worlds-coal-power-plants (last visited March 3, 2020).

international law.[18] Indeed, most readers will recall the nineteenth century case *R. v. Dudley and Stephens*, which involved murder charges against the captain and first-mate of a shipwrecked vessel for killing and eating the hapless cabin boy while stranded at sea in a lifeboat.[19] The court emphatically rejected the argument that necessity was a defense to the charge of murder, and established the principle that has held sway in the common law world ever since—a principle that similarly holds in international law—that necessity, as a concept separate and distinct from the principle of self-defense, is no justification for the lethal use of force.[20] However, the court went to significant pains to highlight that the cabin boy, Richard Parker, had offered no threat whatsoever to his killers. He was entirely innocent, and they killed him purely for the purpose of consuming him, not because he had created or increased any risk to their lives. But what if they had killed Parker not merely to eat him, but because Parker had been actively doing something that slowly increased the risk of death for all of them? What if Parker had irrationally attempted to throw their only drinking water overboard? Would that start to move the principle of necessity into the realm of self-defense, or at least blur the lines between necessity and self-defense? I will explore below how recent arguments to expand the doctrine of self-defense in international law, in order to respond to allegedly new and novel threats, both blur the line between necessity and self-defense, and are likely to be employed in the context of climate change in ways that are likely to find traction as the crisis deepens.

Today, in 2020, such claims will surely sound radical, even dangerous—radical in the sense that it seems unrealistic to think that countries would contemplate the use, or threat, of force in order to enforce compliance with climate change law obligations; and dangerous to suggest that the arguments supporting such a threat or use of force might find some

[18] For the international law principle, *see* JAMES CRAWFORD, STATE RESPONSIBILITY: THE GENERAL PART 274-80, 305-15 (2013); *see also* Int'l Law Comm'n, Rep. on the Work of Its Fifty-Third Session, at art. 25, U.N. Doc. A1/56/10 (2001).

[19] R v. Dudley and Stephens, [1881–85] All ER Rep. 61, (QBD, UK).

[20] *See infra* Part II(B).

legitimacy.[21] Dangerous, indeed, to even voice ideas that could serve to further weaken and undermine the *jus ad bellum* regime's limits on the use of force, and to provide yet more pretexts for states to engage in armed conflict. To be very clear, I am not making a normative argument that the *jus ad bellum* regime *should be* adjusted to recognize and enable such collective action in the future. I am making two main sets of claims. The first is primarily predictive: if the international community fails to mitigate climate change in accordance with our treaty objectives, and the harm resulting from the climate change crisis thus worsens and prompts states to view the causes of climate change as threats to national security, then there will be increasing calls for collective action against climate rogue states; and that this will ultimately result in pressure on the *jus ad bellum* regime to justify the threat or use of force against such states. What is more, when compared to recent arguments for relaxing the *jus ad bellum* limits on the use of force to address other new and novel threats, the arguments that are likely to be advanced in the climate change context are more compelling and reasonable.[22]

My second set of claims are normative. First, I primarily argue that now is the time to start thinking and talking about these issues. If there is some reasonable chance that the *jus ad bellum* regime will come under pressure to permit the threat or use of force against climate rogue states, we need to begin thinking now about whether such pressure should be resisted, and how any adaptations to the regime should be shaped and limited, before the sense of crisis is more urgent and any new policy is forged in a state of fear.[23] I am sensitive to the idea that it may be irresponsible for scholars to explore arguments that run the risk of normalizing and legitimating legal justifications for the kind of state action that would now be unlawful and illegitimate.[24] But in my view, these arguments will be

[21] While radical, such arguments are not entirely unprecedented. *See, e.g.*, Adam Betz, *Preventative Environmental Wars*, 18 J. MIL. ETHICS 223 (2019).

[22] *See infra* Part III(A).

[23] *See infra* Part IV.

[24] There is also the risk that making such arguments can influence current politics in counterproductive ways. *See, e.g.*, Alonso Gurmendi, *New Rule: Let's Not Invade the Amazon*, OPINIO JURIS (Aug. 7, 2019), http://opiniojuris.org/2019/08/07/new-rule-lets-

forthcoming when the pressure mounts regardless, and the greater risk is to remain willfully blind to the issues until the eleventh hour, when states begin to contemplate action. This is not to let out of the bottle a genie that would otherwise never be liberated. This is about identifying the genie now, and figuring out how to harness and limit the harm it can cause before fearful states look to the genie for answers.

What is more, while this article is primarily aimed at initiating a debate on these issues, my preliminary contribution to that debate, and my second normative claim, is to suggest that the coming efforts to adjust the *jus ad bellum* regime should be largely resisted and rejected. While I explore how the arguments marshalled in support of those efforts will be powerful and why they will likely gain traction, I also argue that, on balance, any such relaxation of the standards of *jus ad bellum* would dangerously worsen some of the existing weaknesses of the regime. Moreover, it would compound some of the injustices that already characterize the climate change crisis in ways that are counterproductive to the entire climate change effort, and ultimately undermine the international rule of law. It is important to recognize both their power and the risks of these arguments, precisely so that we may begin to address them now. And, indeed, this exploration further highlights the urgency of finding more effective and legitimate means of galvanizing action to increase enforcement and mobilization of compliance with the climate change law regime.

II. CLIMATE CHANGE AS SECURITY THREAT

This Part will explore how state contributions to climate change will come to be seen as threats to international peace and security. It begins with an examination of how the *consequences* of climate change are already thought to constitute a threat to national security, and how the developing crisis is likely to accentuate that perspective as the consequences become more widespread and severe. It then briefly reviews the international climate change law regime, which defines the standards against

not-invade-the-amazon/ [https://perma.cc/3DCC-8GTQ] (anticipating and responding to the ideas in this very article).

which state conduct will be judged, but which is so far proving to be incapable of mobilizing sufficient compliance to prevent the unfolding crisis. And finally, in the last section, this Part will explore the likely shift in perceptions, framed and shaped in part by the international climate change law regime, to view the *causes* of climate change, in the form of recklessly excessive and flagrantly unlawful contributions to climate change, as comprising threats not only to individual state national security, but ultimately to international peace and security as well.

A. The Consequences of Climate Change as National Security Threat

It is assumed here that readers are familiar with the general problem of climate change—that is, that emissions of carbon dioxide and other greenhouse gases ("GHGs") resulting from human activity are causing a warming of the Earth's atmosphere, which is increasingly impacting the global climate and ecological systems.[25] As will be explained in more detail below, if the process of warming continues there will be an increased melting of polar regions causing significant sea level rise, increasingly severe weather events, more frequent and severe droughts and flooding, all resulting in areas of the world being rendered uninhabitable, and species extinctions on a scale that will cause a massive impact on global bio-diversity.[26] This is a problem that was identified decades ago, and there have been calls for significant policy response since the early 1970s.[27] While there has been the development of an international legal

[25] LE TREUT ET AL., CLIMATE CHANGE 2007: THE PHYSICAL SCIENCE BASIS (Susan Solomon et al. eds., 2007). *Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007); Intergovernmental Panel on Climate Change [IPCC], *Climate Change 2014: Synthesis Report, Contribution of Working Group I, II, and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Core Writing Team et al. eds., 2014). *See also* INCROPERA, *supra* note 9.

[26] *See* INCROPERA, *supra* note 9, at 103; IPCC, AR5 CLIMATE CHANGE 2014: IMPACTS, ADAPTATION, AND VULNERABILITY (Christopher B. Fields et al. eds., 2014), https://www.ipcc.ch/report/ar5/wg2/ [hereinafter IPCC AR5].

[27] *See, e.g.,* George F. Kennan*, To Prevent a World Wasteland: A Proposal*, 48 FOREIGN AFF., Apr., 1970; Maxwell D. Taylor, *The Legitimate Claims of National Security*, 52 FOREIGN AFF. 575, Apr. 1974

regime to address the problem (as discussed below),[28] and national efforts of varying degrees to limit GHG emissions, the world as a whole has continued to increase emissions almost annually (with a brief hiatus after the financial crisis of 2008). This has added to the total stock of GHGs already in the atmosphere and global temperatures have been increasing in line with the increase in GHG emissions.[29]

The nations of the world have, in principle, committed to responding to the crisis so as to limit global temperature rise to 2°C increase over pre-industrial levels, with a preferred target of 1.5°C.[30] The most recent report of the Intergovernmental Panel on Climate Change ("IPCC") states that the observed global mean surface temperature for the decade 2006–2015 was 0.87°C higher than the average over 1850–1900.[31] This warming is higher in certain regions; for example, it is two to three times higher in the Arctic.[32] Moreover, the average global temperature is currently increasing at approximately 0.2°C per decade due to past and ongoing emissions—and it is important to understand that there is "an inexorable level" of temperature increase from past emissions that is "locked in," which would continue for decades even if we ceased all GHG emissions today.[33] In the period from 2006–2012, the average carbon dioxide emissions from just fossil fuel and concrete use (which comprises approximately 90% of carbon dioxide emissions) amounted to 8.3 gigatons ("GtC") per year. In short, GHG emissions continue to increase, and warming therefore is increasing—and as will be discussed below, too much carbon in the atmosphere will trigger adverse positive feedback loops and

[28] *See infra* Part II(B).

[29] *See Greenhouse Gas Levels in Atmosphere Reach New Record*, WORLD METEOROLOGICAL ORG. (Nov. 20, 2018), https://public.wmo.int/en/media/press-release/greenhouse-gas-levels-atmosphere-reach-new-record [https://perma.cc/68SX-NRCA]; *Emissions Gap Report*, U.N. ENV'T (Dec. 5, 2018), https://www.ipcc.ch/site/assets/uploads/2018/12/UNEP-1.pdf [https://perma.cc/A923-6P2R].

[30] *Copenhagen Accord*, U.N. Doc. FCCC/CP/2009/11/Add.1 at 4 (Dec. 18, 2009) [hereinafter Copenhagen Accord]; UNFCCC, Report of the Conference of the Parties, 21st Sess., U.N. Doc. FCCC/CP/2015/10 (Dec. 12, 2015) [hereinafter Paris Agreement], Annex at 22.

[31] Intergovernmental Panel on Climate Change, *Summary for Policymakers* in Special Report: Global Warming of 1.5°C, 4 (2018) [hereinafter IPCC 1.5 Report].

[32] *Id*.

[33] *Id*. at 4–5.

cascade tipping points characteristic in complex systems, which create the potential for exponential rather than linear temperature increase, resulting in dramatic climate disruption.[34] The crisis is getting worse, and the international community is failing to respond adequately.

The worsening crisis will have national security implications. While national security is not the typical "frame" within which the climate change crisis is generally discussed, the idea that climate change poses a threat to the national security of states is not new. Indeed, some of the early warnings about climate change, back in the 1980s, were framed in security terms.[35] In recent years, a number of Western governments have identified aspects of climate change as a significant threat to national security; in the United States, the Department of Defense and the CIA have increasingly focused on climate change as a threat.[36] These threats take different forms, and are more or less direct in the manner in which they are thought to impact national security. The most direct threat is in the form of the damage and degradation of military and defense infrastructure caused by extreme weather events and rising sea levels. One recent example of this was the severe damage sustained by Tyndall Airforce Base in Florida due to Hurricane Michael in October 2018.[37] The frequency and intensity of such storms, and the speed with which they develop, are thought to be increasing as a direct consequence of climate change.[38] The U.S. Department of Defense in its 2019 *Report on Effects of a*

[34] *See infra* notes 60 and 61 and accompanying text.

[35] *See generally, e.g.*, Jessica Tuchman Mathews, *Redefining Security*, 68 FOREIGN AFF., no. 2, 1989 at 162. For a discussion of this early debate, *see* Campbell & Parthemore, *supra* note 2.

[36] *See generally, e.g.*, U.S. DEP'T OF DEF., REPORT ON EFFECTS OF A CHANGING CLIMATE TO THE DEPARTMENT OF DEFENSE (2019) [hereinafter DOD CLIMATE CHANGE 2019 REPORT]; NAT'L INTELLIGENCE COUNCIL, IMPLICATIONS FOR US NATIONAL SECURITY OF ANTICIPATED CLIMATE CHANGE (2016); U.K. MINISTRY OF DEF., GLOBAL STRATEGIC TRENDS: THE FUTURE STARTS TODAY (6th ed., 2018).

[37] *See* Joel Achenbach et al., *Hurricane Michael: Tyndall Air Force Base Was in the Eye of the Storm, and Almost Every Structure Was Damaged*, WASH. POST (Oct. 23, 2018), https://www.washingtonpost.com/national/hurricane-michael-tyndall-air-force-base-was-in-the-eye-of-the-storm-and-almost-every-structure-was-damaged/2018/10/23/26eca0b0-d6cb-11e8-aeb7-ddcad4a0a54e_story.html?utm_term=.4f6f3e06a058 [https://perma.cc/EP89-C9EN].

[38] *See* IPCC AR5, *supra* note 26, Summary for Policymakers.

Changing Climate to the Department of Defense, focused on the vulnerabilities of defense installations and infrastructure to climate related effects, including drought, desertification, wildfires, thawing permafrost, and recurrent flooding.[39] The report also analyzed the predicted increasing impact of climate change on defense operations, particularly in the areas of humanitarian assistance, disaster relief, support for civil authorities, and operations abroad in areas such as the Arctic.[40] Of course, for more vulnerable states, the threat to national security is even more direct and existential—several island nations of the South Pacific are already confronting the threat of being rendered uninhabitable by rising sea levels.[41]

Many government agencies have identified the indirect threats created by climate change as being even more extreme than the direct threats. In this sense, climate change is often referred to as a "threat multiplier."[42] In short, climate change is likely to significantly increase the incidence of political unrest and socio-economic disruption which, in turn, is likely to lead to increased levels of armed conflict over the coming decades.[43] Such effects will be caused by a confluence of consequences of climate change. These will include the rendering of some territories and regions effectively uninhabitable due to flooding, drought, sea level rise, or even excessively hot temperature itself—parts of India, for instance, have already recorded sustained temperatures in excess of 50 degrees Celsius.[44] Droughts, famines, and epidemics resulting from disrupted

[39] DOD CLIMATE CHANGE 2019 REPORT, *supra* note 36, at 4–7.

[40] *Id*. at 8–9; *see also* U.S. DEP'T OF DEF., NATIONAL SECURITY IMPLICATIONS OF CLIMATE-RELATED RISKS AND A CHANGING CLIMATE 2–5 (2015) [hereinafter DOD CLIMATE CHANGE 2015 REPORT].

[41] Josh Gabbatiss, *Rising Sea Levels Could Make Thousands of Islands from the Maldives to Hawaii Uninhabitable Within Decades',* INDEPENDENT (Apr. 25, 2018), https://www.independent.co.uk/environment/islands-sea-level-rise-flooding-uninhabitable-climate-change-maldives-seychelles-hawaii-a8321876.html [https://perma.cc/MU3J-NLY3].

[42] *See, e.g.*, THE CTR. FOR NAVAL ANALYSIS CORP., NATIONAL SECURITY AND THE THREAT OF CLIMATE CHANGE 44 (2007) [hereinafter CNA Report]; DOD CLIMATE CHANGE 2015 REPORT, *supra* note 40, at 8.

[43] CNA Report, *supra* note 42, at 7, 25, 30.

[44] *See* Shekhar Chandra, *Are Parts of India Becoming Too Hot for Humans?*, CNN (July 3, 2019), https://www.cnn.com/2019/07/03/asia/india-heat-wave-survival-hnk-intl/index.html [https://perma.cc/S8RR-7NAY].

agricultural and drinking water supplies will exacerbate problems in vulnerable socio-political and economically challenged regions.[45] All of this is not only going to lead directly to increased tension and armed conflict both within and among states, but it is going to result in massive movements of people, creating migration and internal displacement crises that dwarf the recent refugee problems we are already experiencing.[46] There is considerable evidence that climate change was a contributing factor in the conflicts in Darfur and Syria, for instance,[47] and that it has been a factor in explaining the increased migration flows out of Central America, the Middle East, and North Africa in the last ten years.[48] As the Center for Naval Analysis ("CAN") Corporation stated in a landmark report in 2007, "the chaos that results can be an incubator of civil strife, genocide, and the growth of terrorism," leading to state failure, interstate conflict, and a host of other related security problems for the U.S. defense establishment.[49]

The extent of such disruption and conflict will depend ultimately on the extent of temperature rise, which will in turn depend both on global GHG emissions as well as the nature of somewhat unpredictable tipping points, which may trigger a series of positive feedback loops as temperatures rise.[50] Such feedback loops include, for instance, the temperature rise caused

[45] *See* Campbell & Parthemore, *supra* note 2, at 10.

[46] *See* Leon Fuerth, *Security Implications of Climate Scenario 2: Severe Climate Change of the Next Thirty Years*, *in* CLIMATIC CATACLYSM: THE FOREIGN POLICY AND NATIONAL SECURITY IMPLICATIONS OF CLIMATE CHANGE, *supra* note 2, at 133–54.

[47] *See, e.g.*, Matt McDonald, *Climate Change and Security: Towards Ecological Security?,* 10 INT'L THEORY 153, 154 (2018); *but see* Katharine J. Mach *et al.*, *Climate as a Risk Factor for Armed Conflict*, 571 NATURE 193, (2019) (discussing complexity of relationship among multiple variables).

[48] *See generally*, *e.g.*, DOD CLIMATE CHANGE REPORT 2015, *supra* note 40, at 4; Rafael Reuveny, *Climate Change-Induced Migration and Violent Conflict*, 26 POL. GEOGRAPHY 656 (2007).

[49] CNA REPORT, *supra* note 42, at 22.

[50] *See* Nina Lakhani, '*People are Dying': How the Climate Crisis Has Sparked an Exodus to the US*, GUARDIAN (July 29, 2019), https://www.theguardian.com/global-development/2019/jul/29/guatemala-climate-crisis-migration-drought-famine [https://perma.cc/C7ND-2TCA]; Jeff Turrentine, *Climate Change is Already Driving Mass Migration Around the Globe*, NAT. RES. DEF. COUNCIL: ON EARTH (Jan. 25, 2019), https://www.nrdc.org/onearth/climate-change-already-driving-mass-migration-around-globe [https://perma.cc/7SJU-6WQF]; *see also* OLI BROWN, INT'L ORG. FOR MIGRATION, MIGRATION AND CLIMATE CHANGE 31 (2018).

by decreased reflection of sunlight from the artic region as the size of the polar ice cap shrinks, and the release of large volumes of methane as the tundra in the Arctic region melts.[51] That latter scenario may already be upon us, much sooner than expected.[52] Another such tipping point is implicated by the current deforestation of the Amazonian rain forest. Forests in general, and tropical rainforests such as the Amazon in particular, are understood to play a significant role in both removing carbon dioxide from the atmosphere and storing it, and thus the loss of rainforest, and the release of its stored carbon dioxide if burned, will significantly contribute to increases in GHGs in the atmosphere.[53] The Amazonian rainforest, which comprises 40 percent of the world's rainforest, recycles much of its own water—which means that if it is reduced in size beyond a certain amount, it will produce too little water to sustain the remaining forest, and there will be a vicious cycle of degradation or "dieback." More pessimistic analyses estimate that this catastrophic cascade could be initiated when another 3–8 percent of the forest is destroyed.[54] As headlines have blared in the summer of 2019, the rate of Brazilian destruction of the rainforest has seen a massive increase in 2019, with almost 1,500 square kilometers destroyed in July 2019 alone, a rate of three football fields a minute.[55]

Turning back to the question of how much disruption and conflict is likely to be caused by climate change, one important study published in 2008 looked at the likely national security

[51] *See* Timothy Lenton, *Arctic Climate Tipping Points*, 41 AMBIO 10 (2012); *see also* Casey Ivanovich, *Everything You Need to Know About Climate Tipping Points*, ENVT'L DEF. FUND CLIMATE 411 (Nov. 1, 2017), http://blogs.edf.org/climate411/2017/11/01/everything-you-need-to-know-about-climate-tipping-points/ [https://perma.cc/4RQL-3HGB].

[52] Merritt R. Turetsky et al., *Permafrost Collapse is Accelerating Carbon Release*, 159 NATURE 32 (2019), https://www.nature.com/articles/d41586-019-01313-4 [https://perma.cc/L2YQ-YR33].

[53] For an overview, *see generally* ROSS W. GORTE, CONG. RESEARCH SERV., CARBON SEQUESTRATION IN FORESTS (2009).

[54] Nova Xavantina & Santarém, *On the Brink: The Amazon is Approaching an Irreversible Tipping Point*, ECONOMIST (Aug. 3, 2019), https://www.economist.com/briefing/2019/08/01/the-amazon-is-approaching-an-irreversible-tipping-point [https://perma.cc/PF4F-XVC7].

[55] Jonathan Watts, *Amazon Deforestation Accelerating Towards Unrecoverable 'Tipping Point,'* GUARDIAN (July 25, 2019), https://www.theguardian.com/world/2019/jul/25/amazonian-rainforest-near-unrecoverable-tipping-point [https://perma.cc/FQ4Y-F9BL].

implications of climate change under a number of different scenarios.[56] Two of these scenarios were developed with thirty-year time horizons, predicting developments in 2040, while the third examined a much longer period, providing predictions for conditions at the end of the century. The first of these, the so-called "expected" and most optimistic scenario, assumed an average global temperature increase of 1.3°C by 2040. Even under this optimistic scenario, the anticipated consequences included: heighted tensions and conflicts caused by large-scale migrations; increased levels of armed conflict caused by food and water scarcity, particularly in Africa; increased incidence of disease and pandemics; socio-political backlash to migration in Europe that could test the cohesion of the EU; and some "geopolitical reordering" as states adjust to the new normal.[57]

The study is already ten years old, and the assumptions upon which this "expected" scenario was based now look impossibly optimistic. There is almost no way that we will keep the global average temperature rise to 1.3°C by 2040. The IPCC, in a special report issued in 2018, concluded with a high degree of confidence that global average temperature will at a very minimum reach 1.5°C by 2040—and that is only if emissions remain at current rates, and there are not any accelerations in warming caused by the kinds of positive feedback loops discussed above.[58] As we have seen, rates of GHG emissions actually continue to increase, and some of those tipping points, such as the release of Arctic methane, now look far more imminent than thought just a few years ago.[59]

The next scenario in the study, referred to as the "severe" scenario, looks far more possible now than when it was written.

[56] Campbell & Parthemore, *supra* note 2.

[57] John Podesta & Peter Ogden, *Security Implications of Climate Scenario 1: Expected Climate Change over the Next Thirty Years*, in CLIMATE CATACLYSM: THE FOREIGN POLICY AND NATIONAL SECURITY IMPLICATIONS OF CLIMATE CHANGE, *supra* note 2, at loc. 1294 (Kindle ed.).

[58] IPCC, 1.5 REPORT, *supra* note 31 (global warming is predicted with a high degree of confidence as likely to reach 1.5°C between 2030 and 2050 if it continues to increase at the current rate). The IPCC also has developed a number of different scenarios for temperature rise, based on different annual emissions rates, over the rest of the Century. For all IPCC data and publications, *see* THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, http://www.ipcc.ch [https://perma.cc/MA3M-9SMM] (last visited Feb. 23, 2020).

[59] *See* Turetsky et al., *supra* note 52.

It was based on the assumption that global average temperatures would rise by 2.6°C by 2040, due to the possibility of cascades and positive feedback loops being triggered. The basis for building such possible feedback loops and cascading consequences into the model is that climate change is a complex phenomenon in the technical sense of that term—meaning that it is a system that changes in non-linear and unstable ways. Incremental changes in the level of inputs to a complex system can result in much larger changes to outputs, and it is not possible to create a single model of the system's behavior.[60] Given that we already understand what some likely feedback loops are,[61] and that there are likely other less well-understood and unanticipated knock-on effects to other likely changes, this scenario has reasonably built-in some non-linear temperature increase.

Under this scenario, these significant non-linear cascading events in the global environment result in massive non-linear socio-political consequences. Many states will be overwhelmed by the scale of change and resulting challenges. The internal cohesion of states, including even the less vulnerable Western states, will be severely tested by massive migration flows, changes in agricultural patterns and water availability, economic disruption, the possible crash of global fish stocks, and by pandemics.[62] Multilateral institutions, including the U.N. itself, may fail. Health care systems and social assistance networks in more vulnerable states will collapse. Climate change will likely "be the deathblow for democratic government throughout Latin America."[63] Coastal flooding under these temperatures will pose particular challenges, with massive population dislocation and economic disruption when coastal cities become unsustainable, and the agricultural lands of historic river delta regions are lost. A significant increase in the incidence and breadth of armed conflict is thus forecast.[64] In

[60] Fuerth, *supra* note 46, at 135–36. For a review of complexity theory, *see generally* NEIL F. JOHNSON, SIMPLY COMPLEXITY: A CLEAR GUIDE TO COMPLEXITY THEORY (2007).
[61] *See, e.g.*, INCORPERA, *supra* note 9, at 74–79; *see also supra* notes 51–52.
[62] Fuerth, *supra* note 46 at loc. 1765 (Kindle ed.).
[63] *Id*. at 138.
[64] *Id*.

this scenario, "climate change provokes a permanent shift in the relationship of humankind to nature."[65]

These two scenarios only take us out to 2040, twenty years from now and thirty years from when they were written, and yet one of them already sounds like something approaching the scenes in a dystopian sci-fi movie. But it gets much worse as we move the time horizon out further. The third scenario in the study assumed a global average temperature rise of 5.6°C by 2095.[66] This is not at all unlikely given current trends and the possibility of complex system dynamics, though the study emphasizes that it is very difficult to predict both temperatures and consequences that far out.[67] Notwithstanding all such caveats, the study predicts that the consequences of such a temperature rise will be catastrophic[68]—"hundreds of millions of thirsty and starving people will have to flee" the myriad disasters, and "the world will be caught in an age where sheer survival is the only goal."[69] In this kind of scenario we really are in the midst of dystopian sci-fi horror. And yet, difficult as it is to get our heads around this scenario, it is very much in the realm of the very possible, if not quite yet probable. And the window of opportunity for action to prevent it is quite rapidly closing.

While these three scenarios are just the conclusions of one particular study, they are very much in line with the concerns expressed in the reports of various government agencies and international institutions, both in terms of the projected temperature rise and the likely consequences.[70] Most studies suggest that if we are unable to very soon bring emissions down in accordance with the targets established in the international climate change law regime, then the future in 2100 will be one of massive disruption and conflict, even if it may not quite reach

[65] *Id.* at 153.

[66] *See* Sharon E. Burke, *Security Implications of Climate Scenario 3: Catastrophic Climate Change over the Next Hundred Years*, in CLIMATE CATACLYSM: THE FOREIGN POLICY AND NATIONAL SECURITY IMPLICATIONS OF CLIMATE CHANGE, *supra* note 2, at 158.

[67] *Id.* at 156–58.

[68] *Id.* at 158.

[69] Campbell & Parthemore, *supra* note 2, at 19.

[70] *See generally, e.g.*, IPCC 1.5 REPORT, *supra* note 31; IPCC AR5, *supra* note 26.

the dystopian nightmare contemplated in the third scenario above.[71] As this reality unfolds, not only will the *consequences* of climate change be increasingly identified as national security threats, but so too will some of the *causes* of climate change. As we progress toward this dystopian future, it is quite predictable that states perceived as recklessly contributing to the cause of the crisis through excessive GHG emissions, or by destroying forests and other carbon dioxide sinks, likely in flagrant violation of their international climate change law obligations, are going to be increasingly viewed as a threat to the national security of other countries. Indeed, they will be viewed as a threat to international peace and security, and there will be demands for collective action against them, with legal justifications grounded in legal regimes beyond the international law governing climate change itself. While international climate change law may provide the basis for determining that a state is recklessly and flagrantly in violation of the norms grounding international efforts to address the crisis, the severity of the crisis is in part due to the legal regime's failure to sufficiently mobilize compliance with its terms. It is to that regime we turn next.

B. The International Climate Change Law Regime

In this section, I briefly examine the operation of the climate change regime to provide a basis for explaining how perceived violations of the international legal obligations created by this regime could be relied upon for determining that a state is recklessly contributing to climate change, and thereby help frame perceptions of security threats.

1. The Treaty Regime

The origins of the international response to climate change is usually traced back to the Stockholm Declaration, made at the United Nations Conference on the Human Environment in

[71] *Id.*; *see also* Matt McGrath, *Climate Change: 12 Years to Save the Planet? Make that 18 Months*, BBC NEWS (July 24, 2019), https://www.bbc.com/news/science-environment-48964736 [https://perma.cc/R4FZ-Q8FJ].

1972.[72] But the treaty foundation for the international climate change law regime is provided by the United Nations Framework for Climate Change Convention ("UNFCCC"), adopted at the Earth Summit in Rio in 1992.[73] It defined the ultimate objective of the Convention as the stabilization of GHG concentrations at a level that would not cause dangerous interference with the climate system,[74] established an obligation to work in cooperation towards that objective in accordance with the principle of common but differentiated responsibility, and provided the basis for establishing individual national GHG emissions commitments.[75] It also established an institutional framework for continuing negotiation and decision-making, most significantly in the annual Conference of the Parties (COP), which among other things decides on the development and implementation of any amendments and protocols to the Convention.[76] The Kyoto Protocol, adopted in 1997, imposed concrete commitments of result on a relatively small group of the most developed countries in the form of specific target reductions in GHG emissions, defined as a percentage of their national emission levels in 1990.[77] This was the first approach to the climate change crisis, in which firm negotiated limits were agreed to and imbedded in treaty form. But the U.S. never ratified the Kyoto Protocol, largely because developing countries were not required to make commitments; then Canada withdrew from it on the eve of violating its treaty commitments in 2012.[78] What is more, the next round of negotiations on extending the

[72] United Nations Conference on the Human Environment, Stockholm, Swed., June 5–16, 1972, Declaration of the United Nations Conference on the Human Environment, U.N. Doc. A/CONF.48/14/Rev.1, at 2 and Corr. 1 [hereinafter Stockholm Declaration].

[73] United Nations Framework Convention on Climate Change, May 9, 1992, 1771 U.N.T.S. 107 (entered into force, Mar. 21, 1994) [hereinafter UNFCCC].

[74] *Id*. at art. 2.

[75] *Id*. at arts. 3, 4, and 7.

[76] *Id*. art. 7; *see* BENOIT MAYER, THE INTERNATIONAL LAW ON CLIMATE CHANGE 33–38 (2018); DANIEL BODANSKY ET AL., INTERNATIONAL CLIMATE CHANGE 118–59 (2017).

[77] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 11, 1997, 2303 U.N.T.S. 3 [Hereinafter Kyoto Protocol].

[78] MAYER, *supra* note 76, at 41; Ian Austen, *Canada Announces Exit from Kyoto Climate Treaty*, N.Y. TIMES (Dec. 12, 2011), https://www.nytimes.com/2011/12/13/science/earth/canada-leaving-kyoto-protocol-on-climate-change.html [https://perma.cc/AS2X-DESD].

Kyoto Protocol, the Doha Agreement,[79] has still not been ratified. These failures led to a search for different approaches.

A more recent alternative approach, beginning with the Bali Action Plan in 2007,[80] is for treaties to require state parties to commit to setting for themselves ambitious but unspecified emission targets, thus leaving it to the discretion of countries to subsequently determine their own specific emission targets. What is more, this extended the obligation to all states, developing and developed alike, rather than limiting the commitments to the most developed countries.[81] This alternative approach also identified a new objective of limiting warming as a result of climate change to an average of 2°C above pre-industrial levels, which was articulated in the Copenhagen Accord, and confirmed in the following Cancun Agreement of COP 16.[82] This approach culminated in the Paris Climate Change Agreement in 2016,[83] which provided that each party to the treaty was required to submit ambitious emission reduction targets or "nationally determined contributions" ("NDCs"), with the expectation that these would be increased over time in order to meet the objective of absolutely limiting warming to 2°C, and preferably to limit it to 1.5°C above pre-industrial levels.[84] The Paris Agreement also creates mechanisms for monitoring, implementing, and mobilizing compliance with the commitments made.[85]

[79] Amendment to the Kyoto Protocol Pursuant to Article 3, Paragraph 9 (the Doha Amendment), in the Annex of Decision 1/CMP.8, U.N. Doc. FCC/KP/CMP/2012/13/Add.1 (Dec. 8, 2012) [hereinafter Doha Amendment].

[80] Conference of the Parties, United Nations Framework Convention on Climate Change, Dec. 3–15, 2007, Decision I/CP.13: Bali Action Plan 1, U.N. Doc. FCCC/CP/2007/6/Add.1 (Mar. 14, 2008).

[81] MAYER, *supra* note 76, at 43–44.

[82] Copenhagen Accord, *supra* note 30; Rep. of the Conference of the Parties, 16th Sess., Nov. 29–Dec. 10, 2010, Decision 1/CP.16, The Cancun Agreements: outcome of the work of the Ad Hoc Working Group on Long-Term Cooperative Action Under the Convention, U.N. Doc. FCCC/CP/2010/7/Add.1 (Mar. 15, 2011).

[83] Paris Agreement, *supra* note 30.

[84] *Id.* art. 2.1.

[85] For review of the operation of the Paris Agreement, *see, e.g.*, MAYER, *supra* note 76, at 45-49; BODANSKY, *supra* note 76, 209–50. For the manner in which it creates legally binding obligations, *see* Frédéric Gilles Sourgens, *Climate Commons Law: The Transformative Force of the Paris Agreement*, 50 N.Y.U. J. INT'L L. & POL. 885, 893, 952–53 (2018).

Much has been made of the voluntary nature of the NDCs, leading many engaged in the public discourse on the agreement to remark that it is not "legally binding."[86] The treaty was structured in this way, avoiding explicit binding substantive obligations of result, for a few reasons—not least of which to assist President Obama in characterizing the treaty as an "executive agreement" for purposes of the American domestic law and political process.[87] But there should be no mistake that it is a treaty as understood under international law, and that aspects of the treaty are legally binding. Indeed, there is an argument to be made that the NDCs themselves also become binding commitments.[88] First, Article 4 creates a clear commitment to make NDCs that constitute an ambitious and rapid reduction of each party's contribution to climate change by achieving a balance between reductions in their GHG emissions and an increase in their removal of GHGs via sinks and other methods.[89] Each state is required to prepare and communicate its NDC for the purpose of achieving the objectives of the agreement, and is required to increase its NDC every five years in a manner that reflects "its highest possible ambition."[90] Once submitted, and subsequently relied upon by other countries in determining their own NDCs and other aspects of climate change policy, these submissions can be viewed as unilateral declarations that are substantively binding.[91] Thus, by way of

[86] Samantha Page, *No, The Paris Climate Agreement Isn't Binding. Here's Why that Doesn't Matter*, THINK PROGRESS (Dec. 14, 2015), https://thinkprogress.org/no-the-paris-climate-agreement-isnt-binding-here-s-why-that-doesn-t-matter-62827c72bb04/ [https://perma.cc/ZAM7-ESAV]; Tess Bridgeman, *Paris Is a Binding Agreement: Here is Why that Matters*, JUST SECURITY (June 4, 2017), https://www.justsecurity.org/41705/paris-binding-agreement-matters/ [https://perma.cc/K3P9-YFRC]; MAYER, *supra* note 76, at 45.

[87] Page, *supra* note 86. It should be noted that notwithstanding considerable confusion on this point within some of the American commentary on the subject, while the Paris Agreement is not a "treaty" as that term is understood within the U.S. constitutional system, it is without doubt a treaty under international law. *See, e.g.*, MAYER, *supra* note 76, at 45.

[88] Sourgens, *supra* note 85, at 937–44.

[89] Paris Agreement, *supra* note 30, art. 4.1, 4.2.

[90] *Id.* art. 4.3. For a list of the NDCs of the 184 states that have submitted their first NDCs, *see* UNFCC NDC REGISTRY, https://www4.unfccc.int/sites/NDCStaging/Pages/All.aspx [https://perma.cc/YQK3-RSVK] (last visited Feb. 23, 2020).

[91] Sourgens, *supra* note 85, at 893.

example, Canada submitted its NDC, identifying a target of reducing its GHG emissions by 30 percent below 2005 levels by 2030.[92] The United States submitted its first NDC (prior to the Trump administration announcing its intention to withdraw), committing to reduce GHG emissions by 26–28 percent below 2005 levels by 2025. Brazil committed to a reduction of 37 percent of 2005 levels by 2025.[93] After all parties submitted their first NDCs, an IPCC analysis indicated that the aggregate effect of the reductions committed to, assuming that all were fully realized, would still fall considerably short of limiting an increase of global average temperature to 2°C, and could actually lead to as much as a 3°C increase by 2100.[94]

Failing to meet their NDCs or refusing to increase the levels of their NDCs when required every five or ten years would constitute a violation of the conduct obligations under the treaty. Or, for that matter, if the original NDCs were not made in good faith as reflecting the state's highest ambition "in accordance with the best available science," that too would clearly be a violation of the state's commitments under the agreement.[95] Even if one were to concede that the Paris Agreement does not create binding obligations of *result*, there is no question that it, and the entire United Nations Framework Convention on Climate Change ("UNFCCC") framework, have together established an increasingly granular set of obligations of *conduct*. Moreover, the Paris Agreement provided that more detailed rules would be implemented after it came into force by decisions of the COP,[96] and the complete "Paris Rulebook" was promulgated by the parties to the treaty at the end of 2018.[97]

[92] For a record of the NDCs of the 184 states that have submitted their first NDCs, *see* UNFCC NDC REGISTRY, https://www4.unfccc.int/sites/NDCStaging/Pages/All.aspx [https://perma.cc/YQK3-RSVK].

[93] *Id*.

[94] UNFCCC Secretariat, Aggregate Effect of the Intended Nationally Determined Contributions: An Update, ¶ 41, U.N. Doc. FCCC/CP/2016/2 (May 2, 2016).

[95] Paris Agreement, *supra* note 30, art. 4. On good faith in compliance with treaty obligations, *see generally, e.g.*, Steven Reinhold, *Good Faith in International Law*, 2 UCL J. L. & JURIS. 40 (2013).

[96] Paris Agreement, *supra* note 30, art. 13.3; *see also* MAYER, *supra* note 76 at 45, 49.

[97] Framework Convention on Climate Change, Dec. 2–14, 2018, *Matters relating to the implementation of the Paris Agreement*, para. 5. The Paris Rulebook was issued at COP 24 in Katowice Poland: The Katowice Texts: Proposal by the President, Dec. 15, 2018, https://unfccc.int/process-and-meetings/conferences/katowice-climate-change-

These rules are clearly binding on the parties. And, as mentioned above, in addition to this growing complex of obligations of conduct, there are arguments that the Paris Agreement creates a framework of interlocking unilateral declarations with strong reliance interests, which together operate to make the NDCs legally binding obligations of result under international law.[98] Moreover, we may predict that over the next decade the web of obligations, both in terms of commitments to cooperate generally in the achievement of treaty objectives, and in terms of national commitments to limit GHG emissions, will become ever more robust and constraining.

What is more important here is that under both the Kyoto Protocol and the Paris Agreement approaches, the obligations of states are framed as commitments to a reduction in GHG emissions expressed as a percentage of an earlier national level of emissions. Thus, the thirty-eight developed states listed in Annex B to the Kyoto Protocol were obligated to reduce their GHG emissions during the period between 2005–2012 by at least 5 percent below total national emissions in 1990.[99] The Paris Agreement requires each state to submit NDCs committing them to reduce GHG emissions, and many states have again expressed these as a percentage of their national emission totals in 2005.[100] Thus, when we turn below to the question of how one might assess or determine what constitutes "recklessly excessive" contributions to climate change, this is the frame of reference to which we should look—total current national GHG emissions expressed as percentages measured against specified past benchmarks.

There is no doubt that this approach overlooks many complex questions sounding in ethics and equity on assessing the responsibility for climate change. This approach, for instance, does not take into consideration the historical contributions to the total stock of GHGs currently in the atmosphere, and developing countries have long argued that "differentiation"

conference-december-2018/katowice-climate-change-conference-december-2018. *See generally* Lavanya Rajamani & Daniel Bodansky, *The Paris Rulebook: Balancing International Prescriptivenss with National Discretion*, 68 ICLQ 1023 (2019).

[98] Sourgens, *supra* note 85, at 937–44.

[99] Kyoto Protocol, *supra* note 77, art. 3.1, Annex B.

[100] Paris Agreement, *supra* note 30, arts. 3, 4; *see also* MAYER, *supra* note 76, at 47–48.

should be understood as recognizing that Western countries have a greater responsibility for having contributed the lion's share of GHGs to date.[101] Similarly, one might think that emissions should be looked at on a per-capita basis rather than on a per-state basis, or in absolute terms rather than in terms of percentage reduction.[102] Be that as it may, the approach that has been adopted by the legal regime is as described, and this will almost certainly be the frame of reference for considering when a state is recklessly offside its legal obligations under that regime.

2. Custom and General Principles

In addition to this treaty-based regime there are a number of principles of customary international law and general principles of international law that are relevant to the limitation of state contributions to climate change. The treaty-based regime is not understood to constitute a *lex specialis* that displaces or interferes with the operation of these principles.[103] Most central to our analysis is the "no-harm" principle. One of the original sources of this principle is a case involving environmental law, the *Trail Smelter* case of 1941, in which an arbitration panel found that no state has the right to use, or permit its territory to be used, in such a manner as to cause environmental harm within the territory of another state.[104] The principle is not limited to direct transboundary harm, or to environmental law, as it has developed into a more general principle that obligates

[101] *See generally* MARCIA ROCHA ET AL., CLIMATE ANALYTICS, HISTORICAL RESPONSIBILITY FOR CLIMATE CHANGE—FROM COUNTRIES EMISSIONS TO CONTRIBUTION TO TEMPERATURE INCREASE (2015); *CAIT Historical Emissions Data*, World Res. Inst. (June 2015), https://www.wri.org/resources/data-sets/cait-historical-emissions-data-countries-us-states-unfccc [https://perma.cc/PPH6-FGEY]; T.A. BODEN ET AL., GLOBAL, REGIONAL, AND NATIONAL FOSSIL-FUEL CO2 EMISSIONS (1751-2014) (V. 2017), Carbon Dioxide Analysis Center, U.S. Dept. of Energy, https://www.osti.gov/dataexplorer/biblio/dataset/1389331 [https://perma.cc/8BL5-8NXB] (last visited Feb. 23, 2020).

[102] *See, e.g.,* INCROPERA, *supra* note 9, at 234–40.

[103] MAYER, *supra* note 76, at 66; *see also* Douglas Kysar, *Climate Change and the International Court of Justice* (Yale Law School Public Law Research Paper No. 315, 38, 2013); Christina Voigt*, State Responsibility for Climate Change Damages*, 77 NORDIC J. INT'L L. 1, 4 (2008); RODA VERHEYEN, CLIMATE CHANGE DAMAGE AND INTERNATIONAL LAW 143 (2005).

[104] Trail Smelter Arbitration (United States v. Canada), 3 U.N. Rep. Int'l Arb. Awards 1905 (1941).

states to prevent their territory from being used in any way that may cause harm to other states. This was articulated by the International Court of Justice ("ICJ") in the *Corfu Channel* case,[105] and again reiterated in the context of the use of force in *Military and Paramilitary Activities in and Against Nicaragua (Nicaragua v. United States).*[106] Indeed, the no-harm principle has been articulated as one of the central premises of the "unwilling or unable" doctrine, which has been relied upon by some states to justify the use of force against NSAs in non-consenting states—a topic that will be examined more closely in our discussion of the *jus ad bellum* regime below.[107] In the environmental context, the principle has been affirmed in the *Stockholm Declaration*,[108] in the *Rio Declaration*,[109] and in the preamble to the UNFCCC.[110] The ICJ has affirmed it as customary international law as it applies to the environment, holding in the *Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons* that "[t]he existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment."[111]

There is considerable debate regarding the scope, content, and operation of the no-harm principle, and we need not get too deep into the details of that debate here.[112] But the principle is

[105] Corfu Channel (U.K. v. Albania), 1949 I.C.J. 4, at 22 (Apr. 9).

[106] Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.), 1986 I.C.J. 54 (Jun. 27).

[107] *See infra* notes 223–225 and accompanying text.

[108] Stockholm Declaration, *supra* note 72.

[109] United Nations Conference on Environment and Development, *Rio Declaration on Environment and Development*, U.N. Doc. A/CONF.151/26 (Vol. I) (Aug. 12, 1992) [hereinafter Rio Declaration], Principle 2.

[110] UNFCC, *supra* note 73, preamble.

[111] Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 226 (July 8), ¶ 29.

[112] *See, e.g.,* Marte Jervan, *The Prohibition of Transboundary Environmental Harm: An Analysis of the Contribution of the International Court of Justice to the Development of the No-Harm RulePluriCourts*, Research Paper No. 14-17 (2014), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2486421; An Hertogen, *Due Diligence: An Effective Response to Transboundary Environmental Harm?* (forthcoming 2020) (on file with author); MAYER, *supra* note 76, at 67–71; Alexander Zahar, *Mediated Versus Cumulative Environmental Damage and the International Law Association's Principles on Climate*

understood to impose both substantive and procedural duties. The substantive obligation, in turn, can be interpreted as having one of two distinct aspects, namely a negative "no-harm" obligation—that is, an obligation of result that requires states to refrain from conduct that will cause harm to other states; and a positive "prevention of harm" obligation—that is, an obligation of conduct that requires states to engage in due diligence to ensure that activity within the state's territory or under its jurisdiction is not likely to cause harm beyond its borders.[113] The latter appears to be the dominant or most widely accepted approach as reflected in the recent jurisprudence of the ICJ, the International Law Commission's ("ILC") Draft Articles on Prevention, and the academic literature.[114] Under this approach, the no-harm principle obliges states to take affirmative action to prevent "significant harm," and to reduce the risk of significant harm beyond their borders, not only directly to and within the territory of other states, but also to and within regions that comprise the global commons.[115] This obligation thus includes a substantive duty to engage in due diligence and preventative activity *ex ante*, and failure to take such action once a state is on notice of the risk of harm will itself constitute a violation of the obligation.[116] The standard for assessing the adequacy of due diligence will depend on the nature of the specific risks at

Change, 4 CLIMATE L. 217 (2014); PATRICE BIRNIE ET AL., INTERNATIONAL LAW AND THE ENVIRONMENT 137–52 (3d ed. 2009).

[113] MAYER, *supra* note 76, at 67; PHILIPPE SANDS & JACQUELINE PEEL, PRINCIPLES OF INTERNATIONAL ENVIRONMENTAL LAW 200 (3d ed. 2012); BIRNIE, *supra* note 112, 137–42; Jervan, *supra* note 112, at 98–100.

[114] Jervan, *supra* note 112, at 62–64; MAYER, *supra* note 76, at 67–71; Pulp Mills on the River Uruguay (Argentina v. Uruguay), 2010 I.C.J. Reports 14, ¶ 101 (Apr. 20). *See also* Int'l Law Comm'n, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, adopted by the Commission at its 53rd Session, U.N. Doc. A/56/10 (2001) [hereinafter ILC Articles on Prevention]. For more on the shift to obligations of conduct, *see generally* Jutta Brunnée, ESIL Reflection, *Procedure and Substance in International Environmental Law: Confused at a Higher Level?* 5 EUR. SOC. INT'L L., no. 6, 1 (2016); Benoit Mayer, *Obligations of Conduct in the International Law on Climate Change: A Defence*, 27 REV. EUR. COMP. & INT'L ENVTL. L. 130 (2018).

[115] *See* Jervan, *supra* note 112, at 53 (noting that "significant" harm, not "serious" or "substantial," is the established threshold for triggering the obligation); *see also* ILC Articles on Prevention, *supra* note 114, at 152, ¶ 4; Legality of the Threat or Use of Nuclear Weapons [1996] ICJ 226, ¶ 29 (July 8); Gabčíkovo–Nagymaros Project (Hungary v. Slovakia), Judgment, 1997 I.C.J. Rep. 7, ¶ 53 (Sept. 25).

[116] Jervan, *supra* note 112, at 62.

issue—the ILC Draft Articles on Prevention simply require that states take "all appropriate measures to prevent significant transboundary harm"—a formulation that was followed by the ICJ in the *Pulp Mills on the River Uruguay* case.[117] Finally, the procedural duties require states to notify, warn, inform, and consult with other states regarding any risk of harm arising from the state's activity, which includes an obligation to conduct environmental impact assessments prior to engaging in the conduct in question.[118]

It may seem, and indeed several scholars have argued, that the transboundary no-harm principle can have no application in the context of climate change.[119] This is because all states are emitting GHGs, contributing to climate change, and thereby doing some harm to not only all other states but also to themselves. Clearly the no-harm principle cannot be implicated by all GHG emissions (or, to put it another way, not all GHG emissions can constitute transboundary harm), even though all such GHG emissions are in fact contributing to the overall harm caused by climate change. Unlike in typical environmental transboundary harm cases, such as the *Trail Smelter* case, the actions of the impugned state are not the direct and proximate cause of any specific localized harm in a neighboring state.[120] Rather, the impugned conduct is merely causing an incremental contribution to a global phenomenon that will result in a diffuse harm, manifesting itself in different ways all around the world. And, as Alexander Zahar has argued, even considering the GHG emissions of the United States in a given year, that discrete annual contribution of a single nation is negligible—it is only the accumulation of such annual emissions over many years, in combination with all other emissions in the world, that results in the mounting harm, which is global in its effects.[121] Yet the

[117] ILC Articles on Prevention, *supra* note 114, at 154 ¶ 11; *see* Pulp Mills on the River Uruguay, *supra* note 114, ¶¶ 201–06; and *see* Certain Activities Carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua), 2015 I.C.J. 665, ¶¶ 101-05, 153 (Dec. 16). *See generally* Jervan, *supra* note 112, at 64–65.

[118] Brunnée, *supra* note 114.

[119] *See, e.g.*, Alexander Zahar, *The Contested Core of Climate Law*, 8 CLIMATE L. 244 (2018).

[120] *Id.* at 249–50.

[121] *Id.* at 250.

dominant view is that precisely because the substantive obligations of the no-harm principle are preventative in nature and are obligations of conduct, not of result, the principle and its obligations can indeed apply to the GHG emissions of states in the context of climate change risks.[122] One need not prove that a given state's GHG emissions have caused, or will cause, specific harm to any other given state, but rather that the state was on notice that excessive GHG would be harmful, and that it failed in its duties to take all feasible measures to prevent that harm, or to engage in due diligence to determine alternatives to the harmful conduct.[123]

There are a number of other principles that operate as part of the overall climate change law framework, and which interact with the no-harm principle. Perhaps most important of these is the principle of cooperation, which parties to the UNFCCC agreed to in the *Rio Declaration*, the *Stockholm Declaration*, and in the Preamble to the UNFCCC itself, and which is now arguably a principle of customary international law.[124] This principle creates an obligation for states to cooperate in, among other things, achieving the specific objectives of the UNFCCC.[125] In conjunction with this is the principle of sustainable development, which is provided for in a number of UNFCCC instruments, most notably and recently the Paris Climate Agreement.[126] The ICJ, in the *Gabčíkovo-Nagymoros* (*Hungary v. Slovakia*) case defined the principle of sustainable development as an obligation to reconcile economic development

[122] Brunnée, *supra* note 114, at 6 (focusing more on the procedural aspect than the due-diligence aspects of the duties). *See also* Voigt, *supra* note 103, at 15; Richard S.J. Tol & Roda Verheyen, *State Responsibility and Compensation for Climate Change Damages—A Legal and Economic Assessment*, 32 ENERGY POL'Y 1109, 1112 (2004) (discussing the distinction between general and specific causation in operation of the no-harm principle).

[123] *See* Brunnée, *supra* note 114.

[124] Stockholm Declaration, *supra* note 72, princ. 24; Rio Declaration, *supra* note 109, princ. 14; MAYER, *supra* note 76, at 75.

[125] MAYER, *supra* note 76, at 75 (citing in part The MOX Plant Case (Ireland v. U.K.), Case No. 10, Order for Provisional Measures, Dec. 3, 2001, ITLOS Rep. 95, 110, ¶ 82; and Case Concerning Land Reclamation by Singapore in and Around the Straits of Johor (Malaysia v. Singapore), Case No. 12, Order for Provisional Measures, Oct. 8, 2003, ITLOS Rep. 10). *See also* PEEL & SANDS, *supra* note 113, at 197–98, 205–07.

[126] *See* SANDS & PEEL, *supra* note 113, at 217–20.

with protection of the environment.[127] Finally, there is the precautionary principle, which is a fundamental principle of climate change law, articulated in most of the important instruments. The *Rio Declaration* defines the principle as requiring that "[w]here there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."[128] The International Tribunal for the Law of the Sea ("ITLOS") has held that the precautionary principle is integral to the obligations of due diligence in the no-harm principle, in that states are to err on the side of precaution in decision-making and policy formulation in the event of uncertainty.[129] Thus, these principles operate together to create a web of obligations, requiring states to cooperate in meeting defined climate change mitigation objectives, to ensure that their policies are in line with sustainable development principles, to err on the side of caution in the event of uncertainty as to the magnitude of risk, and to affirmatively take action to prevent conduct within their territory that runs the risk of causing harm to other states.

The foregoing provides a very brief overview of the legal regime as it applies to limiting GHG emissions and other contributions to climate change. While it provides an increasingly robust web of substantive duties and obligations, both of conduct and of result, what it lacks is much in the way of enforcement mechanisms. This is, of course, true of most international law and much has been written on how international law nonetheless manages to mobilize compliance, such that "most states obey most of international law most of the time," as Louis Henkin famously observed.[130] But it is not clear

[127] Gabčíkovo–Nagymaros Project (Hungary v. Slovakia), Judgment, 1997 I.C.J. Rep. 7, ¶ 140 (Sept. 25).

[128] Rio Declaration, *supra* note 109, princ. 15. *See also* MAYER, *supra* note 76, at 73; SANDS & PEEL, *supra* note 113, at 229–39.

[129] International Tribunal for the Law of the Sea (ITLOS) (Seabed Chamber), Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area (Advisory Opinion), ITLOS Case No. 17, Feb. 1, 2011, ¶ at para. 131; *see also* Brunée, *supra* note 114, at 5; Jervan, *supra* note 112, at 72.

[130] LOUIS HENKIN, HOW NATIONS BEHAVE 47 (2d ed. 1979); Harold H. Koh, *Why Do Nations Obey International Law*, 106 YALE L.J. 2599, 2599–2604 (1997) (providing an overview of the different theoretical explanations).

that international climate change law is mobilizing compliance to the extent that will be necessary for the international community to successfully respond to the mounting crisis. The collective action and coordinating problems are profound, with powerful incentives on states to defect from the regime in the short term. One need only look to the example of Canada, a nation that typically prides itself for being a champion of both the international rule of law and environmental stewardship,[131] yet which withdrew from the Kyoto Protocol when it was on the verge of violating its obligations under the treaty.[132] There has also been a popular backlash to the socio-economic dislocation caused by policies designed to meet climate change law obligations, which is creating unique stresses for political systems to deal with—as illustrated by the manner in which the *gilet jaune* protests hobbled President Macron's government in France in 2019.[133] Moreover, this political problem is in turn being opportunistically exploited by populist and nationalist forces, which are actually campaigning on anti-climate change platforms, not only putting democracy itself under strain but making collective action to respond to the crisis that much more difficult.[134]

Adjudication and judicial enforcement is of course one method of mobilizing compliance, but it is quite unclear how litigation is likely to advance compliance with climate change law obligations. The ICJ has yet to hear a case involving these obligations. The most recent cases in which the ICJ adjudicated environmental transboundary harm issues, it emphasized the

[131] *See e.g.*, Government of Canada, Global Issues and International Assistance, https://www.international.gc.ca/world-monde/issues_development-enjeux_developpement/index.aspx?lang=eng&_ga=2.113759111.1612974853.1565298854-1079736567.1565298854 [https://perma.cc/8H8X-DG56].

[132] *See supra*, note 78.

[133] Zerofsky, *supra* note 5; *see also* Tony Barber, *Emmanuel Macron's European Ambitions are Hobbled by Troubles at Home*, FIN. TIMES (Dec. 18, 2018), https://www.ft.com/content/ea998530-fe32-11e8-ac00-57a2a826423e [https://perma.cc/JGT9-6ZM3].

[134] *See, e.g.*, Damien Cave, *It was Supposed to be Australia's Climate Change Election. What Happened?*, N.Y. TIMES (May 19, 2019), https://www.nytimes.com/2019/05/19/world/australia/election-climate-change.html [https://perma.cc/97MW-622C]; Gerald Traufetter, *AfD Hopes to Win Votes by Opposing Climate Protection*, SPIEGEL ONLINE INT'L (May 6, 2019), https://www.spiegel.de/international/germany/afd-seeks-votes-by-opposing-climate-protection-a-1265494.html.

obligations of conduct and due diligence over obligations of result, but it did so in a manner that left some uncertainty as to how it might address a case in which harm was as diffuse as it is in the context of climate change.[135] There have been some efforts to link excessive contributions to violations of human rights, in cases brought to human rights tribunals.[136] There is a growing body of domestic court cases involving climate change claims, with some notable successes. For instance, the Supreme Court of the Netherlands upheld a lower court decision that the Dutch government's NDC of 20 percent reduction constituted a breach of its duty of care to take mitigation measures, and ordered the government to increase its reduction target to 25 percent. [137] Similarly, a Pakistani court found that the government had made insufficient progress in implementing its own national climate change policy. It not only found a violation of constitutional rights, but ordered the government to establish a commission to oversee the process of implementation.[138]

In the United States a constitutional challenge was brought against several federal government agencies for their failure to sufficiently limit GHG emissions, and the Federal District Court in Oregon surprisingly held (albeit in a judgment on a preliminary motion) that the concept of liberty in the due process clause of the Fifth and Fourteenth Amendments gave rise to a fundamental right to a "climate capable of sustaining human life."[139] But the U.S. Court of Appeals for the Ninth Circuit reversed this decision, holding that the courts were not the place

[135] Pulp Mills on the River Uruguay, *supra* note 114; Brunée, *supra* note 114, at 6.

[136] *See* Petition to the Inter-American Commission on Human Rights Seeking Relief from Violations Resulting from Global Warming Caused by Acts and Omissions of the United States, Dec. 7, 2005, http://climatecasechart.com/non-us-case/petition-to-the-inter-american-commission-on-human-rights-seeking-relief-from-violations-resulting-from-global-warming-caused-by-acts-and-omissions-of-the-united-states/ [https://perma.cc/V6C9-8YBD].

[137] Uregenda Foundation v. The State of the Netherlands, unofficial English translation available at: https://www.urgenda.nl/wp-content/uploads/ENG-Dutch-Supreme-Court-Urgenda-v-Netherlands-20-12-2019.pdf [https://perma.cc/DFY7-MGX3]. For discussion of the Hague Court of Appeal decision, *see generally Comparative Law—Climate Change—Hague Court of Appeal Requires Dutch Government to Meet Greenhouse Gas Emission Reductions by 2020*, 132 HARV. L. REV. 2090, 2090–97 (2019).

[138] Leghari v. Federation of Pak., [2015] W.P. No. 25501/201 (Lahore H.Ct.).

[139] Julianna v. United States, 217 F. Supp. 3d 1224 (D. Or. 2016).

for deciding climate change policy.[140] While this decision is deeply disappointing, it is true that litigation is never the best mechanism for the implementation and enforcement of legal regimes governing highly complex problems implicating a diversity of actors. Litigation can only indirectly mobilize compliance ex ante, by way of deterrence. As the *Gabčíkovo–Nagymaros Project* case illustrates, it is not even very effective at resolving large environmental problems involving only two states.[141] The ICJ in that case determined and allocated responsibility, ordered further negotiations and reparations. Yet, years later, the dispute and underlying problems remain largely unresolved.[142] Thus, litigation is unlikely to be that helpful in mobilizing compliance with the obligations and duties regarding reductions in GHG emissions. All of which is to say that as the climate crisis mounts, and the consequences worsen, the inability of the international climate change law regime to mobilize compliance more generally is going to force people to cast about for alternative mechanisms and tools to encourage or coerce compliance.

C. The Causes of Climate Change as Security Threat

In this Section, we return to the idea that there will soon come a time when not only the *consequences* of climate change are seen as a threat to national security, but also that some of the *causes* of climate change will increasingly be viewed by states as a national security threat, and ultimately as a threat to international peace and security. To be more precise, the conduct of states that results in recklessly excessive contributions to climate change, in flagrant violation of international climate change law, will come to be seen as a national security threat by other states, and will be characterized as a threat to international peace and security. This idea, that "recklessly excessive and flagrantly unlawful"

[140] Juliana v. United States, No. 18-36082 D.C. No. 6:15-cv-01517-AA, (9th Cir. Jan. 17, 2020).
[141] Gabčíkovo–Nagymaros Project, *supra* note 127.
[142] *Id.*; *see generally* Gábor Baranyai & Gábor Bartus, *Anatomy of a Deadlock: A Systemic Analysis of Why the Gabčíkovo–Nagymaros Dam Dispute is Still Unresolved*, 18 WATER POL'Y 39, 39–48 (2016).

contributions to climate change will be viewed as a threat to international peace and security, will thus come to form the basis for claims that collective action against such threats will be justifiable.

The development of thinking in this direction is already very much in motion. There have been increasingly frequent arguments that climate change should be taken up by the Security Council as an issue impacting international peace and security.[143] Pointing to the actions of individual states as posing such threats is merely the next step. We can already see shifts in this direction in public discourse. For instance, *The Economist* cover story in the first week of August 2019 characterized Brazil's deforestation efforts in the Amazon as a threat to neighboring countries and to humanity more generally—it even analogized Brazil's conduct to "an act of war."[144] An essay in *Foreign Policy* made a move in the same direction, raising the question of whether states had the right—or even the obligation—to consider using force to protect the Amazon.[145] That same week, a feature in *The Guardian* appeared under the title "Australia's Climate Stance is Inflicting Criminal Damage on Humanity."[146]

Nonetheless, from a purely legal perspective, classifying the GHG emissions of a particular state as a national security threat, and thus a threat to international peace and security, may seem both counterintuitive and a massive stretch. After all, as discussed above, each and every country is contributing to climate change, so how do we single out only some as comprising a threat? Is it even possible to define what constitutes "excessive" GHG emissions? There are some scholars that challenge this very notion.[147] And in thinking about what might constitute

[143] *See infra* Part III(A)(i).

[144] *Deathwatch: The Future of the Amazon*, ECONOMIST (Aug. 3, 2019) (emphasis added); *see also* Stephen M. Walt, *Who Will Save the Amazon (and How)?,* FOREIGN POL'Y: VOICE (Aug. 5, 2019), https://foreignpolicy.com/2019/08/05/who-will-invade-brazil-to-save-the-amazon/ [https://perma.cc/9C4S-BEGG].

[145] Walt, *supra* note 144.

[146] Ian Dunlop & David Spratt, *Australia's Climate Stance is Inflicting Criminal Damage on Humanity*, GUARDIAN (Aug. 2, 2019), https://www.theguardian.com/commentisfree/2019/aug/03/australias-climate-stance-is-inflicting-criminal-damage-on-humanity [https://perma.cc/HTM3-F9NK].

[147] *See, e.g.*, *id.*; MAYER, *supra* note 78, at 79.

excessive contributions to climate change, does it make sense to think about the problem in purely state-centric fashion? Canada, for instance, has a population of less than 40 million, yet contributes absolute carbon dioxide emissions that ranked it in the top twelve state contributors in the world in 2015, ahead of Indonesia, a country of over a quarter of a billion people.[148] Australia, a country of less than 25 million, has an even higher per-capita rate of GHG emissions.[149] From that perspective, a per-capita emission rate approach might seem more just. Even taking a state-centric approach, how should we treat the emissions from China that result directly from industries supplying Western markets or from companies within Western corporate supply-chains, not to mention the entirely separate accounting of maritime and aviation emissions?[150] And then, the most difficult problem of all: how to factor in historic emissions? The United States alone is responsible for approximately 25 percent of the carbon dioxide in the atmosphere.[151] Developing countries have for years taken the position in negotiations that historical emissions have to be considered in establishing emission limits.[152] The principle of "differentiated responsibility" has been reiterated in every UNFCCC agreement, but the United States has insisted that the concept cannot be

[148] *Each Country's Share of CO2 Emissions*, UNION OF CONCERNED SCIENTISTS (July 16, 2008), https://www.ucsusa.org/global-warming/science-and-impacts/science/each-countrys-share-of-co2.html [https://perma.cc/2RLW-XE7N]. For the database of raw data of GHG emissions submitted by each of the state-parties to the UNFCCC, *see* United Nations Framework Convention on Climate Change, Greenhouse Gas Inventory Data—Detailed Data by Party, available *at* https://di.unfccc.int/detailed_data_by_party [hereinafter, UNFCCC GHG emissions database] (last visited April 16, 2020).

[149] UNION OF CONCERNED SCIENTISTS, *supra* note 148.

[150] The emissions from both maritime and air transportation are not governed by UNFCCC, but are governed by the International Maritime Organization and the International Civil Aviation Organization, and related treaties, and do not get accounted for within national emissions. *See* MAYER, *supra* note 76, at 55–59; BODANSKY, *supra* note 76, at 265–73.

[151] *See* MAYER, *supra* note 76, at 98–103.

[152] *See generally* Phillip Stalley, *Principled Strategy: The Role of Equity Norms in China's Climate Change Diplomacy*, 13 GLOBAL ENVTL. POL. 1 (2013). *See* BODANSKY, *supra* note 76, at 27. *But see generally* Eric A. Posner & Cass R. Sunstein, *Climate Change Justice*, 96 GEO. L.J. 1565 (2008) (questioning the corrective and distributive justice claims against developed countries).

interpreted to imply greater historical responsibility.[153] Yet can historical emissions be entirely disregarded when considering what contributions today are excessive and constitute a threat to humanity?[154] In short, even if we begin to view reckless contributions to climate change as a security threat, there does remain the question of precisely how we are to define and determine exactly what constitutes recklessly excessive contributions to climate change, so as to comprise such a threat.

As in most areas of social organization, however, the relevant legal regime will shape our frame of reference and inform the norms that develop around this issue.[155] Recklessly excessive contributions to climate change will be those that are viewed as being in flagrant violation of the prevailing international climate change law duties and obligations. As reviewed in the previous section, there is a growing web of well-defined state duties and obligations, together with increasingly clear expectations regarding each state's mitigation efforts. These may not yet be operating to adequately mobilize broad compliance, or be sufficiently precise and binding so as to provide a high degree of certainty in litigation; but they will be clear enough to provide a basis for public allegations that certain countries are flagrantly offside the rules, and that their contributions are therefore recklessly excessive. The combination of the collective global mitigation objectives articulated in the UNFCCC and the Paris Agreement, and progressively ambitious and voluntary NDC limits of the Paris Agreement, will provide a ready frame of reference for such claims. The regime forms a sufficiently developed set of expectations and benchmarks against which national policy can and will be measured for purposes of determining what constitutes "reasonable" as opposed to "recklessly excessive" GHG emissions. As discussed above, those emissions will, in accordance with the approach of the UNFCCC, be assessed in terms of the percentage increase or decrease

[153] Written Statement of the United States on Principle 7 of the Rio Declaration, in Report of the United Nations Conference on Environment and Development, ¶ 16, UN Doc. A/CONF.151.26 (Vol. IV) (Sept. 28, 1992). For a review of the principle of differentiation, *see* MAYER, *supra* note 76, Chap. 6.

[154] *See supra* note 101.

[155] For the international context, *see, e.g.*, Harold H. Koh, *Why Do Nations Obey International Law?*, 106 YALE L.J. 2599 (1997).

measured against past emissions benchmarks—given, of course, that all states are now obligated to reduce the balance of their contributions relative to those past benchmarks.[156]

A state engaging in or permitting activity that results in GHG emissions and/or destroys carbon sinks, the combined effect of which is to constitute a contribution to climate change that is sufficiently out of proportion to the state's treaty commitments, would almost certainly also constitute a violation of the substantive due diligence obligations of the no-harm principle. These due diligence obligations will also be informed by the commitment made by the parties to the Paris Agreement to "an effective and progressive response to the urgent threat of climate change on the basis of the best available scientific knowledge."[157] I am not here talking about the marginal cases. What will define climate rogue states is activity that will, by most measures and from most perspectives, constitute a "flagrant violation" of the state's obligations under both treaty and customary international law—and the contributions to climate change that give rise to such a flagrant violation will thus be viewed as being recklessly excessive. In this way, what I have termed "recklessly excessive" and "flagrantly unlawful" are intricately related. The terminology does not much matter and these are not terms of art, but are only employed here for definitional convenience—the point is that conduct that is viewed as egregiously unlawful will also be seen as patently and unreasonably excessive, and together they will define conduct that will be perceived to be an unjustifiable threat to the rest of the international community.

Many may object to this line of argument by suggesting that the legal regime is not sufficiently clear, that many elements of it are not necessarily binding, and that it is thus impossible to determine what would constitute "recklessly excessive contributions" even within the legal framework described.[158] These objections would be more salient if the issue was one of trying to build a case for purposes of litigation, and the establishment of state responsibility for violation of these obligations. But proving the violations in court is not what is at

[156] *See supra* notes 96–102 and accompanying text.
[157] Paris Agreement, *see supra* note 30, at Preamble.
[158] *See* Zahar, *supra* note 119, at 250–51 (disputing the notion of excessive emissions).

issue here, and thus the more theoretical legal objections rather miss the mark. The central point is that the legal regime will provide the lens through which state activity is assessed, and will thus frame the perceptions of risk and threat. The legal framework will provide a significant foundation for powerful political arguments about the illegitimacy of the climate change contributions of outlier states, and legal arguments will be central to the rhetoric deployed to rally collective action against the perceived threat posed by those states. This is a familiar pattern. Consider how the United States and others have referred to the principles and rules from the nuclear non-proliferation or counter-terrorism law regimes to characterize the alleged activities of countries like Iran, North Korea, Iraq, and Libya as being unlawful and illegitimate, as part of a process of characterizing those states as rogue nations for purposes of rallying international collective action against them.[159] When the consequences of climate change start to wreak real havoc, and as fear and the sense of urgency and crisis galvanize both governments and publics alike around the world, the pressure to both take significant action to reduce the threat, and to target scapegoats viewed as having helped cause the crisis, is going to become enormous—and the relevant legal regime will help frame the arguments to justify collective action against the rogue states. While this catastrophe will dwarf all others that have come before it, there is a common pattern of governments seeking to blame other states for perceived crises.[160]

[159] *See, e.g.*, Mahsa Rouhi, *From Rogue to Regular: What will it take for Washington to accept Iran as a "normal" state?,* FOREIGN POL'Y: ARGUMENT (Feb. 4, 2019), https://foreignpolicy.com/2019/02/04/from-rogue-state-to-regular-iran-trump-sanctions-bolton-pompeo-normal-state/ [https://perma.cc/46QS-WJPC]. President George W. Bush described Iraq, Iran, and North Korea as the "Axis of Evil" in his 2002 State of the Union Address. *Text of President Bush's 2002 State of the Union Address*, WASH. POST (Jan. 29, 2002) www.washingtonpost.com/wp-srv/onpolitics/transcripts/sou012902.htm [https://perma.cc/LT3Q-E76U].

[160] Two recent examples of this pattern in the context of migration, are the Italian government's blaming of France for the perceived migration crisis, and the Trump administration blaming Mexico for migrant caravans heading for the Southern border: *France Summons Italian Envoy Over Africa Remarks*, BBC NEWS (Jan. 22, 2019), https://www.bbc.com/news/world-europe-46955006 [https://perma.cc/3G8Z-AT6S]; Mary Lee, *Trump Blames Mexico and Democrats for Migrant Caravan*, POLITICO (Oct. 22, 2018), https://www.politico.com/story/2018/10/22/trump-immigration-crisis-921892 [https://perma.cc/5WB4-3MTE].

In the circumstances of the climate change crisis, if some country flagrantly rejects the calls for international cooperation on climate change and pursues its own economic self-interest at the cost of contributing disproportionately to the risk that the whole world is facing, then many countries in the world will begin to view that state as a renegade, a rogue that is putting humanity at risk, and will seek action to stop it, regardless of complex theoretical or fine legal arguments militating against such a characterization. Thus, if Brazil announces it is going to permit the accelerating destruction of the Amazonian rainforest, [161] or Canada adopts policies to maximize the development and production of its tar-sands oil fields, [162] and doing so is going to put those countries far offside their well-established climate change mitigation obligations, their actions are going to be perceived as a threat to the rest of humanity. And that threat is going to begin eliciting a demand for a more direct response—even a military response. In a political climate characterized by fear, a sense of crisis, and urgent need to respond, the characterization of the threats posed by climate rogue states will be stripped of all complexity and nuance, packaged in tribalistic or nationalistic terms, and there will be demands for action to prevent those threats from materializing. And as states have so often responded to threats posed by "others" in the past, the threat or use of force will be one of the primary policy tools for which governments will reach—and then governments will begin to look for legal arguments to provide the justification for using that tool.

This is not to suggest that the violations of the international climate change law obligations could ever, by themselves, justify a use of force under current international law. In Part III below, I will turn to a more detailed analysis of the kinds of arguments we are likely to see for justifying the use of force, but for now it

[161] *See, e.g.*, Dom Phillips, *Jair Bolsonaro launches assault on Amazon rainforest protections*, GUARDIAN (Jan. 2, 2019), https://www.theguardian.com/world/2019/jan/02/brazil-jair-bolsonaro-amazon-rainforest-protections [https://perma.cc/6VP2-HK2P]. *See* Xavantina & Santarém, *supra* note 54; *see* Walt, *supra* note 144.

[162] Stephen Leahy & Ian Willms, *This is the World's Most Destructive Oil Operation—And it's Growing*, NAT'L GEOGRAPHIC (Apr. 11, 2019), https://www.nationalgeographic.com/environment/2019/04/alberta-canadas-tar-sands-is-growing-but-indigenous-people-fight-back/ [https://perma.cc/V83K-HZ95].

should be made clear that a finding of violation, flagrant or otherwise, and even the establishment of state responsibility for that violation, could not in and of itself justify a use of force, or even contribute to or bolster any such justification.[163] It is well established and uncontroversial that the law of state responsibility is quite separate and apart from the *jus ad bellum* regime, and it cannot be relied upon for any justifications for the use of force.[164] But my point is that regardless of this, such illegality will help to both define what is recklessly excessive and thus threatening, and to shape and legitimize the political rhetoric employed to galvanize collective action against the rogue state. And that such political calls for action in turn will drive efforts to expand or adjust the *jus ad bellum* regime to provide the justification necessary for the threat or use of force, in just the same way we have seen efforts to adjust the regime to deal with other novel and challenging threats. The unlawfulness of the rogue state's actions will be implicated in those arguments, just as violations of the nuclear non-proliferation treaty were implicated in arguments for the use of force against Iraq, Iran, and North Korea.

If all of this sounds far-fetched, consider how the issues surrounding geoengineering may sharpen the case for action. Geoengineering refers to various technical methods designed to counter the process of climate change. One area of geoengineering that is already the subject of considerable theoretical and experimental work, referred to as "solar geoengineering" or "solar radiation management," seeks to reduce the temperature of the earth's atmosphere by reducing its exposure to the sun.[165] Some proposed solutions are

[163] This is precisely part of my criticism of the implication of state responsibility and the "no-harm" principle in recent articulations of the "unwilling or unable" doctrine—to which I will return below. For my full critique of this, *see* Craig Martin, *Challenging and Refining the "Unwilling or Unable" Doctrine*, 52 VAND. J. TRANSNAT'L L. 387, 429–33 (2019).

[164] *See, e.g.,* Crawford, *supra* note 18, at 206 (2013). *See generally* CHRISTINE GRAY, INTERNATIONAL LAW AND THE USE OF FORCE (4th ed. 2018); YORAM DINSTEIN, WAR AGGRESSION AND SELF-DEFENCE (6th ed. 2017).

[165] For a brief overview, *see Reaching for the Sunshade July 2030: What if geoengineering goes rogue?*, ECONOMIST (July 6, 2019), https://www.economist.com/the-world-if/2019/07/06/what-if-geoengineering-goes-rogue [https://perma.cc/U5QJ-ZYVS]. For a

somewhat fantastical, such as placing millions of mirrors or shades in outer space between the earth and the sun. Other are much more technically and financially feasible, such as salting the lower atmosphere with sulphate particles, or Sulfuric acid, in an effort to mimic the cooling effect seen after large volcanic eruptions. Just one by-product of this scheme would be to vastly increase the acidification of the oceans, and thereby radically impact marine ecosystems and the biodiversity of the planet.[166] Another proposed technique is to modify or eliminate cirrus clouds, which form at high altitudes and trap more heat than they reflect, by injecting them with such chemicals as bismuth tri-iodide, the unintended consequences of which are not yet well understood.[167]

Consider a situation in which a country that has both the technical and financial ability, but is also one of those acutely vulnerable to climate change—such as India—announces that it is going to undertake a bold and radical geoengineering effort to mitigate the consequences of climate change. The full effects are poorly understood, and the rest of the world objects because the consequences of the effort are considered to be potentially disastrous for the climate system and for biodiversity. States argue that implementation of the plan will clearly violate the no-harm principle, among a host of other possible violations of international law. India brushes all objections aside and announces its intention to proceed with the effort without the consent of the rest of the world. Would its proposed action not constitute a threat to international peace and security, justifying collective action rising to and including the threat or use of force? I suspect that many states would think so—and the primary differences between the geoengineering effort and the reckless contribution to climate change are really just the temporal component and motives. But killing someone slowly with a daily dose of chemo is no less fatal than doing so with a gun, even if they think they are helping with the former.

full-length critique of geoengineering, *see* CLIVE HAMILTON, EARTHMASTERS: THE DAWN OF THE AGE OF CLIMATE ENGINEERING (2013).

[166] For detailed discussion, *see* HAMILTON, *supra* note 165, at 51–71.

[167] *Id*.

While governments will thus view excessive state contributions to climate change as direct threats to international peace and security, and look to the climate change law regime to help identify which states are "rogue" actors most responsible for the threat, they will also look for legal justifications for collective action against such rogue states. I next turn to examine the nature of the arguments that we are likely to see advanced for expanding the *jus ad bellum* regime to justify such action.

III. PRESSURE TO EXPAND THE *JUS AD BELLUM* REGIME

As indicated in the introduction, there has been very little consideration of how any of the foregoing might implicate the *jus ad bellum* regime. We may acknowledge that the consequences of climate change will both increasingly pose national security threats, and increase the incidence of armed conflict; we may recognize that some countries may recklessly contribute to those risks through the flagrant violation of increasingly firm principles of international climate change law; and indeed we may concede that other international law regimes are incapable of enforcing or mobilizing sufficient compliance with those international climate change law obligations. But there has been little sense that these developments could somehow combine to exert pressure on the *jus ad bellum* regime to adapt, or indeed that the *jus ad bellum* regime could have some role to play in addressing climate change. More specifically, nothing in the academic literature appears to have seriously contemplated a future in which states might look to the threat or use of force as a means of compelling recalcitrant states to comply with their climate change law obligations, and thereby reduce the threat posed by excessive GHG emissions to their own national security and to international peace and security more generally. In this Part, I explore how such developments are indeed likely to cause pressure for adjustments to the *jus ad bellum* regime, and examine recent efforts to expand the doctrine of self-defense and create new exceptions to the prohibition on the use of force, as a basis for suggesting the form such pressure is likely to take.

A. Threat to International Peace and Security

To begin, it may be helpful to recall the outlines of the modern *jus ad bellum* regime. It is centered around the general prohibition on the use of force, which is provided for in Article 2(4) of the U.N. Charter and is also well established as a principle of customary international law.[168] There are two generally accepted exceptions to the prohibition, both of which are also explicitly provided for in the U.N. Charter: under Article 42, the U.N. Security Council can authorize member states to use force to maintain or restore international peace and security; and under Article 51, member states may unilaterally use force in the exercise of individual or collective self-defense in response to an armed attack.[169] I will begin with U.N. Security Council authorized action first, because it is most likely that the initial moves along the path towards implicating the *jus ad bellum* regime will begin not with calls for a use of force, but merely with claims that the conduct of the climate rogue state should be understood as constituting a threat to international peace and security requiring some form of collective action. And this is a first step towards triggering Article 42 action.

1. Framework of U.N. Security Council Role

Chapter VII of the U.N. Charter lays out a collective security framework, and its first provision, Article 39, provides that the Security Council "shall determine the existence of any threat to the peace, breach of the peace, or act of aggression and shall make recommendations, or decide what measures shall be taken in accordance with Articles 41 and 42, to maintain or restore international peace and security."[170] Indeed, the U.N. Security Council's primary responsibility is the maintenance of international peace and security,[171] and thus the identification of a threat to international peace and security is typically

[168] On the relationship between the Charter and customary principles of *jus ad bellum*, *see* Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.), 1986 I.C.J. 392, ¶ 178–88 (June 27, 1986).

[169] For a review of the *jus ad bellum* regime under the Charter, *see generally* GRAY, *supra* note 164 and DINSTEIN, *supra* note 164.

[170] U.N. Charter art. 39.

[171] U.N. Charter art. 24, ¶ 1.

understood as a pre-condition for a matter to be taken up by the Security Council. There has been some discussion of the impact of climate change in the Security Council, and the Security Council signaled in Resolution 1625, in 2005, that it was prepared to "adopt a broad strategy of conflict prevention, which addresses the root causes of armed conflict."[172] In 2014 the Security Council recognized that a public health issue, namely the Ebola crisis in West Africa, could be characterized as a threat to international peace and security.[173] As early as 1992, it indicated that instability in economic, social, humanitarian and ecological fields *could* constitute threats to international peace and security and, in 2007, it conducted an open debate on the issue of climate change. Nonetheless, the Security Council has not yet characterized the consequences of climate change as a threat to international peace and security, nor has it agreed to be seized of the issue.[174] Russia, China, and the United States have particularly resisted such moves, as well as many of the major developing countries such as Brazil, though the United Kingdom has worked to get climate change on the Security Council's agenda.[175] The reasons for resistance vary, but there are increasing voices calling for the Security Council to take up the issue, and there are even some scholars who have suggested that the Security Council could employ its collective security mechanisms to enforce climate change law.[176]

[172] S.C.Res. 1625, U.N.Doc.S/RES/1625 (Sept. 14, 2005). *See also, e.g.*, SILKE MARIE CHRISTIANSEN, CLIMATE CONFLICTS—A CASE OF INTERNATIONAL AND HUMANITARIAN LAW 149–88 (2016), and *see generally* Ben Saul, *Climate Change, Conflict and Security: International Law Challenges*, 9 N.Z. ARMED FORCES L. REV. 1 (2009).

[173] S.C. Res. 2177, U.N. Doc. S/RES/2177 (2014). *See* Craig Gaver, *Will the UN Security Council Act on COVID-19?*, OPINIO JURIS (Apr. 4, 2020), http://opiniojuris.org/2020/04/04/covid-19-symposium-will-the-un-security-council-act-on-covid-19/ [https://perma.cc/BX9A-24HW].

[174] *See* Saul, *supra* note 172; Ramsden, *supra* note 3; *see also* Pierre Thielbörger, *Climate Change and International Peace and Security: Time for a Green Security Council? in,* FROM COLD WAR TO CYBER WAR: THE EVOLUTION OF THE INTERNATIONAL LAW OF PEACE AND ARMED CONFLICT OVER THE LAST 25 YEARS (H.J. Heintze & P. Thielberger eds., 2016); *see generally* CLIMATE CHANGE AND THE UN SECURITY COUNCIL (Shirley V. Scott & Charlotte Ku eds., 2018).

[175] Francesco Sindico, *Climate Change: A Security (Council) Issue?* 29 CARBON & CLIMATE L. REV. 29, 30–34 (2007); Saul, *supra* note 172.

[176] *See, e.g.*, Trina Ng, *Safeguarding Peace and Security in our Warming World: A Role for the Security Council*, 15 J. CONFLICT SEC. L. 275, 278–79 (2010); Shirley V. Scott & Charlotte Ku, *The UN Security Council and Global Action on Climate Change*, in

Given that an increasing number of governments are characterizing climate change as a national security threat,[177] and legislatures at various levels of government are passing declarations of "climate emergency,"[178] it seems only a matter of time before states begin to also characterize the risks and consequences of climate change more precisely as a threat to international peace and security—and to press the Security Council to declare it as such and to take up the issue for deliberation. This will be an important conceptual shift, from first viewing climate change as a naturally occurring environmental crisis, to then seeing the consequences of climate change as a national security threat, to finally viewing the causes of climate change—in the form of the states that recklessly contribute to the risk—as constituting a "threat to international peace and security." If the Security Council does take up the issue of climate change and identifies the consequences of climate change as a threat to international peace and security, it will then be an entirely natural and feasible step for it to characterize the recklessly excessive contributions to climate change of a climate rogue state as also constituting a threat to international peace and security.[179] And, in accordance with Art. 39 and the framework of Chapter VII of the Charter, that will trigger the possibility of initiating the operation of a number of different collective security mechanisms.[180] The Security Council can pass resolutions mounting increasing diplomatic pressure, including the imposition of "provisional measures" under Art. 40,[181] followed

CLIMATE CHANGE AND THE UN SECURITY COUNCIL 1–24 (Shirley V. Scott and Charlotte Ku eds., 2018); *and* Christopher K. Penny, *Climate Change as a 'Threat to International Peace and Security'*, in CLIMATE CHANGE AND THE UN SECURITY COUNCIL 25–46 (Shirley V. Scott & Charlotte Ku eds., 2018).

[177] *See* sources and accompanying text, *supra* notes 35–36.

[178] As of August, 2019, 935 jurisdictions and local governments, representing over 200 million people, had issued climate emergency declarations *see* CLIMATE EMERGENCY DECLARATION, https://climateemergencydeclaration.org/climate-emergency-declaratio ns-cover-15-million-citizens/ [https://perma.cc/96GK-TBTF] (last visited Feb. 24, 2020).

[179] Penny, *supra* note 176, at 26.

[180] *See generally* GARY WILSON, THE UNITED NATIONS AND COLLECTIVE SECURITY (2014).

[181] U.N. Charter art. 40.

by the imposition of increasingly punitive economic sanctions under Art. 41.[182]

This has been the well-worn path in dealing with states like Iraq, North Korea, and Iran, the nuclear weapons programs of which were determined to pose a threat to international peace and security. Collective action in these cases involved the authorization and imposition of economic sanctions regimes that were increasingly severe, and also increasingly targeted, identifying individuals in key government positions and even within private enterprise as the subject of sanctions.[183] And, of course, in the event that such measures are unsuccessful in bringing about a change in the conduct or policy of the target state, the Security Council can authorize member states to use force to maintain or restore international peace and security under Art. 42. The U.N. Security Council has authorized such action in the case of the Korean Conflict in 1950, the Gulf War of 1990, and the intervention in Libya in 2011, to name just some well-known instances.[184] While the first two were actions to repel acts of aggression, since the 1990s the Security Council has authorized the use of force to respond to more varied threats to international peace and security.[185] Many of these were lower levels of force, including peace enforcement operations that morphed out of peacekeeping operations, as in the case of Somalia in the 1990s.[186] Of course, the U.S. and the U.K. have argued that the Security Council effectively authorized the invasion of Iraq in 2003 with Resolution 1441, in response to the perceived threat of Iraq's development of weapons of mass

[182] U.N. Charter art. 41.

[183] *See generally, e.g.,* GARY CLYDE HUFBAUER ET AL., ECONOMIC SANCTIONS RECONSIDERED (3d ed., 2007); Alexandra Hofer, *The Efficacy of Targeted Sanctions in Enforcing Compliance with International Law*, 113 AJIL UNBOUND 163, 163–64 (2019).

[184] Though there remains some controversy over whether the Gulf War of 1991 was an exercise of collective self-defense under Art. 51, or collective security operation under Art. 42, or both: *see*, DINSTEIN, *supra* note 164, at 323–26 (arguing that it was primarily an exercise of collective self-defense), and THOMAS FRANCK, RECOURSE TO FORCE: STATE ACTION AGAINST THREATS AND ARMED ATTACKS 26–28 (2002).

[185] *See generally* THE USE OF FORCE IN INTERNATIONAL LAW: A CASE BASED APPROACH (Tom Ruys & Olivier Corten eds., 2018).

[186] Terry Gill & Kinga Tibori-Szabó, *The Intervention in Somalia—1992–95, in* THE USE OF FORCE IN INTERNATIONAL LAW: A CASE-BASED APPROACH (Tom Ruys & Olivier Corten eds., 2018).

destruction.[187] The question of whether the U.N. Security Council actually authorized the invasion remains highly controversial. However, there is no question that the Security Council was seized of the issue and debated whether to issue another resolution authorizing all necessary means to force Iraq to comply with previous resolutions, in an effort to prevent Iraq from developing a nuclear weapon.[188] And, the 2011 Libyan intervention was authorized for the purposes of preventing the Qadhafi regime from inflicting a humanitarian disaster in Benghazi, and is commonly referred to as a prime example of humanitarian intervention.[189]

2. Humanitarian Intervention as Precedent—Atmospheric Intervention

Humanitarian intervention is particularly important to our analysis, for it provides a precedent that will likely be considered highly salient by those beginning to think about the use of force as a means of modifying the behavior of climate rogue states. There are two distinct theoretical formulations of humanitarian intervention. Both involve military intervention within a state to prevent a humanitarian disaster, typically in the form of crimes against humanity or war crimes perpetrated by the forces of the state's own government; but under one formulation this intervention must be authorized by the U.N. Security Council, while under the second formulation the use of force is undertaken without Security Council authority, and thus represents a new exception to the prohibition on the use of force.

[187] S.C. Res. 1441, (Nov. 8, 2002). For contemporaneous analysis of this argument, *see* Memorandum to the Prime Minister of the United Kingdom, from Lord Goldsmith, Attorney General (Mar. 7, 2003), https://www.theguardian.com/politics/2005/apr/28/election2005.uk [https://perma.cc/RQ6D-TPRQ].

[188] For detailed analysis of the lead up to the war, *see* 1 THE REPORT OF THE IRAQ INQUIRY (Jul. 2016), https://webarchive.nationalarchives.gov.uk/20171123122743/http://www.iraqinquiry.org.uk/the-report/ [https://perma.cc/5K6P-8GHZ] (last visited Feb. 24, 2020).

[189] S.C. Res. 1973, (Mar. 17, 2011). On the operation, *see, e.g.*, Ashley Deeks, *The NATO Intervention in Libya—2011*, in INTERNATIONAL LAW AND THE USE OF FORCE: A CASE-BASED APPROACH 749, 751 (Tom Ruys & Oliver Corten eds., 2018). It should be noted that the Libya case remains controversial, with claims that NATO went far beyond the authority provided by the U.N. Security Council—but that does not change the nature of the initial authority.

The basic idea of humanitarian intervention is not new, being traceable back as far as Vattel and Grotius, and its more modern form to Phillimore in the Nineteenth Century.[190] But it was not explicitly recognized or provided for in the creation of the modern *jus ad bellum* regime under the U.N. system. In the late 1990s, however, with the international community's failure to prevent the Rwanda genocide, followed by the unauthorized NATO intervention in Kosovo in the name of humanitarian objectives, there were increasing claims that some allowance had to be made for such interventions.[191] Some argued that while such interventions should ideally be authorized by the Security Council, if such authority was not possible then interventions should be permissible under a new exception to the general prohibition on the use of force.[192] They supported this claim by pointing out that Security Council paralysis was precisely the problem in the case of both Rwanda and Kosovo. Others have insisted that such intervention is permissible if and only if the UN Security Council authorizes it under Art. 42 of the Charter.[193] The Libya intervention in 2011 is touted as the primary example for such an authorized intervention.

The theoretical support for the principle of humanitarian intervention was provided by the "responsibility to protect" doctrine, commonly referred to as R2P, which was developed by an international commission in 2000 and presented to the U.N. General Assembly in 2001.[194] The theoretical claim of R2P is

[190] STEPHEN NEFF, WAR AND THE LAW OF NATIONS: A GENERAL HISTORY loc 2751 (Kindle ed. 2005); *see generally* GARY J. BASS, FREEDOM'S BATTLE: THE ORIGINS OF HUMANITARIAN INTERVENTION (2008).

[191] *See generally* Christine Gray, *The Use of Force for Humanitarian Purposes*, in RESEARCH HANDBOOK ON INTERNATIONAL CONFLICT AND SECURITY LAW at 12–14 (Nigel White & Christian Henderson eds., 2013); Sir Nigel Rodley, *Humanitarian Intervention*, in THE OXFORD HANDBOOK OF THE USE OF FORCE IN INTERNATIONAL LAW (Marc Weller ed., Kindle ed., 2018).

[192] *See, e.g.*, Harold H. Koh, *Humanitarian Intervention: Time for Better Law*, 111 AJIL UNBOUND 287 (2017); Louis Henkin, *Kosovo and the Law of "Humanitarian Intervention"*, 93 AM. J. INT'L L. 824 (1999).

[193] Rodley, *Humanitarian Intervention*, *supra* note 191.

[194] *See generally* INTERNATIONAL COMMISSION ON INTERVENTION AND STATE SOVEREIGNTY, THE RESPONSIBILITY TO PROTECT: REPORT OF THE INTERNATIONAL COMMISSION ON INTERVENTION AND STATE SOVEREIGNTY (2001). R2P is also explained in THE SECRETARY-GENERAL'S HIGH LEVEL PANEL ON THREATS, CHALLENGES, AND CHANGE, A MORE SECURE WORLD: OUR SHARED RESPONSIBILITY (2004), and in KOFI

that states have a responsibility to protect the people within their territory and under their jurisdiction, and that states effectively abdicate or lose some of their sovereign rights against outside interference when they violate that responsibility by engaging in such atrocities as crimes against humanity, genocide, or systemic war crimes against segments of their own population.[195] An additional rationale for Security Council involvement and authorization, is that when a state engages in such atrocities within its own territory, there is a significant possibility that there will be conflict, even civil war, which in turn may spill over international borders. In other words, these are situations that actually constitute threats to international peace and security, justifying U.N. Security Council action.[196]

It should be readily apparent how this doctrine will likely suggest itself as an appealing precedent for those who think that forceful intervention within the affairs of climate rogue states may be warranted. As discussed below, the claim of unilateral humanitarian intervention as a third exception to the prohibition on the use of force remains controversial, and is not yet established law. However, the idea of such intervention as authorized by the security council is now a reasonably well settled doctrine.[197] It contemplates U.N. Security Council authorization of forceful intervention within the territory and affairs of another state, even though that state has not directly threatened—far less actually used force against—another state. Authorization of such intervention is justified primarily on the grounds that it is necessary for humanitarian purposes—to defend the people of that state from the actions of their own government or to prevent instability and potential for conflict within the international system.

One can foresee the argument that forceful intervention to prevent reckless contributions to global climate change by a

ANAN, IN LARGER FREEDOM: TOWARDS DEVELOPMENT, SECURITY AND HUMAN RIGHTS FOR ALL (2005). *See also* Gareth Evans, *The Responsibility to Protect: From an Idea to an International Norm*, *in* RESPONSIBILITY TO PROTECT: THE GLOBAL MORAL COMPACT FOR THE 21ST CENTURY 15–29 (Richard H. Cooper & Juliette Voïnov Kohler eds., 2009).

[195] Evans, *Responsibility to Protect*, *supra* note 194 at 19.

[196] Gray, *supra* note 191, at 12–14; Rodley, *Humanitarian Intervention*, *supra* note 191, at 775–96.

[197] *See* Gray, *Humanitarian Purposes*, *supra* note 191.

rogue state, is even more justifiable than intervention to prevent humanitarian disaster within a state. If R2P suggests that a state abdicates or loses some of its sovereign rights by virtue of failing to fulfil the responsibility it owes to its own people, then *a fortiori*, a state should forfeit some of its sovereign rights when it is appreciably increasing the risks that climate change poses to all of humanity.[198] If forceful intervention against a state is justified on humanitarian grounds because of the risk the regime is creating for the population within that state, then surely forceful intervention is justified on humanitarian grounds because of the increased risk that the state is creating for all of humanity. If forceful intervention is permissible in response to the risk that atrocities within the state might create conflicts that spill across borders, thereby threatening international peace and security, then surely forceful intervention is permissible in response to excessive contributions to climate change, the consequences of which will likely lead to increased and widespread armed conflict and thereby undermine international peace and security. Or so the argument would go, and it would likely gain some traction.

The chance of the Security Council actually authorizing such an atmospheric intervention is, of course, extremely remote, if only because several of the permanent members may well be candidates for the status of climate rogue state. But it is likely that there will be increasing pressure on the Security Council to at least address the issue, and to characterize the consequences of climate change, if not yet the causes, as a threat to international peace and security. That characterization alone will be important, as it will help to reframe how the crisis is debated and even how the public understands and discusses the issue. What is more, once there has been such a characterization of the problem as constituting a threat to international peace and security, there will be efforts to work around the Security Council, just as there have been in the context of humanitarian

[198] This claim assumes a certain understanding of sovereignty, that is that it is a concept that reflects the level of autonomy of states in their relationship with other states under international law, and not purely as a more Hobbesian concept that describes the relationship between sovereign and subjects. For some discussion of the distinction, *see* MALCOLM SHAW, INTERNATIONAL LAW 21–22 (6th ed., 2008).

intervention. Libya was an exceptional case, and the Security Council has more often refused to authorize such interventions, as tragically illustrated by the case of Syria.[199]

In the face of such dysfunctional paralysis, there have been increasing calls to permit the U.N. General Assembly to provide authority for such interventions.[200] This revives an idea that had its conception in the so-called "Uniting for Peace" Resolution of the General Assembly in 1950.[201] This was a resolution to recommend authorization for the use of force by member states in order to respond to the North Korean invasion of South Korea, following the Soviet veto of an authorizing resolution in the Security Council. It has been referred to in a number of General Assembly resolutions since, condemning acts of aggression and alien occupation.[202] It had particular salience during the Cold War, when the paralysis of the Security Council was at its height, but there have been more recent efforts to resurrect the idea specifically to authorize humanitarian intervention.[203]

There are many objections to the idea of relying upon the General Assembly to authorize humanitarian intervention. Some objections involve technical forays into the proper interpretation of the Charter itself, and thus the proper scope of authority and jurisdiction the General Assembly may have with regard to issues of international peace and security. These arguments have been explored and debated by others.[204] It is sufficient for our purposes to note that persuasive arguments have been made in support of the proposition that the General Assembly could authorize a use of force under certain

[199] *See generally* Graham Melling & Anne Dennett, *The Security Council Veto and Syria: Responding to Mass Atrocities Through the "Uniting for Peace" Resolution*, 57 INDIAN J. INT'L L. 285 (2017).

[200] *Id. See also* Ramsden, *supra* note 3.

[201] G.A. Res. 377(V) (Nov. 3, 1950). *See generally* Ramsden, *supra* note 3, Melling & Dennett, *supra* note 199; FRANCK, *supra* note 184, at 33–38.

[202] *See, e.g.*, U.N. Human Rights Council, Rep. of the United Nations Fact-Finding Mission on the Gaza Conflict, U.N. Doc. A/HRC/12/48, ¶ 1971 (2009); U.N. Human Rights Council, Rep. of the Detailed Findings of the Commission of Inquiry on Human Rights in the Democratic People's Republic of Korea, U.N. Doc. A/HRC/25/CRP.1, ¶362, 1201 (2014); U.N. Human Rights Council, Rep. of the Independent International Commission of Inquiry on the Syrian Arab Republic, U.N. Doc. A/HRC/28/69, ¶ 139 (2015).

[203] *See generally* Ramsden, *supra* note 3; Melling & Dennett, *supra* note 199. *See also* FRANCK, *supra* note 184, at 37–38.

[204] *Id.*

conditions.[205] And again, as compared to the case of humanitarian intervention, these arguments are augmented by some powerful new considerations in the case of climate change and atmospheric intervention. The risk of harm posed by climate change threatens people all over the world, not just those of one state, and the consequences of climate change are going to affect the least developed states far more severely and far sooner than it affects the most developed states. Those least responsible for climate change are the most vulnerable to the harm it will cause—they will be the worst affected, and they are the least able to either mitigate or accommodate the consequences of climate change.[206] This is one aspect of the concept of "differentiation" in the climate change law instruments. This feature of climate change surely militates in favor of a more democratic process, one that gives more of a voice for the most vulnerable, for determining if, when, and against whom force should be used in an effort to mitigate the consequences of climate change. The developing world will certainly be making these arguments as the consequences of the crisis begin to mount.

B. Expanding the Unilateral Exceptions to the Use of Force

Given the difficulty of obtaining Security Council authority, and questions regarding the validity and legitimacy of any General Assembly authority, there will be pressure to either expand the one unilateral exception to the prohibition on the use of force, or to create a new exception. The only current unilateral exception is the right of states to use force in the exercise of individual or collective self-defense in response to an armed attack, provided for in Article 51 of the Charter.[207] There have already been arguments for just such expansions in the last couple of decades, in response to threats that were claimed to be new, novel, or difficult to address under current law. These claims also called for expanding the right of self-defense itself,

[205] *Id*.

[206] INCROPERA, *supra* note 9, at 215–16; MAYER, *supra* note 76, at 90–98.

[207] U.N. Charter; art. 51; *see generally* TOM RUYS, "ARMED ATTACK" AND ARTICLE 51 OF THE UN CHARTER: EVOLUTIONS IN CUSTOMARY LAW AND PRACTICE 368–510 (2010); *see generally* GRAY, *supra* note 164.

to deal with the threat of weapons of mass destruction, transnational terrorism, or the threat of cyber attacks; and for the creation of a new exception to allow for unilateral humanitarian intervention. These recent efforts to expand the scope of exceptions to the prohibition, or to put it another way, attempts to lower the threshold for the use of force, are like ruts in the road that will likely be followed in the coming efforts to adjust the *jus ad bellum* regime to address threats posed by excessive and unlawful contributions to climate change. It is instructive, therefore, to examine some of these arguments in more detail, not only to see how they are likely to form the blueprint for future arguments, but to assess how powerful their rationales might be in the context of responses to the climate change crisis. I begin with the arguments for expanding the doctrine of self-defense.

1. Self-Defense

It may be helpful to briefly review the essential elements of the doctrine of self-defense. The exact contours and operation of the doctrine continue to be the subject of considerable debate, some of which is driven by the very efforts to expand the doctrine that we will examine below.[208] The starting point is the idea that the right of self-defense permits the use of force in response to an armed attack. There is debate over both what level of force constitutes an armed attack, and whether states may also use force in anticipation of an imminent armed attack—and indeed, if so, how one defines imminence.[209] We need not delve into the different strands of this debate now, but simply note that "armed attack" is the triggering event for the exercise of the right, and that an armed attack is understood to be, at a minimum, a use of force as that term is used in Article 2(4) of the Charter—and the dominant view is that a use of force must be considerably more grave than the threshold level contemplated by Article 2(4)

[208] *See, e.g.*, GRAY, *supra* note 164, at ch. 4; DINSTEIN, *supra* note 164, at chs. 7–8; RUYS, *supra* note 207, at 53–125.

[209] *See generally*, RUYS, *supra* note 207. For my examination of these issues, *see* Martin, *Unwilling or Unable Doctrine*, *supra* note 163.

to qualify as an armed attack.[210] In addition, if the armed attack was launched by a non-state actor ("NSA") operating within the territory of some other state, the victim of the armed attack cannot justifiably use force in self-defense against the NSA within the territory of that other state, unless the actions of the NSA can be attributed to the territorial state. Such attribution requires that there be a sufficient nexus between the NSA and the territorial state, typically requiring a "substantial involvement" in the activity of the NSA, or some level of control over them.[211] Finally, the use of force in response to an armed attack must be both necessary and proportionate, meaning that the use of force is the only means of effectively responding to the attack, and that the use of force is proportionate to the harm that will be caused by the attack if it is not prevented.[212] These elements should be borne in mind as we review the argument below for expansion of the doctrine.

Among the arguments for expanding the *jus ad bellum* regime for purposes of responding to climate change, those seeking an expansion of the doctrine of self-defense would confront the most difficult obstacles—and, as I will argue below, they should indeed be rejected outright. As we will see, although these arguments have much in common with recent efforts to expand the doctrine of self-defense, they will need to push the envelope quite a bit further than those recent efforts. First and foremost, in the context of climate change, the use of force would not be responding to any armed attack at all, whether actual, imminent, in the distant future, or otherwise. Rather, it would be responding to an unlawful and excessive contribution to a risk, the materialization of which will be spread over time and space. The harm is neither localized, nor temporally fixed—it will be ongoing, worsening, and materializing in various forms

[210] Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.) 1986 I.C.J. Rep. 14 (June 27), ¶¶ 191, 210–11, 230–32; *see also* RUYS, *supra* note 207, at 139–57.

[211] Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.), 1986 I.C.J. Rep. 14, ¶¶ 194–95; Armed Activities on the Territory of the Congo (Dem. Rep. Congo v. Uganda), 2005 I.C.J. Rep. 168 (Dec. 19), ¶¶ 106–47 (explaining, based on the facts presented by Uganda, that Uganda was not acting in self-defense); *see also* GRAY, *supra* note 164, at 139–45, 226.

[212] GRAY, *supra* note 164, at 157–63. *But see* DINSTEIN, *supra* note 164, at 282.

everywhere in the world. What is more, all states, including the defending states themselves, are also contributing to the same risk, albeit to a lesser extent. This leads to very serious problems of causality and attribution. For instance, even if Canada embarks on a policy to produce and consume tar sands oil at levels that are in flagrant and reckless disregard of its climate change law obligations,[213] Mexico will have considerable difficulty in claiming that Canada's particular emissions are the proximate cause of any specific increased threat to the national security of Mexico so as to approximate anything remotely analogous to an armed attack. Thus, the arguments for expanding the doctrine of self-defense will need to dispense with the need for armed attack altogether, and substitute some new concept as a triggering event. This new triggering event will have to be formulated in a manner that is satisfied by a recklessly excessive contribution to climate change in flagrant violation of climate change law.

This may seem an extremely tall and unlikely mountain to climb, and yet the arguments marshalled in favor of other efforts to expand the doctrine have similarly attempted to weaken the concept of armed attack as the triggering event, perverted the concept of imminence and thereby undermined the principle of necessity, and even weakened aspects of causality and attribution in the doctrine of self-defense. I have criticized several of these claims elsewhere,[214] and I do not mean to be understood here as changing my position on them. But each effort was mounted in response to perceived new threats, and provides a blueprint of how similar claims are likely to be made and received in the context of the threats posed by climate change. Further, the nature of the arguments likely to be made in the context of climate change do not look quite so far-fetched or extreme when carefully compared in detail with the other claims already made for expanding the doctrine of self-defense.

[213] Canada withdrew from the Kyoto Protocol in 2012 because it was going to be in violation of its obligations, in large measure due to the emissions associated with the Alberta tar sands industry. *See* Austen, *supra* note 78.

[214] *See generally, e.g.*, Martin, *Unwilling or Unable Doctrine*, *supra* note 163; Craig Martin, *Going Medieval: Targeted Killing, Self-Defense, and the* Jus ad Bellum *Regime*, in TARGETED KILLINGS: LAW AND MORALITY IN AN ASYMMETRICAL WORLD 223 (Claire Finkelstein et al. eds., 2012).

Indeed, as I will examine below, the over-arching objection to all such claims for expansion—namely, that the risk posed by weakening the *jus ad bellum* regime is substantially greater than the risk posed by the threats such changes are designed to address—is less compelling in the context of the potentially existential threats posed by climate change. Or, to put it another way, the rationale for expanding the *jus ad bellum* to deal with the threats posed by climate change is far more persuasive than the grounds for recent efforts to adjust the doctrine. With that, let us examine some of those recent efforts.

a. Preventative self-defense

In the context of the invasion of Iraq in 2003, the United States argued that states could use force in self-defense against states in the process of developing weapons of mass destruction, notwithstanding that an armed attack was not imminent in the traditional sense.[215] Proponents of this so-called "preventative self-defense" claimed that the magnitude of the harm posed by weapons of mass destruction created such an existential threat that states could use force in response, even though the putative "armed attack" was neither certain nor looming in the immediate future.[216] The effort sought to expand the concept of anticipatory self-defense through a radical stretching of the temporal component of the concept of imminence. Under this new formulation of the concept, in situations where there is only some as yet speculative possibility of an armed attack sometime in the future, but the magnitude of harm posed by such an attack is huge, resulting from the use of weapons of mass destruction, then such future armed attack could be characterized as

[215] The US assertion of the right to a preventative self-defense was made in 2002, *see* THE WHITE HOUSE, THE NATIONAL SECURITY STRATEGY OF THE UNITED STATES OF AMERICA 13–15 (Sept. 2002). For analysis of the debate, *see*, *e.g.*, DINSTEIN, *supra* note 164, at 221–28; RUYS, *supra* note 207, at 250–54; *see generally* W. Michael Reisman & Andrea Armstrong, *Centennial Essay: The Past and Future of the Claim of Preemptive Self-Defense*, 100 AM. J. INT'L L. 525 (2006); *see generally* David A. Sadoff, *A Question of Determinacy: The Legal Status of Anticipatory Self-Defense*, 40 GEO. J. INT'L L. 523 (2009).

[216] *See, e.g.*, John A. Cohan, *The Bush Doctrine and the Emerging Norm of Anticipatory Self-Defense in Customary International Law*, 15 PACE INT'L L. REV. 283, 315 (2003); *see also* Michael N. Schmitt, *Preemptive Strategies in International Law*, 24 MICH. J. INT'L L. 513, 545–47(2003).

imminent and the use of force in response necessary. This formulation of imminence almost gutted the concept of its temporal meaning, and thus undermined the principle of necessity that is central to the doctrine of self-defense.[217]

In addition to the violence done to the concept of imminence, and thus the principle of necessity, the centrality of the concept of "armed attack" as the triggering event was also significantly undermined. While technically still in place as the conceptual trigger, the "armed attack" receded over the temporal horizon and was entirely speculative, while the true triggering event was the calculation of unacceptable risk. It is precisely for these reasons that the doctrine of preventative self-defense has been widely rejected.[218] But it is nonetheless instructive that the claims were developed in response to the perceived threat of Iraq developing weapons of mass destruction, advanced vigorously by the government of the United States, as well as by a significant number of academics, policy makers, and jurists. These claims continue to be raised in debates over responses to Iran and North Korea.[219] Moreover, the claims influenced the development of a separate effort to expand the doctrine, to which I turn next.

b. The Unwilling or Unable Doctrine

Arguments made to develop and legitimize the so-called "unwilling or unable" doctrine similarly sought to expand the doctrine of self-defense.[220] This expansion was deemed necessary to justify the uses of force against NSAs within the territory of non-consenting states, precisely because it was difficult to justify such a use of force under the traditional framework of the doctrine of self-defense. The strikes against NSAs undertaken by the United States were often in response

[217] Martin, *Unwilling or Unable Doctrine*, *supra* note 163; *see generally* RUYS, *supra* note 207, at ch. 4.

[218] DINSTEIN, *supra* note 164, at 221–28; RUYS, *supra* note 207, at 322–42 (providing detailed primary sources as evidence of governments rejecting the Bush Doctrine).

[219] For review of the debate, *see, e.g.*, Sean Murphy, *The Doctrine of Preemptive Self-Defense*, 50 VILL. L. REV. 699 (2005).

[220] The seminal work advancing the doctrine is Daniel Bethlehem, *Self-Defense Against An Imminent or Actual Armed Attack by Nonstate Actors*, 106 AM. J. INT'L L. 770 (2012) [hereinafter Bethlehem, *Self-Defense Against NSAs*]; Daniel Bethlehem, *Principles of Self-Defense—A Brief Response*, 107 AM. J. INT'L L. 579 (2013) [hereinafter Bethlehem, *A Brief Response*].

to activity that did not rise to the level of armed attack, were said to be in response to future threats that did not satisfy the traditional concept of imminence, and were undertaken within states that were not sufficiently involved in the activity of the NSA to satisfy traditional tests of attribution.[221] As a result, the unwilling or unable doctrine sought to lower the threshold for what constitutes an "armed attack," relaxed the standards for attributing NSA attacks to the territorial state, borrowed from the claims of "preventative self-defense" in perverting the concept of imminence even further, and seemed to incorporate elements of the law of state responsibility in an effort to bolster the justification for the use of force within the non-consenting state.[222]

Several of these moves should inform how we think about the arguments that may be advanced to justify expanding the *jus ad bellum* in the context of climate change. Borrowing from the law of state responsibility may be most instructive here, for it is one of the explicit premises of the unwilling or unable doctrine that the territorial state stands in violation of the no-harm principle by permitting terrorist attacks to emanate from within its territory.[223] Some of the more detailed and widely accepted articulations of the unwilling or unable doctrine have further implied that the responsibility for this violation of the no-harm principle adds to the justification for the use of force against NSAs within that state's territory.[224] I have argued elsewhere that this constitutes a conflation of state responsibility with *jus ad bellum*, and that it is entirely improper to use the law of state responsibility to bolster what should be an entirely *jus ad bellum* analysis.[225] But this is instructive for how states may rely upon flagrant violations of the no-harm principle in the context of

[221] *Id.* For my analysis of these issues, *see* Martin, *Unwilling or Unable Doctrine, supra* note 163.

[222] *See generally* Bethlehem, *Self-Defense Against NSAs, supra* note 220; Martin, *Unwilling or Unable Doctrine*, *supra* note 163.

[223] Bethlehem, *Self-Defense Against NSAs, supra* note 220, at 773–74, 776.

[224] *Id*. *See also* Greg Travalio & John Altenburg, *Terrorism, State Responsibility, and the Use of Military Force*, 4 U. CHI. J. INT'L L. 97, 110–16 (2003); Martin, *Unwilling or Unable Doctrine*, *supra* note 163, at 429–30.

[225] Martin, *Unwilling or Unable Doctrine*, *supra* note 163, at 429–33.

climate change for the purpose of bolstering the justification for collective action against the climate rogue state.

The other moves made by the unwilling or unable doctrine are similarly instructive. The doctrine of self-defense has traditionally contemplated the use of force against a state that is directly responsible for an armed attack. That doctrine involves both a standard for the threshold of the use of force that rises to the level of "armed attack," and requires a direct causal relationship between the action of the state and the harm caused.[226] The latter is obviously satisfied in the event of a state launching an armed attack against another state, and thus remains merely implicit in the doctrine. But where an NSA has launched an armed attack against one state from within the territory of another, the direct causal relationship is not clear and this implicit element thus becomes more important. The ICJ has held that the defending state can only use force in self-defense against the territorial state in which the NSA is operating, if there is a sufficiently close nexus between the NSA and the territorial state to support attribution of the NSA's actions to the state.[227] Moreover, the ICJ has held, and it is widely accepted outside of the United States, that for a use of force to constitute an armed attack triggering the right of self-defense, it must be of significantly greater scale and intensity than the minimum level of force contemplated by Art. 2(4) of the U.N. Charter.[228]

The unwilling or unable doctrine undermines both of these elements of the doctrine. First, it attempts to lower the threshold for armed attack by characterizing an accumulation of small strikes, none of which alone would rise to the level of armed attack, and which may have been launched by different but loosely affiliated groups, as together constituting an armed

[226] RUYS, *supra* note 207, 126–249, 368–510.

[227] *See* GRAY, *supra* note 164, at 139–45; RUYS, *supra* note 207, at 226 (discussing attribution for purposes of self-defense); Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.), 1986 I.C.J., ¶¶ 194–95; Armed Activities on the Territory of the Congo (Dem. Rep. Congo v. Uganda), 2005 I.C.J., ¶¶ 106–47.

[228] RUYS, *supra* note 207, at 139–49; Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.), 1986 I.C.J. Rep. 14, ¶¶ 191–95; Oil Platforms (Iran v. U.S.) [2003] I.C.J. 161, ¶¶ 64–72.

attack triggering the right of self-defense.[229] Second, it almost entirely dismisses the standards for establishing a sufficient nexus for attribution, permitting the defending state to use force in and against the territorial state based solely on its own judgement that the territorial state is either "unwilling or unable" to prevent the attacks, regardless of the level of "involvement" the state has with the actions of the NSA.[230] Given that state contributions to climate change are largely the result of non-state commercial activity, this weakening of the standards for attribution is again instructive of the kinds of arguments we are likely to see developed to justify the use of force against entities within the territory of climate rogue states.

Finally, the unwilling or unable doctrine has borrowed aspects of the claims made in support of preventative self-defense in an effort to pervert the core temporal essence of the concept of imminence.[231] Two aspects of these claims are particularly relevant. First, as with the arguments for preventative self-defense, the doctrine embraces the idea that imminence is to be defined by reference to the degree of risk a threat poses—that is, the product of the probability that an attack may materialize, and the magnitude of the harm that it will cause—which is to confuse the concept of risk with that of imminence.[232] The second aspect does try to bring some element of time back into what is essentially a temporal concept, by claiming that a threat is imminent when the window of opportunity for preventing an armed attack is closing, even if the attack itself is not in the immediate future.[233] I have argued elsewhere that while this

[229] Bethlehem, *Self-Defense Against NSAs*, *supra* note 220, 774–75. For some support for the "accumulation" argument, *see, e.g.*, DINSTEIN, *supra* note 164, at 209–11; *Contra* GRAY, *supra* note 164, at 153–57; RUYS, *supra* note 207, at 168.

[230] Martin, *Unwilling or Unable Doctrine, supra* note 163, at 423–26.

[231] *Id.* at 415–22.

[232] Bethlehem, *Self-Defense Against NSAs, supra* note 220, at 775–76 ; Martin, *Unwilling or Unable Doctrine, supra* note 163, at 415–23; and for more on imminence generally, *see* Noam Lubell, *The Problem of Imminence in an Uncertain World*, *in* THE OXFORD HANDBOOK OF THE USE OF FORCE IN INTERNATIONAL LAW (Marc Weller et al. eds., 2015); RUYS, *supra* note 207, at 250–54. *See also generally* Noura S. Erakat, *New Imminence in the Time of Obama: The Impact of Targeted Killings on the Law of Self-Defense*, 56 ARIZ. L. REV. 195 (2014); Alan L. Schuller, *Inimical Inceptions of Imminence: A New Approach to Anticipatory Self-Defense Under the Law of Armed Conflict*, 18 UCLA J. INT'L L. & FOREIGN AFF. 161 (2014).

[233] Bethlehem, *Self-Defense Against NSAs, supra* note 220, at 775–776.

claim is not sufficiently rigorous, it is based on a legitimate intuition—that a threat may indeed be imminent, in the sense of requiring immediate action, if there is sufficiently compelling evidence to establish both that there is a very high probability that a specific attack will materialize, and that the last chance to prevent it is about to close.[234] Imminence, after all, is an element of the principle of necessity, and at the end of the day one has to prove that the use of force was the only alternative and last resort to prevent an attack. There may be times when one can prove that a use of force is necessary now, just before the last opportunity to act has been foreclosed, in order to prevent a future harm from materializing.[235] One can similarly see how such arguments might apply in the context of climate change, to support claims that the conduct of a climate rogue state constitutes an imminent threat that must be responded to now, because now is the last chance for preventing the state's harmful conduct, even though the harm resulting from that conduct will not materialize immediately.

Again, while I have criticized these claims in support of the unwilling or unable doctrine, they provide a strong indication of how similar arguments are likely to be made in support of expanding the doctrine of self-defense to deal with reckless contributions to climate change. In the context of climate change, the claims will of course have to go much further, suggesting that that an armed attack (as that term is currently understood) need not be the triggering mechanism for self-defense at all, and that there need be no requirement to conclusively attribute the harm to the responsible state, or to establish a direct causal relationship between the conduct of the responsible state and the materialization of the threat. However, the arguments advancing these claims will merely extend the logic and push the envelope of those already made in the context of the unwilling or unable doctrine, and they will benefit from arguments that have been made in the context of cyber operations.

[234] Martin, *Unwilling or Unable Doctrine, supra* note 163, at 421–23.
[235] *Id.*

c. Response to Cyber Attack

Another effort to expand self-defense came in response to the development of cyber threats. The prospect of offensive cyber operations against institutions of the state has posed a significant challenge for both *jus ad bellum* and international humanitarian law ("IHL"). Do such cyber attacks even come within the scope of either regime? If so, when and how? More specifically, in *jus ad bellum* terms, can a cyber attack constitute an armed attack justifying a use of force in self-defense? These questions were tackled in the Tallinn Manual 2.0,[236] a text produced by an International Group of Experts invited by the NATO Cooperative Cyber Defence Center of Excellence to study the international law issues related to cyber operations. It is considered one of the most authoritative articulations of how international law governs cyber operations.[237] But it goes even further than the unwilling or unable doctrine in lowering the standards and broadening the scope of the elements of armed attack and attribution in the doctrine of self-defense.

To begin with the concept of armed attack, the Tallinn Manual most significantly provides that an operation need not involve kinetic military operations or the use of weapons in order to constitute an armed attack.[238] All that is required is that such an operation satisfy certain requirements of "scale and effect," such that the consequences are sufficiently grave to be analogous to the effects of kinetic attacks, involving the destruction of property and infrastructure, and injury or death to individuals. Indeed, some members of the Group of Experts were willing to go further, claiming that so long as the effects were sufficiently severe, the nature of the harm (that is, physically destructive or injurious as opposed to merely economically harmful) was not an essential element of the analysis. What is more, as with the unwilling or unable doctrine,

[236] *See generally* INTERNATIONAL GROUP OF EXPERTS, TALLINN MANUAL 2.0 ON THE INTERNATIONAL LAW APPLICABLE TO CYBER OPERATIONS (Michael N. Schmitt et al. eds., 2017) [hereinafter, TALLINN MANUAL].

[237] *See, e.g.*, Brian J. Egan, Legal Advisor, Remarks on International Law and Stability in Cyberspace, at Berkeley Law School, DEPT. OF STATE (Nov. 10, 2016), https://2009-2017.state.gov/s/l/releases/remarks/264303.htm [https://perma.cc/E7VH-TFT3].

[238] TALLINN MANUAL, *supra* note 236, at 340–41.

the Tallinn Manual accepted that the aggregation of a number of smaller cyber attacks, none of which alone satisfied the "scale and effects" test so as to constitute an armed attack by itself, could in the aggregate constitute an armed attack if the combined scale and effects of the operations were sufficiently severe. Finally, the majority of the Panel of Experts concluded that intent was irrelevant to the question of whether operations constituted an armed attack.[239] In other words, an intent to cause harm was not required in order to classify the operation as an armed attack, which has obvious significance in the context of climate change—states obviously do not intend to cause any specific harm by engaging in or permitting the conduct that is contributing to climate change, but if intent is irrelevant, then the threat or use of force in response to such harmful conduct becomes easier.

Given how difficult it is to pinpoint the origin and authors of cyber attacks, and thus to attribute an attack to any particular state, the Tallinn Manual also grappled with the issue of attribution. As with the kind of circumstances for which the unwilling or unable doctrine was developed, hostile cyber-operations are frequently mounted by NSAs operating from within one state, and attacking the institutions in another state. The Panel of Experts took the position that the mere provision of sanctuary to such an NSA was not sufficient for attribution purposes, but that a state's provision of sanctuary coupled with other acts such as the provision of some support or assistance, would be sufficient for purposes of attributing the acts of the NSA to the state.[240] Nonetheless, notwithstanding this position on attribution, the majority of the Panel of Experts held that something akin to the unwilling or unable doctrine should also apply—that is, that even in the event that attribution to the territorial state is not possible, states may use force in self-defense against NSAs responsible for cyber-operations comprising an armed attack if the territorial state is unwilling or unable to prevent the attacks.[241] This was supported by the claim that states "have a duty to ensure their territory is not

[239] *Id*. at 343.
[240] *Id*. at 332.
[241] *Id*. at 347.

used for acts contrary to international law"—echoing the unwilling or unable doctrine's invocation of the no-harm principle and incorporation of notions of state responsibility into a *jus ad bellum* regime analysis.[242]

The Tallinn Manual's characterization of use of force and armed attack also includes factors that are more consistent with the traditional formulation of these two concepts. For instance, the list of factors to be considered in assessing whether a cyber attack constitutes even a use of force, far less an armed attack, includes "directness," "immediacy," and "military character."[243] Nonetheless, the Tallinn Manual's characterization of armed attack and even the use of force itself, is a significant departure from the traditional understanding of these concepts. Armed attack, in particular, has always been limited to kinetic operations involving weapons of some kind (even if that included the weaponizing of civilian objects, as in the 9/11 attacks). Similarly, the *traveaux preparatoire* and debates relating to the drafting of Article 2(4) of the U.N. Charter famously limited the concept of use of force to the use of military force.[244] In contrast, in the context of cyber operations, the concept of armed attack can comprise any harm of sufficiently grave scale and effects—even when that harm is the aggregation of effects from incremental operations—caused either by a particular state or NSAs operating within that state. This is so regardless of any intent to cause harm, and it does not require kinetic attacks with weapons of any kind. The Tallin Manual's new and novel characterization of the concept of armed attack is highly suggestive of the kinds of argument we might foresee regarding the other ways this triggering mechanism might be stretched in order to encompass reckless contributions to climate change. Under the approach adopted in the context of cyber-operations, it is not that much of a stretch to argue that a state's reckless contribution to climate change, in flagrant violation of its climate change law obligations, thereby causing harm to other

[242] *Id.*

[243] *Id.* at 331–34.

[244] RUYS, *supra* note 207, at 60–67; Nico Schrijver, *The Ban on the Use of Force in the UN Charter, in* THE OXFORD HANDBOOK OF THE USE OF FORCE, *supra* note 191, at loc. 16049–89.

states, could be sufficient to trigger an expanded right of collective self-defense.

2. Unauthorized Collective Atmospheric Intervention

While the foregoing illustrates the precedents that will likely be followed with respect to expanding the doctrine of self-defense, there is no question that such arguments will face serious resistance. Indeed, these recent efforts to expand the doctrine of self-defense have themselves met with fierce opposition. We can thus anticipate that efforts to expand the *jus ad bellum* regime in the context of climate change will simultaneously pursue an alternative and possibly easier path, again looking to recent efforts for guidance.

The most likely alternative route will be to argue for the establishment of an entirely new exception to the prohibition on the use of force, for the very purpose of permitting the collective but unilateral use of force to prevent the excessive and unlawful contributions to climate change.[245] There is precedent for this too, in the attempts to establish unilateral humanitarian intervention as a new exception. As discussed earlier, there have been claims that there is an "emerging principle" of customary international law that permits the use of force by states to prevent crimes against humanity, genocide, or war crimes within another state, even in the absence of a U.N. Security Council authority—this is the unilateral form of the "humanitarian intervention" concept explored earlier.[246] Some have argued that in the face of U.N. Security Council paralysis, the General Assembly ought to be permitted to authorize such action. Others have gone further, to argue that the use of force for purposes of humanitarian intervention should be, and indeed is in the process of becoming, a third exception to the prohibition on the use of force.[247] These claims have cited such instances as

[245] By "collective but unilateral," I mean an exception that would require no prior institutional authority, but might require that states not act alone, but rather in coalitions of some specified minimum number of states.

[246] *See generally, e.g.*, Harold H. Koh, *Humanitarian Intervention: Time for Better Law*, 111 AJIL UNBOUND 287, (2017); Henkin, *Kosovo and the Law of "Humanitarian Intervention"*, *supra* note 192.

[247] For more on the debate, *see, e.g.*, Sean D. Murphy, *Humanitarian Intervention: The United Nations in an Evolving World Order* (1996); HUMANITARIAN INTERVENTION:

the Indian intervention in East Pakistan in 1971, and that of Vietnam in Cambodia in 1978, as examples of state practice evidencing the emergence of custom.[248] The Secretary General of the U.N. raised the issue in his 1999 annual address, at once suggesting that some form of intervention might be permissible in some circumstances, but cautioning that clear criteria and conditions would have to be developed.[249]

The more accepted view today is that an exception for humanitarian intervention is not yet an established norm of customary international law.[250] Indeed, there are strong arguments that such intervention not only remains unlawful, but also that it should emphatically remain unlawful.[251] Nonetheless, a large amount of literature supports the claim for such a principle, and a number of governments have invoked it at various times—perhaps most recently when the U.K. referenced it as part of its legal position in support of a Security Council resolution authorizing the use of force in Syria, in 2013.[252] All of this provides a precedent for yet another exception for forceful intervention within the territory of a rogue state for the benefit of all of humanity. And, as discussed earlier, the rationales for a right of collective but unilateral

ETHICAL, LEGAL, AND POLITICAL DILEMMAS (J.L. Holzgrefe & Roberr O. Keohane eds., 2000); *see also* José Luis Aragón et al., *Modern Self-Defense: The Use of Force Against Non-Military Threats*, 49 COLUM. HUM. RTS. L. REV. 99 (2018); *supra* note 194 and accompanying text.

[248] *See, e.g.*, OSCAR SCHACHTER, INTERNATIONAL LAW IN THEORY AND PRACTICE 123–25 (1991) (arguing that such claims have been rejected by the international community); FRANCK, *supra* note 184, at 171–72; Rodley, *supra* note196, at loc. 25281–25299 (Kindle ed.).

[249] U.N. GAOR, 54th Sess., 4th plen. mtg., U.N. Doc. A/54/PV.4 (Sept. 20, 1999).

[250] GRAY, *supra* note 164, at 60. *See also* Monica Hakimi, *The Attack on Syria and the Contemporary Jus ad Bellum*, EJIL: TALK! (Apr. 15, 2018), https://www.ejiltalk.org/the-attack-on-syria-and-the-contemporary-jus-ad-bellum/ [https://perma.cc/2d5v-q8ww]; Peter Tzeng, *Humanitarian Intervention at the Margins: An Examination of Recent Incidents*, 50 VAND. J. TRANSNAT'L L. 415, 460 (2017). Kevin Jon Heller, *"Genuine" Unilateral Humanitarian Intervention—Another Ticking Time-Bomb Scenario*, (unpublished manuscript) (on file with author).

[251] *See, e.g.*, Ryan Goodman, *Humanitarian Intervention and the Pretexts of War*, 100 AM. J. INT'L L. 107 (2006); Heller, *supra* note 250.

[252] Prime Minister's Office, *Chemical Weapon Use by Syrian Regime: UK Government Legal Position*, GOV.UK (Aug. 29, 2013) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/235098/Chemical-weapon-use-by-Syrian-regime-UK-government-legal-position.pdf [https://perma.cc/mtu5-3cwl].

"atmospheric intervention" are in many respects stronger than the arguments in support of a unilateral right of humanitarian intervention.[253]

What might we expect in terms of a framework for such an atmospheric intervention? Harold Koh's normative framework for developing a "better law" to deal with humanitarian intervention provides a particularly useful starting point.[254] According to this model, a preliminary condition for any intervention (beyond, of course, first exhausting every and all non-forceful methods), would be that states seeking to take action must first seek U.N. Security Council authorization. It would only be in the face of persistent vetoes or other forms of Security Council dysfunction, that other alternatives could be explored. The next step would be to either obtain General Assembly authorization in line with the Uniting for Peace resolution approach discussed above;[255] or if that too is not feasible, then the approval and support of regional international institutions or arrangements, as contemplated by Chapter VIII of the U.N. Charter,[256] such as NATO, ASEAN, the African Union, or the OAS. The underlying rationale for each of these checks would be to ensure that any action is undertaken collectively, and ideally with some form of collective institutional approval, so as to reduce the cynical exploitation of the doctrine as a pretext for actions by the invoking states to further their unrelated national interests.[257] There might be a requirement for a minimum number of states to be involved to satisfy this condition of collective action. A prohibition against unilateral individual action could thus be established as part of this exception.

In addition to these limits, we might expect there to be a well-developed framework of conditions and qualifiers to define and govern when such use would be lawful. Thus, under this new

[253] By "unilateral" I mean not authorized by the UN, not that it is undertaken by one state acting alone. As will be discussed below, if any such exception were to be embraced, it should be conditioned on the intervention being undertaken by some minimum number of states acting together—hence the phrase "collective but unilateral."

[254] Koh, *Humanitarian Intervention*, *supra* note 246.

[255] *See supra* notes 201–205 and accompanying text.

[256] U.N. Charter art. 52–54.

[257] Koh, *Humanitarian Intervention, supra* note 246, at 289.

and carefully limited exception, for states to lawfully use force for purposes of "atmospheric intervention" such that it would not violate the prohibition in Article 2(4) of the Charter, they would have to establish that the use of force in question was limited in nature and genuinely for the purpose of forcing a climate rogue state to mitigate its recklessly excessive contributions to climate change; that the use of force was necessary and proportionate to address the specified threat posed by the activity of or within the climate rogue state in question (which would thus include the possibility of action against NSAs operating within the territory of the state); and that the use of force would terminate as soon as the threat had been so addressed.[258] This would require a clearly established and articulated principle, integral to the exception itself, requiring the states relying upon this exception to provide persuasive evidence in support of each of the elements.[259]

Now, each of one of these conditions raises a host of further questions, and no doubt, objections. How on earth does one determine if the use of force is necessary? How would one measure proportionality? How could IHL be complied with in any such use of force? And there are many more important questions. We need not delve into all of these here—but this model and the questions it raises provide a good starting point for the coming debate, about how and why we should shape, limit, or utterly reject any adjustment of the *jus ad bellum* regime to deal with climate rogue states.

IV. DEBATING AND RESISTING ANY *JUS AD BELLUM* ADJUSTMENT

To this point, my argument has been primarily predictive. I have explored why the climate change crisis will likely result in states reaching for the threat or use of force as a means of coercing climate rogue states into complying with international norms regarding climate change mitigation; and, through the lens of recent precedent, examined how arguments will likely be

[258] Again, this tracks the template of Koh's humanitarian intervention framework. Koh, *supra* note 246, 289.
[259] *Id*.

developed to expand the *jus ad bellum* regime to provide legal justifications for uses of force. Some of these arguments will be persuasive, and more compelling than recent efforts to expand the *jus ad bellum* regime to deal other new and novel threats. But I have not been making a normative claim that the use of force *should* be relied upon to enforce international climate change law.

In this Part, I turn to the normative implications of my forecasts. My first and primary normative claim is simply that international lawyers, scholars, jurists, and policy makers should be thinking and debating now about why and how to shape, limit, and even reject and resist the coming efforts to expand the *jus ad bellum* regime. My second normative claim, made in the interest of contributing to the initiation of that debate, is to suggest that we should indeed resist anticipated efforts to relax the *jus ad bellum* regime.

A. Reasons for Resisting Change

How should we respond to the anticipated arguments in favor of adjusting the *jus ad bellum* regime? An obvious starting point might be to emphatically and categorically reject any effort to expand the doctrine of self-defense. Notwithstanding the similarity to past efforts to expand the doctrine, permitting the unilateral use of force in self-defense against something that is not even a use of force, far less an armed attack, would be to weaken the prohibition and undermine the threshold for the justifiable use of force to an unacceptable degree. It would introduce such ambiguity into the triggering mechanism for the use of force that it would excessively increase the risk of a radically higher incidence of international armed conflict. Notwithstanding the debate over the ambiguity that may have resulted from the putative adjustments to the doctrine for dealing with the very specific threat of cyber attacks, it would seem entirely justifiable to maintain the position that self-defense is and should remain limited to the use of force in response to an armed attack, and that the definition of armed attack should not be distorted to contemplate such threats as excessive contributions to climate change.

That objection is to focus on a narrow and specific aspect of the anticipated efforts, but it hints at larger questions of risk assessment and how to measure benefits. How should we assess the entire issue of possibly expanding the *jus ad bellum* regime to deal with climate rogue states? It is perhaps helpful to back up and consider the purpose of the regime, and the potential costs and benefits of any adjustment in relation to that purpose. The *jus ad bellum* regime serves the fundamental purpose of preventing, or at least reducing the incidence of, international armed conflict.[260] At its heart is the prohibition on the use of force. Thus, any expansion of the exceptions to this prohibition, or to put it another way, relaxation of the regime's limits, is likely to increase the risk of war. It is precisely because of these risks that I have been highly critical of efforts to expand the doctrine of self-defense in the context of both preventative self-defense and the unwilling or unable doctrine.[261] The increased risk of more frequent inter-state armed conflict seemed a greater threat to the international system than the threat that the expansion or relaxation of the law was being advanced to address. This was certainly so for the threat of transnational terrorism, but arguably so even in the case of responding to the development of weapons of mass destruction. The marginal benefit to be gained by relaxing the *jus ad bellum* regime did not seem to come close to outweighing the risks it posed.[262]

It is not at all clear, however, that these objections hold true in the context of climate change. If the current legal regimes and institutions are not soon able to mobilize the necessary mitigation efforts—that is, if we are heading towards the scenario of a 2.5°C average increase by mid-century, and a 6°C average increase by 2100[263]—then the risk posed to human civilization from the catastrophic consequences of climate change far exceeds the risk posed by international armed conflict (with the possible exception of a nuclear conflict between two of the super-powers). From this perspective, the increased risk of

[260] *See supra* note 164.

[261] Martin, *Unwilling or Unable Doctrine*, *supra* note 163.

[262] *Id*.

[263] That is, the "severe" and "catastrophic" scenarios examined in Campbell & Parthemore, *supra* note 2; *see supra* Part II(A).

war caused by adjusting the *jus ad bellum* regime may be less threatening than the risk posed by not doing everything possible to force all states to comply with their climate change law obligations. The question will then be, as the crisis deepens, whether the marginal benefit of allowing some limited use of force in some conditions, as a means of addressing the threat posed by climate change, would outweigh the risk of a higher likelihood of war in an increasingly chaotic international system.

In some sense, the question is not yet sufficiently ripe for us to competently analyze and address. In our current circumstances, the use of force to enforce compliance with climate change law likely seems entirely unjustifiable. But my central predictive claim here is that as the crisis deepens, perspectives and the calculus will change. In 2030 or 2040, when something along the lines of the "severe" climate scenario discussed above is materializing,[264] how will the cost-benefit analysis for expanding the *jus ad bellum* look? This will depend of course on how we assess the two sides of the cost-benefit analysis equation, which from today's perspective is somewhat difficult to predict, particularly for one side of the equation. On one side of the equation is the cost of increasing the risk of war by relaxing or expanding the exceptions in the *jus ad bellum* regime. This is something we can and should be thinking about now, as that risk can be calibrated by how and to what extent any adjustment to the *jus ad bellum* limits are permitted. In other words, to what extent should the "expansion" or "relaxation" be taken, and thus how much should we permit the risk of increased incidence of war to be raised; and how indeed can we assess the extent or gravity of such increased risk? I will return to this "cost" side of the equation shortly.

The "benefit" side of the equation relates to the risk posed by climate change, and the extent to which that risk can be marginally reduced by expanding or relaxing the rules of *jus ad bellum*. This is the question that is much more difficult for us to meaningfully analyze now. It is complicated because it has to be considered on two levels. The first is the granular or particular level, meaning the specific benefit to be derived in the circumstances of using or threatening force to coerce the

[264] Fuerth, *supra* note 46.

behavior modification of a particular state. The second is the more general effect on compliance that might result from establishing the very idea that excessive state contributions to climate change could be characterized as a threat to international peace and security, and that a range of collective action, up to and including the use of force, might be used to address such threats. It is this second level that I want to focus on as being the far more important. At the same time, in order to even contemplate the effect of an overall modification of the regime, we need to consider what the specific use of force might look like. Indeed, many will argue that this is where the entire analysis may break down, for it is quite difficult to visualize how force could be effectively used to coerce a state to modify its GHG emissions or other climate change related policy.[265] Thus, while the effect of the very existence of a climate change-specific expansion of *jus ad bellum* is of primary importance, we need to pause first to consider how force might be used, even if it is never actually employed but only ever threatened.

The whole concept seems outlandish if we think of the contemplated use of force in terms of invasion and regime change. And yet, when thinking about how force might be used to prevent a specific climate rogue state from engaging in recklessly excessive emissions, this might seem to be the option that comes most readily to mind. The invasion of Iraq in 2003 might be the most obvious precedent, but it will also seem an outrageous response to Canada announcing an expansion of its tar-sands oil industry or Brazil refusing to abate the deforestation of the Amazon. But then how would a use of force be employed in this context? We need to approach the issue with Clausewitz' famous principle in mind: that war is merely the continuation of policy by other means.[266] That is, the use of force

[265] My thanks to Terry Gill, and other members of the LACMO workshop in Amsterdam, for focusing my attention on this question.

[266] CARL VON CLAUSEWITZ, ON WAR 87 (Michael Howard & Peter Paret et al. eds., trans., 1976). For an interesting discussion of the translation of this phrase, *see* James R. Holmes, *Everything You Know About Clausewitz is Wrong*, DIPLOMAT (Nov. 12, 2014), https://thediplomat.com/2014/11/everything-you-know-about-clausewitz-is-wrong/ [https://perma.cc/5j2m-z4z7]. Leaving aside the exact translation, there is no question that the phrase is often misunderstood—but the better understanding is that it means that war, as a means for achieving policy objectives, is limited by those objectives.

must be both tailored to and limited by the specific policy objective it is intended to achieve. In dealing with a climate rogue state, the purpose of either a threat or actual use of force is to coerce the government to bring the state's policy back into compliance with its international climate change obligations. This does not require massive "shock and awe" attacks or regime change—it is likely to be achieved through limited surgical strikes against precisely the infrastructure related to the non-compliant conduct, as illustrated in my hypothetical example in the Introduction. The more pertinent historical examples would be the Israeli surgical air strikes against the Iraqi nuclear facility at Osirak in 1981,[267] or again its strike against the Syrian nuclear facility in 2007.[268] These strikes were unlawful under then prevailing principles,[269] but they provide examples of the kind of limited strike that can both degrade the infrastructure posing a threat, and send a strong message to the government to change its policy. Of course, in the event the strike is unsuccessful in modifying behavior, escalation may be thought necessary, and herein lies the risk of increased international armed conflict.

In getting back to the cost-benefit equation, however, it is not the marginal benefit derived from any specific threat or use of force, or even the aggregation of such marginal benefits, that is the key benefit to be balanced against the cost of increasing the risk of war. Rather, it is the benefit of the overall deterrent effect derived from establishing the possibility of some legally justified threat or even use of force against climate rogue states. The point is that any use of force would be extremely rare so long as

[267] David K. Shipler, *Israeli Jets Destroy Iraqi Atomic Reactor; Attack Condemned by U.S. and Arab Nations*, N.Y. TIMES (Jun. 9, 1981), https://www.nytimes.com/1981/06/09/world/israeli-jets-destroy-iraqi-atomic-reactor-attack-condemned-us-arab-nations.html [https://perma.cc/2kxd-6t7x]. The efficacy of the strike of course remains hotly debated. *See generally, e.g.*, Målfrid Braut-Hegghammer, *Revisiting Osirak: Preventative Attacks and Nuclear Proliferation Risks* 36 INT'L SECURITY 101 (2011).

[268] Amos Harel & Aluf Benn, *No Longer a Secret: How Israel Destroyed Syria's Nuclear Reactor*, HAARETZ (Mar. 23, 2018), https://www.haaretz.com/world-news/magazine-no-longer-a-secret-how-israel-destroyed-syria-s-nuclear-reactor-1.5914407 [https://perma.cc/4vpj-f4gd].

[269] FRANCK, *supra* note 184, at 105–06; Elena Chachko, *The Al-Kibar Strike: What a Difference 26 Years Make,* LAWFARE BLOG (Apr. 2, 2018), https://www.lawfareblog.com/al-kibar-strike-what-difference-26-years-make [https://perma.cc/ca7t-y69c].

there are strict conditions developed for such use, and those conditions are adhered to. The use of force has been rare (and typically unlawful), for instance, in dealing with states violating the Nuclear Non-Proliferation Treaty, but arguably the prospect of such use has been a factor in mobilizing compliance with the regime.[270] It would be difficult to assess such a general deterrent effect, and even more difficult to assess the marginal impact in any specific circumstance. But if our collective failure to deal with the climate crisis continues—in that we are unable to better mobilize compliance with the obligations and norms of the international climate change law regime, and we cannot meet our collective objectives—then there is going to be an increasingly high value placed on that possible deterrent effect. In other words, a high value will be placed on adjusting the *jus ad bellum* regime so as to characterize reckless contributions to climate change as a threat to international peace and security.

This account of putative costs and benefits might suggest that the efforts to expand the *jus ad bellum* might have some merit—and when the time comes, I certainly think that such arguments are likely to become more persuasive and influential. But before we can come to a landing on this, we need to return to the "cost" side of the equation, and to adjust the level of abstraction or the area of focus from which we are analyzing the problem. One of the classic problems that plagues efforts at this kind of balancing of complex, typically unquantifiable and incommensurate risks and rewards, is a failure to cast the net far enough afield, and thus to miss some important second and third order costs in the calculus. Some of the second and third order costs of any efforts to expand the *jus ad bellum* regime would involve direct injury to the regime itself. Others would include negative consequences for other areas of the law and for the rule of law. When those are factored in (assuming for the moment that such a cost-benefit analysis approach is the appropriate means of judging the issue),[271] the cost benefit analysis tends to shift

[270] This is difficult to establish conclusively, but the U.S. government under multiple administrations have alluded to the possible use of force against Iran, Iraq, North Korea, Libya, and others, and one must conclude they thought it would be an effective incentive.
[271] Despite the objections of moral philosophers, such consequentialist and utilitarian cost-benefit analysis tends to inform much policy making. For discussion of its

further towards the negative end of the scale. I briefly explore some of these here, but there are surely others that will need to be considered in future debates.

From a broad theoretical perspective, efforts to implicate the *jus ad bellum* regime for purposes of addressing climate change issues can be objected to as an impermissible move to "securitize" the global policy response to the climate change crisis.[272] Securitization is a term that was developed in international relations and security studies theory to describe the process of framing issues in national security terms, and particularly in terms of existential threat, precisely in order to justify exceptional government policy and action that would otherwise violate regular political and legal norms.[273] There are exceptional circumstances that justify emergency measures, but the term securitization is typically invoked to critically describe dubious or even illegitimate moves to characterize challenges in national security terms for the purpose of circumventing existing norms. The so-called "global war on terrorism" has surely taught us that all efforts at securitization should be treated with considerable suspicion. Barry Buzan and Ole Waever, in developing these ideas in the late 1990s, noted that environmental issues were at risk of being so securitized.[274] Securitization is not only dangerous in terms of the negative and potentially unjust consequences that may directly result from the evasion of established regulation and standards, but also in the corrosive effect it can have on the entire system of norms and the rule of law itself.[275] From this perspective, the predicted efforts to characterize contributions to climate change as threats to international peace and security, and to classify offending states as "climate rogue states" against which states may direct either the threat or use of force, would be to dangerously

shortcomings, *see, e.g.*, MICHAEL J. SANDEL, JUSTICE: WHAT'S THE RIGHT THING TO DO? 31–57 (1st ed. 2009).

[272] My thanks to Mark Taylor in particular for drawing my attention to this line of objection.

[273] BARRY BUZAN ET AL., SECURITY: A NEW FRAMEWORK FOR ANALYSIS 24–25 (1998).

[274] *Id*. at ch. 4.

[275] *Id. See generally* Franziskus von Lucke et al., *What's at Stake in Securitizing Climate Change? Towards a Differentiated Approach*, 19 GEOPOLITICS 857 (2014); Shirley V. Scott, *Securitizing Climate Change: International Legal Implications and Obstacles*, 21 CAMBRIDGE REV. INT'L AFF. 603 (2008).

securitize what should be an urgent public policy issue best solved through cooperation and coordinated collective action.

One of the concrete problems with any effort to relax the *jus ad bellum* regime in order to address climate change aligns neatly with this securitization critique. That is, any change to the regime for this purpose is not only going to increase the incidence of armed conflict legitimately initiated in accordance with the adjusted standards, but it will also increase the risk that any new standards will be cynically exploited as pretexts to disguise the illegitimate use of force. This will be true whether the expansion comes in the form of changes to the doctrine of self-defense, the creation of a new exception to permit the unilateral and collective atmospheric intervention, or even the articulation of a specific new doctrine facilitating atmospheric intervention authorized by the U.N. Security Council. This risk will be highest in the event that the doctrine of self-defense is relaxed, for reasons we have already discussed above, but even with an elaborate framework defining the necessary conditions for the exercise of atmospheric intervention, it will be susceptible to abuse. Recall that many states and legal scholars have alleged that the humanitarian intervention in Libya in 2011 was a pretext for regime change, and that NATO grossly exceeded the scope of the authority conferred by the U.N. Security Council resolution. [276] Indeed, advocates of humanitarian intervention strain to find a single example that is not vulnerable to allegations of ulterior motives, with even the Indian intervention in Bangladesh in 1972 being subject to question.[277]

This problem of possible illegitimate exploitation of any expansion of the *jus ad bellum* regime is compounded by the powerful suspicion that any resulting threats or uses of force will almost certainly be directed against weak states, particularly developing states in the Global South.[278] Thus, it was far more plausible that my hypothetical in the Introduction should involve a surgical strike against power plants in Brazil, rather

[276] GRAY, *supra* note 164, at 3; *see also* Heller, *supra* note 251.

[277] *See supra* note 248.

[278] My thanks to Alonso Gurmendi for his thoughts on this point; *see also* Gurmendi, *supra* note 24.

than against those in Canada or Australia—although those countries are failing miserably in fulfilling their current climate change obligations and both have some of the highest per-capita and historical GHG emission totals in the world.[279] Brazil may be among the top fifteen contributors of carbon dioxide in the world, but its overall historical responsibility for contributions to climate change is considerably less than that of most other developed countries.[280] On one level, the likely use of force against weaker states merely reflects the *real politik* of modern international relations, and may not be so different from the dynamics around the current operation and enforcement of the *jus ad bellum* regime more generally. After all, Russia remains in Crimea, Israel has held the occupied territories for over fifty years, and we could safely wager that there will never be a humanitarian intervention to prevent atrocities in Xinjiang. But in the context of climate change, the development of a doctrine that would be disproportionately employed against the Global South would compound some of the deepest equity and justice problems inherent in the very nature of the climate change crisis, and the structure of the climate change law regime itself.

One of the most central and intractable equity and justice problems in the response to climate change is the concept of differentiation of responsibility and capability. The least developed states are the least responsible for climate change, in terms of both cumulative historical emissions and current contributions, yet they will feel the consequences of climate change soonest, are most vulnerable to the consequences, and are the least capable of adapting to or protecting themselves from those consequences. In contrast, to state the obvious, the

[279] *See, e.g.*, *Each Country's Share of CO2 Emissions*, UNION OF CONCERNED SCIENTISTS (July 16, 2008), https://www.ucsusa.org/resources/each-countrys-share-co2-emissions [https://perma.cc/W79L-HWQ3]; *Per Capita CO2 Emissions*, OUR WORLD IN DATA (2017), https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions#per-capita-co2-emissions [https://perma.cc/HKA6-2YZL]; *Top 12 CO2-Emitting Countries & Their Per-Capita Emissions* (2004), WORLD RESOURCES INSTITUTE (Nov. 2008), https://www.wri.org/resources/charts-graphs/top-12-co2-emitting-countries-their-capita-emissions-2004 [https://perma.cc/LCA6-3ANK].

[280] *See, e.g.* Le Quéré et al., *Global Carbon Project*, OUR WORLD IN DATA (May 2017), https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions#cumulative-co2-emissions [https://perma.cc/5Z9R-HLB6].

countries that are the greatest contributors to climate change are not only least vulnerable and best able to adapt to the risks, they are also the most powerful. The five permanent members of the U.N. Security Council are all among the most responsible for climate change, and the United States has announced its intention to withdraw from the Paris Climate Agreement.[281] The apparent inequities and injustice of this situation have been one of the stumbling blocks in climate change law negotiations.[282] Expanding the *jus ad bellum* regime to help enforce climate change law will merely compound this problem. Force will be used *by* states that are themselves potentially guilty of being climate rogue states, disproportionately *against* weaker developing countries that are in overall terms less responsible than other developed states. This would exacerbate perceptions of profound injustice. Such developments could serve to seriously undermine the global cooperation that is so essential to overcoming the collective action problems inherent in the crisis.

Another basis for objecting to the entire idea of atmospheric interventions, regardless of whether it is authorized by the U.N. Security Council, is that it is difficult to conceive of how such an intervention could be launched without violating fundamental principles of the *jus in bello* regime or international humanitarian law ("IHL").[283] This regime governs the conduct of armed forces within armed conflict. The first act of any use of force for purposes of an atmospheric intervention would trigger the operation of IHL, and the conduct of forces in executing the intervention would be governed by its principles.[284] One of the

[281] *See* Press Statement of Michael Pompeo, Secretary of State, On the U.S. Withdrawal from the Paris Agreement (Nov. 4, 2019), https://www.state.gov/on-the-u-s-withdrawal-from-the-paris-agreement/.

[282] MAYER, *supra* note 76, at 98–105; BODANSKY, *supra* note 76 at 100–05.

[283] Also known as the law of armed conflict. *See generally* YORUM DINSTEIN, THE CONDUCT OF HOSTILITIES UNDER THE LAW OF INTERNATIONAL ARMED CONFLICT (2d ed., 2010); THE OXFORD HANDBOOK OF INTERNATIONAL LAW IN ARMED CONFLICT (Andrew Clapham & Paola Gaeta eds., 2014); THE HANDBOOK OF INTERNATIONAL HUMANITARIAN LAW (Dieter Fleck ed., 2013).

[284] Though there has been a lively debate recently over whether the "first strike" in limited interventions is governed by IHL or international human rights law. *See*, *e.g.*, Alonso Gurmendi, *Raising Questions on Targeted Killings as First Strikes in IACs,* OPINIO JURIS (Jan. 9, 2020) http://opiniojuris.org/2020/01/09/raising-questions-on-targeted-killings-as-first-strikes-in-iacs/ [https://perma.cc/59WE-T938].

four core principles of IHL is the principle of distinction, which requires armed forces to distinguish between combatants and civilians, and between military objectives and civilian objects.[285] Given that the entire premise of atmospheric intervention is that the use of force would be targeted at infrastructure or facilities directly related to the contribution of GHGs, it is highly unlikely that such targets could be legitimately characterized as anything other than civilian objects. What is more, there would be significant risk that civilians would be present. The knowing violation of the principle of distinction, in the form of deliberate targeting of civilians or civilian objects, is considered a grave breach of the Geneva Conventions, and thus a war crime.[286] And this is only the starting point of a far more extensive analysis of ways in which the contemplated atmospheric intervention could potentially run afoul of the principles and rules of IHL. Without delving into the details here, this is one more way in which the adjustment of the *jus ad bellum* regime could undermine the integrity of other legal regimes.

In sum, these additional consequences of the possible adjustment to the regime (and there are surely more), some of which would negatively impact other legal regimes and corrode the international rule of law more generally, would together tend to undermine the global efforts to develop and coordinate law and policy responses to the climate change crisis. For these reasons, when taking these broader factors into consideration, the balance of risk and reward tilts against any relaxation of the constraints of the *jus as bellum* regime.

B. Time for Debating Change is Now

If there is a reasonable chance that there will indeed be pressure to adjust the *jus ad bellum* regime, and regardless of what normative position one may take on the issue, then now is the time for debating and even acting on these issues. Now,

[285] Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), arts. 44, 48, 51, June 8, 1977, 1125 U.N.T.S. 3 (1979); *see also* JEAN-MARIE HENCKAERTS & LOUISE DOSWALD-BECK, INT'L COMM. OF THE RED CROSS, CUSTOMARY INTERNATIONAL HUMANITARIAN LAW 11–24, 79–101 (2005).

[286] DINSTEIN, CONDUCT OF HOSTILITIES, *supra* note 283, at 123.

while the crisis is still on the horizon and the idea of using force to combat climate change still sounds rather bizarre, rather than waiting until the crisis deepens and the pressure for change actually starts to manifest itself, when the debate is going to be shaped by a sense of urgency, fear, and deeply felt national interests.

It is also important to have the debate now to provide time to act on the conclusions. If, for instance, the prevailing normative view is that the predicted efforts to relax the *jus ad bellum* regime should be resisted, then the time is nigh for considering and developing possible pre-commitment devices and other restraining mechanisms to help entrench and protect the current legal architecture. In constitutional theory, there is an idea that constitutional structures can serve as "pre-commitment devices." These are mechanisms designed to constrain future government behavior in circumstances of crisis or emergency, when decision-makers may be tempted to act in ways that are contrary to the nation's fundamental values and principles.[287] The metaphor commonly employed to capture the idea is taken from the story of Odysseus in Greek mythology, protecting himself from succumbing to the fatal spell cast by the Sirens' song by having himself bound to the mast and his men's ears stopped with wax.[288] Treaties have been recognized as operating as precisely this kind of pre-commitment device at the national level, and even as a way of reinforcing and locking-in democratic norms.[289] There has been less work done on how one might think of creating pre-commitment devices to entrench and strengthen the resilience of international law norms at the international level. I have in the past written on how constitutional incorporation of *jus ad bellum* principles could

[287] JON ELSTER, ULYSSES AND THE SIRENS: STUDIES IN RATIONALITY AND IRRATIONALITY (1979); *see also* CASS R. SUNSTEIN, DESIGNING DEMOCRACY: WHAT CONSTITUTIONS DO 96–101 (2001); Stephen Holmes, *Precommitment and the Paradox of Democracy*, *in* CONSTITUTIONALISM AND DEMOCRACY 195 (Jon Elster & Rune Slagstad eds., 1988).

[288] ELSTER, ULYSSES AND THE SIRENS, *supra* note 287.

[289] Steven R. Ratner, *Precommitment Theory and International Law: Starting a Conversation*, 81 TEX. L. REV. 2055, 2059–60 (2003); *see generally* Tom Ginsburg, *Locking in Democracy: Constitutions, Commitment, and International Law*, 38 N.Y.U. J. INT'L L. & POL. 707 (2006).

help strengthen that regime.[290] It strikes me that if we can foresee extreme pressure on the *jus ad bellum* regime coming over the horizon, we should be thinking creatively about ways we might develop mechanisms of one form or another that could help to entrench the current principles and protect them from such pressure.

Finally, there may be some collateral but potentially important consequences of having this debate now. If we step back from the details of these arguments, and allow only the broadest strokes of the image to remain in focus, we may be struck by just how impotent we are as a species to deal with an existential crisis of our own making. Not only international law but all of our institutions are proving incapable of responding to the challenges. The idea that we would consider going to war to stop carbon emissions seems crazy, and yet it reveals the failure of everything else. One of the central reasons for our collective failure is our inability to make a critical mass of the public understand the magnitude of the crisis. Having very public debates on policy options that help to illustrate the severity of the threats, and the more appalling and morally reprehensible the options we will confront the longer we delay, may help to influence public opinion. This idea is reflected in a recent scientific proposal to dam the North Sea to protect England and several countries in Northern Europe from sea level rise. While met with skepticism and disbelief, one of the authors noted that while it is not an ideal solution, it might serve as an alarm, "vividly illustrating the kind of drastic action that might become necessary if global leaders cannot find a way to address climate change."[291] As one recent essay put it, if we could blame climate change on aliens, it would be easier to solve.

[290] For my own work on thinking about incorporating into domestic constitutions the principles of the jus ad bellum regime for this purpose, *see* Craig Martin, *Taking War Seriously: The Case for Constitutional Constraints on the Use of Force in Compliance with International Law*, 76 BROOK. L. REV. 611 (2011).

[291] Claire Moses, *As Sea Levels Rise, Scientists Offer a Bold Idea: Dam the North Sea*, N.Y. TIMES (Feb. 15, 2020), https://www.nytimes.com/2020/02/14/world/europe/north-sea-dams.html [https://perma.cc/56FL-KHET]; for the report, *see* Sjoerd Groeskamp & Joakim Kjellsson, *The Northern European Enclosure Dam for if Climate Change Mitigation Fails*, BULL. AM. METEOROLOGICAL SOC'Y (forthcoming 2020), https://journals.ametsoc.org/doi/pdf/10.1175/BAMS-D-190145.1?referringSource=articleShare& [https://perma.cc/FHB6-VETC].

V. CONCLUSION

I have gone to considerable effort to predict why and how there will be increasing pressure to relax the *jus ad bellum* regime, and have suggested that the arguments driving such pressure will be persuasive, only to end by calling for a rejection of the arguments and for resistance to the pressure. But I think that the issue is worthy of consideration precisely because the logic and intuitions underlying the coming arguments are so powerful—notwithstanding the objections I have laid out, and the many more beside that others will no doubt raise. Let us return to consider the width and sharpness of the line separating necessity and self-defense. In the Introduction, in the context of the case of *R. v. Dudley and Stephens*, [292] I raised the question of how we might think about the available justifications and defenses if Richard Parker,[293] the cabin boy who was murdered, had been doing something that had incrementally threatened the lives of the other seamen in the lifeboat. Let me expand on this line of thinking to develop a thought experiment that brings us closer to our situation in the face of the climate change crisis. Imagine a scenario from a science fiction movie in which some twenty astronauts are in a spaceship returning to Earth. They are still six months from arriving, when the engineering officer determines that they are short of water. Given the current water supply and the limited daily output of the water generator, each person will have to be limited to just one cup per day for the rest of the voyage home. To exceed this will mean that some, possibly all, will die. They all agree that rationing is thus necessary, but there is no way to isolate or lock off the many access points to the water supply, or otherwise prevent cheating.

[292] R. v. Dudley and Stephens, [1881-85] All ER Rep. 61, (QBD, UK).

[293] The name, incidentally, of a character who is stranded at sea and eaten by his companions in an Edgar Allan Poe novel, the *Narrative of Arthur Gordon Pym*, published in 1837, and also the name of the tiger in the popular novel *The Life of Pi* by Yann Martel. Martel has acknowledged that the book takes part of its inspiration from the case. *See* Carl Thompson, *Cannibalism at Sea: Sailors Ate the Cabin Boy*, HIST. EXTRA: BBC HIST. MAG. (May 20, 2014), https://www.historyextra.com/period/cannib alism-at-sea-sailors-ate-the-cabin-boy/ [https://perma.cc/4AVU-AU9D]; Rick Spilman, *Nautical Coincidence & Lifeboat Morality—Richard Parker and the Migonette*, OLD SALT BLOG (Jul 19, 2012), http://www.oldsaltblog.com/2012/07/nautical-coincidence-lifeboat-morality-richard-parker-and-the-mignonette/ [https://perma.cc/AJ6D-VTY5].

And indeed, while most of the astronauts are making an effort, many are exceeding their ration to some extent, putting them all at risk.

Then, with five months remaining, it is discovered that one of the senior officers is not only drinking more than his one cup a day but also has been wasting water to wash each day. With each reckless use of water, he puts all of the crew, and himself as well, at risk of dying before the ship arrives home. After all efforts at persuasion and other acts to prevent his use of water have been tried, would a use of force by the rest of the crew not be warranted? Could such a use of force only be defended on grounds of necessity, or would it begin to look more like self-defense? Would the fact that most of the crew had also been exceeding their ration to some extent undermine the powerful sense that action was required to stop the far more reckless actions of the rogue officer? Even if a court would later determine that necessity was no defense, no matter how terrible the temptation, would we not expect and predict that the crew would use force against the rogue officer in any event? In short, I have not developed this hypothetical as a means of justifying either an expansion of the doctrine of self-defense or that of necessity, but merely to note that some situations will leave people with the powerful sense that force is both necessary and justifiable, and thus create strong pressure to bend existing doctrine to the task of legitimizing their actions.[294]

It is interesting to note that the Queen's Bench Division, in rendering its decision on appeal of the trial verdict in *R. v. Dudley and Stephens,* went to some lengths to emphasize that Richard Parker was entirely innocent and that he had posed no risk to his assailants, thereby highlighting the bright line between necessity and self-defense. However, the court also

[294] It has been suggested that this thought experiment suffers from the same problems and flaws as the ticking time-bomb hypothetical developed to justify torture. But, leaving aside the problem that its premises and assumptions can almost never be satisfied in real life, the ticking time bomb-hypothetical is employed to distil and isolate a proposed principle for purposes of guiding and justifying a particular public policy; this thought experiment is not offered as a justification of any policy option or doctrine, but merely to illuminate the indistinct nature of the line between defense and necessity, and to highlight the pressure for a use of force in some circumstances.

ended with an almost anguished recognition of the harsh operation of the principle it was enforcing:

> It must not be supposed that in refusing to admit temptation to be an excuse for a crime it is forgotten how terrible the temptation was; how awful the suffering; how hard in such trials to keep the judgment straight and the conduct pure. We are often compelled to set up standards we cannot reach ourselves, and to lay down rules which we could not ourselves satisfy.[295]

While the modern international law reflects this common law principle, in that the principle of necessity cannot be invoked as a justification for the use of force,[296] the circumstances of the climate crisis will blur the lines between necessity and self-defense. The ICJ itself gestured towards this blurring of the line in the *Legality of the Threat or Use of Nuclear Weapons*, in which the plurality held that it could not rule out the possibility of using nuclear weapons in self-defense, notwithstanding possible IHL violations, if the survival of the nation was at stake.[297] While we may not have yet begun to fully recognize it, our situation is rather quickly developing into one similar to my sci-fi hypothetical. We know the range of temperature increase that will put our civilization at risk, and we have a very good idea of how much of an increase in the volume of GHGs in the atmosphere will result in such a temperature increase. Reducing our collective emissions is proving enormously difficult, and the publics of most countries have yet to comprehend either the extent of the challenge or the enormity of the risks. But as the consequences of climate change start to really bite in the coming years, and the waves of the crisis begin to really break upon the shores of our collective consciousness, the fear will set in and the demands for action will rise to a fever pitch. Those demands will include calls to take action, including the use of force, against those states that are seen to be recklessly and

[295] R. v. Dudley & Stephens, [1881–85] All ER Rep. 61, 67–68 (QBD, UK).

[296] CRAWFORD, STATE RESPONSIBILITY, *supra* note 18, at 274–80, 305–15 (2013); *see also* Rep. of the Int'l Law Comm'n, 53d Sess., Apr. 23–June 1, July 2–Aug. 10, 2001, U.N. Doc. 1/56/10 at art. 25.

[297] Legality of the Threat or Use of Nuclear Weapons, Advisory Opinion, 1996 I.C.J. 226, ¶¶ 95–97 (July 8).

unlawfully adding to the existential threat faced by humanity. Those climate rogue states, like the water-wasting astronaut in my hypothetical, will be viewed as putting all of humanity in jeopardy, and a use of force against them will begin to look and feel more like an act of self-defense than merely an act of necessity, regardless of the fact that those calling for action will not have entirely clean hands.

My primary argument here has been merely predictive. I claim that such demands for the threat or use of force will likely be made as the crisis worsens, and that these demands will be accompanied by arguments that such a use of force can be legally justified. Pressure will be raised to adjust the *jus ad bellum* regime in order to expand the exceptions to the prohibition on the use of force. We have seen the precedents for precisely those kinds of claims all too recently, in response to the perceived threats posed by states developing weapons of mass destruction, transnational terrorists operating from within weak states, cyber attacks, and governments perpetrating crimes against humanity against their own populations. The logic for relaxing the restrictions on the prohibition against the use of force is actually more compelling in the context of climate change than it was for any of those other threats. The risk posed by those allegedly novel threats was far outweighed by the risk of increasing the incidence of international armed conflict by so expanding the *jus ad bellum* regime. That is not necessarily so in the case of climate change. The risk posed by the consequences of climate change is increasingly recognized as constituting an existential threat, and thus could in principle justify some marginal increase in the risk of war caused by adjusting the *jus ad bellum* regime.

Again, however, while I acknowledge that these arguments will likely become more compelling than those mounted in response to other threats in the recent past, I have tried to explore how the balance of risk and reward tends to tilt more heavily in the direction of excessive and unacceptable risk, once we expand the scope of our analysis so as to consider the broader and unintended consequences of any such relaxation of the regime. My contribution to the debate that I hope this article will help to initiate, is to suggest that any such effort to relax the regime should be resisted. But precisely because these

arguments are coming, we need to begin thinking about them now. Now, before the fear and crisis are upon us, we need to consider how best to resist the worst of these arguments, and possibly how to fashion and establish some pre-commitment devices or other mechanisms to help entrench and protect the existing principles of the *jus ad bellum* regime. Rather than "set up standards we cannot reach ourselves, and to lay down rules which we could not ourselves satisfy," to borrow the language from *R. v. Dudley and Stephens*, we should turn our minds to establishing standards and rules that might be realistic enough to modify state behavior, and actually limit the worst temptations to come. What is more, starting such a discussion now might help change the way we think of the coming climate change crisis—helping to persuade publics that, unless we begin to take drastic action, climate change is going to be catastrophic, and the worst threat to international peace and security that we have ever seen.