



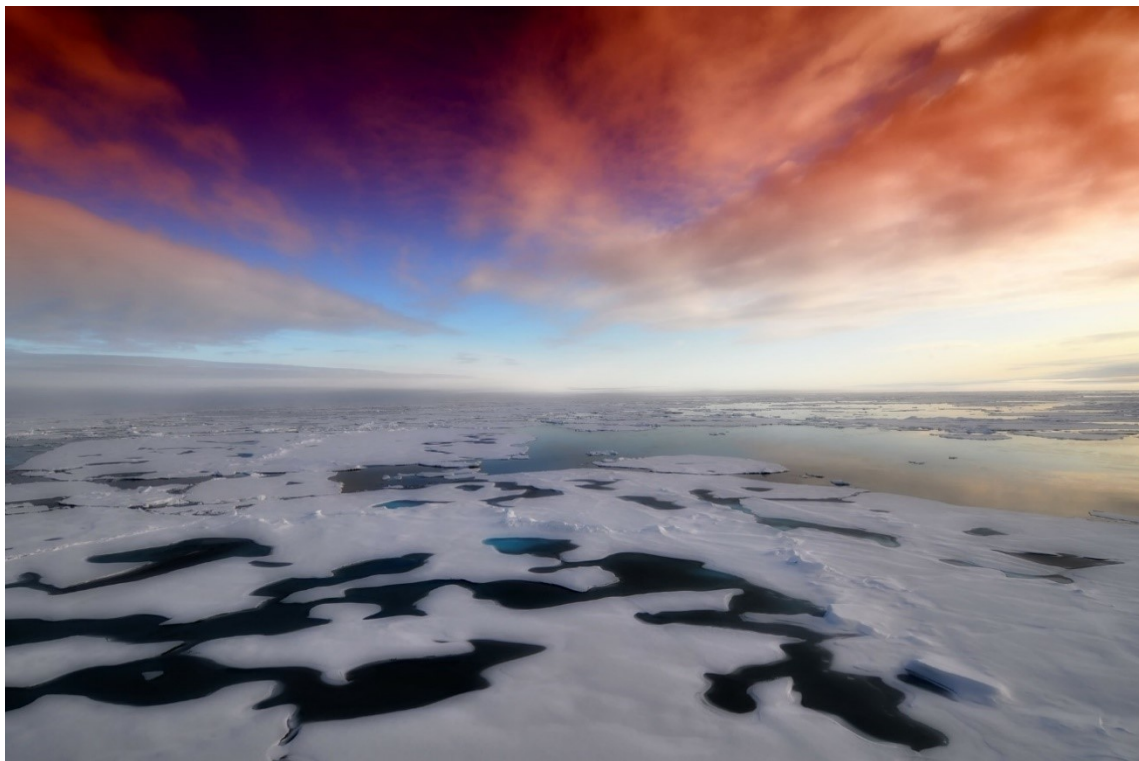
**THE ANNENBERG PUBLIC POLICY CENTER**  
OF THE UNIVERSITY OF PENNSYLVANIA

**Lessons from the Arctic: The Need for Intersectoral Climate Security Policy**

**Alexandra A.K. Meise**

**Senior Fellow, Center for Ethics and the Rule of Law  
University of Pennsylvania**

---



December 2020

“Climate change presents a direct threat to national security.”  
– 2018 National Defense Authorization Act

**Contents**

- Abstract** ..... iv
- I. Introduction** ..... 1
- II. Defining Climate’s Threats and Opportunities** ..... 5
  - A. The Arctic’s Threat Preview** ..... 6
  - B. Impacts on Economic Development** ..... 9
  - C. Impacts on Technology and Research Development** ..... 13
  - D. Impacts on Global Human Security and Military Readiness**..... 15
    - i. Triggering Human Migration**..... 16
    - ii. Shifting Resources Increase Conflict Risk** ..... 18
    - iii. Challenging Military Operations and Readiness** ..... 19
- III. Policy Fragmentation Thwarts Constructive Action Against Climate’s Threats** ..... 23
  - A. Domestic Action** ..... 24
  - B. International Action** ..... 27
- IV. Recommended Ways Forward** ..... 30
- V. Conclusion**..... 35

## Abstract

Climate change is one of the most critical national security threats facing the United States. Its effects reach every aspect of our economy, society, and physical security, as can be seen acutely in the Arctic. U.S. military, intelligence, diplomatic, economic, policy, and business leaders agree that failure to plan for climate's effects will have devastating consequences for the nation's institutions; its resilience against future economic, environmental, and geopolitical challenges; and its ability to respond to global instability.

Yet the United States has failed to muster a comprehensive policy response proportional to the urgency of the climate threat. Federal climate policy has been inconsistent at best and often an obstacle to advancing climate security interests. In the Arctic, U.S. engagement has waxed and waned. State and local governments have taken steps to address climate issues at their levels, but have been thwarted by fractured and fragmented federal, civil society, and business approaches to climate.

Against this backdrop, the Biden-Harris administration has committed to taking bold action to address climate change as a national security threat. Their proposals include rebuilding the nation's relationships with foreign allies, moving the national economy toward net-zero emissions, addressing climate justice, preparing our military to face the threat multipliers of climate change, facilitating job recovery while promoting environmentally sustainable infrastructure, and funding research and innovation in critical technologies. To achieve these goals and secure the nation against climate's threats, however, will require an intersectoral, whole-of-government, whole-of-society approach at a scale that, thus far, has been out of this nation's reach.

No region is experiencing the effects of climate change as dramatically as the Arctic. Recognizing this, this paper uses the Arctic as its primary lens through which to identify security threats, challenges, and opportunities posed by climate change across economic, human, and hard security sectors. It then identifies ways in which the current U.S. approach to climate change policy is fragmented at both the federal and state levels, thwarting necessary progress. Recognizing that a sound national security policy needs to be grounded in the "4 Ds" of security ([hard] defense and intelligence, diplomacy, development and trade, and democratic

governance), it calls for intersectoral, coordinated climate policy support from the highest levels of federal, state, and local government. It concludes with several specific recommendations for how the Biden-Harris administration should prioritize institutional expertise, appointments, and international outreach to facilitate a whole-of-government, whole-of-society approach to implementing climate security policies and its climate agenda.

*An earlier version of this paper was circulated to the participants in the closed sessions of [Circling the Arctic: Security and the Rule of Law in a Changing North](#). This online conference took place October 1-3, 2020, and was sponsored by the [Center for Ethics and the Rule of Law](#) and the [Annenberg Public Policy Center](#) of the University of Pennsylvania, in partnership with the [Wilson Center's Polar Institute](#).*

## I. Introduction

Climate change is one of the most critical national security threats facing the United States. National security, military, and intelligence professionals warn that “[e]ven at scenarios of low warming, each region of the world will face severe risks to national and global security in the next three decades. Higher levels of warming will post catastrophic, and likely irreversible, global security risks over the course of the 21<sup>st</sup> century.”<sup>1</sup> Preparing for these risks requires a whole-of-government, whole-of-society approach and coordinated policy support from the highest levels of federal, state, and local government.

Former Secretary of Defense Chuck Hagel testified before the Congressional Oversight Committee in 2019, “Any action to address climate change must protect America’s economy, our environment, and our national security.”<sup>2</sup> This is necessary, he argued, because “climate change is threatening our economy, our environment, and our national security.”<sup>3</sup> He also cautioned, “There must be a dedicated effort to address this [climate] threat.”<sup>4</sup>

Before that testimony, he, along with 57 other prominent national security leaders, signed a letter pleading with the Trump administration not to ignore intelligence reports on climate change and its security impacts.<sup>5</sup> Government experts had long warned of the urgency of the climate security crisis. The 2015 National Security Strategy put it succinctly:

Climate change is an urgent and growing threat to our national security, contributing to increased natural disasters, refugee flows, and conflicts over basic resources like food and water. The present-day effects of climate change are being felt from the Arctic to the Midwest. Increased sea levels and storm surges threaten coastal regions, infrastructure, and property. In turn, the

---

<sup>1</sup> The National Security, Military, and Intelligence Panel on Climate Change (NSMIP), [A Security Threat Assessment of Global Climate Change](#), CENTER FOR CLIMATE AND SECURITY (Feb. 2020).

<sup>2</sup> Opening Statement of former Secretary of Defense Chuck Hagel, Hearing on “[The Need for Leadership to Combat Climate Change and Protect National Security](#),” House Comm. on Oversight and Reform, 116<sup>TH</sup> CONGRESS (Apr. 9, 2019).

<sup>3</sup> [Id.](#) (emphasis in delivery).

<sup>4</sup> [Id.](#)

<sup>5</sup> Dalia Mortada, “[Former Defense Leaders Warn White House It’s ‘Dangerous’ To Downplay Climate Change](#),” NPR (Mar. 5, 2019).

global economy suffers, compounding the growing costs of preparing and restoring infrastructure.<sup>6</sup>

Nevertheless, prominent members of the Trump administration (including President Trump himself) and other elected officials have questioned the connections between climate change and national security.<sup>7</sup> Before he became president, President Trump called climate change a “hoax.”<sup>8</sup> In 2018, when asked by a reporter to respond to the Fourth National Climate Assessment’s dire warnings about climate change’s threats to the U.S. economy, President Trump said, “I don’t believe it.”<sup>9</sup> William Happer, a prominent National Security Council official in the Trump administration, reportedly said, “demonization of carbon dioxide is just like the demonization of the poor Jews under Hitler.”<sup>10</sup> And in 2019, the administration blocked an intelligence agency officer’s written testimony to Congress on behalf of his bureau that called climate change “possibly catastrophic.”<sup>11</sup>

In the absence of unified executive leadership, other current and former political and nonpartisan leaders, as well as the incoming executive administration,<sup>12</sup> have proposed national action to address climate change threats, including proposals to reform the State

---

<sup>6</sup> White House, [National Security Strategy](#), OBAMAWHITEHOUSE.ARCHIVES.GOV (Feb. 2015) (“2015 National Security Strategy”), 12.

<sup>7</sup> Ellen Cranley, [“These are the 130 current members of Congress who have doubted or denied climate change,”](#) BUSINESS INSIDER (Apr. 29, 2019).

<sup>8</sup> See, e.g., Justin Worland, [“Donald Trump Called Climate Change a Hoax. Now He’s Awkwardly Boasting About Fighting It,”](#) TIME (July 8, 2019).

<sup>9</sup> [“Trump on climate change report: ‘I don’t believe it,’”](#) BBC (Nov. 26, 2018).

<sup>10</sup> Josh Siegal, [“Former Trump official says climate change is ‘imaginary threat’ invented by ‘insular and paranoid’ scientists,”](#) WASHINGTON EXAMINER (Nov. 5, 2019); Maegan Vazquez and Rene Marsh, [“William Happer Leaves National Security Council,”](#) CNN (Sept. 11, 2019).

<sup>11</sup> Juliet Eilperin, Josh Dawsey and Brady Dennis, [“White House Blocked Intelligence Agency’s Written Testimony Calling Climate Change ‘Possibly Catastrophic’,”](#) WASHINGTON POST (June 8, 2019).

<sup>12</sup> Biden-Harris Transition, [“Priorities: Climate Change,”](#) BUILDBACKBETTER.GOV (last accessed Nov. 25, 2020).

Department,<sup>13</sup> National Security Council, and National Science Council;<sup>14</sup> proposals calling for more uniform service-coordination on climate issues;<sup>15</sup> proposals for climate-minded economic investments and reforms, such as the Green New Deal;<sup>16</sup> and calls for special government climate advisory groups.<sup>17</sup> State and local leaders are taking bold actions to limit carbon emissions,<sup>18</sup> promote climate-friendly policies,<sup>19</sup> and encourage growth of green energy.<sup>20</sup>

To be successful and sustainable, however, any long-term climate security strategy must recognize that the hard security threats to the United States presented by climate change intersect with economic and human security threats.<sup>21</sup> Unlike traditional national security threats, climate change is an enemy without a defined face; it cannot be fought with brute force or creative military strategy alone. Unlike the Global War on Terror, in which less than 0.5% of Americans serve in active-duty uniform,<sup>22</sup> all Americans are on the battlefield of the climate war, either directly or indirectly. Like past existential conflicts such as WWII or the Cold

---

<sup>13</sup> Uzra S. Zeya and Jon Finer, [Council Special Report No. 89: Revitalizing the State Department](#), COUNCIL ON FOREIGN RELATIONS (Nov. 2020) (“*Revitalizing the State Department*”), 3, 4.

<sup>14</sup> See, e.g., Climate and Security Advisory Group (CSAG), [A Climate Security Plan for America: A Presidential Plan for Combating the Security Risks of Climate Change](#) (“A Climate Security Plan for America”), THE CENTER FOR CLIMATE & SECURITY (Sept. 24, 2019).

<sup>15</sup> See, e.g., Forest L. Reinhardt and Michael W. Toffel, [“Managing Climate Change: Lessons from the U.S. Navy,”](#) HARVARD BUSINESS REVIEW (Jul.-Aug. 2017).

<sup>16</sup> David Roberts, [“The Green New Deal, explained,”](#) Vox (Mar. 30, 2019); see also Aylin Woodward, [“What each Democrat running for president thinks the US should do about climate change,”](#) BUSINESS INSIDER (Dec. 20, 2019) (discussing presidential candidates’ climate proposals and providing links to candidates’ climate plans); Biden-Harris Transition, [“Priorities: Climate Change.”](#)

<sup>17</sup> See, e.g., John Conger, [“Climate Security in the 2021 U.S. National Defense Authorization Act,”](#) THE CENTER FOR CLIMATE & SECURITY (Aug. 17, 2020).

<sup>18</sup> See, e.g., Center for Climate and Energy Solutions, [“U.S. State Greenhouse Gas Emissions Targets,”](#) (last updated Sept. 2020).

<sup>19</sup> See, e.g., Sam Ricketts, Rita Clifton, Lola Oduyeru and Bill Holland, [“States Are Laying a Roadmap for Climate Leadership,”](#) CENTER FOR AMERICAN PROGRESS (Apr. 30, 2020).

<sup>20</sup> See, e.g., Jeff McMahon, [“Renewable Energy Surges Even In Fossil Fuel Friendly Red States,”](#) FORBES (Oct. 26, 2020).

<sup>21</sup> See, e.g., Daisy Simmons, [“What is ‘climate justice’?”](#) YALE CLIMATE CONNECTIONS (Jul. 29, 2020) (“‘Climate justice’ is a term, and more than that a movement, that acknowledges climate change can have differing social, economic, public health, and other adverse impacts on underprivileged populations. Advocates for climate justice are striving to have these inequities addressed head-on through long-term mitigation and adaptation strategies.”).

<sup>22</sup> CFR.org Editors, [“Demographics of the U.S. Military,”](#) COUNCIL ON FOREIGN RELATIONS (Jul. 13, 2020).



War, climate threats affect all aspects of our domestic and international national security structures.

Indeed, a sound national security policy needs to recognize that intersection and be grounded in the “4 Ds” of security: [hard] defense and intelligence, diplomacy and alliances, development and trade, and democratic governance and rule of law.<sup>23</sup> But at present, the U.S. government’s approach to domestic and international climate policy is too fragmented to effectively advance the country on all 4 Ds to respond to climate’s severe security risks.

The Department of Defense (DoD) has been a leader at the federal level in identifying strategic climate threats, particularly in the Arctic. A 2019 study from the Army War College acknowledged, however, that “the Department of Defense is precariously underprepared for the national security implications of climate change-induced global security challenges.”<sup>24</sup> As elaborated below, the government agencies and offices focused on the other three Ds have a mixed record, at best. The private sector and the public at large are not consistently aligned on climate combat efforts either.

A fragmented approach cannot address the severity of the risks presented. Time has nearly run out for the United States—and the globe—to make the behavioral and strategic changes necessary to prevent cataclysmic impacts.<sup>25</sup> To maximize policy efficiency and impacts

---

<sup>23</sup> See, e.g., Truman Center, “[4-D Approach](#)”; see also Uzra S. Zeya and Jon Finer, [Council Special Report No. 89: Revitalizing the State Department](#), COUNCIL ON FOREIGN RELATIONS (Nov. 2020), 3 (underscoring that “the State Department should be appropriately postured against the range of emerging national security threats and opportunities the nation faces”); James G. Stavridis and Reuben Brigety, II, “[Combat and Compassion](#),” from *Frontiers in Development (a USAID Special Report)*, UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT, ed. Rajiv Shah and Steven Radelet, (May 2012), 53, 54 (“the security challenges posed by fragile and failing states and the deprivation that accompanies them makes it all but inevitable that soldiers and humanitarians, diplomats, and development experts will find themselves operating in increasing proximity to one another, often addressing the same issues with different tools and for complementary purposes”); see also Andrew Revkin, “[Trump’s Defense Secretary Cites Climate Change as National Security Challenge](#),” PROPUBLICA (Mar. 14, 2017) (quoting European Union’s high representative for foreign affairs and security policy as saying, “when you invest in the fight against climate change, you also invest in our own security”).

<sup>24</sup> United States Army War College, [Implications of Climate Change for the U.S. Army](#), (Jul. 2019), 1.

<sup>25</sup> See Sherri Goodman and GEN. (Ret.) Gordon Sullivan, “[Climate change threatens the backbone of America’s global power](#),” THE HILL (Sept. 22, 2019); Nathan Hultman, “[We’re almost out of time: The Alarming IPCC climate report and what to do next](#),” BROOKINGS (Oct. 16, 2018); Stephanie Ebbs, “[Scientists: Time running short before climate change effects are irreversible](#),” ABC NEWS (Oct. 8, 2018); General Assembly Seventy-Third Session, High-Level Meeting on Climate and Sustainable Development (AM & PM) (GA/12131), “[Only 11 Years Left to Prevent](#)

to address the risks, the United States needs a unified and intersectoral approach to its climate security strategy.

To that end, this briefing paper first provides an overview of key climate-related security threats and opportunities, drawing heavily upon examples from the Arctic. After providing intersectoral and intersectional examples of those threats, it identifies ways in which the current U.S. approach to climate change policy is fragmented at both the federal and state levels, thwarting necessary progress to address the looming security threats. Lastly, it calls for a defragmented and intersectoral approach to future climate security policy and makes several specific recommendations for how the Biden-Harris administration can prioritize institutional expertise, appointments, and international outreach to facilitate implementation of intersectoral climate security policies.

## II. Defining Climate’s Threats and Opportunities

As DoD recognized in its 2014 National Security Review, climate change is a “threat multiplier.”<sup>26</sup> It takes existing security and government management concerns and stressors, “such as poverty, environmental degradation, political instability, and social tensions—conditions that can enable terrorist activity and other forms of violence,” and amplifies their impacts.<sup>27</sup> While experts widely recognize that climate change has led to rising temperatures, sea level rise and coastal flooding, more frequent droughts, increased fire risks, and more intense weather patterns, climate change also has dramatic secondary effects. It acutely affects military readiness, amplifies the triggers of conflict eruption, undermines long-standing property regimes, facilitates the spread of disease, fuels mass human migration, and disrupts long-standing economic patterns and structures. These impacts inextricably connect hard, economic, and human security interests, highlighting the need for a 4 Ds response.

---

[Irreversible Damage from Climate Change, Speakers Warn during General Assembly High-Level Meeting](#),” UNITED NATIONS (Mar. 28, 2019).

<sup>26</sup> U.S. Department of Defense, [Quadrennial Defense Review 2014](#) (“Quadrennial Defense Review 2014”), (2014), 8.

<sup>27</sup> [Id.](#)

## A. The Arctic's Threat Preview

Climate change's economic, environmental, strategic, and geopolitical effects on the Arctic offer a preview of the security challenges it presents worldwide.

The Arctic is warming at a faster rate than the rest of planet, with its average temperature rising one degree Celsius in just the last decade.<sup>28</sup> Indeed, Alaska—the United States' gateway to the Arctic—has been warming faster than any other U.S. state and twice as fast as the global average temperature over the last 70 years.<sup>29</sup> In just the last six years, “there have been 5 to 30 times more record high temperatures set [in Alaska] than record lows.”<sup>30</sup> Since 1980, Alaska has seen nine of its 10 warmest years on modern record; in contrast, all of its 10 coldest years of recorded weather occurred before 1980.<sup>31</sup>

Alaska is not alone. A town in Siberia set the record this summer for the highest temperature ever recorded above the Arctic Circle.<sup>32</sup> In the last two years, Siberia has not only seen unprecedented temperatures and resulting widespread wildfires<sup>33</sup> but also unseasonable storms.<sup>34</sup> In only two months of summer 2020, Siberian fires released more carbon dioxide

---

<sup>28</sup> Cheryl Katz, [“Warming at the poles will soon be felt globally in rising seas, extreme weather,”](#) NATIONAL GEOGRAPHIC (Dec. 4, 2019).

<sup>29</sup> The National Climate Assessment (NCA), [Fourth National Climate Assessment Volume II: Impacts, Risks, and Adaptation in the United States](#), U.S. GLOBAL CHANGE RESEARCH PROGRAM (2018) (“*Fourth National Climate Assessment Volume II*”), 1190, 1191.

<sup>30</sup> John Dos Passos Coggin, [“New report highlights Alaska’s last five years of dramatic climate change,”](#) CLIMATE.GOV (Oct. 15, 2019).

<sup>31</sup> [Id.](#)

<sup>32</sup> Andrew Freedman, [“Hottest Arctic temperature record probably set with 100-degree reading in Siberia,”](#) WASHINGTON POST (Jun. 23, 2020) (“In 2020, Siberia has stood out for its above-extreme temperatures, which have accelerated the melting of snow and ice; contributed to permafrost melt, which led to a major oil spill; and have gotten the Siberian wildfire season off to an unusually early and severe start”).

<sup>33</sup> [Id.](#) (“In 2020, Siberia has stood out for its above-extreme temperatures, which have accelerated the melting of snow and ice; contributed to permafrost melt, which led to a major oil spill; and have gotten the Siberian wildfire season off to an unusually early and severe start.”).

<sup>34</sup> Katz, [“Warming at the poles will soon be felt globally in rising seas, extreme weather.”](#)

(CO<sub>2</sub>) than in any complete fire season since data collection began in 2003.<sup>35</sup> By July 21, 2020, Siberia's summer wildfires had destroyed an area larger than the size of Greece.<sup>36</sup>

Climate's impacts on the Arctic include far more than extreme weather. Scientists predict that climate change will increase the incidence of infectious disease spread in the Arctic.<sup>37</sup> This includes increases in zoonotic diseases transmitted between animals and humans, water-borne illnesses stemming from flooding, and foodborne diseases connected to increased temperatures.<sup>38</sup> Melting permafrost is already exposing previously hidden pathogens and diseases. For example, in 2016 newly exposed but long-frozen reindeer carcasses caused an anthrax outbreak in Russia that led to the hospitalizations of 72 people, including 41 children.<sup>39</sup>

The changing landscape is particularly affecting Indigenous communities in the Arctic, including their "agriculture, hunting and gathering, fishing, forestry, energy, recreation, and tourism enterprises."<sup>40</sup> Some examples identified in the U.S. Fourth National Climate Assessment include:

- reducing the presence of shore-fast ice used as a platform to hunt seals or butcher whales,
- reducing the availability of suitable ice conditions for hunting seals and walrus and
- exacerbating the risks of winter travel due to increasing areas of thin ice and large fractures within the sea ice (commonly referred to as "leads") as well as water on rivers.<sup>41</sup>

---

<sup>35</sup> Earth Observatory, "[Another Intense Summer of Fires in Siberia](#)," NASA (Aug. 2020).

<sup>36</sup> Sophie Lewis, "[Wildfires in Siberia have burned down an area larger than Greece](#)," CBS NEWS (Jul. 21, 2020).

<sup>37</sup> Jane Wang, Henry Scherck, and Souvik Chatterjee, "[The overlooked danger: The biohazards of climate change](#)," THE RULE OF LAW POST (Nov. 6, 2020).

<sup>38</sup> Alan J. Parkinson and Jay C. Butler, "[Potential Impacts of Climate Change on Infectious Diseases in the Arctic](#)," 64:5 INTL. J. CIRCUMPOLAR HEALTH 478, 486 (2005).

<sup>39</sup> Alec Luhn, "[Anthrax outbreak triggered by climate change kills boy in Arctic Circle](#)," THE GUARDIAN (Aug. 1, 2016).

<sup>40</sup> [Fourth National Climate Assessment Volume II](#), 573, 588; see also Kathryn Norton-Smith, et al., "[Climate Change and Indigenous Peoples: A Synthesis of Current Impacts and Experiences](#)," USDA (Oct. 2016).

<sup>41</sup> [Fourth National Climate Assessment Volume II](#), 1205.

In addition, the assessment cautioned, “Warm temperatures and increased humidity are also affecting ice cellars used traditionally to store food..., thereby making it harder to air-dry meat and fish on outdoor racks, causing food contamination.”<sup>42</sup>

The village of Newtok, Alaska, has lost so much of its land integrity from erosion, melting permafrost, and sinking tundra that in the fall of 2019 its residents began a planned move of their entire population upriver to the new village of Mertarvik.<sup>43</sup> Newtok is not alone. The Government Accountability Office (GAO) has identified 31 Alaska villages as “imminently threatened by flooding and erosion.”<sup>44</sup> Yet while some parts of the Arctic are suffering from an abundance of water, models conclude that a warming Arctic will lead to prolonged water insecurity at lower latitudes.<sup>45</sup>

Bridges, building foundations, runways, and other infrastructure are shifting and cracking throughout Alaska and the Arctic due to prolonged periods of warmer-than-usual temperatures. The instability of thawing permafrost calls into question the sustainability of property investments made on what is now literally disappearing ground.<sup>46</sup> The *Report on Effects of a Changing Climate to the Department of Defense* underscored this problem, noting that thawing permafrost “decreases the structural stability to foundations, buildings, and transportation infrastructure” on and off base.<sup>47</sup>

Rising temperatures and melting ice increase the importance of the Arctic seas. As one expert succinctly put it, the U.S. military “has a whole new ocean to patrol.”<sup>48</sup> It is perhaps no wonder that at the May 2020 confirmation hearings for the new Secretary of the Navy, Kenneth

---

<sup>42</sup> *Id.*

<sup>43</sup> Marc Lester, “[A Western Alaska village, long threatened by erosion and flooding, begins to relocate](#),” ANCHORAGE DAILY NEWS (Oct. 18, 2019).

<sup>44</sup> Hal Bernton, “[As climate change melts Alaska’s permafrost, roads sink, bridges tilt and greenhouse gases release](#),” SEATTLE TIMES (Dec. 16, 2019).

<sup>45</sup> Brooks Hays, “[Warming Arctic increases odds of prolonged drought](#),” UPI (Mar. 28, 2019).

<sup>46</sup> Bernton, “[As climate change melts Alaska’s permafrost, roads sink, bridges tilt and greenhouse gases release](#).”

<sup>47</sup> Office of the Under Secretary of Defense for Acquisition and Sustainment, *Report on Effects of a Changing Climate to the Department of Defense*, DEPARTMENT OF DEFENSE (Jan. 2019), 7.

<sup>48</sup> Interview with John Conger [video], “[Why Climate Change Is a National Security Issue](#),” MSNBC (Sept. 16, 2020).

Braithwaite, the Arctic was mentioned nearly three dozen times.<sup>49</sup> As described by U.S. Sen. Angus King of Maine: “The opening up of the Arctic Ocean is a world historical event. It’s the equivalent of the discovery of the Mediterranean Sea.”<sup>50</sup> “It’s of enormous strategic importance.”<sup>51</sup> DoD made that importance clear in its June 2019 Arctic Strategy, underscoring that it is imperative “to quickly identify threats in the Arctic, respond promptly and effectively to those threats, and shape the security environment to mitigate the prospect of those threats in the future.”<sup>52</sup>

As the region currently most acutely affected by climate change, the Arctic is a window through which we can see the enormity of the climate security problem and the whole-of-society, intersectoral impacts of its effects. With this in mind, the sections that follow use the Arctic as a lens through which to elaborate on these challenges and highlight the connections between climate change, conflict, and military readiness.

## B. Impacts on Economic Development

The failure to plan for and adapt to climate change will have devastating effects on our economy. According to the Fourth National Climate Assessment:

[T]he continued warming that is projected to occur without substantial and sustained reductions in global greenhouse gas emissions is expected to cause substantial net damage to the U.S. economy throughout this century, especially in the absence of increased adaptation efforts.

With continued growth in emissions at historic rates, annual losses in some economic sectors are projected to reach hundreds of billions of dollars by the end of the century – more than the current gross domestic product (GDP) of many US states.<sup>53</sup> ...

---

<sup>49</sup> Ken Moriyasu, “[US awakens to the risk of China-Russia alliance in the Arctic](#),” NIKKEI ASIAN REVIEW (May 24, 2020).

<sup>50</sup> [Id.](#)

<sup>51</sup> [Id.](#)

<sup>52</sup> Office of the Under Secretary of Defense for Policy, [Report to Congress - Department of Defense Arctic Strategy](#), DEPARTMENT OF DEFENSE (June 2019) (“*Department of Defense Arctic Strategy 2019*”), 7.

<sup>53</sup> [Fourth National Climate Assessment Volume II](#), 25, 26.

Without substantial and sustained global mitigation and regional adaptation efforts, climate change is expected to cause growing losses to American infrastructure and property and impede the rate of economic growth over this century.<sup>54</sup>

These economic threats are seen clearly in the Arctic, where a changing landscape has major domestic and international economic development and trade implications. But with those threats also come opportunities for new economic development. For example, as ice melts and natural resources become more accessible, potential avenues for natural resource exploration and extraction grow.<sup>55</sup> President Trump has opened the Alaska Wildlife Refuge to potential oil drilling<sup>56</sup> and more offshore extraction opportunities are possible as sea ice continues to melt. In addition to fossil fuels, the region is rich in fish and precious minerals. The Alaskan fishing industry has an annual harvest volume equal to all other U.S. states combined,<sup>57</sup> contributing \$12.8 billion in economic output to the U.S. economy.<sup>58</sup> In mining, Greenland alone is estimated to hold a quarter of the planet's "rare-earth minerals,"<sup>59</sup> and Canada is one of the world's leading producers of diamonds.<sup>60</sup> A modern-day "gold rush" is anticipated in the Arctic, with a multitude of State and non-State actors—including multinational corporations—eager to increase their presence in this region and develop new economic opportunities.

---

<sup>54</sup> *Id.*, 25.

<sup>55</sup> Some have questioned whether the oil and gas reserves in Alaskan and other Arctic territory and waters are economically viable to develop, particularly considering the falling price of oil. *See e.g.*, Victoria Petersen, "[Why the Arctic National Wildlife Refuge may not be drilled](#)," HIGH COUNTRY NEWS (Sept. 11, 2020); David W. Sällh, "[Examensarbete 30 hp: Future North Sea oil production and its implications for Swedish oil supply regarding the transport sector -A study on energy security and sustainability of future](#)," UPPSALA UNIVERISTET (Dec. 2012).

<sup>56</sup> Brad Plumer and Henry Fountain, "[Trump Administration Finalizes Plan to Open Arctic Refuge to Drilling](#)," N.Y. TIMES, (Aug. 17, 2020); Tegan Hanlon, "[Trump Rushes to Lock in Oil Drilling in Arctic Wildlife Refuge Before Biden's Term](#)," NPR (Dec. 3, 2020).

<sup>57</sup> John Dos Passos Coggin, "[New report highlights Alaska's last five years of dramatic climate change](#)," CLIMATE.GOV (Oct. 15, 2019).

<sup>58</sup> *Id.*

<sup>59</sup> Jackie Northam, "[Greenland Is Not For Sale. But It Has Rare Earth Minerals America Wants](#)," NPR (Nov. 24, 2019).

<sup>60</sup> *See, e.g.*, Hobart King, "[Diamond Mines in Canada](#)," GEOLOGY.COM (2021).

The anticipated resource rush and opening of potential new northern sea routes (as ancient ice sheets melt) accelerate an international race to open high-traffic shipping lanes across the region and increase port capacity. Newly open sea lanes and routes can be used not only by governments for military and sovereign activity, but also by private interests to transport commercial goods and to access new fish reserves, new seabed-based oil and gas reserves, and/or newly accessible mineral deposits. Such regional economic activity, like military activity, increases risks for regional pollution, workplace accidents, cultural disruption, and nuclear incidents.<sup>61</sup> Experts, including former DoD officials and regional first responders, warn that nuclear activities in the region—and increased energy infrastructure to support those and other economic activities—could lead to more accidents with epic consequences.<sup>62</sup> These activities and their repercussions do not operate in a vacuum. As DoD recognized, “[i]ncreased economic activity in the Arctic raises the probability of a mass casualty incident ... where DoD assistance may be requested.”<sup>63</sup>

The connections between Arctic ice melt, maritime shipping activity, and geopolitics show the intersection of economic development and geopolitical national security concerns. For example, China and Russia loom large in U.S. geopolitical strategic planning globally, and both countries have been particularly keen to increase their regional economic development activities as Arctic temperatures rise and new sea routes emerge. Russia has fortified its regional infrastructure and strengthened its military presence around potential new shipping

---

<sup>61</sup> See Pew Charitable Trusts, “[Vessel Waste a Growing Challenge in the Northern Bering Sea and Bering Strait](#),” (Oct. 18, 2018). Notably, while there may be increased ease in marine transport due to ice melt, rising temperatures are significantly increasing the costs of ground transportation in the region for both its human population and the movement of goods. For example, in Alaska, problems with unstable permafrost and shorter winter seasons means ice roads will have to be replaced with gravel roads, at a cost of \$2.5 million per mile or more. See also Coggin, “[New report highlights Alaska’s last five years of dramatic climate change](#).”

<sup>62</sup> See Sherri Goodman and Katarina Kertysova, “[The nuclearisation of the Russian Arctic: New reactors, new risks](#),” POLAR INSTITUTE & EUROPEAN LEADERSHIP NETWORK (June 2020); Thomas Nilsen, “[Arctic countries have begun working together to step up nuclear accident preparedness](#),” ARCTIC TODAY (July 2, 2019); “[Russian nuclear accident: Medics fear ‘radioactive patients’](#),” BBC (Aug. 23, 2019) (discussing casualties from a nuclear accident connected to the testing of a new Russian weapons system).

<sup>63</sup> [Department of Defense Arctic Strategy 2019](#), 6.



lanes.<sup>64</sup> China, as part of its global economic and political Belt and Road Initiative,<sup>65</sup> has also focused on increasing its access to natural resources and shipping opportunities in the region. It has taken bold steps to prepare for the potential opening of a Transpolar Passage for global shipping.<sup>66</sup> Indeed, China's State Council Information Office stated in a recent white paper that "China hopes to work with all parties to build a 'Polar Silk Road' through developing the Arctic shipping routes."<sup>67</sup>

While there are many examples in recent years of international cooperation among Arctic powers on marine operations and shipping in the Arctic,<sup>68</sup> trade relations among the United States, China, and Russia have worsened during the same time.<sup>69</sup> There are opportunities for Arctic nations and China to use trade relations to repair and potentially advance intergovernmental relations while advancing climate and other policy priorities. For example, beyond the Arctic, pressure already has increased in recent decades to incorporate environmental protections and climate friendly provisions into bi- and multi-lateral trade agreements.<sup>70</sup> Governments around the world are also taking bold regulatory steps to implement climate-friendly policies as part of their climate action plans. Given how important

---

<sup>64</sup> See, e.g., Nastassia Astrasheuskaya and Henry Foy, "[Polar powers: Russia's bid for supremacy in the Arctic Ocean](#)," FINANCIAL TIMES (Apr. 27, 2019); see also [Circling the Arctic: Security and the Rule of Law in a Changing North](#) [virtual conference via the University of Pennsylvania], "[Morning Coffee Talk with Senator Angus King](#)," UNIVERSITY OF PENNSYLVANIA CAREY LAW SCHOOL (Oct. 3, 2020).

<sup>65</sup> Andrew Chatzky and James McBride, "[China's Massive Belt and Road Initiative](#)," COUNCIL ON FOREIGN RELATIONS (Jan. 28, 2020) (description of China's "Belt and Road Initiative").

<sup>66</sup> Mia Bennet, "[The Arctic Shipping Route No One's Talking About](#)," THE MARITIME EXECUTIVE (May 8, 2019).

<sup>67</sup> Reuters Staff, "[China unveils vision for 'Polar Silk Road' across Arctic](#)," REUTERS (Jan. 18, 2018).

<sup>68</sup> Lawson W. Brigham, "[Arctic marine operations and shipping: A source of cooperation rather than conflict](#)," THE RULE OF LAW POST (Dec. 22, 2020).

<sup>69</sup> See, e.g., Reid Standish, "[China, Russia Deepen Their Ties Amid Pandemic, Conflicts With The West](#)," RADIO FREE EUROPE (Sept. 1, 2019); Olga V. Ignatova, Olga A. Gorbunova, and Olga Yu. Tereshina, "[U.S.-China Trade War: Russia's Interests](#)," 5 Mgmt. & Econ. Rsch. J. 10 (Sept. 2019).

<sup>70</sup> See The Economist Intelligence Unit, "[Climate change and trade agreements: Friends or foes?](#)" THE ECONOMIST (2019); Jean-Frédéric Morin and Sikina Jinnah, [The Untapped Potential of Preferential Trade Agreements for Climate Governance](#), 27:3 ENVIR. POL. 541, 556 (2018); New America, "[Using Trade Policy to Fight Climate Change](#)"; World Trade Organization, "[The impact of trade opening on climate change](#)," (last accessed Nov. 2020); Scott Vaughan and Bernice Lee, "[Trade Can be a Driver of Climate Action](#)," INTERNATIONAL INSTITUTE FOR SUSTAINABLE DEVELOPMENT (IISD) (Jan. 29, 2019).

economic development and trade can be to domestic economic security and international relations, nations that do not prepare for climate change's economic and trade impacts risk becoming outliers or stragglers in the fast-moving global marketplace.

### C. Impacts on Technology and Research Development

Science and technology research and innovation have always been national security priorities of the United States and important catalysts for domestic economic growth.<sup>71</sup> Government financial and policy support has been essential to research breakthroughs that have benefited both the government and the public at large.<sup>72</sup>

The need for support for research and innovation in climate-related fields has never been more pressing. The 2014 National Climate Assessment identified “five priority research goals and five cross-cutting foundational capabilities” needed to “advance future climate and global change assessments.”<sup>73</sup> More generally, there has been significant domestic and international pressure in recent years to invest in science and technology research to both advance new mass-market clean energy tech and new military and controlled tech to bolster and advance strategic security interests.<sup>74</sup>

The Arctic presents exemplary strategic challenges and opportunities regarding scientific and technology advancements. With volatile magnetic fields, rapid temperature variations, and

---

<sup>71</sup> See, e.g., U.S. Department of Defense, “[Special Reports: Science and Technology](#),” (last accessed Nov. 30, 2020).

<sup>72</sup> See, e.g., PBS Newshour [video], “[Michael Lewis traces the ‘gutting of the civil service’ under Trump](#),” PBS (Oct. 8, 2018) (“If you deal—anything having to do with science and technology, all the basic research, the very basic research is done with government—through the government, because if it’s not going to pay out in the next 10 to 15 years, industry doesn’t want to have anything to do with it. The future is driven by what the government does. And it has been in this country forever. I mean, you don’t get the Internet without the government. You don’t get the iPhone without the government. You don’t get GPS without the government.”).

<sup>73</sup> Robert W. Corell, Diana Liverman, et al., “[Chapter 29: Research Needs for Climate and Global Change Assessments](#),” from *Climate Change Impacts in the United States: The Third National Climate Change Assessment*, U.S. GLOBAL CHANGE RESEARCH PROGRAM, eds. J. M. Melillo, Terese (T.C.) Richmond and G. W. Yohe (Oct. 2014), 707, 718.

<sup>74</sup> See generally, Andrew Blum, “[The Tech Innovations We Need to Happen if We’re Going to Survive Climate Change](#),” TIME (Sept. 12, 2019). As history shows us, what may be restricted military technology today will become relied-upon by the masses tomorrow. See also Thomas C. Frolich, Evan Comen, and Grant Suneson, “[15 commercial products invented by the military include GPS, duct tape and Silly Putty](#),” USA TODAY (May 16, 2019).

underdeveloped infrastructure (especially for communications networks),<sup>75</sup> the Arctic has always presented a unique set of environmental challenges to maintaining a cohesive strategic security apparatus in the region. While climate change's effects have exacerbated many of those challenges, they have also presented new opportunities. In addition to the new areas to patrol, these opportunities include military-led exploration of previously unexplored portions of the seabed<sup>76</sup> and scientific study of pathogens and organisms previously frozen for thousands of years.<sup>77</sup> Arctic sovereigns and China have demonstrated that they will go to great lengths to harness the economic and scientific potential of the region, including the trade and resources activities noted above, and acquiring samples of previously frozen species, bacteria, and viruses.<sup>78</sup>

These activities—whether instigated by science, economics, or security—have risks. As one scientist who works on ancient viruses described the melting Arctic, “It is a recipe for disaster. If you start having industrial explorations, people will start to move around the deep permafrost layers. Through mining and drilling, those old layers will be penetrated and this is where the danger is coming from.”<sup>79</sup>

Technological innovations have helped humans minimize the impacts of seemingly insurmountable environmental hazards,<sup>80</sup> but they cannot eliminate the hazards of climate change—yet. The race for those new technologies is on and the United States cannot afford to fall behind. Private and government scientists in multiple countries are independently

---

<sup>75</sup> Fritz Bekkadal, [Arctic Communication Challenges](#), 48:2 MARINE TECH. SOC. J. (2014); The European Space Agency (ESA), [“Arctic poses communications challenges,”](#) (last accessed Nov. 30, 2020); see also [“Circling the Arctic: Security and the Rule of Law in a Changing North – Conference Report,”](#) CENTER FOR ETHICS AND THE RULE OF LAW, UNIVERSITY OF PENNSYLVANIA (Oct. 2020), 5.

<sup>76</sup> Martha Henriques, [“The rush to claim an undersea mountain range,”](#) BBC (Jul. 23, 2020) (discussing disputed claims by Russia, Denmark, and Canada over a same portion of Arctic seabed); Tom Parfitt, [“Russia plants flag under North Pole seabed,”](#) THE GUARDIAN (Aug. 2, 2007).

<sup>77</sup> Rebecca Morelle, [“30,000-year-old giant virus ‘comes back to life,’”](#) BBC (Mar. 4, 2014) (describing scientists bringing an ancient virus “back to life” after being frozen in Siberian permafrost for 30,000 years).

<sup>78</sup> [Id.](#)

<sup>79</sup> [Id.](#)

<sup>80</sup> See, e.g., Marc Montgomery, [“Technological help to deal with unpredictable ice and Arctic climate change,”](#) RADIO CANADA INTERNATIONAL (Dec. 13, 2016).

researching and conducting “geoengineering” experiments.<sup>81</sup> New technology and scientific discoveries, however, come with possible secondary effects. The impacts of geoengineering would be difficult to limit to a particular country’s borders. If a rogue experiment were to go badly, the worldwide consequences could be disastrous.<sup>82</sup> This is particularly so in a region as fragile as the Arctic. And yet there is not a global consensus on how to regulate or monitor such geoengineering endeavors across borders.<sup>83</sup> With the risks so high of negative effects from scientific and operational experiments, cross-border coordination on such experiments—whether through the Arctic Council, international educational networks, the United Nations, or other mechanisms—is needed.<sup>84</sup> Just as domestic defense planning incorporates scientific and tech research, so too should climate science and technology issues be a priority in diplomatic, development, and economic strategic planning.

#### **D. Impacts on Global Human Security and Military Readiness**

The Worldwide Threat Assessment of the U.S. Intelligence Community released by Director of National Intelligence Dan Coats in January 2019 stated, “Global environmental and ecological degradation, as well as climate change, are likely to fuel competition for resources,

---

<sup>81</sup> “Geoengineering” is a term used to describe the development of technologies that could manipulate the environment to offset climate change impacts, particularly rising temperature. See, e.g., Mark Lawrence, et al., [Evaluating Climate Geoengineering Proposals in the Context of the Paris Agreement Temperature Goals](#), 9:3734 NATURE COMMUNICATIONS (2018). [An early 2019 study](#) – a collaboration among Harvard University, MIT, and Princeton Universities – concluded that halving warming through idealized solar geoengineering could moderate key global climate hazards and decrease significantly currently anticipated global temperature increases. In 2019, a team of scientists at Harvard began taking their geoengineering experiments out of the laboratory to the sky through the \$3 million USD Stratospheric Controlled Perturbation Experiment (SCoPEX). SCoPEX involves the release of materials into the atmosphere and the deployment of equipment to measure the resulting changes in the air mass affected by those materials. See Keutsch Group at Harvard, [“SCoPEX: Stratospheric Controlled Perturbation Experiment: FAQ.”](#)

<sup>82</sup> Outside/In Episode 100 [audio], [“Plan B,”](#) NHPR (June 20, 2019); see also Troy Bouffard, Alec Bennet and Uma Bhatt, “Sea Ice Decline and Arctic Geoengineering Solutions: Cascading Security and Ethical Considerations” (abstract produced for [Circling the Arctic: Security and the Rule of Law in a Changing North](#) [virtual conference via the University of Pennsylvania]).

<sup>83</sup> See, e.g., Edward A. Parson and David W. Keith, [End the Deadlock on Governance of Geoengineering Research](#), 339:6125 SCIENCE, 1278, 1279 (2013).

<sup>84</sup> See, e.g., Celine Novenario and Cynthia Scharf, [“Climate-altering technologies in the Arctic: Time for a global discussion on governance,”](#) C2G (Oct. 10, 2019); cf [“Circling the Arctic: Security and the Rule of Law in a Changing North – Conference Report,”](#) 14-16.

economic distress, and social discontent through 2019 and beyond.”<sup>85</sup> Indeed, climate change’s threats to human security increase the probability of violent conflict by pressing on the long-recognized triggers of human conflict. As described by Jon Barnett and W. Neil Arger:

[C]limate change undermines human security in the present day, and will increasingly do so in the future. It does this by reducing people’s access to natural resources that are important to sustain their livelihoods. Climate change is also likely to undermine the capacity of states to provide the opportunities and services that help people to sustain their livelihoods, and which help to maintain and build peace. In certain circumstances, these direct and indirect impacts of climate change on human security and the state may in turn increase the risk of violent conflict.<sup>86</sup>

Former Director of National Intelligence James Clapper has made similar statements, underscoring that climate change “significantly contributes to instability” and “can have a devastating impact on the availability of critical resources such as water, food, and energy. ... [A]s population centers compete for waning resources, governments will find it more difficult to maintain order”; all of this creates conditions in which terrorist groups can arise.<sup>87</sup>

The world is already experiencing the interdisciplinary and intersectoral human security impacts of climate change, including increased migration, conflict, and problems with military readiness.

### **i. Triggering Human Migration**

Since the early 1990s, international organizations including the Intergovernmental Panel on Climate Change (IPCC) have noted that perhaps the single greatest impact of climate change will be the number of persons displaced.<sup>88</sup> Climate change places pressure on food and water,

---

<sup>85</sup> House Committee on Oversight and Reform, “[The Need for Leadership to Combat Climate Change and Protect National Security](#),” U.S. CONGRESS (Apr. 9. 2019).

<sup>86</sup> Jon Barnett and W. Neil Adger, [Climate change, human security and violent conflict](#), 26:6 POL. GEOGRAPHY 639, 655 (2007).

<sup>87</sup> See Sonam Sheth, “[Climate change poses a unique threat to national security, military and intelligence experts say](#),” BUSINESS INSIDER (Jun. 4, 2017).

<sup>88</sup> International Organization for Migration (IOM), [Migration, Environment and Climate Change: Assessing the Evidence](#), eds. Frank Laczko and Christine Aghazarm (2009), 9.

accelerates disease outbreaks, and drives conflict due to resource scarcity. It forces flora and fauna out of their traditional territories and into others, affecting food sources, increasing risks for food insecurity worldwide, exacerbating tensions in regions already under natural and geopolitical strain, and fueling mass migration.<sup>89</sup> As the Arctic melts, global sea levels rise, forcing people from their traditional homes and communities in both the Arctic and in coastal regions all over the globe. Increased strategic defense operations and natural resource development activities related to climate change are also expected to increase the influx of people and infrastructure to new regions and to encourage current population concentrations to shift—especially Indigenous populations in sensitive areas such as the Arctic.

The impacts of climate change on human security “can and do[] ... vary[] across the world because entitlements to natural resources and services vary across space, and the social determinants of adaptive capacity are similarly varied.”<sup>90</sup> While in some areas people are displaced in part by an overabundance of water, others are disrupted by the lack of it.<sup>91</sup> Some research suggests that up to 200 million people will be displaced by climate change by 2050<sup>92</sup>; more recent United Nations’ estimates are as high as one billion.<sup>93</sup> Mass human displacement is arguably already underway: according to estimates by the International Organization for Migration, there were already 5.1 million climate- and disaster-related displacements by 2019.<sup>94</sup>

---

<sup>89</sup> John Podesta, “[The climate crisis, migration, and refugees](#),” BROOKINGS (Jul. 25, 2019).

<sup>90</sup> Barnett and Adger, [Climate change, human security and violent conflict](#), 26:6 POL. GEOGRAPHY at 655.

<sup>91</sup> Podesta, “[The climate crisis, migration, and refugees](#).”

<sup>92</sup> International Organization for Migration (IOM), [Migration, Environment and Climate Change: Assessing the Evidence](#), eds. Frank Laczko and Christine Aghazarm (2009), 11.

<sup>93</sup> Francesco Bassetti, “[Environmental Migrants: Up to 1 Billion by 2050](#),” FORESIGHT (May 22, 2019).

<sup>94</sup> See “[Environmental Migration](#),” Migration Data Portal (last visited Aug. 7, 2020).

## ii. Shifting Resources Increase Conflict Risk

These types of societal disruptions show how climate change can be a threat multiplier to the rise of violent conflict.<sup>95</sup> For example, from 2006 to 2011, Syria experienced “the worst long-term drought and most severe set of crop failures since agricultural civilizations began in the Fertile Crescent many millennia ago.”<sup>96</sup> During this time, about 75% of the households that depend on agriculture suffered complete crop failure, and about one-third of Syria’s livestock died, leaving about one million Syrians food insecure.<sup>97</sup> The United Nations and the International Federation of the Red Cross and Red Crescent Societies reported that the drought caused over 800,000 people to lose their livelihoods between 2007 and 2009 and fueled a mass exodus from hard-hit rural areas.<sup>98</sup>

The displacement heightened social unrest as the migrants competed with their urban counterparts for limited resources.<sup>99</sup> These environmental issues were overlaid by poor governance under the al-Assad regime, contributing to further desertification and water shortages.<sup>100</sup> As the drought and resource issues continued in Syria,<sup>101</sup> ISIS rose.<sup>102</sup> When the Arab Spring arrived in 2011, Syrians in urban areas expressed their frustrations with the al-Assad

---

<sup>95</sup> See, e.g., generally Kirby Reiling and Cynthia Brady, [Climate Change and Conflict: An Annex to the USAID Climate-Resilient Development Framework](#), UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT (Feb. 2015).

<sup>96</sup> Francesco Femia and Caitlin Werrell, “[Syria: Climate Change, Drought and Social Unrest](#),” THE CENTER FOR CLIMATE & SECURITY (Feb. 29, 2012); Bruce Lieberman, “[A brief introduction to climate change and national security](#),” YALE CLIMATE CONNECTIONS (“A series of punishing droughts set the stage for the Syrian civil war in 2011”) (Jul. 23, 2019).

<sup>97</sup> Wadid Erian, Bassem Katlan and Ouldbdey Badah, [Drought vulnerability in the Arab region: Special case study: Syria](#), INTERNATIONAL STRATEGY FOR DISASTER REDUCTION (2010), 15.

<sup>98</sup> IRIN News: United Nations Office for the Coordination of Humanitarian Affairs, “[Drought driving farmers to the cities](#),” THE NEW HUMANITARIAN (Sept. 2, 2009).

<sup>99</sup> Femia and Werrell, “[Syria: Climate Change, Drought and Social Unrest](#).”

<sup>100</sup> *Id.*

<sup>101</sup> The drought in Syria is not yet over. A NOAA study found strong and observable evidence that climate change caused the prolonged drought and estimated that yields of rainfed crops in Syria could continue to decline anywhere from 29% to 57% between 2010 to 2050. Femia and Werrell, “[Syria: Climate Change, Drought and Social Unrest](#).”

<sup>102</sup> Henry Fountain, “[Researchers Link Syrian Conflict to a Drought Made Worse by Climate Change](#),” N.Y. TIMES (Mar. 2, 2015); cf Peter Schwartzstein, “[Climate Change and Water Woes Drove ISIS Recruiting in Iraq](#),” NATIONAL GEOGRAPHIC (Nov. 14, 2017).

regime in massive public protests that called for his removal. Syria soon erupted into a violent civil conflict in which hundreds of thousands of people died and tens of thousands more were injured.

Climate change was not the immediate trigger for the Syrian conflict, but experts underscore that its effects pressured already fragile economic sectors and revealed significant weaknesses in the country's management and leadership.<sup>103</sup> Syria is not alone in suffering from the intersection of poor governance and climate impacts. Experts have long warned that natural disasters and civil disruptions caused by public emergencies—such as resource scarcity—may contribute to destabilization and give authoritarians fodder to centralize power and curtail citizen rights.<sup>104</sup> Such secondary effects send further sparks into tinder boxes waiting to erupt into conflict.

### iii. Challenging Military Operations and Readiness

The Department of Defense has made clear: “[T]he impacts of climate change may increase the frequency, scale, and complexity of future missions.”<sup>105</sup> As former Secretary of Defense James Mattis stated in his confirmation hearings, “Climate change is impacting stability in areas of the world where our troops are operating today.”<sup>106</sup> More conflict means more disputes that the United States might be drawn into directly or indirectly, whether militarily or

---

<sup>103</sup> See, e.g., Podesta, [“The climate crisis, migration, and refugees”](#); Vikram Mansharamani, [“A major contributor to the Syrian conflict? Climate change,”](#) PBS NEWSHOUR (Mar. 17, 2016); Emma Tallon, [“Climate Change: An Unspoken Factor in the Syrian Civil War,”](#) NATO ASSOCIATION OF CANADA (Jul. 25, 2019).

<sup>104</sup> See, e.g., Joshua Kurlantzick, [“Dictators are using the coronavirus to strengthen their grip on power,”](#) WASHINGTON POST (Aug. 3, 2020); Steven Levitsky and Daniel Ziblatt, [“Why Autocrats Love Emergencies,”](#) N.Y. TIMES (Jan. 12, 2019); Mark Pelling and Kathleen Dill, [“ISP/NSC Briefing Paper 06/01: ‘Natural’ Disasters as Catalysts of Political Action,”](#) CHATHAM HOUSE (2006), 4, 6. Ryan E. Carlin, Gregory J. Love and Elizabeth J. Zechmeister, [Natural Disaster and Democratic Legitimacy: The Public Opinion Consequences of Chile’s 2010 Earthquake and Tsunami](#), 67:1 POLITICAL RESEARCH QUARTERLY, 3, 15 (March 2014); Zahidul Arefin Choudhury, [Politics of Natural Disaster: How Governments Maintain Legitimacy in the Wake of Major Disasters, 1990-2010 \[unpublished Ph.D. dissertation\]](#), UNIVERSITY OF IOWA (May 2013).

<sup>105</sup> U.S. Department of Defense, [National Security Implications of Climate-Related Risks and a Changing Climate](#), (July 23, 2015).

<sup>106</sup> Andrew Revkin, [“Trump’s Defense Secretary Cites Climate Change as National Security Challenge,”](#) PROPUBLICA, (Mar. 14, 2017).



through other means. As noted above, analysts have connected climate impacts to the rise of human migration and civil unrest in the Sahel,<sup>107</sup> Central America,<sup>108</sup> and other areas of U.S. security concern and engagement.<sup>109</sup>

Within U.S. borders, extreme weather and sea level changes are already affecting American military readiness and training.<sup>110</sup> For example:

- 43 U.S. military installations are already at risk of drought, with an additional five at risk within 20 years.<sup>111</sup>
  - Drought increases the risk of wildfires.

---

<sup>107</sup> The UN Security Council identified climate change as a “driver of conflict across West Africa and the Sahel” in 2018, following a 2017 resolution that linked the shrinking of Lake Chad to the rise of armed opposition groups like Jama’at Nasr al-Islam wal Muslimin (JNIM). Megan Darby, [“Climate change affecting stability across West Africa and Sahel: UN security council,”](#) CLIMATE HOME NEWS (Jan. 31, 2018). One of the largest water sources in Africa, Lake Chad is now less than a tenth of the size it was in 1960. Kathryn Hansen, [“The Rise and Fall of Africa’s Great Lake,”](#) EARTH OBSERVATORY (Nov. 9, 2017). The United States has already been engaged in military assistance in Niger for several years, as many Americans learned for the first time when three Green Berets were killed and two were wounded in an ambush while they were on a training mission with local troops. Eric Schmitt, [“3 Special Forces Troops Killed and 2 Are Wounded in an Ambush in Niger,”](#) N.Y. TIMES (Oct. 4, 2017).

<sup>108</sup> See, e.g., Podesta, [“The climate crisis, migration, and refugees”](#) (noting the United States could face increased border pressure as migrants from countries to the south seek northern inland cities). Many of the people fleeing Central America seeking refuge at the United States’ southern border or elsewhere have been displaced due to climate impacts on their traditional economic activities. Kirk Semple, [“Central American Farmers Head to U.S., Fleeing Climate Change,”](#) N.Y. TIMES (Apr. 13, 2019). In one study by ProPublica, researchers estimated that 1.5 million migrants from Central America and Mexico could arrive in the United States per year. Abraham Lustgarten, [“Where Will Everyone Go?,”](#) PROPUBLICA (Jul. 23, 2020).

<sup>109</sup> For example, the United States was called upon to take action to mitigate the conflict in Syria and President Obama’s subsequent decision to limit U.S. engagement in it has been widely criticized. See, e.g., David Greenberg, [“Syria will stain Obama’s legacy forever,”](#) FOREIGN POLICY (Dec. 29, 2016). In a speech President Obama later made to the U.S. Coast Guard Academy, he stated that “severe drought helped create the instability in Nigeria that was exploited by the terrorist group Boko Haram.” That area is predominantly rural and approximately 40 million people depend on the lake for farming, fishing, and raising livestock—activities which have been jeopardized by the changing climate and fluctuating rainfall. Nellie Peyton, [“Climate change pushes farmers to ‘tipping point’ in Lake Chad crisis,”](#) REUTERS (May 15, 2019).

<sup>110</sup> See, e.g., Office of the Under Secretary of Defense for Acquisition and Sustainment, [Report on Effects of a Changing Climate to the Department of Defense](#), U.S. DEPARTMENT OF DEFENSE (Jan. 2019) (“Report on the Effects of Climate Change to the Department of Defense 2019”), 5, 7; Joseph Lacdan, [“New directive to prepare Army installations against extreme weather, climate change,”](#) ARMY NEWS SERVICE (Sept. 14, 2020).

<sup>111</sup> Nicholas Kusnetz, [“U.S. Military Report Warns Climate Change Threatens Key Bases,”](#) INSIDE CLIMATE NEWS (Jan. 18, 2019).

- In addition to wildfire’s threat to property, troops must limit their use of live ammunition during training when wildfire risk is high.<sup>112</sup>
- 67% of U.S. military installations are threatened by climate flooding.
  - The costs of flooding are significant. For example, flood damage to Offutt Air Force Base in Nebraska caused \$1 billion in damages.<sup>113</sup>
  - Norfolk Naval Station – which is older than the United States itself – is particularly vulnerable to flooding and rising sea levels. Sea level at Norfolk has risen 1.5 feet in the last century, and the station has suffered nine major floods in the last 10 years.<sup>114</sup>
- Recent hurricanes have decimated southern military bases and are expected to be a continued threat as hurricanes increase in average severity.<sup>115</sup>
  - In 2019, Air Force Base Tyndall suffered \$5 billion in damages from Hurricane Michael, and in 2018, U.S. Marine Base Camp Lejeune suffered \$3.6 billion in damages from Hurricane Florence.<sup>116</sup>
- Extreme weather, including rising temperatures and humidity, interferes with training schedules and equipment, and puts servicemen and women at risk of environmentally induced medical conditions.

---

<sup>112</sup> See, e.g., [Report on the Effects of Climate Change to the Department of Defense 2019](#), 7 (“In March 2018 two related wildfires broke out in Colorado during an infantry and helicopter training exercise for an upcoming deployment. Later determined to be due to live fire training, gusty winds and dry conditions allowed the fire to spread, reaching about 3,300 acres in size, destroying three homes, and causing the evacuation of 250 homes.”).

<sup>113</sup> Marc Kodack, [“Lack of Flood Maps at Many U.S. Military Bases Creates Risks,”](#) THE CENTER FOR CLIMATE & SECURITY (May 22, 2020).

<sup>114</sup> Nicholas Kusnetz, [“Rising seas threaten Norfolk Naval Shipyard, raising fears of ‘catastrophic damage’,”](#) INSIDE CLIMATE NEWS AND NBC NEWS (Nov. 19, 2018).

<sup>115</sup> Henry Fountain, [“Climate Change Is Making Hurricanes Stronger, Researchers Find,”](#) N.Y. TIMES, (May 18, 2020).

<sup>116</sup> Ari Shapiro, [“Tyndall Air Force Base Still Faces Challenges in Recovering from Hurricane Michael,”](#) NPR (May 31, 2019); Shawn Snow, [“\\$3.6 billion price tag to rebuild Lejeune buildings damaged by Hurricane Florence,”](#) MARINE CORPS TIMES (Dec. 12, 2018).

- From 2008-2018, DoD spent nearly \$1 billion on the health costs of heat exposure.<sup>117</sup> During the same period, the Marine Corps saw the rate of heat stroke double.<sup>118</sup>
- It is estimated that by 2050 the average military installation will have 33 more “black flag”<sup>119</sup> days with such high heat that they cannot train.<sup>120</sup>
- Military aircraft are sensitive and are less efficient in extreme weather conditions.<sup>121</sup>
- Rising temperatures are increasing the spread of mosquito-borne disease in the United States<sup>122</sup> and in places to which U.S. troops deploy, risking illness and readiness of our active-duty forces.<sup>123</sup>

Fortunately, DoD has long recognized the connections between climate change and military operations. Indeed, even as other government entities have seen their climate programming and/or analysis cut or sidelined, DoD, U.S. military branches, and the U.S. Coast Guard have continued to devote substantial time and resources to addressing the impacts of climate upon our security readiness. This work has been outlined in congressionally mandated reporting and other publications on the effects of climate change on the DoD,<sup>124</sup> the DoD and

---

<sup>117</sup> David Hasemyer, [“Military fights a deadly enemy: Heat,”](#) NBC NEWS AND INSIDE CLIMATE NEWS (July 23, 2019).

<sup>118</sup> *Id.*

<sup>119</sup> A “black flag” is the military’s signal for a day with a high risk of heat casualties.

<sup>120</sup> Marc Kodack, [“Climate Change Driving Increase in Black Flag Days at 100 U.S. Military Installations,”](#) THE CENTER FOR CLIMATE & SECURITY (Dec. 16, 2019).

<sup>121</sup> Leo Shane III, [“The military is being pulled deeper into the climate change debate,”](#) MILITARY TIMES (Jun. 6, 2019); David Vergun, [“Alaska’s Extreme Cold Tests Soldiers, Equipment,”](#) ARMY NEWS SERVICE (Feb. 22, 2017); Cf Sébastien Roblin, [“The U.S. military is terrified of climate change. It’s done more damage than Iranian missiles,”](#) NBC NEWS (Sept. 20, 2020).

<sup>122</sup> See, e.g., Jane Wang, Henry Scherck, and Souvik Chatterjee, [“The overlooked danger: The biohazards of climate change,”](#) THE RULE OF LAW POST (Nov. 6, 2020).

<sup>123</sup> See Thomas Burke, Chesley Dycus, Michael E. O’Hanlon, Eric Reid and Jessica Worst, [“COVID-19 and military readiness: Preparing for the long game,”](#) BROOKINGS INSTITUTION, (Apr. 22, 2020). History shows disease infection rates have a huge impact on military readiness. For example, malaria killed 10,000 during the U.S. civil war and infected about 1,300,000 recruits. Sok Chul Hong, [“The Burden of Early Exposure to Malaria in the United States, 1850–1860: Malnutrition and Immune Disorders,”](#) 67:4 J. ECON. HIST., 1001, 1035 (Dec. 2007).

<sup>124</sup> See, e.g., [Report on Effects of a Changing Climate to the Department of Defense 2019.](#)

military departments' Arctic strategies,<sup>125</sup> climate-related risk to DoD infrastructure,<sup>126</sup> and impacts on military bases.<sup>127</sup>

### III. Policy Fragmentation Thwarts Constructive Action Against Climate's Threats

Climate's security threats are complex and intertwined with nearly every aspect of federal, state, and local government policy. Yet in recent years, as the international community has acted to tackle the climate threat the United States has remained stubbornly behind. At present, U.S. state, local, and federal governments have a fractured and fragmented approach to climate change. At the federal level, not only did President Trump withdraw the United States from the Paris Climate Accord, the legislative and executive branches have aggressively reversed or undermined bipartisan climate-related policies, government programs, business engagements, and environmental laws and regulations.<sup>128</sup> In contrast to the political bodies of government, intelligence agencies and DoD have continued to lead on policy and operational actions addressing climate threats. In addition to the report examples noted above, past National Security Strategy<sup>129</sup> plans and Quadrennial Security Reviews<sup>130</sup> have also clearly stated the urgency of the climate security threats.

There are also conflicting and uncoordinated climate policies at the state and local level, from the private sector, and from civil society.<sup>131</sup> While cross-efforts are not necessarily

---

<sup>125</sup> See, e.g., [Department of Defense Arctic Strategy 2019](#).

<sup>126</sup> See, e.g., Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, [Climate-Related Risk to DoD Infrastructure – Initial Vulnerability Assessment Survey \(SLVAS\) Report](#), U.S. DEPARTMENT OF DEFENSE (Jan. 2018).

<sup>127</sup> See, e.g., United States Army War College, [Implications of Climate Change for the U.S. Army](#), (Jul. 2019).

<sup>128</sup> See, e.g., Lisa Friedman, "[A War Against Climate Science, Waged by Washington's Rank and File](#)," N.Y. TIMES (July 14, 2020); Sally Hardin and Claire Moser, "[Climate Deniers in the 116<sup>th</sup> Congress](#)," CENTER FOR AMERICAN PROGRESS (Jan. 28, 2019).

<sup>129</sup> See, e.g., [2015 National Security Strategy](#), 12.

<sup>130</sup> See [Quadrennial Defense Review 2014](#), 8.

<sup>131</sup> While some business leaders have called expressly for a move away from carbon or toward more sustainable development comporting with the Paris Climate Accord, others have lobbied for increased government support for fossil fuel production. See, e.g., Sandra Laville, "[Top oil firms spending millions lobbying to block climate change policies, says report](#)," THE GUARDIAN (Mar. 21, 2019); compare Timothy Puko, "[Big Companies Urge Biden, Congress](#)

counterproductive, the lacunae between federal and state policy approaches, the lack of coordination, and the government policy fragmentation between and among sectors crucial to protecting and preserving American security are inefficient, thwarting progress necessary to tackle fully climate change's challenges.

## A. Domestic Action

Some of the most ambitious proposals to combat and prepare for the effects of climate change come from the state and local levels. For example, while the federal government was withdrawing the United States from the Paris Climate Accord, at least 24 states and Puerto Rico—plus hundreds of companies and cities—pledged their adherence to it.<sup>132</sup> Indigenous groups are also taking innovative action, with tribal governments and organizations developing and implementing their own climate action plans and sustainable policies.<sup>133</sup> These efforts are expected to have measurable impacts. While the U.S. states that have pledged to the agreement (the “Paris alliance”) are on track to cut emissions by 20-27% by 2025, states outside the alliance are predicted to achieve only a 3-11% reduction, and some of the latter states might see an increase in emissions during that time.<sup>134</sup>

---

[to Address Climate Change](#),” WSJ (Dec. 2, 2020). Similarly, civil society is not a monolith, with fragmenting around climate policy prioritization and the urgency of the issue. Newsroom, [“Confusion Is the Main Reason Europeans and Americans Underestimate Climate Crisis, Open Society Report Finds,”](#) OPEN SOCIETY INSTITUTE (Nov. 20, 2020).

<sup>132</sup> Robinson Meyer, [“Dozens of States Want to Keep America’s Broken Climate Promise,”](#) THE ATLANTIC (Dec. 9, 2019); [“In Support of Ambitious, Durable, Bipartisan Climate Solutions,”](#) CENTER FOR CLIMATE AND ENERGY SOLUTIONS, (Nov. 2020) (public letter from over 30 major U.S. corporations calling for bipartisan action on climate and stating, “We are each taking major steps to reduce our climate impact. We have publicly declared ambitious goals and are investing in clean technologies and other climate solutions.”); Oliver Balch, [“75 CEOs call for US to stay in the Paris Agreement as emissions continue to rise,”](#) REUTERS EVENTS (Dec. 4, 2019); [“468 US Climate Mayors commit to adopt, honor and uphold Paris Climate Agreement goals,”](#) CLIMATEMAYORS (Jun. 1, 2017).

<sup>133</sup> [Fourth National Climate Assessment Volume II](#), Figure 15.1 (identifying 800 concrete climate actions by indigenous groups in the last decade); see also Jim Morrison, [“An ancient people with a modern climate plan,”](#) WASHINGTON POST (Nov. 24, 2020).

<sup>134</sup> David R. Baker, Emily C. Dooley and Keith Naughton, [“California to Ban New Gasoline Cars by 2035, a First in U.S.,”](#) BLOOMBERG NEWS (Sept. 23, 2020).

While state and local governments trying to advance climate change policy have made some progress, they have done so facing obstacles from federal inconsistency.<sup>135</sup> Fuel emissions policy is an instructive example. In 2012, the Obama administration instituted fuel economy rules described as the most focused and wide-sweeping effort by the federal government to date.<sup>136</sup> The Trump administration later announced it would roll back those rules, thwarting efforts to decrease America’s reliance on fossil fuels and decrease carbon emissions from vehicles. President Trump expressed pride in the decision, and his agencies described it as “the largest deregulatory initiative of this administration.”<sup>137</sup> This action was not isolated. As of July 2020, the Trump administration had reversed nearly 70 other environmental rules and was in the process of rolling back at least another 30.<sup>138</sup>

Not deterred by federal rollbacks, California—the fifth largest economy in the world<sup>139</sup>—sought to enforce tighter fuel efficiency standards than the federal government. Over two million cars are sold in California each year, making the state a significant participant in the American car market. Six car manufacturers stated they would voluntarily comply with California’s fuel efficiency standards.<sup>140</sup> But rather than let California proceed to work with the car makers to advance climate goals, the U.S. Environmental Protection Agency and the U.S. Department of Transportation sternly cautioned California, threatening “legal consequences” if

---

<sup>135</sup> Indigenous groups also have obstacles to taking all the actions they would like to combat climate change acceleration and effects. This is because, *inter alia*, under U.S. law, the federal government retains certain legal authorities over its territories and resources. See [Fourth National Climate Assessment Volume II](#), 574.

<sup>136</sup> Hiroko Tabuchi, [“States Sue to Block Trump from Weakening Fuel Economy Rules,”](#) N.Y. TIMES (May 27, 2020).

<sup>137</sup> Claire Bushey, [“Trump rolls back US fuel economy standards,”](#) FINANCIAL TIMES (Mar. 31, 2020).

<sup>138</sup> Nadja Popovich, Livia Albeck-Ripka and Kendra Pierre-Louis, [“The Trump Administration Is Reversing 100 Environmental Rules. Here’s the Full List,”](#) N.Y. TIMES (Jul. 15, 2020).

<sup>139</sup> Kiernan Corcoran, [“California’s economy is now the 5th-biggest in the world, and has overtaken the United Kingdom,”](#) BUSINESS INSIDER (May 5, 2018).

<sup>140</sup> Baker, et al., [“California to Ban New Gasoline Cars by 2035, a First in U.S.”](#)

the state did not walk away from its agreement with those companies.<sup>141</sup> The federal government also launched preliminary antitrust investigations against the companies.<sup>142</sup>

In a separate incident, California tried to institute a greenhouse gas reduction program that included partners from Quebec, Canada. The federal government sued and argued that the U.S. Constitution prohibited states from making direct agreements with foreign governments.<sup>143</sup> This did not stop the governor of California, however, from issuing an executive order in September 2020 aimed at reducing carbon emissions by requiring the state's Air Resources Board to develop regulations mandating that all new passenger vehicles sold in the state after 2035 produce zero emissions.<sup>144</sup>

This fractured state versus federal approach to climate policy thwarts genuine and necessary progress on climate policy. As a senior policy adviser for the State of Washington noted, "When it comes to efficiency or energy standards, when it comes to fuel-efficiency standards for cars, it's much easier to do that at federal level. .... No one wants fragmented

---

<sup>141</sup> Anna M. Phillips, "[Trump warns California that emissions deal with automakers may be illegal](#)," LOS ANGELES TIMES (Sept. 6, 2019).

<sup>142</sup> *Id.*

<sup>143</sup> Lisa Friedman and Katie Benner, "[Justice Dept. Sues California to Stop Climate Initiative from Extending to Canada](#)," N.Y. TIMES, (Oct. 13, 2019).

<sup>144</sup> Office of Governor Gavin Newsom, Press Release, "[Governor Newsom Announces California Will Phase Out Gasoline-Powered Cars & Drastically Reduce Demand for Fossil Fuel in California's Fight Against Climate Change](#)," CA.GOV (Sept. 23, 2020) ("Executive order directs state to require that, by 2035, all new cars and passenger trucks sold in California be zero-emission vehicles"); Baker, et al., [California to Ban New Gasoline Cars by 2035, a First in U.S.](#); see also Tabuchi, [States Sue to Block Trump From Weakening Fuel Economy Rules](#). California is not alone in taking bold pro-climate actions. For example, in May 2020, nearly two dozen states joined California in suing the federal government over the fuel emissions rollback. New York's *Climate Leadership and Community Protection Act* calls for 70% renewable electricity by 2030. New York Department of Environmental Conservation, "[Reducing Greenhouse Gas Emissions Limiting Future Impacts of Climate](#)," NEW YORK STATE. Washington Governor Inslee has taken executive actions outlining steps for reducing carbon pollution in the state. See, e.g., Washington Governor Jay Inslee, "[Governor Inslee's Executive Order 14-04: Washington Carbon Pollution Reduction and Clean Energy Action](#)," GOVERNOR.WA.GOV. Colorado has had a climate action plan since 2007. Its most recent update, published in 2018, laid out updated plans in multiple major sectors: greenhouse gases, transportation, energy, agriculture, tourism and recreation, ecosystems, water, and public health. "[Colorado Climate Plan 2018 Update - State Level Policies and Strategies to Mitigate and Adapt](#)," ADAPTATION CLEARING HOUSE (Jul. 2018). Oklahoma, long an economy built on the oil and gas industry, has found new economic boosts through promoting wind power. Jon Heggie, "[Oklahoma: how wind is re-energizing the state's economy](#)," NATIONAL GEOGRAPHIC (Apr. 20, 2020).

standards, but that's unfortunately what you get when you oppose everything at the federal level."<sup>145</sup>

## B. International Action

The Paris Climate Accord is the most prominent example of how the Trump administration's resistance to recognizing the climate change threat and advancing climate-related security policies has affected U.S. international and diplomatic engagement. At present, there are 197 signatories to the Paris Climate Accord. It is the leading mechanism through which UN members collectively pledge action. Representatives of the United States helped negotiate the agreement during the Obama administration, but in June 2017, President Trump announced his decision to withdraw the country from it.<sup>146</sup> On November 4, 2019, the United States formally began the withdrawal process, and the withdrawal was effectuated on November 4, 2020. The United States is the only country to renounce the Accord and one of only a handful not to at least be a signatory.<sup>147</sup>

The United States' withdrawal from the Paris Accord and other international agreements<sup>148</sup> has sparked backlash domestically and drawn rebuke and criticism from the

---

<sup>145</sup> Robinson Meyer, "[Dozens of States Want to Keep America's Broken Climate Promise](#)," THE ATLANTIC (Dec. 9, 2019) (quoting Chris Davis, a senior policy adviser for Gov. Inslee (WA) who attended December 2019 UN climate negotiations related to the Paris Climate Accord).

<sup>146</sup> Fiona Harvey, "[Syria signs Paris climate agreement and leaves US isolated](#)," THE GUARDIAN (Nov. 7, 2017). Originally, there were 197 signatories to the Accord, including the United States; Syria was the only country that had not signed the Accord, and it was engaged in chaotic civil unrest. Several months after President Trump announced the United States would withdraw from the Accord, however, Syria signed the Accord, bringing the number of signatory countries back up to 197.

<sup>147</sup> Rebecca Hersher, "[U.S. Officially Leaving Paris Climate Agreement](#)," NPR (Nov. 3, 2020).

<sup>148</sup> The Paris Climate Accord is not the only international agreement the United States has withdrawn from since the inauguration of President Donald Trump. For example, it has also withdrawn from the Open Skies agreement with Russia and the Joint Comprehensive Plan of Action (JCPOA) (the "Iran Nuclear Deal"). Drew Kann, "[US begins formal withdrawal from Paris climate accord](#)," CNN (Nov. 4, 2019); John Hudson and Paul Sonne, "[Trump administration to withdraw from Open Skies treaty in a further erosion of arms control pacts with Russia](#)," THE WASHINGTON POST (May 21, 2020). President Trump and Secretary of State Pompeo have also repeatedly made statements that undermine or otherwise question the legitimacy of the International Criminal Court. Elizabeth Evanson, "[Donald Trump's Attack on the ICC Shows His Contempt for the Global Rule of Law](#)," HUMAN RIGHTS WATCH (July 6, 2020).



international community.<sup>149</sup> It is amid this challenging backdrop that those working on all 4 Ds of U.S. national security (diplomacy, development, democratic governance, and defense) nevertheless have been trying to engage international partners to address climate change threats. President-elect Biden has pledged that the United States will rejoin the Paris Accord and reengage in international climate efforts. He has also pledged a multi-prong policy plan to address climate change and promised to strengthen the United States' relationships with international partners. Such actions are likely to be welcomed by many in the international community and in the United States, but they are unlikely to come easily. Not only must the United States step into Accord discussions that have evolved since the United States announced its withdrawal, but it must do so while also working bilaterally, multilaterally, and globally to repair and solidify its other international commitments and democratic partnerships.<sup>150</sup>

The Bureau of Oceans and International Environmental and Scientific Affairs (OES) of the U.S. Department of State (DoS) has been the DoS bureau most closely involved in climate change and U.S. international climate policy.<sup>151</sup> Within its responsibilities is representing the United States at the United Nations Framework Convention on Climate Change (UNFCCC). Responsible for landmark developments such as the Kyoto Protocol and the Paris Accord, UNFCCC is the main international body tackling climate change.<sup>152</sup> Arctic issues also fall within OES' purview.<sup>153</sup>

On July 29, 2020, the Trump administration created a new "Coordinator for the Arctic Region" position within the State Department.<sup>154</sup> As described by DoS, this coordinator is "the

---

<sup>149</sup> See, e.g., Tom Jawetz, "[Restoring the Rule of Law Through a Fair, Humane, and Workable Immigration System](#)," CENTER FOR AMERICAN PROGRESS (Jul. 22, 2019); see also "[German President criticizes US stance at security conference](#)," ASSOCIATED PRESS (Feb. 14, 2020); Richard Wike, et al., "[America's international image continues to suffer](#)," PEW RESEARCH CENTER (Oct. 1, 2018) (finding that the United States' reputation continues to suffer on the international stage because of perceptions that it does not have global interests in mind).

<sup>150</sup> See generally, Umair Irfan, "[The US just left the Paris climate agreement](#)," VOX (Nov. 4, 2020).

<sup>151</sup> Office of Global Change, "[Our Mission](#)," U.S. DEPARTMENT OF STATE.

<sup>152</sup> United Nations, "[What is the United Nations Framework Convention on Climate Change?](#)"

<sup>153</sup> Office of Ocean and Polar Affairs, "[Our Mission](#)," U.S. DEPARTMENT OF STATE.

<sup>154</sup> Office of the Spokesperson, "[Appointment of U.S. Coordinator for the Arctic Region: Media Note](#)," U.S. DEPARTMENT OF STATE (July 29, 2020).

principal advisor to the Secretary and the Deputy Secretary on all Arctic matters” and “will lead and coordinate the Department’s policy-making and diplomatic engagement on Arctic-related issues to advance U.S. interests in the region related to safety and security, sustainable economic growth, and cooperation among Arctic States to support and strengthen the rules-based order in the region.”<sup>155</sup> This also includes engagement with the Arctic Council. Many in the Arctic policy community welcomed this announcement as a promising avenue to promote interdisciplinary policies for that region, including possibly on climate.<sup>156</sup>

International reengagement on climate issues is essential for U.S. security. As a recent Council on Foreign Relations report underscored, climate change is “the planet’s gravest existential threat, requiring urgent global cooperation.”<sup>157</sup> Despite being a national security issue “that will shape the decades to come,”<sup>158</sup> it is one for which military and other government security experts conclude that DoS and other government agencies tasked with responding to its threats are unprepared<sup>159</sup> or “currently inadequately postured.”<sup>160</sup> If the United States is going to reemerge as a global leader on climate security issues and make necessary progress domestically to increase its climate resilience, it must prioritize climate

---

<sup>155</sup> [Id.](#)

<sup>156</sup> Climate change has been a priority issue for the Arctic Council and the Council has made a concerted effort, particularly in the last decade, to facilitate international study and cooperation to address climate change’s effects on the region. *See, e.g., “The Arctic in a Changing Climate,”* ARCTIC COUNCIL (last updated Nov. 15, 2020). In spring 2020, however, the United States blocked inclusion of “climate change” in the official communiqué coming out of the Arctic Council’s annual meeting. As later reported in the media, this “was the first time since its formation in 1996 that the council had been unable to issue a joint declaration spelling out its priorities.” Somini Sengupta, [“U.S. Pressure Blocks Declaration on Climate Change at Arctic Talks,”](#) N.Y. TIMES (May 7, 2019).

<sup>157</sup> Zeya, et al., [Revitalizing the State Department](#), 4.

<sup>158</sup> [Id.](#), 3.

<sup>159</sup> *See generally* [“A Climate Security Plan for America,”](#) THE CENTER FOR CLIMATE & SECURITY.

<sup>160</sup> Zeya, et al., [Revitalizing the State Department](#). USAID is also essential to promoting and preserving U.S. national security and finds itself “witness[ing] the effects of climate variability and change every day.” *See* Climatelinks, [“Climate Risk Management,”](#) U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT. As noted on a USAID partnership website: “Extreme weather and climate impacts undermine development gains and future development progress. It’s not just an environmental problem, but a development problem with direct implications for hunger, poverty, conflict, water scarcity, infrastructure integrity, sanitation, disease and survival.” [Id.](#); *see also* U.S. Agency for International Development, [“Environment and Global Climate Change.”](#)

change as a national security and foreign policy priority and make cohesive and intersectoral government policies that bridge lacunae between its federal and state approaches.

#### IV. Recommended Ways Forward

The United States government's fractured and fragmented approach to climate change has hampered those attempting to fight against and prepare for its impacts. To prepare for climate threats, the United States needs both a whole-of-government and a whole-of-society approach. Decisive, coordinated action is essential to avoid social and economic destabilization, and, in turn, political destabilization.

To do this, we first need to acknowledge that climate threats and opportunities, like those in health, are intersectoral in nature. We must consider impacts on hard security, the economy and sustainability, technology and research development, human security, diplomacy, democracy, and development. To do this effectively, the federal government must move forward with security policy from a baseline that recognizes and accepts that climate change is a security threat. In addition, it must actively engage with state and local government leaders as well as nongovernmental partners, including economic actors, civil society groups, scientists, and individuals most likely to be affected by climate change's security impacts.

At the federal level, Congress has significant power and ability to strengthen our climate security resilience and promote whole-of-society action. If Congress chose to do so, it could strengthen environmental legislation such as the Clean Air and Clean Water Acts, tighten carbon and fuel emissions standards, fund additional climate-related scientific and tech innovation, provide budgetary support for agencies' new climate security efforts, create incentives for the private sector and state/local governments to address climate change's threats, and generally advance policies that promote climate resiliency.<sup>161</sup> Congress also could

---

<sup>161</sup> See, e.g., Rob Jordan, "[Stanford experts examine prospects for congressional action on climate change](#)," STANFORD NEWS (Apr. 17, 2019); see also Center for Climate and Energy Solutions, "[Federal Action on Climate](#)"; Eliza Barclay and Umair Irfan, "[10 ways to accelerate progress against climate change](#)," Vox (Nov. 26, 2019); House Select Committee on the Climate Crisis Majority Staff Report, [Solving the Climate Crisis: The Congressional Action Plan for a Clean Energy Economy and a Healthy, Resilient, and Just America](#), 116TH CONGRESS (June 2020).

require executive agencies and departments to do more to study and consider climate impacts on their operations and strategies, as Congress has done with DoD.<sup>162</sup>

Climate change is a national security issue, and national security should be a nonpartisan issue. Climate security-related policy action and legislation should present opportunities for bipartisan cooperation, interagency/intergovernmental strategic planning, public-private partnerships, and diverse coalition building. Yet given the anticipated partisan makeup of Congress in 2021,<sup>163</sup> it is unlikely we will see sweeping federal legislative action addressing the full intersectoral nature of the climate threats.<sup>164</sup> Hyper-partisanship within state legislatures may also hinder new climate legislative action on that level.<sup>165</sup>

Whether or not Congress or state legislatures act, however, the Biden-Harris administration can take executive action to de-fracture U.S. climate security policy and advance climate goals.<sup>166</sup> President-elect Biden and Vice President-elect Harris ran on a platform that recognized climate change as a national security threat. They have promised to “fully integrate climate change into ... foreign policy and national security strategies, as well as [the U.S.]

---

<sup>162</sup> See, e.g., John Conger, “[U.S. Congress Continues to Address Climate Change in Defense and Intelligence Legislation](#),” CENTER FOR CLIMATE & SECURITY (Dec. 12, 2019); see also John Conger, “[Climate Security in the 2021 U.S. National Defense Authorization Act](#),” CENTER FOR CLIMATE & SECURITY (Aug. 17, 2020).

<sup>163</sup> As of the date of this paper (December 2020), Joseph R. Biden will assume the presidency on January 20, 2021, and the House of Representatives will remain in the hands of the Democratic Party for the 117<sup>th</sup> Congress. It is not yet clear which party will hold the Senate, however. There is a run-off election in Georgia for both of its senate seats scheduled for January 5, 2021. See Nathaniel Rakich and Geoffrey Skelley, “[Georgia’s Runoffs Will Determine Control of The Senate. Here’s What We Know So Far](#),” FIFTYEIGHT (Nov. 11, 2020). If both Democratic candidates win those seats, no one party or coalition will hold the Senate majority. The Vice President, as Senate President, will break the vote-ties, as necessary. *Id.* Even if that occurs, the slim majorities in both houses will make passing any big bills difficult.

<sup>164</sup> See, e.g., Jeff Tollefson, “[Can Joe Biden Make Good on His Revolutionary Climate Agenda](#),” NATURE (Nov. 25, 2020) (noting “global warming is still a partisan issue on Capitol Hill, dividing Republicans and Democrats, and ‘that is going to limit what Biden can accomplish’” (quoting Prof. Vicki Arroyo)).

<sup>165</sup> Nadja Popovich, “[Climate Change Rises as a Public Priority. But It’s More Partisan Than Ever](#),” N.Y. Times, (Feb. 20, 2020).

<sup>166</sup> Barry Rabe, “[The limitations of a climate change presidency](#),” BROOKINGS (June 23, 2019); Jeff Tollefson, “[Can Joe Biden make good on his revolutionary climate agenda?](#),” NATURE (Nov. 25, 2020). Both President Obama and President Trump used executive orders to effectuate their respective climate-related policy priorities. See, e.g., Sabin Center for Climate Change Law, “[Executive Orders—Trump Administration](#)” (identifying presidential executive orders related to climate between Jan. 27, 2015 and May 17, 2018), COLUMBIA UNIVERSITY.

approach to trade.”<sup>167</sup> They promised sweeping executive orders on “day one” to put the United States “on track” “to achieve a 100% clean energy economy and net-zero emissions no later than 2050,”<sup>168</sup> and they pledged significant economic investment across multiple societal sectors including in energy and climate research, housing, tech, infrastructure, trade, and low-carbon manufacturing. They carried climate change into their transition planning, declaring it one of four priority issues for their administration.<sup>169</sup> Less than three weeks after the election was called for the Biden-Harris ticket, President-elect Biden named former Secretary of State John Kerry as his special “Presidential Envoy for Climate”—a cabinet-level position; in the role, Kerry will also sit on the National Security Council.<sup>170</sup> As climate experts have noted, this appointment shows the new administration’s commitment to its campaign promises on climate change, including for the United States to rejoin the Paris Climate Accord.<sup>171</sup>

Kerry’s appointment and the promise to rejoin the Paris Accord are a promising start, but they cannot alone remedy the policy fracturing that has happened across federal, state, local, private, and civil structures across the country. They also cannot alone implement the

---

<sup>167</sup> [“The Biden Plan for a Clean Energy Revolution and Environmental Justice,”](#) JOEBIDEN.COM (last accessed Nov. 2, 2020). Climate and political experts have contrasted this to President Trump, who has not offered a strategic plan to combat climate change since entering the presidency and who did not include a specific plan to tackle climate change in his reelection platform. See Rachel Frazin, [“GOP platform on climate risks ceding issue to Democrats,”](#) THE HILL (Aug. 24, 2020) (noting the 2020 GOP platform was identical to the 2016 platform and describing the platform as promoting “market forces” and “innovation” to address climate rather than provide a specific climate plan); Craig Welch and Sarah Gibbens, [“Trump vs. Biden on the environment – here’s where they stand,”](#) NATIONAL GEOGRAPHIC (Oct. 19, 2020). Moreover, the GOP Platform – in contrast to intelligence reports – went so far as to describe climate change as “far from this nation’s most pressing national security issue.” [Republican Platform 2016](#), 20.

<sup>168</sup> [“The Biden Plan for a Clean Energy Revolution and Environmental Justice,”](#) JOEBIDEN.COM.

<sup>169</sup> Biden-Harris Transition, [“Priorities,”](#) BUILDBACKBETTER.GOV (last accessed Dec. 13, 2020) (identifying the four priorities for the incoming Biden-Harris administration as COVID-19, economic recovery, racial equality, and climate change).

<sup>170</sup> See, e.g., Kate Sullivan, [“Biden prioritizes climate crisis by naming John Kerry special envoy,”](#) CNN (Nov. 24, 2020).

<sup>171</sup> See John Conger, Caitlin Werrell and Francesco Femia, [“A Very Strong Signal: 5 Key Takeaways on John Kerry’s Climate Envoy Role and Seat on the National Security Council,”](#) CENTER FOR CLIMATE AND SECURITY (Nov. 24, 2020). President-elect Biden and Vice President-elect Harris promised during the campaign to rejoin the Paris Climate Accord, and Kerry recognized this in his speech the day he was nominated as special envoy. See, e.g., Sullivan, [“Biden prioritizes climate crisis by naming John Kerry special envoy.”](#)

sweeping climate policy goals<sup>172</sup> the incoming administration has set. Meeting these goals will require coordinated teams focused on climate security not only in the traditional national security offices, but also across the federal government. It will also require having personnel with decision-making power ready to act on these issues from day one of the new administration.

To that end, the incoming administration should consider these actions to build a framework through which to pursue its greater climate security policy goals:

*In the first 100 days*

- Prioritize climate-related appointments and staffing:
  - Name a senior-level official in each executive agency/department/office to coordinate that entity's climate policy portfolio;
  - Expand the Climate Security Advisory Council to bring together those senior-level officials (including the Department of Defense) to facilitate climate policy coordination across federal agencies/departments/offices<sup>173</sup>;
  - Retain the new Senior Coordinator for the Arctic Region position, recognizing the importance of the Arctic region to climate security and wider military strategy;
  - Incorporate climate expertise into every executive agency/department/office's policy team, not only in traditional national security offices; and

---

<sup>172</sup> See, e.g., Biden-Harris Transition, "[Priorities: Climate Change](#)."

<sup>173</sup> Section 5321 of the House NDAA for FY2020 called for the creation of a "Climate Security Advisory Council." Despite its name, it was to be focused on the intelligence community, rather than all the agencies relevant to intersectoral climate security issues. Specifically, the council was to be composed of individuals from intelligence agencies such as the DIA, CIA, and Bureau of Intelligence and Research of the U.S. Department of State, as well as three federal government officials "outside of the intelligence space." See Esther Sperling, "[Climate Security in the National Defense Authorization Act](#)," AMERICAN SECURITY PROJECT (Dec. 13, 2019). Going forward, in order to facilitate a whole-of-government, intersectoral approach to climate security threats, rather than an exclusive interagency climate security taskforce, at a minimum it should also include as permanent members someone from USAID (or another government development representative), someone appointed by the Director of the National Economic Council, and someone from DARPA (or the National Academies Climate Security Roundtable called for by the pending NDAA FY2021 (House Sec. 1613)).

- Prioritize making climate-related appointments that do not require congressional confirmation to ensure that the new administration can act on these issues as soon as possible following the inauguration.<sup>174</sup>

*In the first year*

- Recommit to international climate engagement through the Paris Climate Accord and other international outreach:
  - Reengage the Arctic Council on climate issues and ensure that the new Arctic Coordinator has sufficient staff and funding to carry out the position’s broad mission;
  - Promote strategic science and technology research domestically and work with international sovereign, private, and civil partners to coordinate on climate-related science and tech developments across borders;
  - Incorporate climate-minded provisions into future trade and other international agreements; and
  - Include climate expertise on trade and treaty negotiation teams.
- Bridge the gap between state and federal climate policy:
  - Establish a blue-ribbon commission of state/federal/local leaders, climate and technology experts, industry and civil society leaders, educators, climate justice and public health experts, and Indigenous representatives to identify best practices on climate resiliency at the state and tribal levels as examples for other jurisdictions and at a federal level.

The above recommendations are just a start. Several nonpartisan expert groups have provided detailed recommendations and guidance for how to reform defense, diplomacy, and other government structures and to pursue economic policies in ways that would prioritize climate security issues and advance climate security goals.<sup>175</sup>

---

<sup>174</sup> Notably, Kerry’s new position as a “special envoy” is one that does not require Senate confirmation.

<sup>175</sup> See, e.g., “[A Climate Security Plan for America](#),” THE CENTER FOR CLIMATE & SECURITY; Zeya, et al., [Revitalizing the State Department](#), 3, 4; cf Jeff Tollefson, “[Can Joe Biden make good on his revolutionary climate agenda?](#)” NATURE

## V. Conclusion

The COVID-19 pandemic is a stark reminder of the need for a whole-of-society, whole-of-government approach to existential security threats. The virus may have first appeared to be a geographically limited public health issue. But after seeing COVID-19's initial impacts in Italy and elsewhere, countries learned quickly that if they did not take definitive action at all levels of government, the economy, and society, the impacts could be catastrophic. Within weeks, the virus devastated the U.S. economy<sup>176</sup> and international commerce,<sup>177</sup> deeply impacted U.S. military readiness,<sup>178</sup> overwhelmed the U.S. health care system,<sup>179</sup> and paralyzed state, federal, and local safety net and governance mechanisms.<sup>180</sup> Policy and governance experts have concluded that fractured and siloed approaches to combatting the virus fueled the virus' spread and thus the severity of its impacts.<sup>181</sup>

As climate researcher Kate Guy noted, COVID-19 can be seen a stress test on our governance institutions, "exposing their vulnerabilities but also providing the urgent impetus to

---

(Nov. 25, 2020). See also National Academies of Sciences, Engineering, Medicine, [Informing an Effective Response to Climate Change](#), (2010); *id.*, at 1, 3 (noting the "critical need to coordinate a national response that builds on existing efforts, learns from successes and failures, reduces burdens on any one region or sector, and ensures the credibility and comprehensiveness of information and policy" and that the report focuses on "the federal role in the design of information systems and services to support and evaluate responses to climate change"). Notably, some of the recommendations (and/or ones very similar to them) are already included in the pending 2021 NDAA, bills for which have been passed by both the House and the Senate and are currently pending conference. See, e.g., Conger, "[Climate Security in the 2021 U.S. National Defense Authorization Act](#)."

<sup>176</sup> Irina Ivanova, "[U.S. economic shutdown saved up to 2.7 million lives, analysis finds](#)," CBS NEWS (Jul. 13, 2020).

<sup>177</sup> WTO Press Release 855, "[Trade set to plunge as COVID-19 pandemic upends global economy](#)," WORLD TRADE ORGANIZATION (Apr. 8, 2020).

<sup>178</sup> See, e.g., The Soufan Center, "[How Will COVID-19 Impact U.S. Military Readiness?](#)," THE CIPHER BRIEF (Apr. 23, 2020).

<sup>179</sup> Maia Dorsett, [Point of no return: COVID-19 and the U.S. healthcare system: An emergency physician's perspective](#), 6:26 SCIENCE ADVANCES (Jun. 26, 2020).

<sup>180</sup> See, e.g., Tami Luhby and Kelly Mena, "[Spike in unemployment filings overwhelms state systems](#)," CNN (Mar. 20, 2020).

<sup>181</sup> See Thomas J. Bollyky and Stewart M. Patrick, "[Improving Pandemic Preparedness: Lessons from COVID-19](#)," COUNCIL ON FOREIGN RELATIONS (Oct. 2020); cf Martha Kinsella, Gareth Fowler, Julia Boland and Daniel I. Weiner, "[Trump Administration Abuses Thwart US Pandemic Response](#)," BRENNAN CENTER FOR JUSTICE (Jan. 4, 2021); compare OECD Policy Responses to Coronavirus, "[The territorial impact of COVID-19: Managing the crisis across levels of government](#)," OECD (Nov. 10, 2020).



build new resilience.”<sup>182</sup> With over 266,000 American lives already lost to the virus by Thanksgiving,<sup>183</sup> some would say it is a stress test the United States has failed.

And yet, the impacts anticipated from climate change are greater than those of the COVID-19 pandemic. Data, intelligence, legal, and other experts have pleaded with America’s policy leaders to take bold action to address climate security threats and injustice. Former Secretary of Defense James Mattis stated plainly in his 2017 confirmation hearings that not only is climate change a threat to national interests, it “is a challenge that requires a broader, whole-of-government response.”<sup>184</sup> Just as it touches nearly every sector of our society, economy, and security structures, so too must our response and our preparations for those impacts. Given the urgency, policy coordination across sectors is essential.

Climate may be the threat without a face, but as national security experts Hon. Sherri Goodman and General (Ret.) Gordon Sullivan wrote, “Imagine if the United States had really known Pearl Harbor was coming, or 9/11. There’s still time to mobilize as only America can, but not much time.”<sup>185</sup> The time to act and prepare for the greatest security threat to our nation and the world has come. We cannot afford to wait.

---

<sup>182</sup> Kate Guy, “[Coronavirus shows we are not at all prepared for the security threat of climate change](#),” THE CONVERSATION (Apr. 15, 2020).

<sup>183</sup> U.S. Centers for Disease Control (CDC), “[CDC COVID Data Tracker](#),” (last accessed Nov. 30, 2020); Sara G. Miller and Jiachuan Wu, “[Coronavirus in the U.S.: Map of how many cases have been confirmed across the country, by state](#),” NBC NEWS (last accessed Nov. 24, 2020); *see also* Carla K. Johnson, “[‘Unfathomable’: U.S. death toll from coronavirus hits 200,000](#),” ASSOCIATED PRESS (Sept. 22, 2020).

<sup>184</sup> Andrew Revkin, “[Trump’s Defense Secretary Cites Climate Change as National Security Challenge](#),” PROPUBLICA (Mar. 14, 2017).

<sup>185</sup> Sherri Goodman and GEN. (Ret.) Gordon Sullivan, “[Climate change threatens the backbone of America’s global power](#),” THE HILL (Sept. 22, 2019).

## ABOUT ALEXANDRA A.K. MEISE

Alexandra (Xander) A.K. Meise is a Senior Fellow with the Center for Ethics and the Rule of Law at University of Pennsylvania Carey Law School.

Xander's research at Penn Law probes the intersection of public and private international law, with a focus on the scope of sovereign power under international law and the potential national security implications of climate change. Drawing upon her public and private service spanning five continents, she is particularly interested in the governance of sovereign power and in economic development in national security contexts.



Prior to coming to Penn, Xander spent over a decade representing and advising sovereign governments and other clients in U.S. federal court matters, in treaty-based international arbitrations, and in designing and implementing rule of law-based best practices and legal reforms. Her advocacy practice focused on litigation under the U.S. Foreign Sovereign Immunities Act (FSIA) and international dispute resolution and prevention. Her human rights advising practice focused on human rights compliance and conflict prevention, particularly in relation to natural resource development projects. Xander also has experience working for international criminal tribunals and the U.S. Department of State.

Xander lectures frequently in academic and international fora on dispute resolution and human/political rights issues, and she has trained scores of government officials and practitioners on international law matters. In addition to her work with CERL, she teaches International Human Rights Law at Georgetown University Law Center and is a non-resident Fellow of the Columbia Center on Sustainable Investment (a joint Center of Columbia Law School and The Earth Institute at Columbia University) and a Political Partner of the Truman National Security Project.