

Climate Change, the Erosion of State Sovereignty, and World Order

CAITLIN E. WERRELL
Cofounder & President
Center for Climate and Security

FRANCESCO FEMIA
Cofounder & Director
Center for Climate and Security

CLIMATE CHANGE AND ITS ATTENDANT impacts on natural resources have traditionally been treated as a “soft security” issue—a challenge to be managed, but not necessarily a disruptive factor in international security.¹ Until recently, climate change was primarily the domain of specialized negotiators, such as environmental ministers and individuals present at the United Nations Framework Convention on Climate Change (UNFCCC). However, this has begun to change. In response to a growing body of research demonstrating a significant relationship between a changing climate and state fragility, the foreign policy and security establishments of a growing number of nations have become increasingly concerned. A flurry of national security strategies, defense papers, and intelligence assessments have suggested that climate change is a “threat multiplier”

221

CAITLIN E. WERRELL is cofounder and president of the Center for Climate and Security. Her primary research interests include climate change, water policy, and international security. She has spent over a decade investigating the intersection of security, natural resources, conflict, and cooperation. Werrell has experience in international and domestic climate and water policy, including as co-founder of the MAP Institute for Water & Climate, a Senior Associate at AD Partners, and Director of International Programs at EDN. She holds a master’s degree from the University of Oxford, where she focused on trans-boundary water issues, concluding with a field study on water conflict and cooperation in Cyprus.

FRANCESCO FEMIA is cofounder and director of the Center for Climate and Security. He previously served as program director at the Connect U.S. Fund, where he founded and facilitated the U.S. Climate Leadership Group, and has over a decade of experience conducting research and policy development on the intersection of climate change and national and international security. Femia has written for various publications and is frequently cited on climate and security issues. He holds a master’s degree from the London School of Economics and Political Science, where he explored EU security and defense policy, including through a field study on Cyprus’ stalemated conflict.

Copyright © 2016 by the Brown Journal of World Affairs

and an “immediate risk to national security.”² Although security establishments have been attuned to climate change risks since at least 2003, the number of strategy, planning, and implementation documents addressing climate change risks to security has increased significantly in recent years.³ A reasonable question follows: What does this mean for state sovereignty and the world order that rests on that foundation? This article is a preliminary attempt at answering this question. Its general conclusion is that climate change, by exacerbating stresses on the natural resources that sustain the nation-state, presents a significant threat to state sovereignty and world order.

THE DEVELOPMENT OF WORLD ORDER

Historically speaking, regional and international threats and disruptions have driven changes to regional and world order. The destructive Thirty Years’ War drove decision-makers in Europe to establish a nation-state system in the Treaty of Westphalia in 1648. The globally devastating Second World War precipitated the development of an international order based around the United Nations—and its enforcement arm, the UN Security Council—which was designed to protect the sovereignty of states against external aggression and to lessen the likelihood of interstate conflict. This was followed by the formation of a series of regional orders in Europe (NATO, the European Coal and Steel Community, the European Community, and ultimately, the European Union), whose aims were to both maintain peace among Western European nation-states and combat a Soviet Union that presented a potential threat to their sovereignty.⁴

222

Climate change, by exacerbating stresses on the natural resources that sustain the nation-state, presents a significant threat to state sovereignty and world order.

The current world order thus rests on sovereign states participating in a web of international and regional institutions that grew out of the post-Second World War world and survived both the Cold War and the collapse of the Soviet Union. Today, there are myriad stressors to this order that have been well documented,

such as nuclear proliferation, the rise of new global powers, and international terrorism. However, a stressor that has been comparatively underexplored is the influence of climatic change on the availability of critical natural resources, such as food and water, and how these changes may impair the legitimacy of sovereign nation-states worldwide.

Climate Change, the Erosion of State Sovereignty, and World Order

A NEW EPOCH

The formation and existence of the nation-state has occurred during a relatively stable climatic period—an epoch referred to by geologists as the Holocene (beginning at approximately 11,701 BP).⁵ According to a group of researchers who surveyed the climate over the last 400,000 years, the Holocene appears to be the longest warm and stable climatic period during that time, which may have played a significant role in facilitating the development of human civilizations.⁶ This geologic time period encompasses the advent of agriculture, the rise and fall of empires and monarchs, the birth of the nation-state, and the invention of rocket ships and computers. In short, all of modern civilization has occurred within the Holocene epoch. The foundation for the current system of nation-states rests in part on a common assumption that the baseline natural resource conditions present until today will generally continue (fits and starts notwithstanding). The flaw with this assumption is that atmospheric conditions have shifted significantly since the mid-twentieth century, to the point that Earth may have entered a new epoch characterized by an unstable climate, which some have labeled the Anthropocene.⁷ There are three characteristics of this epoch with noteworthy implications for international security:

- The changes in climate are primarily being driven by human activity;⁸
- The changes are unprecedented for most of human civilization;⁹ Looking to history will not be sufficient to predict future conditions and the resiliency of states;
- These changes are happening at an extremely rapid rate in terms of both geologic and civilizational time.¹⁰ This has implications for the ability of societies and governments to prepare for, adapt to, and successfully respond to stresses.

THE NATURE OF THE THREAT

Regardless of whether Earth is indeed in a new epoch, the influence of rapid climatic change on natural resources must be factored into our understanding of state fragility, state sovereignty, and world order. Potential strains on natural resources include rising sea levels and an increase in the frequency and severity of extreme weather events, which could aggravate stresses on critical water, transport, and energy infrastructure and cause major disruptions. The transboundary nature of some climate impacts like sea level rise and migrating fish

stocks can increase the likelihood of conflict between states.¹¹

In short, the threat to state stability comes not from climate change itself, but rather from how these changes interact with the existing security landscape and with the ability or inability of governments to effectively manage these conditions to ensure that basic resources and prosperity are preserved for their respective publics. Seen through this lens, climate change may present a serious challenge to state sovereignty in a number of places around the world.

THE SIX EROSIONS OF STATE SOVEREIGNTY

By exacerbating stresses on the critical resources underpinning national security, including water and food, climate change can degrade a nation's capacity to govern. Decreases in water, food, and energy availability resulting from a changing climate can decimate livelihoods and contribute to a broad range of destabilizing trends—which include population displacements, migration, and political unrest.¹² These pressures in turn can contribute to state fragility, internal conflict, and potentially state collapse.¹³ Climate change can also indirectly disrupt existing international security dynamics in geostrategically significant areas, such as the South China Sea and the Arctic.¹⁴ Cumulatively, these threats can place significant strains on a world order built on an international system of cooperating sovereign states.

224

The threat to state stability comes not from climate change itself, but rather from how these changes interact with the ability of governments to ensure that basic resources are preserved.

State sovereignty, in the modern sense, is built on both a state's output and input legitimacy.¹⁵ A state's output legitimacy involves its ability to meet its citizens' demands for basic resources or prosperity (e.g., food, water, energy, employment), while a state's input legitimacy involves its ability to offer citizens a say in how they are governed (e.g., voting and legal recourse). Climate change, by compromising a state's ability to provide basic resources to its population, can significantly

erode its output legitimacy. This erosion can contribute to state fragility and state failure, which in turn has implications for regional and international security.¹⁶ This possible disruption derives from the contribution of climate change to six key phenomena we have identified that are related to the erosion of state sovereignty. These categories are drawn from concepts prevalent in political geography, political science, international relations, and climate change literature:

Climate Change, the Erosion of State Sovereignty, and World Order

1. Catch-22 (paradoxical) states;
2. Brittle states;
3. Fragile states;
4. Disputed zones among states;
5. Disappearing states;
6. Non-state actors.

1. CATCH-22 STATES:

As natural resources within the territory of nations are strained, modern states have often turned to the global market to meet the gap between their capacity to supply food, water, and energy and the demand of their populations. However, the global market is increasingly vulnerable to price fluctuations driven in part by an increase in the frequency and intensity of extreme weather events.¹⁷

This presents a catch-22 for resource-stressed nations, particularly nations that may experience increased resource stress due to a changing climate. Syria and Egypt are instructive examples in this regard. Prior to the country's ongoing civil war, the Assad regime in Syria prided itself on being one of the few Arab nations that produced a significant percentage of its own wheat locally, as well as lucrative cash crops such as cotton, despite the water intensity of those pursuits.¹⁸ However, these agricultural practices were challenged by persistent winter precipitation decline, which has been linked to climate change by a number of recent studies.¹⁹ The worst drought in Syria's recorded history occurred from 2007 to 2010, and was made two to three times more likely by climate change, according to a recent study. Population pressures and wasteful agricultural practices, such as flood irrigation, dramatically depleted the country's water table to a critical level.²⁰ These dynamics contributed to widespread agricultural and pastoral devastation across Syria and the displacement of nearly two million people, and may have been a factor in the country's transition from relative stability to one of the most conflict-ridden states in the world.²¹ The Assad regime's emphasis on greater self-sufficiency, which diminished the country's dependence on the global food market, was ultimately unsustainable due to local climatic, natural resource, and infrastructural conditions. Poor political decisions on the part of the regime, including in regard to natural resource management, accelerated the state's collapse.

The global food market has also been buffeted by climate change, making overdependence on it a risky venture for states as well. Egypt, like many of its neighbors, is one of the most dependent countries on the global wheat market.²² In 2010, a major drought and heat wave events in China and Russia devastated

local wheat harvests, driving China and Russia to purchase extraordinarily large quantities of wheat on the global food market (two separate studies explicitly connected the events in Russia to climate change).²³ This was a major factor in the 300 percent price increase in Egypt for wheat between 2010 and 2011.²⁴ Egyptian bread subsidy policies were unable to bring the price down in many rural areas.²⁵ While protests were occurring in Cairo and other cities, the appeal of the revolutionary movement in Egypt broadened to the countryside, which saw at least three major food riots in 2011.²⁶ Other nations in the Middle East, North Africa, Central Asia, and elsewhere are already facing a similar catch-22 situation, wherein neither local agricultural production nor dependence on the global food market are optimal options. If climatic and demographic projections continue along current trends, the number of states facing this catch-22 dilemma may increase.²⁷

2. BRITTLE STATES

226

The international security landscape hosts a number of seemingly stable states that are nevertheless quite vulnerable under the surface from a resource perspective. It is important to distinguish such brittle states from fragile states. In brittle states, the appearance of stability—due to either the imperviousness of such states to outside inquiry or ignorance of the role of natural resource vulnerabilities in contributing to political unrest—can lead analysts and policymakers alike to fail to anticipate fragilities and thus to make ill-informed political, economic, and natural resource management choices.²⁸ One might also refer to these cases as “Potemkin Village” states—stable only on the surface. These states may score relatively high in “state fragility indices” when compared with states that are more widely considered “failed” or on “the brink of failure,” such as Somalia, Sudan, and the Central African Republic.²⁹ These indices of state stability focus primarily on social, political, and economic circumstances that suggest the likelihood of collapse to be low. However, such measurements often underestimate or exclude significant natural resource vulnerabilities and climatic stresses that may make the body politic far more fragile than indicated by other, more explicitly political factors used to measure state stability.³⁰ The aforementioned case of Syria, under Assad, is a strong example. Up to merely days prior to the revolution erupting in 2011, political analysts pointed to Syria as being very stable in comparison to its Middle Eastern and North African neighbors.³¹ For example, an assessment carried out by the Obama administration in late 2010 concluded that Syria and Saudi Arabia were the “least likely” states in the

Climate Change, the Erosion of State Sovereignty, and World Order region to experience political turmoil in the wake of unrest in Tunisia, Egypt, and Libya.³² That prediction proved unwise in the case of Syria. Generally missing from the analysis of Syria's stability were significant natural resource vulnerabilities, exacerbated by three decades of climate-induced precipitation decline and by natural resource mismanagement, which produced significant risks, particularly among agricultural and pastoral communities.³³

Prior to the events of the so-called Arab Awakening, Egypt was also considered to be a generally stable nation.³⁴ In addition to the aforementioned vulnerabilities related to dependence on the global wheat market, Egypt's own natural resource picture suggests a brittleness as well. A combination of factors over time—including sea level rise, the overextraction of water from coastal aquifers, and the sharing of Nile waters with neighboring states—has left the already low-lying Nile Delta in a precarious situation. The Delta is also heavily populated; it contains many of Egypt's major cities and the vast majority of its population. The Nile Delta and Mediterranean coast are also responsible for at least 30 to 40 percent of the country's total agricultural production, which could be devastated by increases in saltwater intrusion exacerbated by a rising sea level. Furthermore, 30 percent of Egypt's labor force works in the agricultural sector, mostly in the Nile Delta.³⁵ Coupled with the aforementioned vulnerability of Egypt's population to global food price shocks, which has contributed to social unrest in a number of instances, failure to address rising sea levels and the Nile Delta's health could contribute to the erosion of the legitimacy and resiliency of current and future Egyptian governments.³⁶ Given Egypt's outsized role in maintaining regional security, its continued vulnerability could present a significant problem for international security.

Furthermore, there are nations that may only be superficially stable. Though it does not rank high in popular measurements of state fragility, Saudi Arabia is heavily dependent on a volatile global food market and is also likely to experience significant precipitation decline as a result of climate change.³⁷ Coupled with other ethnic, demographic, and political pressures, climate change and water insecurity dynamics could threaten Saudi Arabia's stability.³⁸ Other nations with seemingly hard (as opposed to brittle) institutions, yet serious natural resource vulnerabilities under the surface, include Iran—which suffers from many of the same climatic, water, and food security pressures as Syria—and North Korea—which is seemingly stable, but very resource poor and increasingly vulnerable to a changing climate.³⁹

As the climate changes, more states may shift into brittle state conditions. However, given the sometimes impenetrable nature of these states and

the attendant difficulty associated with diagnosing their levels of instability, the international community will need to significantly improve its analytical and predictive tools by better factoring in climatic- and water-related stresses. Addressing climate change, however, will not entirely address the problem of brittle states, as there are a range of social, political, and economic drivers of such conditions. The likelihood of states developing brittleness or ultimately collapsing may be mitigated by local, regional, and international policies that address climate risks.

3. FRAGILE STATES

Most obviously, climate change may increase the fragility of already-fragile states. The populations of nations that are poorly governed and resource stressed are likely to be among the hardest-hit victims of a changing climate. Due to impacts such as sea level rise and extreme rainfall variability, climate change is likely to strain basic food and water resources and render governance of natural resources more challenging, even in states with robust institutions. States with weak institutions are likely to fare worse. A great number of fragile states—such as Sudan, Ethiopia, and the Central African Republic in Africa; Pakistan and Bangladesh in South Asia; and Yemen and Libya in the Middle East and North Africa—are all projected to experience some of the most dramatic effects of climate change in terms of rainfall variability and sea level rise.⁴⁰ According to the U.S. National Intelligence Council's 2015 Worldwide Threat Assessment, the additional pressure climate change will place on already-stressed global food supplies will be particularly acute in Africa, the Middle East, and South Asia.⁴¹

Libya, for example, is a clear case of what happens when a state occupies a nexus between existing state fragility, water insecurity, and climate change. The heavily populated coastal areas of Libya bordering the Mediterranean are, according to recent studies, likely to experience a doubling of "drought days," from 101 days to 224 days per year.⁴² Given Libya's generally arid geography, its population is also highly dependent on fossilized groundwater from aquifers shared with neighboring arid states. This is water that is non-rechargeable, or unable to be replenished once withdrawn. Water from such aquifers is delivered to the coastline via the Great Man-Made River Project constructed under the Gaddafi regime—one of the largest water engineering projects in the world. This suggests that in the future, since the groundwater reserves are nonrenewable, Libya may continue to need rainfall in the winter to meet the population's water demands—rainfall that, according to recent research, is experiencing a

Climate Change, the Erosion of State Sovereignty, and World Order sharp decline as a result of climate change.⁴³ Libya's existing extreme political and economic instability, coupled with its role as both a destination and a throughway for African refugees and migrants seeking to enter Europe, make it a very unstable nation. Climatic stresses, by placing additional strains on Libya's ability to provide basic water and food resources to its public in the future, may exacerbate Libya's current instability and threaten to render it a chronically unstable, or failed, state.

In the absence of significant adaptation efforts, a slowing of the rate of climatic change, or significant improvements in natural resource governance, such nations are likely to become even more fragile than they already are, potentially increasing the incidence of state failure. As states fail, refugee crises are also likely to increase in frequency and scale. Nationalistic responses to such dynamics, in Europe, for example, can place significant strains on those institutions intended to maintain regional order, such as the European Union.⁴⁴

4. DISPUTED ZONES AMONG STATES

Climate change can also increase the possibility of tensions between major powers over zones subject to competing territorial claims, which could have important implications for world order. Two of the clearest examples of this disputed zone-climate change nexus are the South China Sea and the Arctic Ocean.

The South China Sea is one of the most critical geostrategic choke points in the world. According to a study by the Center for a New American Security (CNAS), sea-faring vessels carry \$1.2 billion of U.S. trade through its waters annually.⁴⁵ Furthermore, sovereignty over significant areas of the Sea is bitterly disputed by adjacent countries, while the United States and China have competed over its control for some time—with the United States viewing China's expansionist territorial claims to the Sea as a threat to U.S. interests in the Asia-Pacific region and to the security of key allies and partners.⁴⁶

Overlaid on this tense geostrategic environment is an ocean that is being warmed by a changing climate. Coupled with overfishing, this phenomenon is driving fish stocks to migrate northward into colder (and contested) waters.⁴⁷ As the populations of small nations bordering the Sea, such as Vietnam, are highly dependent on its fish stocks as a source of protein (for example, 30 percent of protein intake in Vietnam is derived from fish), fishing fleets are likely to venture further north, and with greater frequency, into zones that are subject to competing claims between their nations of origin, China, and the United States.⁴⁸ This dynamic could increase the likelihood and number of regional security disputes

in the future. Recent historical precedent shows that regional disputes over the Sea tend to become international security problems as the United States will often come to the defense of its allies and partners in the region.⁴⁹

The Arctic, on the other hand, is host to extraordinary cooperation between Arctic (and non-Arctic) nations, in a region that could have easily become a Wild West of water, ice, resources, and supply lines. This cooperation may be due to successful intergovernmental regional institutions, such as the Arctic Council,

It is likely that nonstate actors with grievances against the state will take advantage of the loss of state legitimacy and the expansion of ungoverned spaces in order to gain power and leverage.

and a desire among nations involved in the Arctic to maintain stable sea lanes for global economic commerce. The Arctic, however, due to rapidly melting ice, is changing significantly at a time when diplomatic tensions elsewhere in the world, such as between Russia and the United States, are on the rise.⁵⁰ This has already had a measurable effect on the security landscape in the Arctic.⁵¹

230

Since Russia's incursion into Crimea and eastern Ukraine, for example, every member state of NATO has suspended all forms of military cooperation with Russia, including in the previously a political zone of military cooperation in the Arctic. Russia has also withdrawn from the Arctic Security Force Roundtable, a major forum for military cooperation in the region.⁵² As an even greater reduction in Arctic ice is all but certain, economic activity there is highly likely to increase dramatically. In this context of possibly greater interaction between Arctic nations, but less cooperation due to diplomatic tensions elsewhere in the world, the probability of tension and conflict between major powers increases. While the current probability of conflict in the Arctic is low, the future is uncertain due to a rapidly changing physical and geopolitical landscape.⁵³

5. DISAPPEARING STATES

Rising sea levels will lead to the eventual disappearance of certain low-lying states as well as the loss of significant territory for other states. This includes island states, such as the Maldives, and large swathes of countries, such as the low-lying coastal zones of Bangladesh.⁵⁴ For small island nations, climate change and sea level rise present an existential threat, and thus the possibility of a total loss of sovereignty. The international community has no experience in managing the disappearance of nations as a result of environmental processes.⁵⁵ In fact,

Climate Change, the Erosion of State Sovereignty, and World Order
there are no international legal norms designed to account for such an eventuality—including no formal recognition of “climate refugees” or “environmental refugees.”⁵⁶ The loss of entire states, or large zones within states, may contribute to a mass increase in stateless peoples in the international system, which could present a humanitarian, political, and security crisis of the highest order. The full nature of the consequences of such an event are not broadly understood, and given the rapid rate of sea level rise, this significant unknown represents a challenge to the current world order. Indeed, low-lying states are one of those few examples where the influence of climate change on state stability is direct. The regional and global security consequences of these disappearing states, or sections of states, must therefore be better understood and addressed.

6. NONSTATE ACTORS

As climate change contributes to water and food insecurity and increases the likelihood of state failure and conflict, it is likely that nonstate actors with grievances against the state will take advantage of the loss of state legitimacy and the expansion of ungoverned spaces in order to gain power and leverage.⁵⁷ These expansions of ungoverned spaces may include an increase in organized criminal entities that engage in natural resource provision and a potential increase in the number and strength of nonstate actors who may ideologically reject the legitimacy of the states they operate in.⁵⁸ There is a wide and deep literature demonstrating the proliferation of nonstate actors in environments where states are weak and unable to provide food and water.⁵⁹ Today, Syria and Iraq are strong examples of this dynamic, given climatic projections for the region as well as the water insecurity, political fragmentation, and strength of terrorist organizations within their borders. As Dr. Marcus King notes, given that water resources are scarce, nonstate actors—including international terrorist organizations such as the Islamic State (IS)—are increasingly seizing such resources and using them as leverage against adversaries and as weapons against populations they wish to terrorize.⁶⁰ In the future, such leverage may be utilized to further erode the legitimacy of the state.⁶¹ This is not to say that climate change causes terrorism. Rather, climate change can place additional strains on resource security in such a way that may contribute

to an increase in the power of such nonstate actors.

CONCLUSION

The cumulative effect of climate change contributions to the erosion of state legitimacy may be far more significant than is currently appreciated. By placing strains on the resources necessary for the viability of the nation-states system and the well-being of its populations and by physically changing key geostrategic environments, climate change presents a significant threat to world order.

In the face of such far-reaching implications, policies designed to address climate change cannot be fully commensurate to the threat if they are formulated primarily or exclusively in niche institutions, such as the United Nations Framework Convention on Climate Change. In order to reduce climatic risks to state stability and world order, national governments, as well as regional and international security institutions—including but not limited to NATO, the OSCE, the African Union, ASEAN, and the UN Security Council—will need to integrate the effects of climate change on the regional and global security landscape into their strategies, plans, and operations and shift resources accordingly. Technical and technological solutions will certainly be important for managing risks—including for advancing less wasteful irrigation practices and drought-resistant agriculture, mitigating vulnerabilities of critical infrastructure, and reducing emissions. A critical prerequisite for addressing climate risks to world order, however, is ensuring that the international security community prioritizes it. Otherwise, our policies will merely nibble at the margins of the threat. In this context, improving, augmenting, and possibly even creating new international, regional, national, and subnational governance structures for addressing climate change will be important. This requires that climate change be placed high on the international security agenda and that nations collaborate on addressing those risks that present the greatest challenge to a functioning world order. 

232

NOTES

1. H. J. S. Fernando, Z. B. Klaić, and J. L. McCulley, *National Security and Human Health Implications of Climate Change* (Dordrecht, The Netherlands: Springer Science & Business Media, 2012).

2. Lukas Rüttinger et al., *A New Climate for Peace: Taking Action on Climate and Fragility Risks* (adelphi, International Alert, Woodrow Wilson International Center for Scholars, European Union Institute for Security Studies, 2015); “Climate Security Resource Hub,” *Climate Security* 101.

3. “Climate and Security Resources: U.S. Government,” *The Center for Climate and Security*, <https://climateandsecurity.org/resources/u-s-government/>.

4. Stanley R. Sloan, *NATO, the European Union, and the Atlantic Community: The Transatlantic Bargain*

Climate Change, the Erosion of State Sovereignty, and World Order

Challenged (Lanham, MD: Rowman & Littlefield Publishers, 2005).

5. Mike Walker et al., "Formal Definition and Dating of the GSSP (Global Stratotype Section and Point) for the Base of the Holocene Using the Greenland NGRIP Ice Core, and Selected Auxiliary Records," *Journal of Quaternary Science* 24, no. 1 (2009): 3–17.

6. J. R. Petit et al., "Climate and Atmospheric History of the Past 420,000 Years from the Vostok Ice Core, Antarctica," *Nature* 399 (1999): 429–36.

7. Colin N. Waters et al., "The Anthropocene Is Functionally and Stratigraphically Distinct from the Holocene," *Science* 351, no. 6269 (2016).

8. Jerry M. Melillo, Terese Richmond, and Gary W. Yohe, *Highlights of Climate Change Impacts in the United States: The Third National Climate Assessment* (U.S. Global Change Research Program, 2014).

9. Susan Solomon et al., "IPCC, 2007: Summary for Policymakers," in *Climate Change 2007: The Physical Science Basis, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2007).

10. "Climate Change: Vital Signs of the Planet: Evidence," NASA, <http://climate.nasa.gov/evidence/>.

11. W. Neil Adger et al., "Human Security," in *IPCC Climate Change 2014: Impacts, Adaptation, and Vulnerability Part A: Global and Sectoral Aspects, Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2014), 755–91.

12. Michael McElroy and D. James Baker, *Climate Extremes: Recent Trends with Implications for National Security* (Cambridge, MA: Harvard University Center for the Environment, 2012).

13. Rüttinger et al., *A New Climate for Peace*.

14. Patrick M. Cronin, ed., *Cooperation from Strength: The United States, China and the South China Sea* (Washington, DC: Center for New American Security, 2012); Elizabeth Rosenberg, David Tittle, and Alexander Wiker, *Arctic 2015 and Beyond: A Strategy for U.S. Leadership in the High North*, Policy Brief (Washington, DC: Center for New American Security, December 2014).

15. Vivien A. Schmidt, "Democracy and Legitimacy in the European Union," in *The Oxford Handbook of the European Union*, ed. Erik Jones, Anand Menon, and Stephen Weatherill (Oxford: Oxford University Press, 2012).

16. *Ibid.*

17. Michael B. Kelley, "Emerging Markets Could Be Devastated By A Literal Perfect Storm," *Business Insider*, March 6, 2013.

18. Francesco Femia and Caitlin E. Werrell, "Syria: Climate Change, Drought and Social Unrest," *The Center for Climate & Security*, February 29, 2012.

19. Martin Hoerling et al., "On the Increased Frequency of Mediterranean Drought," *Journal of Climate* 25, no. 6 (2012): 2146–61.

20. Colin P. Kelley et al., "Climate Change in the Fertile Crescent and Implications of the Recent Syrian Drought," *Proceedings of the National Academy of Sciences* 112, no. 11 (2015): 3241–46.

21. Femia and Werrell, "Syria."

22. Troy Sternberg, "Chinese Drought, Wheat, and the Egyptian Uprising: How a Localized Hazard Became Globalized," in *The Arab Spring and Climate Change*, ed. Caitlin E. Werrell and Francesco Femia (Washington, DC: Center for Climate and Security, Stimson Center, Center for American Progress, February 2013).

23. Friederike Otto et al., "Reconciling Two Approaches to Attribution of the 2010 Russian Heat Wave," *Geophysical Research Letters* 39, no. 4 (2012); Stefan Rahmstorf and Dim Coumou, "Increase of Extreme Events in a Warming World," *Proceedings of the National Academy of Sciences* 108, no. 44 (2011): 17905–9; Troy Sternberg, "Chinese Drought, Bread and the Arab Spring," *Applied Geography* 34 (May 2012): 519–24.

24. Sternberg, "Chinese Drought, Wheat, and the Egyptian Uprising."

25. Sarah Johnstone and Jeffrey Mazo, "Global Warming and the Arab Spring," in *The Arab Spring and Climate Change*, ed. Caitlin E. Werrell and Francesco Femia (Washington, DC: Center for Climate and Security, Stimson Center, Center for American Progress, February 2013).

26. Sternberg, "Chinese Drought, Wheat, and the Egyptian Uprising."

27. Foad Al Harazi, "Future Impact of Climate Change Visible Now in Yemen," *World Bank*, November

24, 2014.

28. Herbert Obinger, Stephan Leibfried, and Francis G. Castles, *Federalism and the Welfare State: New World and European Experiences* (Cambridge: Cambridge University Press, 2005).

29. J. J. Messner et al., *Fragile States Index 2015* (Washington, DC: The Fund For Peace, 2015).

30. Caitlin E. Werrell, Francesco Femia, and Troy Sternberg, "Did We See It Coming?: State Fragility, Climate Vulnerability, and the Uprisings in Syria and Egypt," *SAIS Review of International Affairs* 35, no. 1 (2015): 29–46.

31. A.L. Butters, "Why the Arab Democracy Wave Is Unlikely to Reach Syria—Yet," *Time*, February 4, 2011.

32. Jim Mann, *The Obamians: The Struggle inside the White House to Redefine American Power* (New York: Penguin Books, 2012).

33. Werrell, Femia, and Sternberg, "Did We See It Coming?"

34. The Fund for Peace, *Failed States Index 2010* (Washington, DC: The Fund for Peace, 2010).

35. Francesco Femia and Caitlin E. Werrell, *Egypt's Political Transition and the Rising Sea: An Opportunity for Reform* (Washington, DC: Center for Climate and Security, 2012).

36. Sternberg, "Chinese Drought, Wheat, and the Egyptian Uprising."

37. Messner et al., *Fragile States Index 2015*; Chatham House, *Global Food Insecurity and Implications for Saudi Arabia* (London: Chatham House, April 29, 2013).

38. John Hannah, "It's Time for the United States to Start Worrying About a Saudi Collapse," *Foreign Policy*, October 7, 2015.

39. Francesco Femia and Caitlin E. Werrell, *Eye on Iran: Lake Urmia, Water, Climate and Security in a Volatile Region* (Washington, DC: Center for Climate and Security, 2012); Benjamin Luke Habib, "The Implications of Climate Variability for North Korean Regime Stability," *International Journal of Climate Change: Impacts and Responses* 1, no. 1 (2009): 83–104.

40. Messner et al., *Fragile States Index 2015*; Intergovernmental Panel on Climate Change, "Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change," in *Climate Change 2014: Mitigation of Climate Change* (Cambridge: Cambridge University Press, 2014).

41. James R. Clapper, *Worldwide Threat Assessment of the US Intelligence Community* (February 26, 2015).

42. Joshua W. Busby, Kaiba L. White, and Todd G. Smith, *Climate Change and Insecurity: Mapping Vulnerability in Africa*, Climate & Energy Paper Series (Washington, DC: The German Marshall Fund of the United States, 2010).

43. Hoerling et al., "On the Increased Frequency of Mediterranean Drought"; Francesco Femia and Caitlin E. Werrell, *A New Libya In A New Climate: Charting A Sustainable Course for the Post-Gaddafi Era* (Washington, DC: Center for Climate and Security, 2011).

44. Alastair MacDonald and Noah Barkin, "European Leaders Fear The Refugee Crisis Will Tear The E.U Apart," *Huffington Post*, January 18, 2016.

45. Cronin, *Cooperation from Strength*.

46. *Ibid.*

47. Marcus DuBois King, "Climate Change and Vietnamese Fisheries: Opportunities for Conflict Prevention," in *The U.S. Asia-Pacific Rebalance, National Security and Climate Change*, ed. Caitlin Werrell and Francesco Femia (Washington, DC: Center for Climate and Security, 2015), 55–63.

48. Caitlin E. Werrell and Francesco Femia, eds., *The U.S. Asia-Pacific Rebalance, National Security and Climate Change* (Washington, DC: Center for Climate and Security, 2015).

49. King, "Climate Change and Vietnamese Fisheries."

50. Timothy C. Gallaudet, *Charting the Arctic: Security, Economic, and Resource Opportunities* (Joint Subcommittee Hearing, Committee on Foreign Affairs, U.S. House of Representatives, Subcommittee on Europe, Eurasia, and Emerging Threats and Subcommittee on the Western Hemisphere, November 17, 2015).

51. Uri Friedman, "The Arctic: Where the U.S. and Russia Could Square Off Next," *Atlantic Monthly*, March 28, 2014.

52. Alyson JK Bailes, "A New Arctic Chill? Reactions in the North to New Tensions with Russia," *Scottish Global Forum*, February 6, 2015, <http://www.scottishglobalforum.net/alyson-bailes-arctic-chill>.

Climate Change, the Erosion of State Sovereignty, and World Order

html#_ftnref3.

53. Gallaudet, *Charting The Arctic*.

54. Yasuaki Hijioka, Erda Lin, and Joy Jacqueline Pereira, "Chapter 24: Asia," in *Climate Change 2014: Impacts, Adaptation, and Vulnerability: IPCC 5th Assessment Report* (Cambridge: Cambridge University Press, 2014).

55. Jenny Grote Stoutenburg, *Disappearing Island States in International Law* (Leiden, The Netherlands: BRILL, 2015).

56. Benjamin Glahn, "Climate Refugees? Addressing the International Legal Gaps," *International Bar Association*, June 11, 2009, <http://www.ibanet.org/Article/Detail.aspx?ArticleUid=B51C02C1-3C27-4AE3-B4C4-7E350EB0F442>.

57. Rüttinger et al., *A New Climate for Peace*; Peter H. Gleick, "Water and Terrorism," *Water Policy* 8, no. 6 (2006): 481–503.

58. Tim Boekhout van Solinge, "The Illegal Exploitation of Natural Resources," in *The Oxford Handbook of Organized Crime*, ed. Letizia Paoli (Oxford: Oxford University Press, 2014).

59. Todd Sandler, "The Analytical Study of Terrorism Taking Stock," *Journal of Peace Research* 51, no. 2 (2014): 257–71.

60. Marcus DuBois King, "The Weaponization of Water in Syria and Iraq," *Washington Quarterly* 38, no. 4 (Winter 2016): 153–69.

61. *Ibid.*