

REMARKS

Threat Multiplier: Exploring the National Security Law and Policy Implications of Climate Change

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On March 20, 2015, these remarks were delivered at Georgetown University Law Center by Alice Hill, Senior Advisor for Preparedness and Resilience to the Assistant to the President for Homeland Security and Counterterrorism.

Thank you for inviting me here today. It is my pleasure to have a chance to speak with you about climate change and national security. It is clear that the impacts of climate change are already being felt, both here in the United States and globally. It is also clear that those impacts threaten our security.

Today I will speak with you about the national security risks posed by climate change impacts—what we are already observing, both internationally and domestically, and what is predicted to come. I will then briefly share with you the work that President Obama’s Administration has undertaken to address these security challenges. Finally, given the legal scholars in the audience, I will present a sample of emerging legal questions that have arisen from increased awareness of the impacts of climate change.

As has been observed, “[n]ational security extends well beyond protecting the homeland against armed attack by other states, and indeed, beyond threats from people who purposefully seek to damage or destroy states. Phenomena like pandemic disease and natural disasters, despite lacking human intentionality, can threaten national security.”¹ I work on the National Security Council staff. Let me be clear—climate change is a matter of national security.

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¹ Joshua W. Busby, *Climate Change and National Security: An Agenda for Action*, COUNCIL ON FOREIGN RELATIONS, COUNCIL SPECIAL REPORT NO. 32, Nov. 2007, 5.

In February of this year, the Administration released the 2015 National Security Strategy, highlighting that “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.”² In light of the significant threat that climate change poses to social stability, and critical infrastructure in particular, the Strategy lists it as a top strategic risk to U.S. interests, alongside other risks such as a catastrophic attack on the United States, the spread of infectious disease, and the proliferation of weapons of mass destruction.³

Security Impacts of Climate Change Are Visible Today

Last year, the Administration released its third National Climate Assessment.⁴ This is a consensus statement from more than three hundred climate scientists. That document unequivocally states that, “[c]limate change, once considered an issue for a distant future, has moved firmly into the present.”⁵ It also makes clear that the United States will not be spared. Indeed, the “effects of climate change are [already] being felt from the Arctic to the Midwest.”⁶

Here are a few of the major findings from the National Climate Assessment:

- “Climate change threatens human health and well-being . . .”
- “Infrastructure is being damaged by sea level rise, heavy downpours, and extreme heat; damages are projected to increase with continued climate change.”
- “Water quality and water supply reliability are jeopardized . . .”
- “Climate disruptions to agriculture have been increasing and are projected to become more severe over this century.”⁷

And these impacts will affect virtually every country on earth. It is, after all, *global* climate change.

In 2014, the Intergovernmental Panel on Climate Change (IPCC) issued a number of assessment reports, including a report on impacts, adaptation, and vulnerability.⁸ The

² EXEC. OFFICE OF THE PRESIDENT, NATIONAL SECURITY STRATEGY (2015), 12, https://www.whitehouse.gov/sites/default/files/docs/2015_national_security_strategy.pdf [hereinafter NATIONAL SECURITY STRATEGY].

³ *Id.*

⁴ U.S. GLOBAL CHANGE RESEARCH PROGRAM, CLIMATE CHANGE IMPACTS IN THE UNITED STATES (2014), available at <http://nca2014.globalchange.gov/report> [hereinafter NATIONAL CLIMATE ASSESSMENT].

⁵ NATIONAL CLIMATE ASSESSMENT, *supra* note 4, at 1.

⁶ NATIONAL SECURITY STRATEGY, *supra* note 2.

⁷ NATIONAL CLIMATE ASSESSMENT, *supra* note 4, at 16.

⁸ INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE [IPCC], *Climate Change 2014: Impacts, Adaptation, and Vulnerability* (2014), available at <http://ipcc-wg2.gov/AR5/>.

report looked at future risks. It concluded that if we continue on our current trajectory, absent substantial reductions in emissions, we are at high risk for:

- Severe and widespread impacts on unique and threatened ecosystems;
- Large risks to global and regional food security; and
- Compromised normal human activity due to the combination of high temperature and humidity.⁹

The IPCC and the National Climate Assessment found that climate change poses systemic risks from extreme weather events, which could lead to breakdown of critical infrastructure networks such as electricity, health, and emergency services.¹⁰

We witnessed this dramatic, systemic infrastructural breakdown during Superstorm Sandy.¹¹ With increased sea level rise came increased storm surge.¹² That storm surge damaged our ability to generate electricity—indeed, much of lower Manhattan went entirely dark.¹³ Millions lost power across a huge region.¹⁴ Without electricity, our transportation and health sectors began to collapse.¹⁵ Wastewater treatment failed and property was severely damaged.¹⁶

When critical infrastructure fails, our economy can suffer. A weakened economy can then compound the costs of preparing and restoring such infrastructure.¹⁷ As the impacts of climate change accelerate, we will be challenged to absorb and recover from the inevitable disruptions that it causes.

The United States Considers Climate Change an Issue of National Security

As the President noted in his proposed budget, during the last decade, the federal government has already spent approximately \$300 billion in direct costs tied to extreme weather events and fires alone.¹⁸ Over the same time span, “natural disasters have cost the world an average of 106,000 lives and \$184 billion per year,” according to leading

⁹ *Id.* at 14.

¹⁰ *See generally id.*; NATIONAL CLIMATE ASSESSMENT, *supra* note 4, at 15–17 (assessing the risks that climate change poses to various sectors).

¹¹ *See generally* U.S. DEP’T OF HOUS. & URBAN DEV., HURRICANE SANDY REBUILDING STRATEGY (2013), <http://portal.hud.gov/hudportal/documents/huddoc?id=HSRebuildingStrategy.pdf>.

¹² *See id.* at 193.

¹³ *Id.* at 17.

¹⁴ *Id.* at 22.

¹⁵ *Id.* at 25–28.

¹⁶ Stephen E. Flynn, *Bolstering Critical Infrastructure Resilience After Superstorm Sandy: Lessons for New York and the Nation*, NORTHEASTERN UNIVERSITY, CENTER FOR RESILIENCE STUDIES, Apr. 2015, at 5–6, available at <http://www.northeastern.edu/resilience/programs/sloan-foundation/>.

¹⁷ NATIONAL SECURITY STRATEGY, *supra* note 2.

¹⁸ OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, FISCAL YEAR 2016 BUDGET OF THE U.S. GOVERNMENT (2015), 23, <https://www.whitehouse.gov/sites/default/files/omb/budget/fy2016/assets/budget.pdf>.

reinsurance company Munich Re.¹⁹

As extreme weather events intensify, the Government Accountability Office (GAO) anticipates that the impacts and costs of weather-related disasters will increase.²⁰ Indeed, since 2013, GAO has listed climate change as a top risk to federal assets, operations, and programs. GAO has concluded that climate change presents a “significant financial risk to the federal government” and “poses risks to many environmental and economic systems.”²¹

Global Security Threats

When the Pentagon took a look at this range of impacts, it concluded in its Quadrennial Defense Review that “climate change poses [a] significant challenge for the United States and the world at large.”²² The Department of Defense noted that “[t]he pressures caused by climate change will influence resource competition while placing additional burdens on economies, societies, and governance institutions around the world.”²³

Likewise, the Department of Homeland Security, in its Quadrennial Review, stated that climate change trends “aggravate stressors abroad that can enable terrorist activity and violence, such as poverty, environmental degradation, and social tensions.”²⁴

My boss, Susan Rice, the President’s National Security Advisor, has stated that “climate change is a source of stress on a number of the underlying causes of conflict. Drought, floods, food shortages, and water scarcity drive increased human insecurity and poverty and can contribute to conflict.”²⁵

Given the economic and development challenges they face, many of the poorest nations do not have a lot of margin of error. In the words of President Obama, “[w]hen people are hungry, when people are displaced, when there are a lot of young people . . . who are drifting without prospects for the future, the fertility of the soil for terrorism ends up being significant. And it can have an impact on us.”²⁶

¹⁹ *Hearing on the FY 2016 Budget Request Before the H. Comm. on Foreign Affairs*, 114th Cong. 53 (2015), 7 (statement of Alfonso E. Lenhardt, Acting Adm’r, U.S. Agency for Int’l Dev.).

²⁰ U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-15-290, HIGH-RISK SERIES: AN UPDATE (2015), 67, available at <http://www.gao.gov/products/GAO-15-290>.

²¹ *Id.*

²² U.S. DEP’T OF DEF., QUADRENNIAL DEFENSE REVIEW (2014), at 8, available at http://archive.defense.gov/Home/features/2014/0314_sdr/qdr.aspx [hereinafter DEFENSE QDR].

²³ *Id.*

²⁴ U.S. DEP’T OF HOMELAND SEC., QUADRENNIAL HOMELAND SECURITY REVIEW (2014), at 22, available at <http://www.dhs.gov/quadrennial-homeland-security-review>.

²⁵ *Years of Living Dangerously*, Episode 1, SHOWTIME (Apr. 13, 2014), available at <http://yearsoflivingdangerously.com> [hereinafter *Years of Living Dangerously*].

²⁶ *Id.*, Episode 5; Thomas Friedman, *Obama on Obama on Climate*, N.Y. TIMES, (June 7, 2014), http://www.nytimes.com/2014/06/08/opinion/sunday/friedman-obama-on-obama-on-climate.html?_r=0.

Maintaining stability within and among other nations can help avoid military conflicts. The impacts of climate change may lead to instability, however, by creating food or water shortages, damaging critical infrastructure, constraining the availability of electricity, increasing competition for natural resources, spreading water- and insect-borne diseases, forcing migration as land boundaries change, and disrupting economic activity. These consequences of climate change could significantly add to the challenges faced by not only already-fragile governments that are unable to respond effectively but also to stable governments.²⁷

The Department of Defense expects the frequency, scale, and complexity of future humanitarian assistance and disaster response missions to increase in the future as climate change impacts increase.²⁸ It also expects that climate change may affect its ability to carry out its missions successfully.²⁹ As the Quadrennial Defense Review makes clear, climate change “creates both a need and an opportunity for nations to work together.”³⁰

We are not alone in thinking that climate change poses security risks. The American Security Project surveyed every country in the world and asked if climate change was included in its national security strategy. Approximately seventy percent said that climate change was a threat to their own security.³¹

President Obama’s Climate Action Plan

So, what are we doing about this looming crisis? The President’s Climate Action Plan has set the United States on the path to addressing the risks and challenges.³² The Plan has three pillars: cut harmful emissions; prepare the United States for the impacts; and lead internationally, including by helping countries to adapt.³³

The Climate Action Plan recognizes that, as we act to curb the carbon pollution that is driving climate change, we must also improve our ability to manage the climate impacts that we are already witnessing across the country. We must also work with our

²⁷ See *National Security Implications of Climate Change: Submitted to the Subcomm. on Defense of the S. Comm. on Appropriations*, 113th Cong. (2014), at 7–8 (statement of Daniel Y. Chiu, Deputy Assistant Sec’y of Def. for Strategy & Force Dev.).

²⁸ John Podesta, *Combating Climate Change: Secretary Hagel Hosts the U.S.-ASEAN Defense Forum*, THE WHITE HOUSE (Apr. 3, 2014, 12:52 PM), <https://www.whitehouse.gov/blog/2014/04/03/combating-climate-change-secretary-hagel-hosts-us-asean-defense-forum>.

²⁹ DEFENSE QDR, *supra* note 22, at VI.

³⁰ Podesta, *supra* note 26 (quoting DEFENSE QDR, *supra* note 22, at 25).

³¹ T.J. Raphael, *Is Climate Change a Bigger Threat to Our National Security than Terrorism?*, PUBLIC RADIO INT’L. [PRI] (May 8, 2014, 5:15 PM), <http://www.pri.org/stories/2014-05-08/climate-change-bigger-threat-our-national-security-terrorism>.

³² EXEC. OFFICE OF THE PRESIDENT, THE PRESIDENT’S CLIMATE ACTION PLAN (2013), <https://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf> [hereinafter CLIMATE ACTION PLAN].

³³ *Id.* at 5.

international partners to likewise reduce emissions and prepare for pending impacts. In the words of the Plan, if we fail to prepare, we will “put millions of people at risk, jeopardizing important development gains, and increasing security risks that stem from climate change.”³⁴

Regional Adaptation

With regard to managing the impacts of climate change at home, we have sought to help local communities prepare. We issued the National Climate Assessment, which for the first time looked at regional impacts.³⁵ We required federal agencies, including the Department of Defense, to engage in adaptation planning.³⁶

One area of immediate concern is Hampton Roads, where we have worked with local leaders to develop a pilot project to plan for sea level rise.³⁷ The Norfolk Hampton Roads area is home to many military bases, shipyards, and installations. And it is an area where sea level is rising at roughly twice the global average. There is no high ground; all it takes is a rainstorm and a big tide for flooding to occur these days. Many of the personnel live off base. A study by the Virginia Institute of Marine Science identified almost three hundred miles of roads vulnerable to floods in the Norfolk region.³⁸

Sector-by-Sector Infrastructural Risk Assessments

We are also looking at our vulnerabilities, such as in the energy sector. We know that failure in the energy sector can lead to cascading effects. A number of our vulnerabilities were revealed during the summer of 2012 when we had a really hot summer. High temperatures caused increased demand for electricity from air conditioning.³⁹ To meet the increased electrical demand, electric power generation plants need to use more water to ensure electricity generation.⁴⁰

But with increased heat, there is also increased evaporation. Rivers run low and warm. And with more heat, the soil is drier, which can create greater demand for

³⁴ *Id.* at 20.

³⁵ See generally NATIONAL CLIMATE ASSESSMENT, *supra* note 4.

³⁶ Exec. Order No. 13514, Federal Leadership in Environmental, Energy, and Economic Performance, 74 Fed. Reg. 52117, 52124-25 (Oct. 5, 2009).

³⁷ *National Security and the Accelerating Risks of Climate Change*, CNA MILITARY ADVISORY BOARD, May 2014, at 25, available at <https://www.cna.org/mab/reports> [hereinafter CNA Report].

³⁸ Jeff Goodell, *The Pentagon & Climate Change: How Deniers Put National Security at Risk*, ROLLING STONE (Feb. 12, 2015), <http://www.rollingstone.com/politics/news/the-pentagon-climate-change-how-climate-deniers-put-national-security-at-risk-20150212>; *Recurrent Flooding Study for Tidewater Virginia*, VIRGINIA INST. OF MARINE SCI., Jan. 2013, at 9, http://crm.vims.edu/recurrent_flooding/Recurrent_Flooding_Study_web.pdf.

³⁹ Joe Eaton, *Record Heat, Drought Pose Problems for U.S. Electric Power*, NATIONAL GEOGRAPHIC (Aug. 17, 2012), <http://news.nationalgeographic.com/news/energy/2012/08/120817-record-heat-drought-pose-problems-for-electric-power-grid/>; U.S. ENVTL. PROT. AGENCY, CLIMATE IMPACTS ON ENERGY (2009) <http://www3.epa.gov/climatechange/impacts/energy.html>.

⁴⁰ *Id.*

irrigation, further stressing water supplies. Increased heat also negatively impacts the transmission of electricity. During the summer of 2012, a nuclear plant had to shut down in Connecticut because the water used to cool the towers simply became too warm.⁴¹ In the West in 2013, wildfires near Yosemite threatened not only transmission towers, but also San Francisco's drinking water.⁴²

We saw extraordinary events during that time in the transportation sector as well. The Mississippi River is a vital transportation corridor. Sixty percent of all grain exported from the United States ships via the Mississippi River.⁴³ The Mississippi got so low in the August 2012 drought that barge traffic halted.⁴⁴ Barge traffic also halted in April 2011 and June 2013, then because of severe flooding on the Mississippi.⁴⁵ Both too much and too little water—symptoms of climate change—can bring commerce on the Mississippi to a halt.

These experiences demonstrate that climate-related disasters will greatly tax the ability of our critical infrastructure to provide basic services. The President's Climate Action Plan calls for agencies to follow the Department of Energy's approach to report on the impacts of climate change on key sectors and identify strategies to address them, prioritizing health, transportation, food supplies, oceans, and coastal communities.⁴⁶

This Administration has emphasized infrastructure resiliency and the need to modernize federal programs so that federal investments are resilient investments.⁴⁷ We want to make sure, for example, that new buildings, roads, and projects funded with taxpayer dollars are built to withstand projected climate change impacts, not just built to historic norms.

We have designed our infrastructure, including our defense apparatus, based on certain expectations about the climate.⁴⁸ Consideration of climate and weather patterns has always been a part of our planning processes. However, one of our fundamental assumptions, namely, that the climate is unchanging, no longer holds true.

⁴¹ U.S. DEP'T OF ENERGY, U.S. ENERGY SECTOR VULNERABILITIES TO CLIMATE CHANGE AND EXTREME WEATHER (2013), at 2, available at <http://energy.gov/downloads/us-energy-sector-vulnerabilities-climate-change-and-extreme-weather>.

⁴² Kurtis Alexander, *Yosemite Fire Threatening SF's Water Supply*, SAN FRANCISCO CHRONICLE, Aug. 28, 2013, <http://www.sfgate.com/news/article/Yosemite-fire-threatening-SF-s-water-supply-4766176.php>.

⁴³ U.S. NAT'L PARK SERV., MISSISSIPPI RIVER FACTS, <http://www.nps.gov/miss/riverfacts.htm> (last visited Oct. 11, 2015).

⁴⁴ Karl Plume, *Low Water Strands 97 Vessels on Mississippi River: USCG*, REUTERS, Aug. 20, 2012, <http://www.reuters.com/article/2012/08/20/us-usa-drought-barges-idUSBRE87J0WO20120820>.

⁴⁵ See, e.g., Karl Plume, *Flood Halts Mississippi River Barge Traffic North of St. Louis*, REUTERS, June 4, 2013, <http://www.reuters.com/article/2013/06/04/us-usa-flood-shipping-idUSBRE95312Q20130604>.

⁴⁶ CLIMATE ACTION PLAN, *supra* note 32, at 14.

⁴⁷ *Id.* at 13.

⁴⁸ *Climate Extremes: Recent Trends with Implications for National Security*, HARVARD UNIV. CENTER FOR THE ENV'T, Oct. 2012, at 7, available at <http://environment.harvard.edu/climate-extremes>.

We can no longer assume that the extremes of tomorrow will resemble the extremes of yesterday. This means that we need to adapt to new conditions. This is critical work. The Multihazard Mitigation Council of the National Institute of Building Sciences conducted a study on the benefits of building resiliently.⁴⁹ The Council concluded that for every dollar spent on FEMA mitigation projects on the front end there was, on average, a savings of four dollars in reduced damage.⁵⁰ Put simply, the study showed that although building higher and safer may cost more up front, over time it saves money because, for example, future storms cause less damage to resilient buildings.⁵¹

Data-Driven Policymaking

To successfully adapt, we need sound, credible climate and infrastructure data to conduct risk assessments and analysis. Pursuant to the President's Climate Action Plan, we have created a data initiative to leverage extensive federal data relevant to climate change to stimulate innovation in climate preparedness.⁵² The first batch of data focused on coastal flooding and sea level rise. Also pursuant to the Plan, we have created a toolkit for resilience that centralizes access to data-driven resilience tools, services, and best practices.⁵³

Coming out of the work of the Hurricane Sandy Rebuilding Task Force and the Climate Action Plan, the President established a Federal Flood Risk Management Standard.⁵⁴ Floods are the most frequent and costly natural hazard in the United States.⁵⁵ Losses caused by flooding impact our economic prosperity and public health and safety, which in turn affects our national security.⁵⁶

Between 1980 and 2013, the United States suffered more than \$260 billion in flood

⁴⁹ *Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities*, NATIONAL INSTITUTE OF BUILDING SCIENCES, MULTHAZARD MITIGATION COUNCIL, 2005, available at https://www.nibs.org/?page=mmc_projects#nhms.

⁵⁰ *Id.* at iii.

⁵¹ *See generally id.*

⁵² Press Release, OFFICE OF THE PRESS SEC'Y, THE WHITE HOUSE, FACT SHEET: The President's Climate Data Initiative: Empowering America's Communities to Prepare for the Effects of Climate Change (Mar. 19, 2014), <https://www.whitehouse.gov/the-press-office/2014/03/19/fact-sheet-president-s-climate-data-initiative-empowering-america-s-comm>.

⁵³ John P. Holdren et al., *A Toolkit to Help Communities Respond to a Changing Climate*, THE WHITE HOUSE (Nov. 17, 2014, 12:45 PM), <https://www.whitehouse.gov/blog/2014/11/17/toolkit-help-communities-respond-changing-climate>.

⁵⁴ Press Release, OFFICE OF THE PRESS SEC'Y, THE WHITE HOUSE, Executive Order—Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input (Jan. 30, 2015), <https://www.whitehouse.gov/the-press-office/2015/01/30/executive-order-establishing-federal-flood-risk-management-standard-and->.

⁵⁵ U.S. DEP'T OF HOMELAND SEC., FED. EMERGENCY MGMT. AGENCY, FLOOD HAZARD MAPPING AND RISK ANALYSIS (2013), 1, https://www.fema.gov/pdf/about/budget/11g_fema_flood_hazard_mapping_risk_analysis_dhs_fy13_cj.pdf.

⁵⁶ *Supra* note 54.

damages.⁵⁷ Approximately eighty-five percent of disaster declarations arise from flooding.⁵⁸ Flood impacts are predicted to increase over time due to development patterns and the effects of climate change.⁵⁹ The Federal Flood Risk Management Standard better reflects our understanding of current and future flood risk in a changing climate. It applies a consistent standard for all federal investments and allows agencies to account for the projected impacts of climate change. When implemented, the standard will reduce flood risk, increase resilience, and diminish the likelihood of future losses, thereby minimizing future costs for the federal government, states, local governments, and the private sector, and potentially save lives.⁶⁰

Global Investments and Strategies

We must also pay close attention to what is happening in the Arctic. Climate change is occurring more rapidly there than anywhere else in the world.⁶¹ Changes wrought by increased temperatures are clearly in evidence, including damage from subsidence caused by melting permafrost.⁶² Increasing temperatures in the Arctic will also lead to an increase in commercial activity. Indeed, with warmer temperatures, we are seeing the Northern Sea Route used as a shipping channel.⁶³ In light of the concerns regarding the Arctic, this Administration has created a National Arctic Strategy and an accompanying Implementation Plan with specific tasks for agencies to undertake in light of changing conditions.⁶⁴ The President also issued an Executive Order to ensure that our federal efforts in the Arctic are well-coordinated.⁶⁵ This is especially important as the United States has now assumed the Arctic Council Chairmanship.⁶⁶

As you can see, climate change poses significant risks and challenges to our national security. That is why this Administration is making historic investments in the capacity of countries to respond to climate change. To help other nations prepare for the impacts, we

⁵⁷ U.S. FED. EMERGENCY MGMT. AGENCY, FEDERAL FLOOD RISK MANAGEMENT STANDARD (2015), <https://www.fema.gov/news-release/2015/02/05/federal-flood-risk-management-standard>.

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ *See generally id.*

⁶¹ U.N. ENV'T PROGRAMME [UNEP], *What Future for the Arctic? New Awareness of and Opportunities for UNEP to Address Climate Change in the Arctic*, at 6 (Feb. 18, 2013), <http://www.unep.org/gc/gc27/Docs/se/What%20Future%20for%20the%20Arctic.pdf>.

⁶² *See generally* U.S. ARCTIC RESEARCH COMM'N, CLIMATE CHANGE, PERMAFROST, AND IMPACTS ON CIVIL INFRASTRUCTURE (2003), <http://www.arctic.gov/publications/other/permafrost.pdf>.

⁶³ CNA Report, *supra* note 37, at 19.

⁶⁴ EXEC. OFFICE OF THE PRESIDENT, IMPLEMENTATION PLAN FOR THE NATIONAL STRATEGY FOR THE ARCTIC REGION (2014), https://www.whitehouse.gov/sites/default/files/docs/implementation_plan_for_the_national_strategy_for_the_arctic_region_-_fi....pdf.

⁶⁵ Exec. Order No. 13689, Enhancing Coordination of National Efforts in the Arctic, 80 Fed. Reg. 4191 (Jan. 21, 2015).

⁶⁶ ARCTIC COUNCIL, *U.S. Chairmanship 2015-2017: One Arctic: Shared Opportunities, Challenges & Responsibilities*, (2015), <http://www.arctic-council.org/index.php/en/about-us/arctic-council/u-s-chairmanship>.

have proposed a \$3 billion Green Climate Fund.⁶⁷ The President also signed an Executive Order requiring all international development projects to be screened for climate resilience.⁶⁸ That means that taxpayer dollars should last for the life of the project, rather than be washed away with the next storm.

Time is of the essence. We will need everyone's commitment to help ensure that we leave a healthy planet. We need to cut our emissions and prepare for impacts. Or, as others have put it, "[w]hat we need is enough mitigation to avoid unmanageable climate change and enough adaptation to manage unavoidable climate change."⁶⁹

Climate Change Presents Novel Legal Issues

And since this is a law school event, and I am a former lawyer, it seems appropriate that I spend a few minutes discussing legal developments regarding climate change.

There have been some well-publicized efforts to sue for damages over the failure to mitigate climate change. A recent empirical study by Professors David Markell and J.B. Ruhl asked if a new jurisprudence was developing with regard to climate change or whether it was business as usual.⁷⁰ They concluded that it was the latter.⁷¹ This is no surprise because, as a former judge, I know not only that cases come in one by one, but also that the courts are not known for speedy action.

But even though the judicial system has treated these cases as business as usual, there have been some fascinating developments. For example, in February 2014, in the wake of Superstorm Sandy, when utility Con Edison sought to increase its rates, the New York State Public Service Commission reached a historic decision. As part of a settlement, it required Con Edison to implement state-of-the-art measures to plan for and protect its electric, gas, and steam systems from the effects of climate change.⁷²

Last December, a criminal court in France found several public officials guilty of manslaughter for their failure to protect local citizens from a devastating flood. In the

⁶⁷ Press Release, OFFICE OF THE PRESS SEC'Y, THE WHITE HOUSE, United States and Japan Announce \$4.5 Billion in Pledges to Green Climate Fund (GCF) (Nov. 15, 2014), <https://www.whitehouse.gov/the-press-office/2014/11/15/united-states-and-japan-announce-45-billion-pledges-green-climate-fund-g>.

⁶⁸ Exec. Order No. 13677, Climate-Resilient International Development, 79 Fed. Reg. 58231 (Sept. 23, 2014).

⁶⁹ John P. Holdren, *Climate Change Science and Policy: What Do We Know? What Should We Do?*, THE KAVLI FOUND., 2010 Kavli Prize Science Forum Keynote Address, Sept. 2010, available at <http://www.kavlifoundation.org/2010-kavli-prize-science-forum-keynote-address-john-p-holdren-us-presidential-science-advisor>.

⁷⁰ David Markell & J.B. Ruhl, *An Empirical Assessment of Climate Change in the Courts: A New Jurisprudence or Business As Usual?*, 60 FLA. L. REV. 15 (2012).

⁷¹ *Id.*

⁷² Ethan I. Strell, *Public Service Commission Approves Con Ed Rate Case and Climate Change Adaptation Settlement*, COLUM. L. SCH. SABIN CTR. FOR CLIMATE CHANGE CLIMATE LAW BLOG (Feb. 21, 2014), <http://blogs.law.columbia.edu/climatechange/2014/02/21/public-service-commission-approves-con-ed-rate-case-and-climate-change-adaptation-settlement/>.

early morning of February 28, 2010, Storm Xynthia hit the French Atlantic coast, overwhelming coastal defenses and flooding almost 200 square miles of land. The storm caused forty-seven deaths and over one billion euros in damage. Over half of these deaths occurred in two neighboring villages where rapidly rising flood waters trapped hundreds of sleeping residents in their homes.⁷³

The investigation revealed that local public officials, including the four-term mayor, had overseen the construction of single-story homes in an area known as “the deadly bowl” for its extreme flood risk. According to the investigation, the officials failed to take adequate precautions to protect the houses from flooding or warn the residents of the flood risk. In addition, the mayor and his staff failed to issue adequate warnings or evacuation orders when Storm Xynthia made landfall. The court found that the mayor and his assistant were fully aware of the flood risks but had deliberately concealed them to avoid hindering real estate development in the area, thus breaching their “duty to protect and safeguard the population.” The court also found that the mayor intentionally obstructed the implementation of a flood risk prevention plan for this same reason. The court sentenced the mayor to four years in prison.⁷⁴

Finally, there will be new developments in real estate law. I must admit, as a judge, I never looked forward to having a disputed title case. But shifting boundaries will create issues for those wishing to convey land interests. For example, surveys and plats may no longer be valid. Traditional ownership lines will be challenged by rolling easements. The question is: where does the public easement end and private land begin when the ocean washes away what was the coastline? As policymakers, we must monitor and anticipate these legal touch points to ensure that our policy and legal frameworks are agile enough to withstand the social and infrastructural pressures of climate change.

Conclusion

As I think about all of these issues, I know that the faces in this room are our hope. We need more people to become seriously engaged in our efforts to curb emissions and prepare for the consequences of climate change.

Governor of Washington Jay Inslee, who was a member of the President’s State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience, has made an observation that I think about often: “We are the first generation to see the impacts of climate change, and we are the last that can do something about it.”⁷⁵ You can greatly assist in that process. Thank you.

⁷³ Jessica Anne Wentz, *Government Officials’ Liability after Extreme Weather Events: Recent Developments in Domestic and International Case Law*, COLUM. L. SCH. SABIN CTR. FOR CLIMATE CHANGE CLIMATE LAW BLOG (Feb. 18, 2015), <http://blogs.law.columbia.edu/climatechange/2015/02/18/government-officials-liability-after-extreme-weather-events-recent-developments-in-domestic-and-international-case-law/>.

⁷⁴ *Id.*

⁷⁵ *Years of Living Dangerously*, *supra* note 25, Episode 9.