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Subcommittee on East Asia, the Pacific, and International Cybersecurity Policy
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Chairman Markey, Senator Romney, and distinguished Members of the Subcommittee:

Thank you for the opportunity to testify before you today.

I bring over 30 years of experience as a national security professional to this issue and served as the first Deputy Undersecretary of Defense (Environmental Security). I am currently the Secretary General of the International Military Council on Climate and Security, Founding Board Chair of the Council on Strategic Risks (CSR), and as Senior Strategist at the Center for Climate and Security, an institute of the CSR. I am also the Founder and former Executive Director of CNA's Military Advisory Board, and a Senior Fellow at the Woodrow Wilson International Center. The views I am presenting today are my own.

Let me start with a short history of how I came to determine that climate change is a security threat, and why it is in America's interest to understand the magnitude of this issue and the urgent need to address it.

When I served as the Deputy Undersecretary of Defense for Environmental Security in the 1990s, we were primarily focused on cleaning up hazardous waste from Cold War-era military activities. Over time, environmental issues evolved and became part of our National Security Strategy, when we began to consider the fact that conflicts over access to, or control of, natural resources compromised U.S. national security interests. The focus then was on regional cooperation between countries to reduce nuclear risks, including from nuclear waste, preventing transnational environmental crime such as illegal fishing and logging, promoting cooperation among various stakeholders both within and outside of government, and better understanding and addressing the consequences of environmental threats. The Department of Defense (DoD) began integrating environmental concepts into planning under its Preventive Defense Strategy, and in 1993 it took on the role of "…[helping] deter or mitigate the impacts of

adverse environmental actions leading to international instability."[1] The US Pacific Command was one of the first Combatant Commands to hold an Environmental Security Partners Engagement conference with ministers from across the Pacific and still conducts the Pacific Environmental Security Forum with our key allies and partners.

These developments at DoD, along with the implications of climate change coming into sharper focus, led to a marked increase in concerns about the security risks of climate change from both the Department of Defense and the Intelligence Community[2] during the George W. Bush Administration. While at CNA during that time, I founded the CNA Military Advisory Board (MAB), composed of senior retired generals and admirals, to assess the national security implications of climate change. In a seminal report in 2007 we identified climate change as a "threat multiplier," amplifying existing conditions of instability. The CNA MAB in this Report stated, "[t]he potential consequences of climate change are so significant that the prudent course of action is to begin now to assess how these changes may potentially affect our national security, and what courses of action our nation should take."[3] We recommended that the national security implications of climate change be incorporated into the broad range of national security strategy and planning documents.

Building from work of the CNA MAB, the Center for Climate and Security (CCS), where I am now a Senior Strategist, assembled an Advisory Board of 30 senior retired military leaders and national security professionals, who have served across both Democratic and Republican Administrations, and in all branches of the U.S. military and the U.S. Coast Guard. Since 2011, CCS has produced a steady stream of reports and articles on the national security risks of climate change, and was the first organization to highlight the climate change dimension in Syria's political instability.[4] CCS also hosts a climate and security "community of practice," the Climate and Security Advisory Group (CSAG), that includes participation from over 300 national security, military and intelligence leaders. In 2019, the CSAG released a Climate Security Plan for America, which laid out a roadmap for the federal government to tackle the security risks posed by climate change. In 2020, CCS assembled a National Security, Military and Intelligence Panel (NSMIP) to produce a first-of-its-kind Security Threat Assessment of Global Climate Change.

With its partners in Europe, the CCS has established an International Military Council on Climate and Security, including representatives from 38 countries, to meet the growing concerns about climate change from our allied and partner nations' militaries. In addition to an annual World Climate and Security Report, the IMCCS Expert Group has produced a range of reports assessing

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[1] Sherri Wasserman Goodman, Deputy Under Secretary of Defense, (Environmental Security), Statement Before the Subcommittee on Installation and Facilities, House Armed Services Committee, May 13, 1993.

[2] The Center for Climate and Security Resource Hub, accessed at: https://climateandsecurity.org/resources/u-s-government.

[3] CNA Military Advisory Board. "National Security and the Threat of Climate Change." Report. 2007.

[4] "Military Expert Panel Report: Sea Level Rise and the U.S. Military's Mission." Eds 1 & 2. The Center for Climate and Security. September 2016 & February 2018.

climate security risks, including analyses of many countries in East Asia and the Indo-Pacific, which will form the basis of my remarks today.

Since the CNA MAB first characterized climate change as a "threat multiplier" in 2007, the national security community has concluded that climate change now contributes to unprecedented security threats for the United States – and the world. Growing evidence demonstrates that climate change is increasing the likelihood of conflict in key regions.[5] In 2016, the Climate Security Consensus Project stated that "the effects of climate change present a strategically-significant risk to U.S. national security." In the Fiscal Year 2018 National Defense Authorization Act (NDAA), Congress determined that "climate change presents a direct threat to the national security of the United States and is impacting stability in areas of the world both where United States Armed Forces are operating today, and where strategic implications for future conflict exists." In 2018, research supported by USAID, further demonstrated the effects of climate change on state fragility around the world. The Director of National Intelligence, via the Worldwide Threat Assessment, has repeatedly emphasized that the United States will have to manage the negative effects of a changing climate. and The National Intelligence Council (NIC) has publicly released papers on topics such as water security, food security, and overall climate change developments that have noted the national security implications. The most recent *Global Trends* Report from the NIC, published earlier in 2021, characterized climate and environmental issues as one of four fundamental trends that will shape national security going forward.

The Biden Administration has not only recognized these threats, but has elevated them by putting climate security front and center in its foreign policy, calling for the integration of climate considerations across the work of all agencies.

This whole-of-government approach is critical, as these unprecedented climatic changes arrive during a time of other rapid and unprecedented changes in the geostrategic environment. Population growth, rising powers, an increase in the political fortunes of authoritarians, weakening norms against the use of weapons of mass destruction, and rapid and disruptive technological changes, among other major risks, are combining to challenge us in dizzying ways. The impacts of rapid climate change, including an array of extreme weather events, arrive in this already unstable and volatile world, threatening to further destabilize the international order. While there is no region of the world that will be left untouched by these changes, I am pleased today to provide a more detailed assessment of the risks posed in East Asia and the Pacific.

Climate Security in East Asia and the Pacific: Overview

[5] Schleussner, Carl-Friedrich, Jonathan F. Donges, Reik V. Donner, and Hans Joachim Schellnhuber. "Armed-conflict Risks Enhanced by Climate-related Disasters in Ethnically Fractionalized Countries." PNAS. August 16, 2016.

East Asia and the Pacific are highly exposed to climate change-driven hazards, including extreme hydrometeorological and heat events, sea level rise and acidifying oceans. These unprecedented hazards arrive in a region that already faces a broad spectrum of conventional, unconventional, and hybrid security risks and challenges.

Upon the release of two new reports focused on South Asia and Southeast Asia, from CCS earlier this year former U.S. Pacific Commander Admiral Samuel J. Locklear III, U.S. Navy (Ret.), stated: "We have entered an age in which multiple, converging risks define our security environment. In the Indo-Pacific region, climate change is the biggest long-term security threat." Climate impacts are getting more potent, dialing up the threats from existing conflict patterns and resource scarcities. At the same time, climate projections are getting more precise. This combination of potency and precision translates into an obligation for militaries to anticipate, train, equip and prepare for increasingly dangerous climate security scenarios."

These developments affect the US military mission in the region and increase risks of regional instability. However, they also present opportunities for closer collaboration with U.S. allies and partners in the region. Let me discuss each of these areas in turn.

Impacts on the US Military Mission

In this region, climate change simultaneously impedes the US military's operational preparedness and expands its missions by straining physical infrastructure, interrupting exercises, and increasing the need for humanitarian and disaster relief missions. As Erin Sikorsky and Caroline Baxter noted in *Just Security* earlier this year:

> "Worsening storms and overlapping typhoon seasons in Japan and South Korea threaten the structural integrity of U.S. bases in-country and inhibit reception, staging, and onward movement of forces flowing from the United States to the theater of operations. Rising sea levels threaten airfields on small islands like Guam, Palau, and Yap and diminish their utility as locations for prepositioned U.S. equipment. Without these locations, every military challenge in the region becomes significantly harder."

Secretary of Defense Austin underscored this point at the World Leaders Climate Summit in April 2021, noting that the February 2019 Typhoon Wutip -- outside of the typical typhoon season-- forced the United States to pause exercises with its Australian and Japanese allies.

In terms of humanitarian aid and disaster relief missions, in 2020 the International Federation of the Red Cross reported 25 climate-related disasters in the region – a record high. In testimony before Congress in 2019, Admiral Phil Davidison, Commander of U.S. Indo-Pacific Command, explained that these types of response missions are the most immediate and concrete way in which climate change is affecting operational readiness.

Climate Change and Regional Instability

In addition to direct risks to the US military mission, climate change is increasing financial and political burdens on already-strained governments, heightening tensions and opening new areas of competition in East Asia and the Pacific, particularly vis-a-vis China.

Across the region, climate impacts are inducing or exacerbating physical, ecological, and socio-economic stressors, leading to intensifying food and other resource competition, societal tensions, and irregular migration and displacement — which, in turn, can amplify existing security challenges or create new ones. Internal and cross-border climate-related migration can stress densely-packed urban areas, particularly in areas experiencing economic or political instability, or both. Such migration also can increase inter-communal conflicts and grievances with governments.

Southeast Asia exemplifies these dynamics, as the Expert Group of the International Military Council on Climate and Security (IMCCS) detailed in a report released in February of this year. In regional waters, like the South China Sea, countries face contested maritime boundaries and competition for ocean-based resources. On land, excessive heat and drought, particularly in rural agricultural areas, can induce migration to coastal cities, which are themselves at risk from storms and inundation. Domestic insurgent groups and violent extremist organizations are recruiting farmers and fishermen, who are desperate, because they are no longer earning a livelihood. Fishermen adept at making bombs for "blast fishing" –the practice of stunning fish with an underwater explosion then capturing them with a net—are particularly attractive recruits. These "threat amplifiers," added to the physical damage wrought by climate impacts, are stunting economic growth, ecosystem sustainability, and impairing the ability of governments to provide basic services, compromising stability and security.

Southeast Asia is home to about 9 percent of the global population, but 18 percent of the global fish catch. Overfishing and warmer, more acidic oceans are taking a toll on both historically rich fishing grounds and traditional livelihoods supporting millions. Small local fishing boats forced to sail farther from land are confronted with armed Chinese vessels. In September 2020, the Chinese Coast Guard reported that over the course of the preceding four months it had evicted over 1,100 fishing boats from the northern half of the South China Sea, while detaining 11 vessels and over 60 foreign crew members. Similar aggressive tactics from Chinese long-range fishing fleets, including involvement in illegal, unreported and unregulated (IUU) fishing in the Exclusive Economic Zones of Pacific Island States, appear to be occurring throughout the broader Indo-Pacific region and beyond.[6] According to a 2017 analysis from Australian climate security researcher Dr. Michael Thomas, increasing competition for declining

[6] The security implications of illegal, unreported, and unregulated (IUU) fishing in Southeast Asia, the broader Indo-Pacific region, and globally are addressed in detail in a 2016 report from the National Intelligence Council, Global Implications of Illegal, Unreported, and Unregulated (IUU) Fishing. See also, Fisheries, Food Security and the Issues of Climate Change and its effect on the Indo-Pacific; Fisheries Partnerships; The national security imperative to tackle illegal, unreported, and unregulated fishing.

stocks "could further strain the international rules-based approach to fishing governance and could well increase tensions, violent confrontations and military brinkmanship over the multiple overlapping and competing territorial claims in the South China Sea."

Climate factors are also consequential in the tense relations between nuclear-armed India, Pakistan and China. A joint study published earlier this year by the Council on Strategic Risks and the Woodwell Climate Research Center projects a strong warming trend near the disputed border between India and China, where approximately 100,000 Indian and Chinese troops are deployed at altitudes reaching 15,000 feet. Military patrols, which are not viable today, may become more frequent, setting the conditions for potential violent clashes.

Meanwhile China—partly due to its transition to renewable energy—is planning the world's largest hydroelectric facility just north of where the Brahmaputra River crosses into India. Three times the size of Three Gorges Dam, this newer dam project is also located in a seismically sensitive zone. This has caused major concerns for downstream India, which is also worried that the new Chinese dam could be used to either withhold water from or flood parts of India. In truth, it will be difficult to tell if a future flood is the result of Chinese manipulation of the dam, or climate-related factors. China's lack of transparency on dam projects affecting its neighbors only increases India's distrust.

China is also constructing a series of dams in Pakistani-held Kashmir, to which India objects, due to its territorial claims there. These dams, when built, will be viable until the end of the century, due to projected glacial melt patterns. Such construction will contribute to further strengthening the China-Pakistan partnership while exacerbating both countries' tensions with India. In each of these disputes, universally trusted data sources, and institutions capable of managing resource-related disputes, are lacking.

Opportunities to Support Allies and Partners in the Region

In this context, the United States will need to develop and implement more expansive approaches to maintaining and enhancing its regional influence, and supporting the interests of its allies, and current and prospective partners in the Indo-Pacific, including robustly supporting climate resilience efforts in the region. Interestingly, in a survey of ASEAN member states' top challenges in 2021, the threat of climate change outranked the threat of regional military tensions by nearly 10 points. For the Philippines, a crucial U.S. ally in the region, the gap was almost 20 points.

As I wrote with a colleague in *The National Interest* earlier this year, "In some cases, the United States will need to compete for influence where China is taking advantage of climate change to improve its military posture in the South China Sea or become the relief provider of first resort to vulnerable Pacific Island nations."

In addition to integrating climate into our assessments of security threats, the United States can further "climatize" security by bringing climate and ecological considerations into both the State Department and Defense Department's foreign security assistance programs. Addressing the geopolitical dynamics of the risks of climate change and other ecological disruption requires the United States to step up and play a leadership role in helping allies and partners build resilience to climate change effects and associated security risks.[7]

As the U.S. Department of Defense (DoD) carries out its global posture review with the goal of aligning force posture with security strategy, DoD should consider how it can better enhance the resilience of allies and partners and work with them to help them build their capacity to endure future climate security and ecological security risks.

Recommendations

As the CCS outlined in its Climate Security Plan for America (CSPA), the United States should use all of the tools in its toolbox across agencies and the government to address security-related climate threats and enhance geostrategic and economic competitiveness with China by: 1) investing in scientific research and development on climate and clean energy; 2) helping allies and partners tackle climate security risks; and 3) improving the resilience of U.S. and allied force posture and base infrastructure in the Pacific.

Investing in Science, Research and Development

Increased U.S. investment in science, research and development on climate and clean energy will not only advance the state of energy technology, but it will offer another way for the United States to demonstrate global leadership on climate issues and compete with China. To avoid catastrophic security risks in the second half of the century, the world needs to rapidly advance the state of the art in low and zero/net-zero-emissions technology, particularly in lowering the cost of developing and fielding such technologies at the scale required to sustain stable global economic development. Such an effort should include accelerating the research, development, techniques, and technologies in diverse fields from energy production and storage to agriculture, forestry, and beyond needed to ensure that net global emissions are reduced.

Helping Allies and Partners

To ensure a whole-of-government approach to supporting allies and partners climate security efforts, the CSPA argues for the adoption of regional climate security strategies, or "unified interagency plans that support U.S. national security, foreign policy and development strategies

[7] For more information on ecological security risks, please see: R. Schoonover, C. Cavallo, and I. Caltabiano. "The Security Threat That Binds Us: The Unraveling of Ecological and Natural Security and What the United States Can Do About It." Edited by F. Femia and A. Rezzonico. The Converging Risks Lab, an institute of The Council on Strategic Risks. Washington, DC. February 2021.

in critical regions of the world to bolster climate resilience and clean energy transitions in key countries, prevent climate stress from destabilizing fragile states, expand U.S. alliances and partnerships, and compete with great powers."

As part of this effort, the Defense Department should develop a "Security Forces Climate Engagement Plan" to promote regular military-to-military and civil-military international engagement on climate change preparation, to enhance the resilience of U.S. allies and partners, and to enhance U.S. influence vis-à-vis its primary competitors. Also, the Defense Department and State Department should work together to evaluate whether Security Assistance and Foreign Military Sales programs are effective in assisting allies and partners in addressing the security impacts of climate change. Congress and the Department of Defense should also revitalize the Defense Environmental International Cooperation Program (DEIC) with sufficient resources to make military-to-military environmental cooperation a robust engagement tool for each geographic combatant command. Other avenues for deepening cooperation include sharing a modified version of the DoD Climate Assessment Tool with allies and partners for their use, as well as a version of the forthcoming risk assessment report DoD was tasked with completing as part of the Biden administration's Executive Order on tackling the climate crisis.

Improving Resilience

Key military bases in the Pacific and those of our allies and partners need to become more resilient to rising sea levels and extreme weather events, and our forces need to be prepared to operate in the increasing extreme heat conditions worldwide. U.S. naval bases on small islands like Diego Garcia, Guam, and the Marshall Islands are particularly at risk, facing serious impacts of rising seas. In the face of extreme cyclones, other bases will be strained by response demands while potentially trying to recover their own capabilities. Climate resilience for defense forces and bases should be a standing component of the ASEAN Defense Ministerials and Quad meetings and be addressed in Track II-focused fora such as the Munich Security Conference, Halifax International Security Forum, the Pacific Environmental Security Forum, and the International Military Council on Climate and Security.

Conclusion

The US must present a compelling alternative to China's Belt and Road Initiative to our Asian and Pacific allies and partners in order to regain strategic advantage in the region. The US can do so by a combination of the three recommendations above: investing in science and research, which harnesses the power of America's innovation culture, our universities, and government labs; helping our allies and partners prepare for climate security risks; and improving the resilience of our force structure and base posture in the region.

Fortunately, the difference between today and major global disruptions of the past is that we can spot impending disasters earlier and more easily. We do not have to wait for the next pandemic, the next 9/11 or the next Pearl Harbor, to better prepare for the climate crisis we

are already experiencing. Though the risks are unprecedented, our foresight is unprecedented as well. Technological developments have given us predictive tools that enhance our ability to anticipate and mitigate threats, to transform energy systems for improved mission performance, and to make the security and supporting civilian infrastructure of the US and of our allies and partners more resilient and secure. Congress has strengthened, and must continue to strengthen, the authorities, programs, and funding available to the State and Defense Departments, USAID, and other agencies to address these threats to both the US and to our allies and partner nations in East Asia and the Pacific and globally. In short, we have the ability to make the United States and our allies and partners more resilient to a broad range of threats. “Climate-proofing” our collective security is essential to protect America’s 21st-century near- and long-term national security interests. Failing to address climate security risks now will both embolden our adversaries to take the lead and will undercut our national and collective security.