Statement by Sherri Goodman
Former Deputy UnderSecretary of Defense (Environmental Security)
Founder and first Executive Director, CNA Military Advisory Board
Senior Fellow, Woodrow Wilson International Center
Leadership Council Member, Joint Ocean Commission Initiative

House Science Committee
Roundtable on Science and Policy Perspectives:
National Security Implications of Climate Change

July 12, 2017

Ranking Member Johnson and Members of the Committee: thank you for the opportunity to speak here today. My name is Sherri Goodman. I've been working at the nexus of national security, science and the environment for 30 years. I served as the first Deputy Undersecretary of Defense (Environmental Security) for 8 years in the 1990s. Since then I have served in executive leadership positions at a number of national security and science organizations, including CNA (Center for Naval Analyses), the Consortium for Ocean Leadership, and the Woodrow Wilson International Center.

Summary:

The environment (specifically weather) has always played a role in military planning, from Trenton to D-Day to the raid to get Osama Bin-Laden.

- Ten years ago I founded the CNA Military Advisory Board, by organizing a dozen retired 3&4 star Generals and Admirals to look specifically at the national security implications of climate change -- we were the **first security organization to recognize and clearly identify climate change as a threat multiplier,** a phrase I personally coined**.** Our work was informed by the science conducted and supported by the key US agencies this committee oversees: NSF, NOAA, NASA, and many others.
- Three years ago I worked with a similar group of retired generals and admirals at CNA to reexamine this issue and we concluded that **climate change is a catalyst for conflict and an accelerating risk**.
- I've subsequently began to focus my attention on the security risks of climate change as manifest by impacts on water, the oceans and the arctic.
- I am also a member of the Joint Ocean Commission Initiative, a bipartisan group of senior ocean leaders that brings together all sectors of the ocean community to catalyze action and monitor progress toward meaningful ocean policy reform. The Joint Initiative has recently released an Ocean Action Agenda which contains priority recommendations that address coastal security issues in the face of a changing climate and encourages leadership in the Arctic.
- That is how I will shape my brief discussion today – an over view of the overall national security risks of climate change and then some specifics about the oceans and the arctic.

Climate Change and National Security:

Let me begin by recognizing the views of those who say "the climate has always been changing so why should we do anything about it now?" Yes, the climate does change, but for the last 10,000 years it has been relatively stable. What we do know is that climate change has NEVER impacted 8 billion people – the way it will over the next decade or two. **That is the major concern – understanding climate change is about lowering the risk to the 8 billion people who will have to live through the change.** That is what we have been trying to understand and explain for the last 10 years.

In 2007 our distinguished group of warfighters, America's military leaders, found:

- Projected **climate change poses a serious threat** to America's national security
- Climate change acts as a **threat multiplier** for instability in some of the most volatile regions of the world
- Projected climate change will **add to tensions** even in stable regions of the world
- **Climate change, national security, and energy dependence** are a related set of global challenges

Seven years later, in 2014, despite progress at state, national and international levels in both mitigation and adaptation, the MAB was compelled to gather again because of their growing concern that comprehensive action by both the U.S. and the international community was not happening with the urgency and comprehensiveness the full spectrum of climate change issues require.

We found:

- Climate change remains a threat multiplier. In many areas the threats are manifesting faster than anticipated and the **risks are accelerating**.

- The potential security ramifications of global climate change should be serving as catalysts for cooperation and change. Instead, climate change impacts are already acting to accelerate instability in vulnerable areas of the world and are serving as **catalysts for conflict**.

- Rapid population growth, especially in coastal and urban areas, and complex changes in the global security environment have made understanding the strategic security risks of projected climate changes more challenging. When it comes to thinking about the impacts of climate change, **we must guard against a failure of imagination**.

- As the world's population and living standards continue to grow, the projected climate **impacts on the nexus of water, food, and energy security become more profound**. Fresh water, food, and energy are inextricably linked, and choices concerning how these finite resources will be produced, distributed, and used will have increasing security implications.

- Climate change impacts, both current and projected, inside the borders of the United States will continue to **challenge key elements of our National Power** and encumber our

homeland security. Of particular concern are climate impacts to our military, infrastructure, economic and social support systems.

- Military. The impacts of **climate change are detrimental to military readiness**, strain base resilience both at home and abroad, and may limit our ability to respond to future demands. Given the forward presence of our military around the world, there will be an **increased demand for the military to provide humanitarian assistance and disaster relief**, both at home and abroad.
- Infrastructure. The impacts of projected climate change can be detrimental to the physical components of our national critical infrastructure, while also limiting their capacities. **Infrastructure protection planning documents should have more explicit projected scenarios.**

That paints the overall picture so **let me focus on the Arctic and oceans.**

- Accelerated melting of "old ice" in the Arctic is making the region more accessible to a wide variety of human activities including shipping, resource extraction, fisheries, tourism and other commerce. This activity level will accelerate in the coming decades. Given the vast expanse of the Arctic, this increased accessibility possess unique search and rescue challenges. **The United States and the international community are not prepared for the pace of change in the Arctic**.
    - In 2012, the level of ice coverage in the Arctic was the lowest on record by more than one million square miles. 2017 is on pace the beat that record. While annual figures vary, the overall trend is clearly toward less ice coverage.
    - The Arctic is rich in resources, and less ice will mean that valuable resources and shorter transit routes will be increasingly accessible. China is already increasing its Foreign Direct Investment in Greenland and Iceland to secure rare earth minerals and other resources it needs to feed its growing economy and population.
    - In 2016 we started to see cruise ships filled with tourists transiting and "vacationing" in the Arctic.
    - Nations, corporations, and even individuals will be anxious to exploit the opening Arctic region, even if they have to accept higher levels of risk than in other areas of the world. The Bering Strait between Alaska and Russia is only 30 miles wide at its narrowest point, and will most likely see increased activity as it becomes navigable for longer periods.
    - While the United States and the international community prepare for more Arctic activities in the future, the **increased activity today brings high levels of risk to that fragile area**.
    - Indeed, changes already affecting human communities include reduced food security (due to the loss of whaling, sealing, and other native harvesting practices), more severe storm damage, and increased local environmental threats from new activities.

- As the House has recently noted in its Sense of Congress amendment to H.R. 2810, "In the Arctic, the combination of melting sea ice, thawing permafrost, and sea-level rise is eroding shorelines, which is damaging radar and communication installations, runways, seawalls, and training areas."

- The most obvious manifestation of climate change can be seen on land where rain patterns are changed and temperatures rise. But it is the **oceans that may have the largest impact on society**.
    - Just as it did millions of years ago, as the temperature of the ocean increases it will expand and sea level will rise. Add to that melting glaciers and ice sheets on Greenland and Antarctica and we could see anywhere from a meter to three or more over the next 80 years. This will **swallow low lying islands in the Pacific, but as importantly it will impact BILLIONS of people who live near the coasts and in the world's megacities**. A good portion of Florida could be underwater or have saltwater intrusion, and it will also impact the Mekong delta – the bread basket of Asia, and the fertile Nile delta – leading over a million Egyptians to have to migrate – and countless other areas around the world. – 16 of 20 the most populated urban areas in the world are on the coast. We have already seen the results of climate induced migration in Syria – the future will bring more climate induced migration. We are already experiencing climate-induced migration in both Alaska and Louisiana.
    - In many areas, changes in the Oceans will have impacts long before sea level rise…Look at the Maldives as a case. More than 1000 low lying islands with major industry of tourism – for the beaches and diving and fishing. Today changes in the ocean are bleaching the coral reefs and driving the fish toward higher latitudes, away from the Maldives. Tourism and the GDP are down while unemployment is up. The Maldives are already seeing large numbers of unemployed young males looking for purpose. They have seen a rise in religious extremism and rioting in the streets over suppression of women. **Climate change and the impact on the oceans is already a threat multiplier in the Maldives**.
    - In the United States, more than 40 percent of the population lives in coastal counties, which generate almost half of U.S. gross domestic product. Unfortunately, millions reside in areas at risk for coastal flooding, putting homes, families, and critical economic resources in harm's way. Increasing coastal flooding and more intense coastal storms threaten the lives and safety of coastal residents, the integrity of public and private infrastructure, and key industries.

- What can Congress do?
    - **Support funding for NOAA, NASA and NSF** in areas that enable better understanding of changing climate dynamics. 18 retired senior military leaders and national security officials have signed a letter to Congress urging support "for NASA Earth Science, NSF Geoscience programs (oceans, atmosphere, earth), and National Oceanic and Atmospheric Administration research programs. These programs are essential parts of a broader whole of government and whole of society effort to provide

essential data about and better scientific understanding of global, regional and local Earth processes."

- **Make Earth System Prediction a priority**, which is on the cusp of enabling assessment and of key weather and water disasters, such as 1) 2003 European heat wave - responsible for 70,000 deaths; 2) 2009 Australian wildfires – as many as 400 individual fires were recorded on one day; 3) The 2012 U.S. drought - $30 billion in agricultural losses; 4) The 2010 Pakistan floods - covered about 20 percent of the country and affected 20 million people; 5) The decades-long drought in the Sahel, during which famine killed tens of thousands of people; 6) Hurricane Sandy - about $75 billion in damages.
- The **House Climate Solutions Caucus** with 46 members, both Republican and Democrat, is a good start towards building the bipartisan support so essential for moving our nation constructively forward in this area. Just as national defense has had bipartisan support since World War II, on matters from nuclear security to terrorism and cyber, climate security, as among the key global security challenges of our era, **deserves strong bipartisan support** and leadership from Congress.
- **Make infrastructure investments that protect coastal communities**. Any national infrastructure initiative should prioritize funding for projects that boost coastal resilience. New coastal infrastructure projects should build resilience into all aspects of design and engineering. This is critical for projects such as ports, roads, bridges, power grids, and wastewater treatment plants, among others.
- Tremendous work has already been done by federal, state, local, and tribal entities to start preparing for changing conditions in the Arctic, but Congress should build on progress to date and **take action to support sustainable economic development in the Arctic**, including:
    - Implementing and building upon existing expert recommendations in the National Strategy for the Arctic Region, the Alaska Arctic Policy Commission report, and the U.S. Coast Guard's Port Access Route Studies.
    - Implementing the International Maritime Organization's Polar Code.
    - Designating maritime economic zones and marine protected areas.
    - Investing in Arctic infrastructure including: a permanent Coast Guard presence and enhanced search and rescue capacity, port improvements, modern water and sewer systems, telecommunications, access to new energy resources, oil and chemical spill prevention and response, and coastal erosion and storm surge protection.
- Congress can continue to **support the work of DOD and other federal agencies to adapt to the impacts of climate change**. Key steps have already been taken by DOD to put in place the guidance needed to enable our military forces and infrastructure to meet this challenge. Eliminating that guidance will be detrimental to military readiness. Noting the US National Intelligence Council Assessment of 2016 finding that "climate change will likely pose significant national security challenges for the United States over the next two decades," the recent bipartisan House Sense of Congress calls "climate change a direct threat to the national security of the United States," and directs DOD to

report on "vulnerabilities to military installations and combatant commander requirements." This report will be a helpful step in enabling DOD to prepare for climate impacts at critical facilities.

- The US also needs to improve its capacity to **predict the likely locations of violent disruptions fueled in part by the consequences of climate change**. The recent NIC report on *Implications for US National Security of Anticipated Climate Change*, identifies 6 pathways for disruption and conflict from climate change. Now the challenge is to translate that initial assessment into actionable guidance for national security policymakers and military planners.
- We need to have **non-partisan policy forums** for tackling global issues through independent research and open dialogue to inform actionable ideas for Congress, the Administration and the broader policy community – the work of **the Woodrow Wilson International Center** is critical here. I am pleased that both the Environmental Change and Security Program and the new Polar Initiative at the Wilson Center are key bipartisan convening forums on the critical issues we are discussing today.

- The military leaders of the CNA MAB have indicated that the U.S. needs to lead the world in mitigation and adaptation to climate change. The Paris Accord was one way U.S. could show leadership. We should now look for other ways to show leadership through bilateral and multilateral efforts with major players, and ensuring that other nations, in particular, China, do not act to fill the vacuum left by the absence of US leadership, particularly in the Asia-Pacific region.
- Thank you for the opportunity to address you today.