



**Statement for the Record**

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**FOR A HEARING ON**

***“Climate Change in the Era of Strategic Competition”***

**BEFORE THE**

**HOUSE ARMED SERVICES SUBCOMMITTEE ON INTELLIGENCE AND  
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Chairman Langevin, Ranking Member Stefanik, and distinguished members of the Committee, thank you for the opportunity to discuss the Intelligence Community's (IC) assessment of the national security implications of climate change.

Changing climate is just one of a multitude of factors—alongside things like demographics, economic and political factors, and technology—that the IC considers when it examines global strategic trends and the potential threats they pose to US national security. The IC does not assess the direct effects of climate change on the US homeland, nor does it evaluate the science behind the scientific reports. To inform our judgments regarding the national security implications of climate change, we rely on reports produced by US federal science agencies, peer-reviewed scientific journals, and reports from international scientific organizations.

### **Climate Trends and National Security**

These scientific assessments, which indicate that Earth's atmosphere and oceans are undergoing a long-term warming trend, raise critical national security questions. Studies indicate rising temperatures can amplify extreme events such as heatwaves, heavy precipitation, storm surges, droughts, wildfires, and some tropical cyclones. Other effects, which already are in evidence, include rising sea levels, melting glaciers and ice sheets, thawing permafrost, soil degradation, ocean acidification and deoxygenation, animal and plant species redistribution, coral bleaching, and changes in ocean and atmospheric circulations. Complexities in Earth's systems, uncertainties in modeling, and the unpredictability of human choices—including the level of greenhouse gas emissions—make it difficult to project when and where specific disruptive events and other climatological changes will have the most significant national security effects.

The IC assesses that such effects from climate change almost certainly will have an increasingly significant direct and indirect effect on the social, political, economic, and security challenges faced by the United States and other countries during the next few decades. The combination of other environmental stresses and human activities makes it challenging to discern the national security implications of climate change in isolation. In many cases, climate change is likely to exacerbate existing stresses, such as water or food shortages that worsen social and political conditions in a country.

The effects of climate change are likely to compound other dynamics, including:

- Straining physical infrastructure.
- Contributing to instability in some countries.
- Driving disruptive human migration.
- Exacerbating tensions over resources.
- Increasing competition in the Arctic.

The IC assesses that, for the next several years, the security risks for the United States linked to climate change will arise primarily from distinct extreme weather events that are compounded by worsening pre-existing problems, such as water and food insecurity, around the world. During the

next 20 years and beyond, we expect that the greatest threats will arise where multiple extreme weather events converge, driven by both climate change and these underlying climate stressors.

### **Straining critical physical infrastructure:**

The collective effects of climate change are likely to directly damage and strain overseas infrastructure critical to US national security interests. The expected more frequent and intense heat waves and extreme precipitation events will hinder economic development by threatening vital energy resources in some strategically important countries in the developing world.

- A warming climate will significantly increase energy demand in some countries at the same time that extreme weather and sea-level rise threaten energy supplies. High temperatures weaken generation and transmission efficiency by straining cooling systems and power lines, while more extreme precipitation patterns will reduce hydroelectric power production.
- Physical damage to coastal transportation networks and ports also is likely to affect trade and economic activity.

### **Contributing to instability:**

In the coming two decades, the IC assesses that an increasing number of countries will encounter climate-related hazards—such as extreme weather events, drought, heat, or infrastructural damage—that will stress their capacity to respond, cope, or adapt. We already have seen water crises exacerbate social unrest in and emigration from fragile states in the Middle East and North Africa, such as Syria and Libya, in part by aggravating the effects of other factors, such as preexisting socioeconomic grievances and ineffective government institutions, according to a joint UN-World Bank study. With continued rising temperatures, more countries are likely to face such challenges with greater frequency, increasing the risk of unrest, migration, and interstate tension.

- Countries with weak political institutions, poor economic conditions, or other existing risk factors, such as political strife, probably will be the most vulnerable to climate-linked instability or migration and would be the hardest pressed to respond to and recover from a crisis.
- Twenty-six of the 39 countries assessed by a 2018 USAID-funded academic study to have the highest or high state fragility also have a large number of people or a large proportion of the population facing high risk from the effects of climate change. Burma, Egypt, India, Nigeria, and Democratic Republic of Congo have the greatest number of people in highly exposed areas.

### **Increasing human migration:**

In some regions, climate-related hazards are likely to contribute to migrations that overwhelm host governments and populations and exacerbate existing social and political tensions. As sudden extreme weather—such as floods, heatwaves, and severe tropical storms—becomes more frequent, the number of displaced people almost certainly will increase, with effects felt particularly in regions that are unaccustomed to or unprepared for such events and areas that have already absorbed large influxes of migrants, such as the Levant, Sahel, and Europe. Rising sea levels and unexpectedly large storm surges could threaten small island states and low-lying coastal regions, including many megacities, with flooding and saltwater contamination of freshwater.

- The World Bank estimates that significant levels of warming could push tens of millions of people in Sub-Saharan Africa, South Asia, and Latin America to migrate within their countries

by 2050. These migrants are likely to move from rural to urban areas, possibly spurring a reduction in agricultural production and food security in affected countries, while further straining the provision of services in urban areas.

### **Exacerbating tensions over resources:**

Disputes over land and water resources increasingly trigger social violence and internal conflict, particularly when they build on preexisting social and political grievances. More frequent extreme weather events, ranging from droughts to intense rainfall, would significantly threaten agricultural production and increase food price volatility. As the climate changes, disputes over water and access to arable land are likely to grow, prompting more such local conflicts. Moreover, scarcer land and water resources could spur speculation by international investors, pricing out local communities and increasing tensions.

- In 2018, disputes over access to water and grazing land were a factor that fueled conflict between farmers and herders in Mali that reportedly killed several dozen people. Also in 2018, water protests in southern Iran turned violent when security forces opened fire on demonstrators.
- Ocean warming and acidification are likely to adversely affect marine fish populations, particularly in East Asia and in the North Sea. Disputes over fishing rights and access have become major points of contention for countries that rely heavily on fishing for food or income, increasing the incentive for illegal and unregulated fishing, particularly as species migrate outside of established fishing grounds because of warming oceans.
- Food prices will likely rise as long-term climate effects—such as more very hot days and nights and changing precipitation patterns—compound already worsening constraints on food production caused by local deficiencies of land, water, and energy supplies. Heatwaves and reduced precipitation threaten livestock and reduce fertility, pasture yields, milk production, and disease resistance.

### **Increasing challenges in the Arctic:**

The IC assesses that changing conditions in the Arctic will have significant security, economic, and social implications for both Arctic and non-Arctic states. Scientific research by the National Oceanic and Atmospheric Administration states that warming rates in the Arctic are more than twice the rate of the rest of the Earth, which means the Arctic could be free of ice cover in the summer as early as 2030. An increasingly navigable Arctic makes the region more consequential for both economic and security reasons. The Arctic has historically been characterized as a region of international cooperation and low geopolitical tension, but growing involvement by Arctic and non-Arctic states and increasingly accessible resources and sea routes could upend these dynamics.

- Additionally, thawing permafrost will imperil an estimated two-thirds of today's Arctic civilian and energy infrastructure by mid-century.

Recent actions by Beijing and Moscow suggest that both capitals are preparing for a future in which the Arctic is warmer and more accessible.

- Diminishing sea ice is already enabling Russia and China to explore use of the newly opened sea routes to accelerate extraction of fossil fuels, potentially further harming the fragile northern ecosystem. While large-scale exploitation still faces commercial challenges, the Arctic could contain well over 90 billion barrels of oil, 1,700 trillion cubic feet of natural gas, and 44 billion barrels of liquid natural gas. In August, Russia's Lukoil and China's Chinaoil participated in the first sale and shipment of Arctic crude to Asia, transporting oil from Murmansk to Dongjiakou via an unusually ice-free Northern Sea Route (NSR).
- Russia and China are both increasing investment in the region. For example, Russia in 2017 pledged \$2.7 billion to develop its continental shelf, and longer openings of the NSR could advantage Russian liquefied natural gas exports to Asian markets that US companies are also seeking to develop. China has been a leading investor in the Yamal natural gas project in the Russian Arctic. In January 2018, Beijing published an Arctic policy white paper in which it reiterated its claim to be a "near-Arctic state" and introduced the "Polar Silk Road", linked to its Belt and Road strategy. China has also launched two icebreakers, and its cargo ships are increasingly transiting the NSR.
- Russia is also taking actions that suggest it views the Arctic as an emerging theater of military competition. While Moscow's Ambassador-at-Large for International Cooperation in the Arctic recently described the Arctic as "a territory of peace, constructive interaction, and neighborliness," Russian media continue to showcase recapitalization of Arctic military power. October 2019 press reporting from Norway noted that deliveries of goods to Russia's Arctic military bases this year have increased by 200 percent.

#### **China's role in climate change:**

China seeks to boost its image as a leader in combating climate change, despite its role as the largest carbon emitter and its continued support for high-emissions development globally. Given its massive energy demands, China's energy decisions are likely to drive the direction of greenhouse gas emissions for decades to come. The country remains the world's largest coal consumer and is building mostly low efficiency, coal-fired power plants abroad. Although China played a pivotal role in 2015 to broaden the scope of commitments by developing countries under the UN Framework Convention on Climate Change process, Beijing is likely to continue to avoid energy decisions that impose significant economic costs.

- China, however, seeks to establish itself as a renewable energy superpower and touts its more than \$100 billion in annual investments in green technologies. China is now the world's largest producer, exporter, and installer of solar panels, wind turbines, batteries, and electric vehicles, and controls 29 percent of global renewable energy patents.
- Beijing has also announced plans to increase the share of Belt and Road Initiative projects dedicated to renewable energy and sustainable infrastructure in coming years as it seeks to bolster its environmental reputation abroad.

#### **Climate geoengineering:**

Unilateral efforts by countries or groups to test or deploy geoengineering—a largely theoretical field exploring how to moderate the effects of climate change through methods such as injecting aerosols into the stratosphere or chemically altering the reflectivity of clouds—have the potential to heighten tensions among states. The authority of actors to conduct such activities with global implications would be in dispute. Further, it may be impossible to fully attribute outcomes to geoengineering activities, rather than from natural variability or other emissions of greenhouse gases.

**Global governance and multilateral responses:**

Political disputes among nations and various stakeholders are hampering international policy-driven efforts to reduce emissions. Some adversely affected countries and interest groups may take their grievances outside of the UN Framework Convention on Climate Change-led process and seek redress through international judicial mechanisms. For example, since 2011 several small island states have proposed seeking an advisory opinion from the International Court of Justice related to climate change.

**Terrorist recruitment**

Terrorist groups have exploited natural disasters and water and food shortages in some countries, including Iraq, Nigeria, Pakistan, Somalia, and Syria, to boost recruitment and support among local populations.

**Closing:**

Climate change and its resulting effects have wide-ranging implications for national security, presenting risks and challenges for the US. The IC plays an important role in identifying and analyzing these implications for policymakers. Thank you for the opportunity to appear before the Committee today to share our assessments, and I look forward to your questions.