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## Climate Change and Adaptation: Department of Defense

Secretary of Defense Lloyd Austin has stated that “to keep the nation secure, [the Department of Defense (DOD)], must tackle the existential threat of climate change.” DOD has released a number of documents outlining how it plans to adapt to and address climate change, including the 2021 *DOD Climate Risk Analysis* and the *DOD Climate Adaptation Plan*. Congress may conduct oversight of the implementation of these plans. Congress could also consider examining possible climate risks and assessing possible implications for global security, military readiness and infrastructure, and DOD force structure when considering authorization, appropriations, and other legislation.

### Implications of Climate Change for the U.S. Military

DOD Directive (DODD) 4715.21, “Climate Change Adaptation and Resilience,” took effect in 2016 and outlines department policy, roles, and responsibilities related to climate change. The directive defines *climate change* as

variations in average weather conditions that persist over multiple decades or longer that encompass increases and decreases in temperature, shifts in precipitation, and changing risk of certain types of severe weather events.

DOD’s *Climate Risk Analysis* report concludes that these variations could produce climate hazards such as sea or glacial ice retreat, rising sea levels, flooding, drought, extreme heat, wildfires, and tropical cyclones. Each of these hazards in turn holds implications for international security. For example, drought could lead to inadequate water supplies and adverse impacts on agricultural production. This could increase competition for, or conflict over, natural resources in affected areas. Flooding could damage critical infrastructure and displace populations, which could in turn cause mass migration or political crises. DOD notes that such hazards could “[reshape] the geostrategic, operational, and tactical environments with significant implications for U.S. national security and defense.”

DOD’s *Climate Risk Analysis* report further notes that

as the frequency and intensity of [climate] hazards increase ... [they may] affect the demands on and functionality of military operations, and increase the number and severity of humanitarian crises, at times threatening stability and security.

DOD has sought to increase military readiness and may propose changes in military equipment or force structure in anticipation of increased operations due to climate change. For example, extreme weather events could increase demand for humanitarian assistance and disaster response

capabilities, while glacial ice retreat could lead to increased regional competition in the Arctic, with an increase in demand for specialized, cold-weather military equipment for U.S. forces.

According to DOD officials, climate change has growing implications for the costs of operating U.S. military installations and associated equipment. DOD maintains more than 5,000 military installations worldwide. Of these, more than 1,700 are in coastal areas and have been or may be affected by sea-level rise or extreme weather events. In 2018, Hurricane Michael caused an estimated \$4.7 billion in damage to Florida’s Tyndall Air Force Base (with more than 12 F-22 fighter aircraft sustaining damage), while Hurricane Florence caused around \$3.6 billion in damages to North Carolina’s Marine Corps Base Camp Lejeune. In 2021, winter storms damaged 694 facilities across four military installations in Texas (Fort Hood), Oklahoma (Fort Sill), Kansas (Fort Riley), and Louisiana (Fort Polk).

Some analysts have argued that rising sea levels, extreme weather events, and other climate-related factors could impact transportation routes, port infrastructure, or manufacturing facilities, which could in turn affect both commercial and military supply chains.

### DOD Climate Adaptation Planning

DODD 4715.21 defines *climate adaptation* as an “adjustment in natural or human systems in anticipation of or response to a changing environment in a way that effectively uses beneficial opportunities or reduces negative efforts.” DOD’s *Climate Adaptation Plan* builds upon previous DOD climate change-related policies to “ensure the DOD can operate under changing climate conditions.”

The adaptation plan outlines five lines of effort (LOE):

1. *Climate-informed decision-making* based on climate assessments;
2. *Train and equip a climate ready force* able to operate in extreme weather conditions;
3. *Infrastructure* to support military operations under changing conditions;
4. *Supply chain resilience and innovation* in austere locations; and
5. *Enhance adaptation and resilience through collaboration* with other federal agencies, Congress, U.S. allies and partners, and other stakeholders.

These LOEs and related enablers, such as monitoring and data analytics, constitute DOD’s Climate Adaptation Strategic Framework.

DOD's *Climate Adaptation Plan* additionally states that all department operations, plans, and procedures must include climate change considerations "to ensure the military forces of the United States retain operational advantage under all conditions." Similarly, Executive Order 14008, signed in 2021, directs the Secretary of Defense and the Chairman of the Joint Chiefs of Staff to incorporate climate considerations into the National Defense Strategy and other relevant strategy and planning documents.

## Legislative Activity

Congress has conducted oversight of DOD climate-related activities. In Section 951 of the FY2008 National Defense Authorization Act (NDAA; P.L. 110-181), Congress required that the first National Security Strategy and first National Defense Strategy prepared after January 2008 include guidance for military planners to assess the risks of projected climate change to current and future mission of the armed forces.

Section 335 of the FY2018 NDAA (P.L. 115-91) directed DOD to identify and report on 10 installations per service that were most vulnerable to climate change. This report was delivered to Congress in January 2019; however, three members of the House Armed Services Committee concluded that the report did not address Section 335's specified criteria and formally requested DOD to submit a revised report. The military services subsequently followed up in 2019 with responses to questions for the record, in which the Army, Air Force, and Marine Corps each identified their 10 most vulnerable installations and the Navy identified its 16 most vulnerable. Section 2801 of the FY2020 NDAA (P.L. 116-92) required all major military installations to incorporate resilience information into installation plans, including climate-related threats to military installations, assets or infrastructure vulnerable to such threats, and lessons learned from previous extreme weather events.

Subtitle C, "National Security Climate Resilience," of Title III of the FY2022 NDAA (P.L. 117-81) sought to improve DOD's climate resilience, defined in the subtitle as "the capability to avoid, prepare for, minimize the effect of, adapt to, and recover from, extreme weather, or from anticipated or unanticipated changes in environmental conditions, that do (or have the potential to) adversely affect the national security of the United States or of allies and partners of the United States." Subtitle C directs DOD to undertake actions "to ensure that the critical infrastructure of Department facilities is hardened, developed, and constructed for quick recovery from natural disasters and the impacts of extreme weather"; requires the department to include extreme weather events in its reports on the health of the national technology and industrial base and account for climate and environmental challenges in future planning and development; and requires each military department to assess climate risks to their installations and other facilities.

The President's FY2023 budget request proposes \$3 billion in funding for DOD climate adaptation measures. This includes \$2 billion for installation resiliency and adaptation, \$247 million for "investments to improve the energy

efficiency of existing operational platforms and propulsion systems," \$807 million for science and technology, and \$28 million for "investments to incorporate climate risks into wargames, exercises, and other planning tools."

## Considerations for Congress

### Installation Plans

According to DOD's *Climate Adaptation Plan*, "the Department plans to complete forward-looking climate exposure assessments on all major U.S. installations with a target of January 2022 and all major OCONUS [outside the continental United States] installations by January 2023." Congress may consider the methods and results of these assessments as it evaluates military construction funding requests or possible future base realignment and closure processes.

### Costs

To reduce future costs associated with repairing installations affected by climate change or extreme weather events, DOD's FY2023 budget request includes \$2 billion for installation resiliency measures, which the budget request states are to "[adapt] military facilities to withstand increasingly challenging conditions and [deploy] advanced technologies to strengthen the ability to rapidly recover from disruptions to public infrastructure from climate-induced extreme weather." In considering this request, Congress could consider whether or not to direct an assessment of the costs of up-front resilience measures versus the potential costs of installation repair. Members could also seek additional information to set priorities for types, locations, and scheduling of future resilience measures.

### Service Strategies

In February 2022, the Department of the Army released its *Climate Strategy*, detailing the service's plans for adapting to climate change and enhancing resilience across the force. The strategy outlines a number of metrics by which its implementation can be assessed (e.g., "field an all-electric light-duty non-tactical vehicle fleet by 2027"). Likewise, in May 2022, the Department of the Navy released *Climate Action 2030*, which identifies two performance goals—building climate resilience and reducing climate threat—for the Navy and Marine Corps. The Department of the Air Force is reportedly in the process of finalizing a climate strategy.

Such strategies are not, however, statutorily required. As it conducts oversight of climate adaptation and resilience efforts, Congress may consider whether or not to require the services to release climate strategies that detail how the respective service plans to implement overall DOD and executive branch requirements. Congress may additionally consider whether or not to identify more specific goals and evaluative metrics for use by the services.

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**Hibbah Kaileh**, Research Assistant

**Kelley M. Saylor**, Analyst in Advanced Technology and Global Security

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