



DoD DIRECTIVE 4715.21

CLIMATE CHANGE ADAPTATION AND RESILIENCE

Originating Component: Office of the Under Secretary of Defense for Acquisition and Sustainment

Effective: January 14, 2016

Change 1 Effective: August 31, 2018

Releasability: Cleared for public release. Available on the DoD Issuances Website at <http://www.esd.whs.mil/DD/>

Approved by: Robert O. Work, Deputy Secretary of Defense

Change 1 Approved by: Karen Saunders, Chief of Staff

Purpose: In accordance with the direction in Executive Order 13653, this issuance establishes policy and assigns responsibilities to provide the DoD with the resources necessary to assess and manage risks associated with the impacts of climate change. This involves deliberate preparation, close cooperation, and coordinated planning by the DoD to:

- Facilitate federal, State, local, tribal, private sector, and nonprofit sector efforts to improve climate preparedness and resilience, and to implement the 2014 DoD Climate Change Adaptation Roadmap.
- Help safeguard U.S. economy, infrastructure, environment, and natural resources.
- Provide for the continuity of DoD operations, services, and programs.

TABLE OF CONTENTS

SECTION 1: GENERAL ISSUANCE INFORMATION	3
1.1. Applicability.	3
1.2. Policy.	3
1.3. Summary of Change 1.	3
SECTION 2: RESPONSIBILITIES	4
2.1. Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)).	4
2.2. Assistant Secretary of Defense for Energy, Installations, and Environment (ASD(EI&E)).	4
2.3. Assistant Secretary of Defense for Logistics and Materiel Readiness.	5
2.4. Assistant Secretary of Defense for Acquisition.	5
2.5. ASD(R&E).	6
2.6. Director, Test Resource Management Center.	6
2.7. USD(P).	6
2.8. Assistant Secretary of Defense for Homeland Defense and Global Security (ASD(HD&GS)).	7
2.9. Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict..	7
2.10. Under Secretary of Defense for Personnel and Readiness.....	7
2.11. Under Secretary of Defense for Intelligence.	8
2.12. DCMO.....	8
2.13. DoD Component Heads.	8
2.14. CJCS.	9
2.15. CCDRs.	9
GLOSSARY	10
G.1. Acronyms.	10
G.2. Definitions.....	10
REFERENCES	12

SECTION 1: GENERAL ISSUANCE INFORMATION

1.1. APPLICABILITY. This issuance applies to:

a. OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff (CJCS) and the Joint Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the DoD (referred to collectively in this issuance as the “DoD Components”).

b. All DoD operations worldwide unless superseded by international agreement.

1.2. POLICY. The DoD must be able to adapt current and future operations to address the impacts of climate change in order to maintain an effective and efficient U.S. military. Mission planning and execution must include:

a. Identification and assessment of the effects of climate change on the DoD mission.

b. Taking those effects into consideration when developing plans and implementing procedures.

c. Anticipating and managing any risks that develop as a result of climate change to build resilience.

1.3. SUMMARY OF CHANGE 1. This change reassigns the office of primary responsibility for the issuance to the Under Secretary of Defense for Acquisition and Sustainment in accordance with the July 13, 2018 Deputy Secretary of Defense Memorandum.

SECTION 2: RESPONSIBILITIES

2.1. UNDER SECRETARY OF DEFENSE FOR ACQUISITION, TECHNOLOGY, AND LOGISTICS (USD(AT&L)). In coordination with the Under Secretary of Defense for Policy (USD(P)), the USD(AT&L):

- a. Develops and oversees the implementation of DoD policy on climate change adaptation and resilience.
- b. Establishes DoD climate change boards, councils, and working groups to integrate climate change considerations into DoD programs, plans, and policies, when necessary.
- c. In coordination with the Deputy Chief Management Officer of the Department of Defense (DCMO), establishes efficient cost, schedule, performance, and strategic efficiencies, and establishes reporting metrics across the Department through alignment to DoD strategic planning and performance management.
- d. Ensures DoD modeling and simulation efforts in support of climate change impact analysis is conducted in accordance with the responsibilities assigned in DoD Directive (DoDD) 5000.59.

2.2. ASSISTANT SECRETARY OF DEFENSE FOR ENERGY, INSTALLATIONS, AND ENVIRONMENT (ASD(EI&E)). Under the authority, direction, and control of the USD(AT&L), the ASD(EI&E):

- a. Serves as the DoD's primary climate change adaptation official.
- b. Collaborates with the USD(P) and CJCS to account for climate change impact during planning processes across the spectrum of military operations.
- c. Develops DoD climate change adaptation and resilience policy in coordination with the USD(P).
- d. Collaborates with DoD issuance Principal Staff Assistants to integrate climate change considerations in appropriate existing policies, procedures, and programs as part of their regular revision process.
- e. Oversees DoD climate change adaptation and resilience research, development, testing, and evaluation programs in coordination with the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)). Collaborates with the Military Departments and other federal agencies on climate change-related research and its applications to produce actionable science.
- f. Collaborates with DoD Components and other federal agencies to support efforts by the private sector, and other professional and governmental organizations to identify, develop, and demonstrate technologies, engineering standards, tools, and approaches that enable climate change adaptation and resilience, in accordance with Section 4 of Executive Order 13653.

g. Provides guidance and direction on relevant technologies, engineering standards, tools, scenario development and use, and other approaches to enable prudent climate change adaptation and resilience, including the Unified Facilities Criteria Program, in accordance with DoD Instruction (DoDI) 4120.24.

h. Promotes, as an advisor to the Defense Acquisition Board and other key acquisition bodies, integrating climate change considerations into programs under his or her purview.

i. Oversees identification and management of climate change-related risks in coordination with other DoD risk management and readiness programs.

j. Considers climate change adaptation and resiliency in the installation planning and basing processes to include impacts on built and natural infrastructure.

k. Engages with State and local governments to promote compatible development that considers climate change adaptation opportunities through the Joint Land Use Study Program in accordance with DoDI 3030.3.

l. Leverages the Strategic Environmental Research and Development Program, a joint effort between the DoD, Department of Energy, and Environmental Protection Agency, to develop and implement climate change assessment and adaptation planning tools.

2.3. ASSISTANT SECRETARY OF DEFENSE FOR LOGISTICS AND MATERIEL READINESS. Under the authority, direction, and control of the USD(AT&L), the Assistant Secretary of Defense for Logistics and Materiel Readiness:

a. Identifies and considers the risks climate change poses to logistics infrastructure, materiel acquisition and supply (including critical suppliers and critical components), key transportation modes and routes, and storage and stockpile activities.

b. Takes appropriate actions to manage the risks identified in Paragraph 2.3.a.

c. Integrates consideration of the impacts of a changing climate into existing policies under his or her cognizance.

2.4. ASSISTANT SECRETARY OF DEFENSE FOR ACQUISITION. Under the authority, direction, and control of the USD(AT&L), the Assistant Secretary of Defense for Acquisition:

a. In accordance with DoDD 5000.01 and DoDI 5000.02:

(1) Oversees integration of climate change considerations, including life cycle analyses, into acquiring or modifying weapons systems, platforms, equipment, and products.

(2) Develops or updates policies to integrate climate change considerations into mission area analyses and acquisition strategies across the life cycle of weapons systems, platforms, and equipment.

(3) Oversees integration of climate change-related policy and practices in defense acquisition workforce training and education.

b. Supports the CJCS in integrating climate change considerations into interactions between the Joint Capabilities Integration and Development System and Defense Acquisition System processes in accordance with CJCS Instruction 3170.01I.

2.5. ASD(R&E). Under the authority, direction, and control of the USD(AT&L), the ASD(R&E):

a. In coordination with the ASD(EI&E):

(1) Oversees defense-related research in climate science for the development of approaches and technologies that reduce risk and promote mission execution.

(2) Provides guidance and direction on relevant technologies and technological approaches to comply with policy and lessen the effects of climate change on operational mission needs.

b. Oversees DoD engagement with the U.S. Global Change Research Program through the National Science and Technology Council's committee structure in accordance with Executive Order 12881.

2.6. DIRECTOR, TEST RESOURCE MANAGEMENT CENTER. Under the authority, direction, and control of the USD(AT&L), the Director, Test Resource Management Center:

a. Oversees integration of climate change considerations into DoD testing range sustainment policy objectives established in DoDD 3200.15.

b. Oversees DoD assessment of impacts to testing capabilities resulting from climate change trends in accordance with the responsibilities assigned in DoDD 5105.71.

c. Identifies climate change trends that may impact testing range capabilities across the DoD, and oversees DoD Component implementation of strategies to sustain testing range capabilities.

d. In coordination with the DoD Component heads, collaborates with internal and external stakeholders to address common climate change challenges and opportunities, including regional planning efforts.

2.7. USD(P). In coordination with the USD(AT&L), the USD(P), through the Assistant Secretary of Defense for Strategy, Plans, and Capabilities, develops policies, plans, programs, forces, and posture needed to implement the DoD strategy, including, as appropriate, adapting actions to increase resilience to climate change.

2.8. ASSISTANT SECRETARY OF DEFENSE FOR HOMELAND DEFENSE AND GLOBAL SECURITY (ASD(HD&GS)). Under the authority, direction, and control of the USD(P), the ASD(HD&GS) develops, coordinates, and integrates DoD climate change policy for homeland defense activities including national preparedness, crisis management, defense mobilization in emergency situations, defense continuity programs, mission assurance, the Defense Support of Civil Authorities (DSCA), and continuity of operations and government, preserving freedom of navigation and other ASD(HD&GS) mission areas in accordance with DoDI S-2005.01.

2.9. ASSISTANT SECRETARY OF DEFENSE FOR SPECIAL OPERATIONS AND LOW-INTENSITY CONFLICT. Under the authority, direction, and control of the USD(P), the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict:

a. Monitors and directs appropriate planning for anticipated humanitarian assistance and disaster relief (HA/DR) requests for DoD assistance, including stabilization support. These plans address climate change impacts such as increased demand and resources for HA/DR activities, and increased instability sparked by competition for limited natural resources.

b. Provides guidance and oversight to the Combatant Commanders (CCDRs) on on-going humanitarian assistance programs and resources to encourage partner nations' efforts for:

(1) Disaster risk reduction, mitigation, preparedness, and resiliency.

(2) Building capacity for humanitarian assistance, global health engagement, and disaster prevention in light of changing climate risks.

c. Incorporates climate risks into stability operations policy, doctrine, and planning, including the impact of climate trends on conflict and state fragility.

2.10. UNDER SECRETARY OF DEFENSE FOR PERSONNEL AND READINESS. In coordination with the USD(AT&L), the Under Secretary of Defense for Personnel and Readiness:

a. Oversees integration of climate change considerations into DoD training range sustainment policy objectives established in DoDD 3200.15.

b. Oversees DoD assessment of impacts to training capabilities resulting from climate change trends.

c. Identifies climate change trends that may impact training ranges and training capabilities across DoD, and oversees DoD Component implementation of strategies to sustain training range capabilities.

d. Considers and plans for the impacts of climate change on the safety, health, and well-being of the DoD military and civilian workforce.

2.11. UNDER SECRETARY OF DEFENSE FOR INTELLIGENCE. The Under Secretary of Defense for Intelligence:

a. Oversees planning, organizing, coordinating, and balancing of climate change and environmental monitoring-related investment and risk for all DoD intelligence, surveillance, and reconnaissance and environmental system capabilities, and consults with CCDRs, as appropriate.

b. As the Director of Defense Intelligence and principal advisor to the Director of National Intelligence (DNI) and all other Intelligence Community elements on Defense Intelligence matters:

(1) Coordinates with the DNI to ensure effective, complementary, and mutual climate change and environmental monitoring related support between Defense Intelligence programs and the National Intelligence Program.

(2) Coordinates with the DNI on all other responsibilities and functions as related to risks, potential impacts, considerations, vulnerabilities, and effects of altered operating environments related to climate change and environmental monitoring.

2.12. DCMO. As the Performance Improvement Officer of the DoD, the DCMO coordinates with the USD(AT&L) to establish cost, schedule, performance, and strategic efficiencies, and establishes reporting metrics across the DoD through alignment to DoD strategic planning and performance management.

2.13. DoD COMPONENT HEADS. The DoD Component heads:

a. Integrate climate change considerations into DoD Component policy, guidance, plans, and operations.

b. Assess and manage risks to built and natural infrastructure, including changes as appropriate to installation master planning, natural and cultural resource management, design and construction standards, asset management, encroachment management, utility systems, and emergency management operations.

c. Assess, incorporate, and manage the risks and effects of altered operating environments on DoD Component capabilities and capacity, including force structure, basing, military operations, capacity building, stability operations, and demand for HA/DR and DSCA in short- and long-term plans.

d. Assess and manage vulnerabilities associated with climate change to acquisition and supply, including the full life cycle of weapons systems, platforms, equipment, and products within the respective DoD Component's portfolio.

e. Assess and mitigate the effects of climate change on the ability to carry out training and test activities in the field environment. Determine the total impacts on training and test activities across the DoD Component concerned, including supporting range complex planning.

- f. Update health surveillance programs to address effects on personnel, including changes in extreme temperatures, precipitation patterns, and disease vector distribution.
- g. Nominate climate change concepts, effects on mission, and DoD adaptation and resiliency efforts into education and training.
- h. Collaborate with internal and external stakeholders to address common climate change challenges and opportunities, including regional planning efforts.
- i. Leverage authoritative environmental prediction sources for appropriate data and analysis products to assess weather and climate impacts.
- j. Integrate resource considerations and cost management including life-cycle costs into plans, business processes, material management, and acquisition strategies, along with associated investment and risk management processes at all relevant levels within the Component concerned.

2.14. CJCS. In addition to the responsibilities in Paragraph 2.13., the CJCS:

- a. Collaborates with allies and partners to optimize joint exercises and war games incorporating climate change considerations, including factors contributing to geopolitical and socioeconomic instability and long-term planning.
- b. Continues efforts to incorporate geostrategic and operational energy and water considerations into force planning, requirements development, and acquisition processes.

2.15. CCDRs. In addition to the responsibilities in Paragraph 2.13., the CCDRs:

- a. Incorporate climate change impacts into plans and operations and integrate DoD guidance and analysis in Combatant Command planning to address climate change-related risks and opportunities across the full range of military operations, including steady-state campaign planning and operations and contingency planning.
- b. Assess the risks to U.S. security interests posed by climate change within their areas of responsibility and resulting risks to U.S. operations, and identify associated U.S. military capability gaps and operational risks.
- c. Require country-specific cooperation and engagement including joint training and exercises that enhance partner capacity and improve joint force tactics, techniques, and procedures for addressing climate change impacts.
- d. Monitor internal policy guidance provided to the other DoD Components for the preparation and review of program and budget submissions.
- e. Review and refine capacity and capability requirements for HA/DR and DSCA for the respective assigned areas of responsibility.

GLOSSARY

G.1. ACRONYMS.

ASD(EI&E)	Assistant Secretary of Defense for Energy, Installations, and Environment
ASD(HD&GS)	Assistant Secretary of Defense for Homeland Defense and Global Security
ASD(R&E)	Assistant Secretary of Defense for Research and Engineering
CCDR	Combatant Commander
CJCS	Chairman of the Joint Chiefs of Staff
DCMO	Deputy Chief Management Officer of the Department of Defense
DNI	Director of National Intelligence
DoDD	DoD Directive
DoDI	DoD Instruction
DSCA	Defense Support of Civil Authorities
HA/DR	humanitarian assistance and disaster relief
USD(AT&L)	Under Secretary of Defense for Acquisition, Technology, and Logistics
USD(P)	Under Secretary of Defense for Policy

G.2. DEFINITIONS. These terms and their definitions are for the purposes of this issuance.

actionable science. Theories, data, analyses, models, projections, scenarios, and tools that are:

Relevant to the decision under consideration.

Reliable in terms of its scientific or engineering basis and appropriate level of peer review.

Understandable to those making the decision.

Supportive of decisions across wide spatial, temporal, and organizational ranges, including those of time-sensitive operational and capital investment decision-making.

Co-produced by scientists, practitioners, and decision-makers and result in rigorous and accessible products to meet the needs of stakeholders.

adaptation. 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.

climate change. 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. This term and its definition are proposed for inclusion in the next edition of Joint Publication 1-02.

resilience. Ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions.

scenario. A situation that details future potential conditions in a manner that supports decision-making under conditions of uncertainty, but does not predict future change that has an associated likelihood of occurrence.

REFERENCES

- Chairman of the Joint Chiefs of Staff Instruction 3170.01I, “Joint Capabilities Integration and Development System (JCIDS),” January 23, 2015
- Department of Defense 2014 Climate Change Adaptation Roadmap, October 13, 2014
- Deputy Secretary of Defense Memorandum, “Establishment of the Office of the Under Secretary of Defense for Research and Engineering and the Office of the Under Secretary of Defense for Acquisition and Sustainment,” July 13, 2018
- DoD Directive 3200.15, “Sustaining Access to the Live Training and Test Domain,” December 18, 2013
- DoD Directive 5000.01, “The Defense Acquisition System,” May 12, 2003
- DoD Directive 5000.59, “DoD Modeling and Simulation (M&S) Management,” August 8, 2007
- DoD Directive 5105.71, “Department of Defense Test Resource Management Center (TRMC),” March 8, 2004
- DoD Instruction 3030.3, “Joint Land Use Study (JLUS) Program,” July 13, 2004
- DoD Instruction 4120.24, “Defense Standardization Program (DSP),” July 13, 2011
- DoD Instruction 5000.02, “Operation of the Defense Acquisition System,” January 7, 2015
- DoD Instruction S-2005.01, “Freedom of Navigation (FON) Program (U),” October 20, 2014
- Executive Order 12881, “Establishment of the National Science and Technology Council,” November 23, 1993 as amended
- Executive Order 13653, “Preparing the United States for the Impacts of Climate Change,” November 1, 2013
- Joint Publication 1-02, “Department of Defense Dictionary of Military and Associated Terms,” current edition