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WORKING PAPER

Promoting the Dialogue: *Climate Change and U.S. Ground Forces*

By Christine Parthemore



**Center for a
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Security**

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Cover Image

U.S. Marines along the Euphrates River near Haditha, Iraq.
(LCPL. BRIAN A. KINNEY/ U.S. DEPARTMENT OF DEFENSE)

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About the Author

Christine Parthemore is the Bacevich Fellow at the Center for a New American Security.

At a time when U.S. ground forces must wage two protracted wars in Iraq and Afghanistan, design overarching visions for future needs and plan and equip accordingly, analyzing how climate change might affect the Army, Marine Corps and National Guard¹ might seem like an abstract exercise. Yet ensuring U.S. security has always required more than just prevailing in current conflicts. It requires understanding and planning for the trends and threats America is likely to face in the future.

Civilian and military leaders, Congressional leaders and security analysts all identify climate change as an issue that may have a significant impact on the armed forces. As the 2010 Quadrennial Defense Review (QDR) states, “climate change, energy security and economic stability are inextricably linked. The actions that the Department takes now can prepare us to respond effectively to these challenges in the near term and in the future.”² Indeed, climate change stands to affect military installations at home and abroad, domestic policy and environmental conditions in areas of strategic importance to the United States. All these factors have implications for the missions and operations of the U.S. ground forces. Preparing adequately, as the QDR suggests, will require more extensive analysis of what this challenge means for the Army, Marine Corps and National Guard.

The Center for a New American Security (CNAS) launched the Promoting the Dialogue project in June 2009 to examine how climate change might affect the military services. This working paper, which will accompany additional papers on maritime and air missions and the Combatant Commands, is based on personal interviews, research and site visits that included discussions with key representatives of the Army, Marine Corps and National Guard. These working papers will identify important aspects of the current discussions concerning climate change and national security and highlight important questions for further research.

INSTALLATIONS: REDUCING EMISSIONS AT HOME

Today, the Army, Marine Corps and National Guard confront climate change issues most directly in meeting requirements for reducing greenhouse gases at domestic installations. These military bases must abide by laws and regulations passed by Congress, Executive Orders (EOs) signed by the President and state laws and regulations that demand lower emissions, energy efficiency and less reliance on high-carbon energy.

For example, in October 2009 President Obama signed EO 13514, which requires all federal agencies to set targets for lowering emissions and to consider those targets in planning and purchasing. To carry out this order, the Department of Defense (DOD) set a goal of reducing greenhouse gas emissions by 34 percent by 2020 for non-combat activities at its more than 300,000 buildings.³ While combat vehicles and activities are exempt from this requirement, steps to improve operational energy efficiency for the sake of improved mission effectiveness may further reduce emissions.

Despite this growing legal and regulatory demand to address climate considerations, the degree to which climate is a concern still depends to a large degree on individual interest. Many domestic bases benefit from managers who are motivated to focus on alternative energy and understand how to combine funding from disparate streams (like various types of contracts and grants) to procure higher-efficiency technologies or install lower-carbon power generation.

The Army and Marine Corps emphasize a wide range of environmental issues (e.g., considering water and land use along with energy and climate considerations) in managing their domestic installations. For example, the Marine Corps “Ten by ‘10” campaign plan describes goals of ensuring energy and water supplies, meeting efficiency

mandates and “reduc[ing] life cycle operating costs of Marine Corps facilities and manag[ing] future commodity price volatility.”⁴ Several Army installations have drawn attention for their energy and environmental achievements as well, including Fort Carson in Colorado, which combines conservation and efficiency practices for both energy and potable water.⁵

In addition to efforts to reduce greenhouse gas emissions and meet related energy goals, some installations and training ranges may also be susceptible to environmental changes. DOD’s Strategic Environmental Research and Development Program is working to analyze several of these changes, noting that “Maintaining readiness requires a natural and built infrastructure that is sustainable and adaptive in the face of climate change.”⁶ Some effects of climate change could strain budgets and reduce assured access to energy and other resources. Indeed, one Army program is currently examining how the effects of climate change may alter land, water and air conditions around training ranges. The goal is to ensure that mission readiness does not suffer due to changing environmental conditions.⁷

Beyond the direct energy and environmental benefits derived from implementing EOs and meeting legal requirements to save energy, various carbon pricing mechanisms are generating new issues over financial benefits. Installation managers in states like California that are likely to adopt carbon markets and renewable portfolio standards are beginning to raise questions regarding potential monetary or credit earnings that they may derive from providing cleaner energy to their local utilities. The prospect of a carbon price is creating a strong need to think through what federal agencies lowering their emissions must do with any subsequent proceeds. To give a hypothetical example, if an Army base invests in a major solar energy installation, and the resulting clean energy earns carbon credits under that state’s emissions-trading scheme,

do those credits belong to that base, the Army, DOD or the federal government?

Answering questions like this will be important for understanding the full business cases for investing in clean energy and efficiency measures, and there is a growing need for high-level instruction on how the services should handle many of the specifics involved in carbon credit markets. One benefit, as officials at installations begin to wrestle with ways to lower greenhouse gas emissions and navigate clean-energy financial considerations, is that more and more individuals are learning important lessons that may be useful for others. The services should find new ways of collecting and disseminating these lessons learned regarding sustainability, energy efficiency and reducing greenhouse gas emissions. Use of wikis, listservs or any searchable social media may prove useful for sharing recommendations, with minimal management required. Given the vast number of alternative power generation and emissions-reducing energy projects that the Army and Marine Corps have undertaken on its domestic installations, sharing lessons for implementation would also showcase the variety of ways in which the services are working to meet their energy and emissions requirements.

Still, climate change is important for the ground forces far beyond their requirements to reduce emissions. Indeed, the Army, Marine Corps and National Guard have been increasingly integrating consideration of climate change into their strategy documents and planning. Looking to visions of the future security environment and the shape of the current missions in which they are engaged – including counterinsurgency in Afghanistan, counter-narcotics operations in Central America and responses to domestic crises – can help clarify how understanding climate change better may be relevant to future missions.

GROUND MISSIONS: CLIMATE CONSIDERATIONS FOR CURRENT AND FUTURE SECURITY NEEDS

A consistent stream of planning, strategic debates and leadership decisions continuously set direction and establish priorities for the Army, Marine Corps and National Guard. Looking to Congressionally-mandated reports such as the Army Posture Statements and the DOD-wide Quadrennial Defense Review, as well as leadership statements, can provide good indications of what challenges the Obama administration and military leaders expect to dominate their future missions. These documents, paired with scientific projections, can provide an indication of the general ways in which climate change may affect U.S. ground forces.

It remains unclear exactly how, when and where the effects of climate change will likely combine with political, social and economic trends in shaping the future security environment; however, many analyses point to the need to understand climate change in the context of these other factors. “While climate change alone does not cause conflict,” the 2010 QDR notes, “it may act as an accelerant of instability or conflict, placing a burden to respond on civilian institutions and militaries around the world.”⁸ The 2009 Army Posture Statement (a report the Army submits to Congress with its budgets, which can serve to justify budget requests and activities, and as strategic communications tool) describes today’s world and that of the future as an “Era of Persistent Conflict.” Its authors see a future of protracted challenges, including rapid changes in technology, proliferation of weapons of mass destruction, failing states, dramatic demographic shifts and increasing frequency or intensity of natural disasters, as well as a changing climate.

Both documents also concur on one important aspect of addressing climate change: that doing so will not be up to DOD or the services alone. The

2009 Posture Statement outlines important policies and tools for addressing these challenges, highlighting interagency cooperation, working with partners abroad and preparing for the full spectrum of military operations. It also argues that the Army's modular structure should make it more agile in responding to a variety of challenges.⁹ The 2010 QDR likewise notes that "managing the national security effects of climate change will require DOD to work collaboratively, with many branches of government and with both traditional allies and new partners."¹⁰ It describes shifting patterns of natural disasters domestically and abroad that could lead to increased demands for disaster and humanitarian relief missions, noting that, "In some nations, the military is the only institution with the capacity to respond to a large-scale natural disaster. Proactive engagement with these countries can help build their capability to respond to such events."¹¹

Interagency collaboration, though certainly the appropriate way to address climate-related issues, will not always be smooth or simple. Looking at ways in which the effects of climate change could have important implications for economic and political stability can help illustrate the kind of issues that may arise for the U.S. ground forces.

Projections indicate changes varying dramatically by region, with water availability decreasing in some regions with flooding in others, and land arability benefiting in some regions with desertification spreading in others. Both factors will affect agriculture around the world, raising productivity in some areas and lowering it in others. Bolstering agricultural production is certainly not a traditional security mission – and, in particular, not a DOD mission – yet in conflicts such as the one in Afghanistan today it can become a key variable to success.

However, the U.S. government lacks sufficient capacity for economic development and non-military security assistance.¹² American ground forces

have therefore in some cases taken responsibility for non-combat activities that bolster stability and security. Recent attention to activities like the National Guard's Agricultural Development Teams (ADTs), in which troops are teaching Afghans farming methods and distributing food, has led some development and relief groups to publicly argue that combat forces should not engage in these kinds of activities regularly or on a large scale.¹³ Yet, as defense strategist Andrew Krepinevich cautioned, if civilian government agencies "prove unable to meet their obligations as partners in restoring stability, the Army must also be prepared to engage in operations to help restore the threatened state's governance and infrastructure."¹⁴ Given that this would involve (among other things) many of the types of activities that may become more important to state stability in a climatically changing future, this debate will likely be prominent in any discussion of climate change implications for U.S. ground forces.

In addition to the debate on the proper roles of the American military in non-military activities, climate change may add new dynamics to more traditional security assistance activities by changing the needs of nations with which the United States forms partnerships. For example, the United States already provides significant security and other assistance to Colombia to promote regional goals like countering narcotics production and trade. According to a 2009 CNA report, Colombia is likely to face an array of climate change effects unique to its geography and landscape. This, in turn, is likely to "worsen long-standing problems (e.g., drug trafficking and crime, natural disasters, forced migration or displacement)," and drive an increasing need for Colombian armed forces to "provide security assistance, along with civilian partners, to the public." Natural disasters and other environmental changes could also "divert resources from other missions and operations" by increasing the need for humanitarian response and damaging infrastructure.¹⁵ These trends

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could complicate U.S. abilities to meet its regional security objectives.

The Army itself has identified several other implications of climate change for its missions. Specifically, migration and other ancillary effects of climate change could complicate ongoing missions. The Army Corps of Engineers, whose responsibilities include managing water resources and reducing risks to infrastructure from natural disasters, may see a rise in sea level affect installations at home and abroad, and it may be asked to collaborate more often with key international partners to help them adapt to climatic changes.¹⁶

On the U.S. domestic front, the most often cited effect is that some National Guard units may be called upon more often if climatic changes spur more or more intense natural disasters or if the secondary effects of climate change affect border security. In interviews, several Guard representatives voiced their sense that they will have sufficient capacity to adjust if demands increase, and will be able to adapt accordingly. However, several noted that more detailed climate projections and related information would assist in preparing for worst-

case contingencies. Questions surrounding the roles, responsibilities, and command and control of ground forces within the continental United States have risen to cabinet-level debate recently as the southern border has posed an increasing threat to national security.¹⁷ This situation provides a window into more complex questions about the possible effects of more or more serious natural disasters in North and Latin America, or increasing movements of people as a result of changing environments.

These issues may seem relevant only for the more distant future. However, given challenges related to climate change that might confront the country in the long term, more concerted consideration of them in the near term is certainly warranted.

RESEARCH NEEDS

Good policy solutions regarding questions like those identified above will remain elusive without far more thorough analysis of how climate change may affect U.S. ground forces, future missions and capabilities. Our work points to two key research priorities.

Afghanistan and Pakistan. Given the large presence of American ground forces in Afghanistan and their mission not just to secure but to stabilize that war-torn country, one important exercise would be to examine regional climate projections for Central Asia, focusing on how changing climate conditions may affect agriculture (and, related, water supplies) in Afghanistan and Pakistan. In addition to U.S. military forces, USAID, the U.S. Department of Agriculture and other civilian agencies are engaged in diversifying and improving the region's agricultural sector to promote economic growth and long-term stability.¹⁸ The Intergovernmental Panel on Climate Change and other climate science projectors tend not to provide great detail on many countries in conflict such as Afghanistan, in part due to lack of consistent



A National Guard Humvee departs the New Orleans Superdome in Louisiana on Sept. 5, 2005 to provide disaster relief following Hurricane Katrina. The National Guard will likely play a unique role in domestic efforts to adapt to the effects of climate change. (U.S. ARMY)

monitoring of environmental trends. Clearly identifying a need for the science community to develop better projections for Afghanistan and Pakistan (or for that broad region, should sufficient information on those two specific countries prove unavailable) could provide a focused, relevant topic around which security planners could build new relationships with the climate science community toward a specific security goal. This kind of analysis could also be useful in setting priorities for the water, energy and agricultural projects that are important to long-term prosperity in Afghanistan and avoiding what is becoming a proverbial warning -- building a hydroelectric power system on a river that is unlikely to exist in 15 years. Perhaps most important, this type of exercise could also showcase the importance of contributions of U.S. civilian agencies to meeting U.S. security needs.

Domestic Climate Change Effects. The Army and National Guard would benefit from deeper examination of how climate change will affect the

continental United States. Analysis of the security consequences of climate change often focuses on those developing countries least capable of adapting to change. American ground forces are unlikely to be called upon to engage in these locations unless other U.S. interests are directly at stake. However, they will continue to have domestic roles and responsibilities, and indeed the Army Corps of Engineers and National Guard will likely play unique roles in domestic efforts to adapt to the effects of climate change. Individuals within both organizations are beginning to engage with other federal, state and local agencies as needs arise -- adapting to water shortages in the western United States (the type of issue likely to arise more with a changing climate), for example. The more that future demand can be quantified based on projected climate effects -- and the less ad hoc this process is -- the smoother will be the process of adjusting to changing domestic needs.

As the Army, Marine Corps or National Guard (or researchers focusing on these services) consider how to undertake deeper examinations of what climate change means for their missions and capabilities, looking to the Navy's process may be instructive. Several years ago, it began analyzing how climate change might affect its missions, operating environment, equipment and capabilities by commissioning broad initial studies that identified a wide range of potential issues. It has since worked to study these potential issues more deeply, parsing which will or will not be problematic, in an effort to best place further research and investments. By systematically identifying the most likely climate change-related issues it will face, the Navy has been able to build solid policies and plans without an oversized dedication of resources.

Such analysis must also be matched by actionable climate change projections from partners in the science community. For example, although generating climate projections (like all projections) will remain an inexact practice, more clear indications of how and where natural disasters could drive increased HA/DR missions could assist in more efficient planning. Until U.S. ground forces create a demand for information that is relevant to their specific missions and responsibilities, climate scientists and modelers are unlikely to generate optimal projections for their use. This will require further developing and maintaining just the kind of interagency relationships that the QDR suggests will be important in regularly evaluating climate science projections and their security implications.

For the U.S. ground forces, delaying concerted research on this issue for too long increases the risks that speculation, rather than security priorities or solid methods, will drive research needs. For example, some commentators are now speculating that the effects of climate change are likely to spawn more terrorism.¹⁹ Proving such a link would require extensive multidisciplinary analysis. Unless backed by rigorous study, this kind of claim may

detract from more likely scenarios that should be of greater concern to U.S. ground forces. Given the pressing priorities for U.S. ground forces at this time, non-governmental organizations should be able to meet these research needs if the military services are unable to commit the resources to doing so in the near term.

CONCLUSION

The U.S. Army, Marine Corps and National Guard are in the early phases of considering how climate change might affect them in the future. These services possess the size and enterprising individuals to make significant progress on reducing emissions at domestic installations. Each service has been shaped by the current wars in ways that have helped it articulate a vision of a complex future. This understanding can serve as a foundation for better understanding how climate change as an unconventional global issue may affect the ground services as well. Deeper intellectual study of how climate change is likely to affect the U.S. ground forces, combined with leadership attention to the practical questions being raised as the services work to meet energy and climate requirements, will set the Marine Corps, Army and National Guard on a solid footing for understanding what this issue means for them.

ENDNOTES

- ¹ "Ground forces," in this context, include the U.S. Army, U.S. Marine Corps and National Guard. While the U.S. Marine Corps is an expeditionary force, current operations in Iraq and Afghanistan are raising specific concerns among USMC leaders on energy use in theater.
- ² U.S. Department of Defense, "Quadrennial Defense Review (QDR)" (February 2010): 84.
- ³ See "Executive Order 13514—Federal Leadership in Environmental, Energy, and Economic Performance" (October 8, 2009); and U.S. Department of Defense, "Greenhouse Gas Targets Announcement for DOD" (29 January 2010).
- ⁴ U.S. Marine Corps, "Ten by '10: Top 10 Things To Do by 2010 to Reduce USMC Energy Risks" (undated materials).
- ⁵ See Colonel Eugene B. Smith, Garrison Commander, "Memorandum: Energy Efficiency Measures for FY09 (Heating Season)" (24 October 2008); and U.S. Department of Energy, "Water Reclamation and Reuse at Fort Carson" (August 2009).
- ⁶ U.S. Department of Defense, "SERDP and ESTCP Launch Climate Change Efforts," *SERDP Information Bulletin* No. 40 (Fall 2009).
- ⁷ "Sustainable Range Program," *Army Posture Statement* (5 January 2010).
- ⁸ QDR: 85.
- ⁹ Submitted by Hon. Pete Geren and General George W. Casey, Jr., "Statement on the Posture of the United States Army, 2009" (May 2009): 1-2.
- ¹⁰ QDR: 86-87.
- ¹¹ QDR: 85.
- ¹² Kristina Wong, "Afghanistan Civilian Surge Could Last Decade: Largest U.S. Civilian Effort in Combat Area Since Vietnam War," *ABC News* (4 March 2010).
- ¹³ See, for example, Kevin Baron, "Mixing fighting and food in Afghanistan," *Stars and Stripes* (15 September 2009).
- ¹⁴ Andrew F. Krepinevich, "The Future of U.S. Ground Forces," Testimony Before the U.S. Senate Armed Services Committee, Airland Subcommittee (26 March 2009): 5.
- ¹⁵ David M. Catarious, Jr., and Ralph H. Espach, "Impacts of Climate Change on Colombia's National and Regional Security" (Washington: CNA, October 2009): iii.
- ¹⁶ See, for example, Army Environmental Policy Institute, "Worldwide Emerging Environmental Issues Affecting the U.S. Military," at <http://www.aepi.army.mil/rpt-weei.html>; and Army Environmental Policy Institute, "Climate Change and Army Sustainability," *Army Foresight* (July 2007).
- ¹⁷ Spencer S. Hsu, "Agencies Clash on Military's Border Rule; At Issue: Which One Directs Troops in Anti-Drug Mission," *The Washington Post* (28 June 2009): A1.
- ¹⁸ See, for example, Keith B. Richburg, "U.S. Aid Workers Find Few Trained Afghan Partners," *The Washington Post* (20 January 2010); and Stephen Kaufman, "Agriculture Is Top U.S. Nonsecurity Focus in Afghanistan" (8 January 2010).
- ¹⁹ See "Global Warming Could Increase Terrorism, Official Says," *CNN* (25 June 2008); and David Montero "Could Climate Change Aggravate Terrorism," *Christian Science Monitor* (5 December 2007).

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Center for a New American Security

1301 Pennsylvania Avenue, NW
Suite 403
Washington, DC 20004

TEL 202.457.9400
FAX 202.457.9401
EMAIL info@cnas.org
www.cnas.org



About the CNAS Natural Security Program

The Center for a New American Security (CNAS), a non-profit, non-partisan national security research organization based in Washington, D.C., launched the Natural Security program in June of 2009. CNAS initiated the program in order to study the near-term national security implications of natural resources supply and demand patterns, as well as the security consequences of high consumption rates. The program focuses on energy, minerals, water, land, climate change, and biodiversity, as well as the links among these resource challenges. The ultimate goal of the program is to offer practical solutions and strategies to anticipate, shape, and respond to the ways in which natural resources will shape the 21st century strategic environment.



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1301 Pennsylvania Avenue, NW
Suite 403
Washington, DC 20004

TEL 202.457.9400
FAX 202.457.9401
EMAIL info@cnas.org

www.cnas.org