

Jim Ramsay* and Kent Butts

Research and Policy in Homeland Security and Climate Change: Results from a Roundtable and Thoughts on Developing a National Research Agenda for Climate Change and Security

Abstract: To scientists, there is a clear consensus that human activities have a measurable effect on the climate, and that subsequently there are concerns about how a changing climate could impact global economies, trade relations, water (and other resource) access and logically therefore, also to security. Whether anthropomorphic climate change is a homeland or national security issue is a difficult distinction to make given the lack of consensus over the definition of modern homeland security. However, such distinctions may be moot given the recent and profound changes in the Arctic. On the one hand, Alaska shares a coastline with the Arctic Ocean; hence security concerns in the Arctic may be considered homeland security issues. On the other hand, given the Russian military interest/presence in the Arctic, security concerns in the Arctic may be considered matters of national security. The resulting challenge to the academic community is how to move the discussion about climate change and security forward. The authors recently held a roundtable at Penn State University that included several distinguished and accomplished policy makers, executives and scholars who collectively examined the impacts and threats posed by climate change.

Keywords: climate change; policy; research agenda.

DOI 10.1515/jhsem-2014-0049

1 Introduction

Climate change is a powerful national security issue. It is, to be sure, an environmental security issue that affects US national security interests. However, climate change is much more than that. It has emerged as the most far-reaching security

***Corresponding author: Jim Ramsay**, Embry-Riddle Aeronautical University – Chair, Department of Security Studies and International Affairs, Professor of Homeland Security, Security Studies and International Affairs, College of Arts and Sciences, 600 Clyde Morris Blvd., Daytona Beach, FL 32114, USA, Phone: +386-226-7153, Fax: +386-226-7739, e-mail: ramsa301@erau.edu

Kent Butts: Penn State Harrisburg

issue of today, implicated in hard security issues such as regime change, failed states, conflict over scarce resources, terrorism, regional instability, extreme weather, critical infrastructure protection, and the geopolitics of the Arctic.

Motivation for the Roundtable on Climate Change and Homeland Security had been growing over the last several years as a result of an increasing number of security, intelligence, and policy-oriented studies and reports from both the private and the public sectors. This literature began to speak frankly about the threat that climate change poses to critical infrastructure, the American economy, and, subsequently, to security. Reports and studies – including the 2007 study by Nordas and Gleditsch, *National Security Implications of Global Climate Change* (Pumphrey 2008), *Trends and Implications of Climate Change for National and International Security* (DOD 2011), *Climate Change Adaptation and Sustainable Design at the Port Authority of New York & New Jersey* (Mills-Knapp et al. 2011), *The Climate Change Adaptation Roadmap* (DHS 2012) and the 2014 study from Harvard University Center for the Environment – each suggested that a tipping point had indeed been met and that perhaps the time was right to develop a forum wherein this emerging body of knowledge could be discussed at the policy and strategic levels. For example, even before Hurricane Sandy struck, New York City was well aware of its vulnerabilities and of the threat that climate change and extreme weather posed to its critical infrastructure (Mills-Knapp et al. 2011). The findings from these reports, as well as those from several others, support the conclusions of the recently published Intergovernmental Panel on Climate Change (IPCC) *Fifth Assessment Report (AR5)*, which states with high confidence that “ecosystems and cultures... are already at risk from climate change” (IPCC 2014: p. 12). Consequently, the homeland security programs at Penn State and Embry-Riddle Aeronautical University joined to devise and conduct the Roundtable on Climate Change and Homeland Security in February 2014.

This article summarizes the analytical framework relating climate change to homeland security, as well as the research topics and policy recommendations extracted by authors after the roundtable. As a backdrop for the rationale and timing of the roundtable, the following section briefly reviews the linkages between climate change and security.

2 Literature Review

Over the last 5 years, the case for climate change as a homeland (and national) security issue has been gaining strength in the literature. Ramsay and O’Sullivan (2013: p. 3) observe that even though the science of climate change had not been clearly

linked to security issues historically, by the time *The National Security Strategy of the United States* (White House 2006) was written, pandemic and other public health concerns were included as threats to national security without explicit mention of or linkages to climate change. In 2007 the Center for Naval Analysis (CNA) produced *Climate Change and National Security and the Threat of Climate Change*, a watershed document authored by the Military Advisory Board. This report articulates the linkages between climate change and a cascading series of consequences, including political and economic disruption, mass migration, and failed nation states. The CNA report also points out that climate change is not simply a singular driver of instability; rather, it essentially acts as a threat multiplier and eventually could cause existing tensions to boil over into conflict which threaten US national security interests (CNA 2007). The study was written at the same time that the National Intelligence Council was drafting its *National Security Implications of Global Climate Change to 2030*, a classified document that was the subject of open congressional hearings in 2008 that linked climate change to water scarcity, decreased agricultural productivity, migration, and damage to infrastructure, all of which affect poverty, social stability, and intrastate conflict (U.S. House 2008).

By 2012 and 2013, several US-based climate change reports highlighted both the scope and criticality of climate change and its ties to security. These studies were conducted involving dozens of climate and security experts. In its promotion of the first study, *Climate Extremes: Recent Trends with Implications for National Security* (McElroy and Baker 2012), the Harvard University Center for the Environment describe how changes in extremes include

more record high temperatures; fewer but stronger tropical cyclones; wider areas of drought and increases in precipitation; increased climate variability; Arctic warming and attendant impacts; and continued sea level rise as greenhouse warming continues and even accelerates. These changes will affect water and food availability, energy decisions, the design of critical infrastructure, use of the global commons such as the oceans and the Arctic region, and critical ecosystem resources. They will affect both underdeveloped and industrialized countries with large costs in terms of economic and human security. The study identifies specific regional climate impacts – droughts and desertification in Mexico, Southwest Asia, and the Eastern Mediterranean, and increased flooding in South Asia – that are of particular strategic importance to the US.

In addition, in *Climate and Social Stress: Implications for Security Analysis*, a study produced by the National Academies of Sciences and National Research Council, Steinbruner and colleagues (2012), note that

The US intelligence and security communities have begun to examine a variety of plausible scenarios through which climate change might pose or alter security risks... The central purpose of [this] study... was... “to identify ways to increase the ability of the intelligence

community to take climate change into account in assessing political and social stresses with implications for US national security.” (Steinbruner et al. 2012: p. 1)

Essentially confirming the core logic of the CNA report (2007), the Steinbruner et al. study places climate change in the national security context. That is, as Ramsay and O’Sullivan point out “climate-related events are often closely spaced in time, and can directly lead to cascading failures and crises in global food, water, trade, commodities, public health, economic, and political systems – particularly in countries and regions that are already fragile, poorly resilient, or stressed” (Ramsay and O’Sullivan 2013: p. 5).

Recently, the atmosphere in Washington has become more conducive to dealing with the effects of climate change. Facilitating this change has been Executive Order 13514, Federal Leadership in Environmental, Energy and Economic Performance (October 2009), which requires government agencies to develop climate change roadmaps. The Department of Homeland Security (DHS) wrote a particularly well-regarded document, *Climate Change Adaptation Roadmap* (2012), which is itself the product of several other strategic documents – such as the aforementioned CNA report – that address the role of climate change in security. Recognizing climate change as a strategic driver of the current security milieu, the roadmap focuses on more powerful storms and disasters, the Arctic, vulnerable critical infrastructure, and stressors abroad, where climate change is implicated in creating the conditions that “enable terrorist activity, violence, and mass migration” (DHS 2012: p. 10).

3 International Linkages

Climate change affects homeland security abroad by placing additional demands on the political system of fragile states already struggling to prevent system failure. Governmental legitimacy turns on meeting these demands with existing resources. Warmer dryer air, as well as reduced rain in countries that depend almost exclusively on rain for water, affect food security; warmer climates allow diseases like malaria to reach higher elevations and allow water-borne diseases to spread with more powerful storms and floods. When these effects occur unevenly across a country, they can lead to intrastate conflict and loss of governmental legitimacy. The Bruntland Commission’s *Our Common Future* report in 1987 and the United Nations Development Programme’s influential *1994 Human Development Report* point out that an environmentally insecure nation is more likely to fail. In developing regions, such as the Middle East and Northern Africa, the nexus between state security and human security, freedom from want and freedom from

fear, often explains failed states and determines regional stability and patterns of migration. Extremist ideology takes advantage of the erosion of the resource base and loss of legitimacy. For example, according to a 2009 United Nations Environmental Programme (UNEP) study, “since 1990 at least eighteen violent conflicts have been fuelled by the exploitation of natural resources” and “at least 40% of all intrastate conflicts have a link to natural resources” (UNEP 2009: p. 5). So well recognized is this phenomenon that the US Geological Survey and the US Agency for International Development (USAID) now run a Famine Early Warning Systems Network (FEWS NET, <http://earlywarning.usgs.gov/fews/>), which traces acute food security and crisis in strategically important regions.

Developed by the US Coast Guard (USCG), the *National Strategy for the Arctic Region* (NSAR) (White House 2013) clarifies the strategic importance of climate change effects in this resource-rich, territorially complex region. Successfully achieving national goals in a region that is also of strategic interest to China and Russia will require cooperation and coordination among US agencies. The USCG manages DHS equities in the Arctic, and its 2013 *Arctic Strategy* (USCG 2013) clarifies the importance of this new transportation route and the growing quest for its resources. Particularly valuable and well written, this document provides a reference that introduces the major homeland security issues from infrastructure to economic impacts and makes clear the pressing need for additional US icebreakers to accomplish its mission and support the US Navy. And DOD’s *Arctic Strategy* reiterates the NSAR vision for a peaceful Arctic while detailing the importance of the Arctic to US national security and DOD missions, such as securing freedom of the seas (DOD 2013).

In many ways, this emergent body of literature provided the motivation to conceptualize and conduct a roundtable aimed at producing a set of research and policy recommendations. It also framed the participants’ discussions and presentations. What follows are two sets of recommendations that evolved from those rich discussions and presentations.

4 The Roundtable

Penn State University’s Homeland Security Program, in partnership with the Homeland Security Program at Embry-Riddle Aeronautical University, conducted a Climate Change and Homeland Security Roundtable on February 18–19, 2014, at Penn State’s Harrisburg campus. The roundtable brought together senior-level insurance industry executives, academics, think tank experts, and senior members of the national and homeland security communities to explore the impact of climate change upon domestic security of the US, and to identify key

issues requiring further policy development and analysis, or subsequent research, analysis, and evaluation.

The main products were two sets of priority topics for academic research and policy development, including a set of recommendations submitted to DHS, which participants hope will be included in strategic homeland security documents. Key findings that form the basis of subsequent research and policy recommendations include the following:

- Climate change is occurring more rapidly than predicted, affecting food, energy and water security, prosperity, and major homeland security objectives.
- Climate change is increasing the underlying conditions being exploited by ideological extremists and terrorists in fragile Muslim states.
- The DHS Arctic mission and critical infrastructure protection planning should be given high priority.

As for the recommendations specified below, the first set is research oriented, and the second set is policy oriented. There is neither an inherent order to the lists nor an implied level of importance, and the recommendations are not to be attributed to those attending the roundtable. Rather, these lists summarize the authors' essential areas of research and policy courses of direction identified throughout the roundtable. Toward this end, the authors define the term *climate change* the same way that the IPCC does in its Framework Convention on Climate Change: "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods" (IPCC 2014: p. 5).

4.1 Research Recommendations

- Support a national research agenda for climate change and homeland security, to be conducted by (in part, funded) educational research centers. The main mission of these centers would be to form public/private partnerships in order to identify knowledge deficiencies, produce scholars, educate practitioners, and help form the scientific basis that supports standards development.
- Identify in developing nations the leading indicators of radicalization (or governmental delegitimization) that are tied to or exacerbated by climate change.
- Develop the ability to more precisely refine climate forecasting in the near term (0- to 10-year period).
- Investigate mechanisms and technology enhancements that improve energy sector resilience to natural disasters emanating from climate change.

- Investigate methods to improve public health/hospital capacity to manage climate change-related challenges, such as heat stress, asthma, the spread of new or exotic diseases, etc.
- Develop metrics that identify levels of community preparedness and methods that can enhance community-level preparedness and resilience.
- Develop methods that private sector-based owners/operators of critical infrastructure can use to integrate and/or better use risk management techniques.
- Further explore the implications of climate change on the underlying conditions that terrorists seek to exploit. See, for example, the 2003 *National Strategy for Combating* (CFR 2003).
- Investigate the link between human security, environmental security, and homeland security in such areas as migration, terrorism and ungoverned space, cooperation between terrorist and drug cartel organizations, and state failure or fragility.
- Examine the implications of Arctic environmental change for US homeland security. Issues range from USCG mission and funding to United Nations Convention on Law of the Sea (UNCLOS), resource geopolitics, impact on indigenous cultures, growth in trade, and infrastructure development.
- Investigate the applicability of modeling to climate change threats, including but not limited to port infrastructure, flooding, coastal erosion, tidal patterns, and the economic impacts of snowpack loss and jobs after “superstorms” such as Hurricane Sandy.
- Explore the role of the US interagency community (Department of State [DOS], DOD, DOS, USAID, the National Oceanic and Atmospheric Administration, and others), the international community, the private sector, academia and nongovernmental organizations in supporting DHS’s effort to execute its climate change strategy.

4.2 Policy Recommendations

- Emphasize to DOS, DOD, and USAID the importance of climate change adaptation to addressing the underlying conditions of terrorism in failed or fragile moderate Muslim states.
- Work with the interagency community to encourage the collection of migration, disease, and water and food security data associated with regional climate change.
- Request that DOD use existing combatant command engagement programs to build the capacity of host nation militaries to support civilian authority in

- collecting and managing regional climate change adaptation data, and water and food security.
- Encourage DHS to reach out to USAID to explore a greater basis for interagency cooperation in addressing development and climate adaptation efforts in countries critical to defeating extremist ideology and combating terrorism.
 - Characterize climate change as a national security issue that affects homeland security, rather than as a purely environmental security issue.
 - Commission studies to identify the economic costs of disasters rather than just the recovery and response costs. Related to this, investigate how to incentivize risk-reducing behavior at the organizational level.
 - Mainstream the Arctic: prioritize the requirement for additional USCG icebreakers to execute the Arctic strategy and support the Navy in this rapidly emerging geopolitical theater. Challenges such as the nonratification of UNCLOS and an increasingly territorial Russia amplify the importance of the Arctic.

5 Conclusions

Climate change presents security issues at home and abroad. It acts as a threat multiplier and can exacerbate domestic challenges, such as critical infrastructure vulnerabilities, as well as international (particularly in less developed nations/regions) concerns, such as stresses due to mass migration and resource scarcity, which can directly lead to failed nation states, or radicalization. The need to develop a national research agenda that specifically addresses security challenges emanating from climate change involves new areas of both scholarship and policy development. Toward this end, the authors hosted a research and policy roundtable in order to better elucidate the security concerns and issues primarily related to climate change.

The roundtable was attended by several accomplished scholars and policy-makers from the federal government and private sector, who discussed what is known and, more importantly, what needs to be known to better protect the US. Reflecting the views of the authors, this paper stresses the need to continue a national conversation about how anthropomorphic changes in the climate could continue to affect security in the US and around the world. It is clear from this first roundtable that there is a compelling need for subsequent roundtables and more specific integration of climate change concerns into the US domestic and national security strategies. To accomplish this, the federal government will need to adequately fund and organize a national structure that will likely leverage public and private partnerships and offer sufficient funds to initiate and sustain a national research agenda.

5.1 Climate Change and Homeland Security Participant List

The following participants attended the roundtable:

- Kent Butts, Penn State Harrisburg (Co-host)
- Jim Ramsay, Embry-Riddle Aeronautical University (Co-host)
- Lindene Patton, Zurich Financial Services
- J. Robert Barnes, Center for Climate and Security
- Tim Beres, Center for Naval Analysis
- Porter DeLaney, Kyle House Group
- Richard Engel, National Intelligence Council
- Francesco Femia, Center for Climate and Security
- Alice Hill, National Security Staff, Executive Office of the President
- James Loy, Cohen Group
- David Tittle, Pennsylvania State University
- David Trissell, FEMA/DHS
- Theresa Whalen, National Intelligence Council

References

- Center for Naval Analysis (CNA). (2007) *National Security and the Threat of Climate Change*. Alexandria, Va.: CNA Corporation. Available at: <https://www.cna.org/sites/default/files/National%20Security%20and%20the%20Threat%20of%20Climate%20Change%20-%20Print.pdf>.
- Council on Foreign Relations (CFR). (2003) *National Strategy for Combating Terrorism*. Washington, DC. Available at: https://www.cia.gov/news-information/cia-the-war-on-terrorism/Counter_Terrorism_Strategy.pdf.
- Harvard University Center for the Environment. (2014) “A New Harvard Report Probes Security Risks of Extreme Weather and Climate Change.” Available at: <http://environment.harvard.edu/climate-extremes>.
- Intergovernmental Panel on Climate Change (IPCC). (2014) “Summary for Policymakers.” In (C. B. Field, V. R. Barros, D. J. Dokken, K. J. Mach, M. D. Mastrandrea, T. E. Bilir, M. Chatterjee, K. L. Ebi, Y. O. Estrada, R. C. Genova, B. Girma, E. S. Kissel, A. N. Levy, S. MacCracken and P. R. Mastrandrea, eds.) *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, UK, and New York, NY: Cambridge University Press. Available at: http://ipcc-wg2.gov/AR5/images/uploads/WG2AR5_SPM_FINAL.pdf.
- McElroy, Michael and D. James Baker (2012) *Climate Extremes: Recent Trends with Implications for National Security*. Cambridge, Mass.: Harvard University Center for the Environment.
- Mills-Knapp, Sara, Emily Bourdeau, Gregory Falco, Carol Resler, Harold Tovar and Stephen Zoegall. (2011) *Climate Change Adaptation and Sustainable Design at the Port Authority of New York & New Jersey*. May 11. Available at: http://www.earth.columbia.edu/sitefiles/file/education/capstone/Capstone_final_5_11_11_reduced.pdf.

- Nordås, Ragnhild and Nils Petter Gleditsch. (2007) "Climate Change and Conflict," *Political Geography*, 26(6):627–638. Available at: http://graduateinstitute.ch/files/live/sites/iheid/files/sites/political_science/shared/political_science/1701/Environmental-Security-Article-Nordas-Gleditsch.pdf.
- Pumphrey, Carolyn. (2008) *Global Climate Change: National Security Implications*. Carlisle, Pa.: Strategic Studies Institute. Available at: <http://www.strategicstudiesinstitute.army.mil/pdffiles/pub862.pdf>.
- Ramsay, James D. and Terrence M. O'Sullivan. (2013) "There's a Pattern Here: The Case to Integrate Environmental Security into Homeland Security Strategy," *Homeland Security Affairs Journal* 9(6):1–21. Available at: <http://commons.erau.edu/db-applied-aviation/11>.
- Steinbruner, John D., Paul C. Stern and Jo L. Husbands, eds. (2012) *Climate and Social Stress: Implications for Security Analysis*. Washington, DC: National Academies Press.
- United Nations. (1987) *Report of the World Commission on Environment and Development: Our Common Future (The Brundtland Report)*. Oxford: Oxford University Press. Available at: <http://www.un-documents.net/wced-ocf.htm>.
- United Nations Development Programme (UNDP). (1994) *Human Development Report 1994*. New York: Oxford University Press. Available at: http://hdr.undp.org/sites/default/files/reports/255/hdr_1994_en_complete_nostats.pdf.
- United Nations Environment Programme (UNEP). (2009) *From Conflict to Peacebuilding: The Role of Natural Resources and the Environment*. Policy Paper No. 1, Nairobi, Kenya. Available at: http://www.unep.org/pdf/pcdmb_policy_01.pdf.
- U.S. Coast Guard (USCG). (2013) *Arctic Strategy*. Washington, DC. Available at: http://www.uscg.mil/seniorleadership/DOCS/CG_Arctic_Strategy.pdf.
- U.S. Department of Defense (DOD). (2011) *Trends and Implications of Climate Change for National and International Security*. Report of the Defense Science Board Task Force. Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics. Available at: <http://www.acq.osd.mil/dsb/reports/ADA552760.pdf>.
- U.S. Department of Defense (DOD). (2013) *Arctic Strategy*. Available at: http://www.defense.gov/pubs/2013_Arctic_Strategy.pdf.
- U.S. Department of Homeland Security (DHS). (2012) *The Climate Change Adaptation Roadmap*. Washington, D.C. Available at: http://www.dhs.gov/sites/default/files/publications/Appendix%20A%20DHS%20FY2012%20Climate%20Change%20Adaptation%20Plan_0.pdf.
- U.S. House of Representatives. (2008) *National Intelligence Assessment on the National Security Implications of Global Climate Change to 2030*. Joint Hearing before the Permanent Select Committee on Intelligence and the Select Committee on Energy Independence and Global Warming, 110th Cong., 2nd sess. June 25. Statement of Dr. Thomas Fingar, Deputy Director of National Intelligence for Analysis and Chairman of the National Intelligence Council. Available at: http://fas.org/irp/congress/2008_hr/062508fingar.pdf.
- White House. (2006) *The National Security Strategy of the United States of America*. 2006. Washington, DC. Available at: <http://www.comw.org/qdr/fulltext/nss2006.pdf>.
- White House. (2013) *National Strategy for the Arctic Region*. May 2013. Washington, DC. Available at: http://www.whitehouse.gov/sites/default/files/docs/nat_arctic_strategy.pdf.