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WORKING PAPER

Promoting the Dialogue: *Climate Change and the Maritime Services*

By Christine Parthemore

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Cover Image

The USCGC Healy (WAGB 20) assists a science team in the Arctic Ocean in August 2005.

(AEROGRAPHER'S MATE 1ST CLASS GENE SWOPE /U.S. Navy)

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About the Author

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Climate change carries broad implications for U.S. interests. Scientists forecast, and in some regions are already observing, an increasingly accessible Arctic, sea level rise, melting glaciers and ice sheets, changing patterns of natural disasters and alterations to ocean conditions. These physical changes hold consequences for national security. They could affect military installations, generate new challenges for continued U.S. access to the global commons and contribute to economic and political instability abroad in ways that affect U.S. maritime missions in particular. Leaders in the U.S. Navy and Coast Guard (collectively referred to as the maritime services in this paper¹) are expending significant effort to understand and respond to this challenge.

The unique capabilities and missions of the maritime services require a nuanced understanding of changes to the world's ecosystems, and they are therefore as aware as any civilian scientists that actual observations of climatic changes are outpacing projections. Combined with strong leadership, this awareness is driving the Navy and Coast Guard to explore more deeply than many other government departments how climate change will affect them. Complicating these efforts are continuing difficulties with interpreting climate projections and determining how these analyses should inform policy decisions.

In September 2009, the Center for a New American Security (CNAS) convened representatives from the Navy and Coast Guard, scientists, government agency officials, nongovernmental organization representatives and security and foreign policy experts to discuss the implications of climate change for the maritime services.² This working paper crystallizes how they are thinking about this problem, based on discussions in that meeting, a series of interviews and independent research conducted by CNAS.

DEFINING THE CLIMATE CHANGE CHALLENGE

Leaders within the maritime services have launched several initiatives over the past few years to better understand what climate change projections and observed changes mean for their missions, operating environment and capabilities. Their experience is instructive.

The Coast Guard has actively observed changing conditions, and several of its leaders have voiced concern over changing patterns in maritime shipping and other economic activities. In response, Coast Guard Commandant Admiral Thad Allen has called for new assessments to determine future Coast Guard mission requirements, and he has conducted extensive outreach, including everything from Congressional testimony to blog posts.

Turning to the Navy, the Chief of Naval Operations (CNO), Admiral Gary Roughead, commissioned several exploratory studies in 2008 about how climate change may affect the maritime environment and therefore the Navy.³ These far-ranging studies included expert working groups and focused on a broad range of initial findings on potential climate effects, such as alterations in ocean salinity and changes to the Arctic region. Initial assessments pointed to specific effects on which the Navy should focus, working with scientists and other climate experts to determine which issues are likely to be problematic. Admiral Roughead then built upon this initial research and analysis by establishing two related task forces: Task Force Climate Change, charged with creating an Arctic Roadmap and later a roadmap for full global climate change effects;⁴ and Task Force Energy, which examined maritime, aviation, expeditionary and shore energy vulnerabilities to price volatility, limited range and grid fragility. It has also created working groups on fuels, the environment and strategy. The two task forces coordinate closely with one another, ensuring that these interrelated issues are considered together. In

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the coming months, these task forces will incorporate their findings into comprehensive energy and climate strategies. In September 2009, the CNO also commissioned a Naval Studies Board project to examine specific climate change questions for the maritime services,⁵ and the leaders of each task force continue to deliver public speeches, interact with the policy community, and otherwise disseminate their findings to date.

Task Force Climate Change has considered several key questions for the Navy including: what specific effects does the most current climate science indicate are likely to happen; what tradeoffs are involved with focusing time and funding on climate change, including the costs and benefits of making investments to adapt to climatic changes early and waiting for improved climate models to provide more specific information; and where are contributions to the study of climate change and investments by the Navy and Department of Defense (DOD) in general most useful? As one Navy officer noted, these questions are intended to make senior leaders feel comfortable in dedicating finite (and possibly increasingly constrained) resources to addressing climate change at any level.

One outcome of these efforts is that the maritime services have a clearer vision than the other services and federal departments of how climate change is likely to affect their work, instilling a high level of confidence that they will be able to adapt. In



The Los Angeles-class submarine USS *Annapolis* (SSN 760) broke through three feet of ice during Ice Exercise (ICEX) 2009 in the Arctic Ocean. ICEX 2009 was intended to test and evaluate naval submarine operability in the changing Arctic environment. (MASS COMMUNICATION SPECIALIST 1ST CLASS TIFFINI M. JONES/U.S. Navy)

speaking with Navy and Coast Guard personnel about the effects of climate change, there is one often-cited refrain: We will adjust, as we always have. Those who make a living of monitoring the environment – particularly the oceans – have long experienced its changing conditions and adapted accordingly. This experience also clarifies to maritime service personnel the importance of understanding changing conditions, an important result of which is an increasingly clear identification of which climate change effects are likely or unlikely to cause much concern for the maritime services.

TODAY'S BIGGEST CHALLENGE: THE ARCTIC

Through the process described above, the maritime services identified the Arctic as the most important near-term challenge. Indeed, because there are tangible, measurable changes occurring in that region today, many already consider the Arctic to be the first case study in how climate change may

combine with other forces to affect maritime missions. According to NASA:

Satellite observations since 1979 have shown that [the] amount of ice that survives the summer is getting smaller; declines have been especially dramatic in the past decade...the summer melt season is getting significantly longer.⁶

The opening of the Northwest Passage for transit several consecutive years – coupled with Russia's 2007 placement of a titanium flag under the North Pole and climate observations and projections indicating that it could continue to open up annually – are driving home the need for deeper analysis of the implications of Arctic climate change for the maritime services.

With more than 140 years of service in the Arctic and 11 statutory responsibilities there, the U.S. Coast Guard is at the center of efforts to adapt to change in the Arctic. Its missions in the Arctic include protecting indigenous populations and

marine life as well as law enforcement and interdiction. These missions give the Coast Guard unique responsibilities for managing the effects of environmental change on human populations in the Arctic. Several Alaskan villages, including Newtok, Shishmaref and Kivalina, are already being relocated with assistance from the Navy, Marine Corps, Coast Guard and National Guard. Other towns experiencing ocean inundation and rapid erosion caused by decreasing ice cover throughout the year are requiring increased in-place assistance from the Coast Guard and Navy.

Perhaps the more important change to date is the increasing number of people traveling to the Arctic. At a modest but still worrying scale, the Coast Guard has observed ecotourists, sailors and boaters operating vessels in Arctic waters and encountering difficulty due to equipment that is inadequate for operations in that environment.

An even bigger concern is increasing activity by people seeking economic opportunities in the Arctic, where a series of presidential directives and bilateral treaties govern the activities of the United States and other nations and establish exclusive economic zones and transit agreements.⁷ The U.S. Geological Survey estimates that the Arctic holds about 90 billion barrels of undiscovered oil and 1,669 trillion cubic feet of natural gas⁸ in addition to likely abundant mineral resources including iron, zinc and manganese. The Coast Guard is also observing northern movement of fish stocks and melting summer ice that could make new shipping lanes viable for transporting goods. These economic opportunities are sure to increase the number of workers in the Arctic region. The scale of this increasing activity may be minor today and seemingly slow to build, but it still holds implications for the maritime services: according to some experts, the worst-case logistical and operational challenge for the Coast Guard in the Arctic is a large-scale rescue mission.

Coast Guard officials and other experts voice concern that they are not yet equipped to deal with a significant increase in their Arctic activities, should that requirement arise, citing a lack of sufficient communication equipment that can function reliably in the Arctic region⁹ and only a small number of icebreakers. The National Research Council concluded in 2007 that the United States needed to maintain a fleet of three ships with icebreaking capabilities—in addition to the one existing research-only ship operated by the National Science Foundation—just for the Coast Guard to meet its existing responsibilities in the Arctic. Given the disrepair of two of the current three icebreakers, the report recommended the construction of replacements, which would take eight to ten years to complete, rather than financing repairs.¹⁰

However, other estimates based on the most current climate change projections indicate that a fleet of three icebreakers would be either barely sufficient or fully inadequate if missions expand along with increased Arctic activity. Coast Guard Commandant Admiral Thad Allen testified in July 2009, “What we have right now, in my view, is the minimum capability we need to be able to respond if all three of them are operating, and they are not,” noting also, “If...you want to be able to get as far into the ice any time of the year that you need to, north and south, to be able to keep somebody on station, it takes three cutters to do that. And if you’re talking North and South, it would be six, if that was your requirement.”¹¹

If Admiral Allen’s estimate is correct, this gap between U.S. security needs and U.S. capabilities in the Arctic points to a need for more specific information about climate change’s effects. But whether or not more detailed projections become available in the coming years, important policy decisions may still arise, and the maritime services will need to continue to evaluate how climate change will affect their missions.

KEY POLICY IMPLICATIONS

Beyond analyzing potential security implications and adjusting to changing physical conditions, climate change is already raising two important policy questions broader than purchasing ice-breakers and other equipment. Concerns about managing the changing Arctic are increasing the need for U.S. ratification of the UN Convention on the Law of the Sea (UNCLOS) and beginning to generate debate over how the different Combatant Commands (COCOMs) that include the Arctic in their areas of responsibility – EUCOM (European Command), PACOM (United States Pacific Command) and NORTHCOM (Northern Command) – will work together.

The maritime services, the Office of the Secretary of Defense and the White House have all recommended in strong terms that the United States ratify the UNCLOS, though it remains to be seen when and how this might occur. The Senate's previous inability to ratify it stemmed from arguments concerning national sovereignty and a distaste for licensing fees for some businesses operating within U.S. territory, among other concerns. One reporter noted in February 2010, "While the issue has support on both sides of the aisle, as well as from the oil industry and environmentalists, finding time for it on the Senate calendar has been an obstacle,"¹² and the same doubts of previous Congresses still linger. To date, there is a dearth of good analysis regarding the likelihood of and major issues regarding Senate ratification of UNCLOS in the coming years.

Analysts and decision makers are also beginning to raise questions surrounding how the relevant COCOMs will manage responsibilities in the Arctic. In the February 2010 Senate hearing on the fiscal year 2011 budget, Alaska's Senator Begich asked Chairman of the Joint Chiefs of Staff, Admiral Michael Mullen, whether he saw a need for a single, unified command to govern the Arctic.

While Admiral Mullen answered in the negative, the question is being raised with increasing frequency.¹³ While the maritime services alone will not determine the answer to this question, lessons from their experiences in the Arctic in recent years and the input of their leaders are sure to influence decisions.

As the Navy and Coast Guard incorporate climate change projections into their planning and policy makers begin to examine the policy decisions laid out above, a strong desire for more detailed projections of climate change effects is emerging. The most crucial missing ingredient from the Navy's perspective is a timeline based on the best scientific projections. As the result of its work to study climate change, the Navy has a good sense of the range of plausible effects. However, to effectively incorporate climate considerations into its planning it will need better information on when different effects could manifest. One Navy officer noted, for example, "If we are going to increase operations in the Arctic we need to know when and by how much the Arctic is going to open up. Even with uncertainty we need a best guess." For example, to make decisions on whether and how many ice-hardened vessels to build – a very costly decision – maritime service leaders need to understand the full benefits that each additional vessel could bring given how climate change will be affecting the Arctic region. Today, the only part of the equation the maritime services know with a high degree of certainty is the cost, while U.S. needs and benefits remain less clear.

In the coming years, the United States must strike a delicate balance between spending money too soon and potentially wasting resources by placing bad bets and investing too late and risking failure or preventable complications in future missions. Several Navy officials expressed hope that future collaboration with the National Oceanic and Atmospheric Administration (NOAA) and other research organizations will focus on gaining a

THE NAVY: CONSIDERING CLIMATE IN ENERGY DECISIONS

As the Navy invests in energy research and development, it is considering its own contribution to climate change.

Navy leaders point to a history of research and development in nuclear energy as proof that it can play a role as an early adopter of technologies and practices that promote energy security – and as proof that low-carbon technologies can also address military needs. The difficult questions lie in where investments will have the greatest returns now, given the need to both reduce greenhouse gas emissions and to find alternative fuels that do not harm warfighting capabilities.

In order to address energy and climate concerns in managing Navy installations, the Navy is investing in grid and metering improvements, energy efficiency and conservation, photovoltaic systems and other energy solutions as required by Congressional legislation, Executive Orders and DOD instruction. Such investments, particularly on efficiency measures, can assist in meeting greenhouse gas reduction targets, reduce vulnerabilities and save the maritime services money over time. With the goals of finding cost-effective energy sources and increasing range between refueling, the Office of Naval Research has long invested in alternative fuels research and development, including biofuels and unmanned aerial vehicles powered with hydrogen fuel cells. Secretary of the Navy Ray Mabus also set goals in 2009 for reducing petroleum use, integrating energy targets into contracting, purchasing alternative fuel vehicles, deploying a “Great Green Fleet” powered by nuclear and biofuels and in the slightly longer term (by 2020) using alternative energy sources for half of all consumption.¹⁴



An F/A-18E Super Hornet aboard the USS *Nimitz*. The Navy recently started testing biofuels in the F404 F/A-18 engine.
(COMMUNICATTION SPECIALIST 3RD CLASS JOHN PHILIP WAGNER JR./U.S. Navy)

Additionally, the Navy recently began biofuels testing for the F404 F/A-18 engine with the hope of certifying it as a “Green” Hornet by 2010.¹⁵

Many of the decisions faced by the maritime services involve difficult tradeoffs. Fortunately, some energy solutions involve clear climate benefits with acceptably low risks. Chief among these are opportunities to seize tactical or operational advantages through investments that also save money and reduce greenhouse gases over the long term. Some energy efficiency improvements increase range or extend energy use by several days without refueling. As one Navy leader described during the September 2009 CNAS workshop, the Navy is looking for emissions-reducing energy solutions that allow more time back at station and provide longer endurance for operations.

Despite many advances, there is significant room for improvement in how the Navy makes energy investments. Investments are too often still ad hoc and are not evaluated against clear criteria that ensure they are the best ways

to meet Navy, DOD and federal goals. With budgets likely to tighten in the future, some Navy leaders wish for more stringent processes to determine which alternative energy sources and target technologies are viable and most likely to pay off. Yet this desire competes with the pressure to cast a wide net in order to ensure that no potential game-changers (for example, energy technologies that can produce dramatic results, such as eliminating the need for liquid fuels in some applications) are overlooked.

Understanding the complexity of balancing risk in investments is a valuable first step. Task Forces Energy and Climate Change are considering quantitative and qualitative methodologies for charting potential investment courses and for determining which Navy goals the investments might work to achieve. Key questions will include how long it takes to break even in alternative fuel investments and the nature and scope of the impact upon the fully burdened cost of fuel.

In the coming years, the United States must strike a delicate balance between spending money too soon and potentially wasting resources by placing bad bets and investing too late and risking failure or preventable complications in future missions.

more granular understanding of regional effects and timing. The Navy's desire is to eventually have much more detailed projections, including estimates of likely climate effects in timelines as short as six months. The goal of the Navy's efforts is not to know exactly what will happen years and even decades in the future, but to ensure that scientific forecasts are included in planning, budgeting and especially acquisitions, since purchasing decisions have impacts that last for decades.

In the longer term, sea level rise is one of the most complicated problems for the maritime services, as its effects could make adaptation extensive and difficult. Navy observations show the Greenland and Arctic ice sheets changing in ways that previous climate models did not portend. Moreover, current climate projections do not provide much detail about the likelihood or extent of sea level rise in particular geographic regions. As a result, one admiral suggested that the maritime services might not currently be able to model or project sea level rise in ways that will be directly useful, despite its potential to produce effects ranging from coastal population displacement to changing patterns of littoral activities and erosion and

flooding of low-lying installations. However, it is difficult to answer questions of where, when and to what degree any of these effects are likely to occur.

While the maritime services wish to include climate considerations in their decision making, the lack of detailed projections regarding sea level rise remains problematic. At the same time, efforts to acquire more actionable climate data have hopeful side effects. The strong interest of the maritime services in climate change analyses is sending a strong demand signal for better information and encouraging collaboration between the maritime services and outside scientists. In order to best prepare for the full range of effects stemming from climatic changes, however, collaboration on action will be as vital as collaboration on analysis.

A NEED FOR COLLABORATION

The 2010 Quadrennial Defense Review (QDR) suggests, "Climate change will require DOD to work collaboratively, through a whole of government approach, with both traditional allies and new partners."¹⁶ This is certainly true for the maritime services, as their work to date has shown. Collaboration with other federal agencies and international partners will be imperative, but it is unclear exactly what that will look like.

President Obama's Interagency Ocean Policy Task Force may be an early example of the kind of interagency collaboration called for in the QDR and the kind of collaboration necessary for the maritime services to address climate change effectively. Launched in June 2009, it brought together the Council on Environmental Quality, the Coast Guard, NOAA, the Environmental Protection Agency, the Navy and other agencies to coordinate policies throughout the government on oceans and coastal areas, and international governance thereof through UNCLOS and other treaties. One of the priorities its early work identified is "resiliency and adaptation to climate change and

ocean acidification.”¹⁷ In another example of such interagency coordination, in January 2010, Navy Secretary Ray Mabus and Agriculture Secretary Tom Vilsack signed a memorandum of understanding to coordinate the two departments on biofuels work. This is an important step: it will be impossible for the Navy to meet its current clean energy goals if the fuels it desires are unavailable, and its goals will be skewed if it does not account for the realities of the developing advanced biofuels market. Secretary Mabus cited the rationale for this collaboration as to “secure the strategic energy future of the United States, create a more nimble and effective fighting force and protect our planet from destabilizing climate changes.”¹⁸

These types of partnerships and collaborative efforts can produce tangible results such as ensuring that government actions are not working at cross purposes (for example, by considering national security, economic or environmental goals separately). Navy and Coast Guard coordination with other government agencies on climate change and related issues also have two important symbolic effects: showing how their plans align with the president’s climate and energy goals and encouraging the view that that protecting national security must involve civilian agencies beyond the DOD and the Department of Homeland Security. However, interagency partnerships and working groups can also be short-lived, and the benefits often begin and end with symbolism. It is incumbent upon individuals championing these issues to carry out related policy changes.

The process of analyzing problems and developing goals across government agencies can have lasting effects, such as building personal relationships and raising awareness of important issues. However, it is less clear which agencies and actors will be charged to lead the process of turning the progress to date into tangible results and on what timeline – for example, steering ratification of the Law of the Sea Treaty through Congress.



NOAA Administrator Dr. Jane Lubchenco and U.S. Coast Guard Commandant Admiral Thad Allen participated in a trip to Alaska in August 2009 as part of an interagency task force. (ADM. THAD ALLEN/U.S. Coast Guard)

The QDR also calls for collaboration with international partners, including Canada, NATO allies and Russia, to address the effects of climate change in general, and the Arctic specifically.¹⁹ While this is likely correct, it will not be simple, and many other analyses have recognized the obstacles to collaboration. One maritime scholar noted recently:

The only thing in the Arctic melting faster than the northern ice cap is the international comity... What was once a part of an untapped commons is now increasingly being contested. Sovereignty and border disputes have existed for years without resolution.²⁰

Navy Secretary Ray Mabus has noted “potential sources of conflict and harmful environmental side-effects” in the changing Arctic, in addition to opportunities for cooperation, and he has stated his optimism for developing a coordinated Arctic approach in the coming years despite the absence of one today.²¹ Until there is more clarity, based on climate change projections, regarding what effects the maritime services are likely to see and where or when such effects will manifest, it will remain

difficult to calculate which international relationships may be affected and where important opportunities for partnership lie.

While the key stakeholders in the Arctic are relatively clear, it is less clear with whom the United States should collaborate to address other effects of climate change. The United States may choose to develop international, interagency and nongovernment partners as needs arise. However, this process does not have to be entirely ad hoc. Instead, national security analysts should conduct country-level assessments to determine which will be most severely affected by climate change and which countries are best positioned to work constructively with the United States to address issues of shared concern. Such assessments would represent an important next step in research and analysis on climate change and national security.

CONCLUSION

The maritime services have developed an advanced understanding of the implications of climate change projections for their missions and capabilities. Yet challenges remain. In the near term, the toughest policy hurdles may be promoting the ratification of UNCLOS and preparing for potential delays in this process, and contributing to a blueprint for how the Combatant Commands will manage the Arctic area of responsibility. Over the longer term, the maritime services will need to continue building upon their interagency coordination to date, and continue collaborating with nongovernmental and international partners to identify where the effects of climate change are most likely to complicate the maritime services' mission. With access to the global commons and stability abroad potentially at stake, analyzing and addressing the effects of climate change will remain important to the ability of the Navy and the Coast Guard to successfully fulfill their missions.

ENDNOTES

- ¹ I use the term “maritime services” generally in reference to the U.S. Navy and the U.S. Coast Guard, as many of the issues outlined may apply to each of them. However, most observations relate to specific services and are noted as such. The U.S. Marine Corps will be included in a forthcoming (March 2010) policy brief on climate change and ground forces. A forthcoming brief on climate change and air missions will also cover U.S. Navy issues on that topic.
- ² This CNAS discussion was held on background.
- ³ This included the CNAS March 2009 working paper, “Uncharted Waters: The U.S. Navy and Navigating Climate Change,” by Sharon Burke, Jay Gullede, Michael Horowitz, Christine Parthemore, and Nirav Patel (30 March, 2009) and Michael Bowes, “Impact of Climate Change on Naval Operations in the Arctic” (Alexandria, VA: CNA, April 2009).
- ⁴ Task Force Climate Change/Oceanographer of the Navy, “U.S. Navy Arctic Roadmap; October 2009” (10 November 2009): 5.
- ⁵ These questions include, among others, the potential impacts of climate change on naval antisubmarine warfare operations and the specific capabilities that will be required. See The National Academies Current Projects System, “Project Information; National Security Implications of Climate Change on U.S. Naval Forces” (2010).
- ⁶ National Aeronautics and Space Administration (NASA), “Melt Season in the Arctic Getting Longer” (28 January 2010).
- ⁷ These include: “PDD (Presidential Decision Directive)/NSC26: U.S. Antarctica Policy” (9 March 1996); “NSPD (National Security Presidential Directive)-66 / HSPD (Homeland Security Presidential Directive)-25” (9 January 2009); the UN Convention on the Law of the Sea; the “Canada and United States Agreement on Arctic Cooperation” (11 January 1988); and the U.S.-USSR Maritime Boundary Agreement (Bureau of European and Eurasian Affairs, “Status of Wrangel and other Arctic Islands” [8 September 2009]).
- ⁸ U. S. Geological Survey, “Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle” (2008).
- ⁹ Bowes, “Impact of Climate Change.”
- ¹⁰ National Research Council, *Polar Icebreakers in a Changing World: An Assessment of U.S. Needs* (Washington, DC: National Academy of Science, 2007).
- ¹¹ Admiral Thad Allen, “Testimony in Hearing of the Oceans, Atmosphere, Fisheries and Coast Guard Subcommittee of the Senate Commerce, Science and Transportation Committee” (7 July 2009).
- ¹² Dina Fine Maron, “Canada will Use Robot Subs to Map Sea Floor, Boost Territorial Claims” *Greenwire* (10 February 2010).
- ¹³ The final working paper in the CNAS “Promoting the Dialogue” series, to be released in spring 2010, will examine the Combatant Commands and climate change.
- ¹⁴ “Remarks by the Honorable Ray Mabus, Secretary of the Navy, Naval Energy Forum, Hilton McLean Tyson’s Corner, McLean, Virginia, Wednesday, October 14, 2009” (14 October 2009).
- ¹⁵ Billy Ray Brown, “Test Results Promising that Navy Hornet Can Fly on ‘Green Fuel’” (29 October 2009).
- ¹⁶ U.S. Department of Defense (DOD), “Quadrennial Defense Review Report” (February 2010).
- ¹⁷ White House Council on Environmental Quality, “Interim Report of the Interagency Ocean Policy Task Force” (10 September 2009): 7.
- ¹⁸ Navy Office of Information, “USDA, Navy Sign Agreement to Encourage the Development, Use of Renewable Energy” (21 January 2010).
- ¹⁹ U.S. DOD, “Quadrennial Defense Review Report”: 59-62
- ²⁰ Frank Hoffman, “The Maritime Commons in the Neo-Mahanian Era,” in *Contested Commons* (Washington, DC: Center for a New American Security, 2010): 78.
- ²¹ Center for a New American Security, “Strategic Resources and Global Security Trends: Prepared Remarks of the Honorable Ray Mabus, Secretary of the Navy” (18 November 2009).

About the Center for a New American Security

The mission of the Center for a New American Security (CNAS) is to develop strong, pragmatic, and principled national security and defense policies that promote and protect American interests and values. Building on the expertise and experience of its staff and advisors, CNAS aims to engage policymakers, experts and the public with innovative fact-based research, ideas, and analysis to shape and elevate the national security debate. A key part of our mission is to help inform and prepare the national security leaders of today and tomorrow.

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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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