CLIMATE CHANGE AND SECURITY
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I am pleased to be able to contribute to the work of the (Subcommittee on Investigations and Oversights) House Committee on Science & Technology on "The National Security Implications of Climate Change". The relationship between climate change and security is important and will play a major role in defining the future vitality of the United States (U.S.). Today, I will focus on the role of the Department of Defense (DOD) in addressing climate change security issues and, in particular, highlight the value of the regional combatant commands in building sovereign nation capacity for mitigating destabilizing climate change threats.

CHANGE BRINGS OPPORTUNITY

Today we have an opportunity for addressing the security dimensions of climate change that did not previously exist. President Bush's recent leadership role on climate change issues and his decision to support the 33rd G8 Summit's effort to at least halve the global carbon dioxide emissions by 2050 was a watershed for the United States climate change policy.[1] It reflects a growing recognition in the United States of the importance of proactively addressing the issue of climate change and encourages research on its security dimensions.

In order to understand the way that the United States is approaching climate change one must consider many domestic variables. There is substantial movement on climate change in the United States that are now being recognized and changing the milieu in which the security dimensions of climate change are being considered.

The election of the 110th Congress is having a significant impact on how the United States approaches climate change. Congress is drawing governmental attention to environmental issues across many agencies often in a bipartisan way. The Amendment to the Defense Appropriations Act requiring the Department of Defense to consider climate change in its planning and operations was submitted by Senator Clinton but supported by some Republicans.[2] Senators Domenici and Bingaman recently co-authored a major paper on climate change regulating greenhouse gasses.[3]

The faith based community is a powerful force in U.S. politics from the local to the national level. President Bush has made clear the importance of his faith and this community. Recently leaders of the evangelical Christian community have entered the debate on environmental degradation and climate change. The National Association of Evangelicals has taken a pro environmental stance that reflects the concept of humankind being held accountable for what they do with the world God created.[4] Thus, within the religious conservative community, there is a reexamination of environmental issues and growing support for national efforts to mitigate activities that may contribute to climate change.

There are other political realities at play. Polls have noted a trend toward taking action on climate change variables among both political parties. In the last national presidential election, polls showed that a majority of Republican voters favored doing more to curb tailpipe admissions. Being against taking action to address climate

change is no longer of value to candidates running for office in many states. This is an important trend.

The private sector is becoming a powerful force for climate change regulation. The private sector is increasingly lining up behind taking action on greenhouse gas emissions. Faced with growing state and local legislation aimed at controlling emissions, the private sector is seeking a place at the table where this legislation is being crafted, particularly at the national level. The private sector would prefer one federal standard to which it could adapt production technology rather than varying standards across states and regions.

It is particularly important to remember that much environmental policy in the United States originates at the state and local level. The U.S. air and water quality standards were first developed at the state level. Because of its sizeable economy, air quality standards in California drove the auto industry to drop opposition to emissions control and produce vehicles to meet that state's and federal requirements. However, it often takes years for state standards to become federal standards. It may appear that the United States is not moving forward on climate change mitigation, but in fact, the recent environmental policies implemented in California are already changing the national debate as other states consider similar legislation.[5] The impact of State climate change policies and recent U.S. Supreme Court decisions are being felt at the national level.

There are other key variables in the shift of public opinion on climate change. The Intergovernmental Panel on Climate Change (IPCC) report presented a strong case for mitigating climate change, providing previously lacking consensus among the scientific community on critical aspects of the debate.[6] Media coverage of obvious phenomena of climate warming, such as the melting of glaciers and polar ice caps, was highly influential, even among those unfamiliar with the technical dimensions of the climate change debate. Former Vice President Gore's movie, personal appearances, and their publicity reinforced the IPCC report and gave an abstract (to some) concept a clear image. Complementing these activities has been the growing understanding of the importance of climate change to the traditional national security objectives.

CLIMATE CHANGE AND SECURITY

Climate change is an Environmental Security issue and should be considered in that context. Environmental security refers to "*a process whereby solutions to environmental problems contribute to national security objectives."* [7] While the relationship of environmental issues to security was recognized previously, the end of the Cold War brought a new examination of the dimensions of security, and the recognition that environmental issues could inflame existing tensions into conflict, but could also serve as confidence building measures to reduce tensions. NATO's post Cold War Strategic Concept made this clear, *"Risks to Allied security are less likely to result from calculated aggression…but rather from the adverse consequences of instabilities…faced by many countries…security and stability have political, economic, social, and environmental elements as well as the indispensable defense dimension."*[8] Climate change affects the management of these elements and is a "threat multiplier for instability in some of the most volatile regions of the world."[9] In the Post Cold War era, instability is the chief threat to traditional U.S. national security interests.

The intelligence community has focused on environmental hot spots as potential sources of instability, but environmental issues also provide a valuable element of outreach and engagement, which may serve as confidence building measures between countries or regions of existing enmities. NATO used Environmental Security successfully to promote dialogue and cooperation with former East Bloc countries in the early 1990s. India, Pakistan, and China have cooperated on seismic disaster preparedness.[10] The Madrid Peace Process for the Middle East used water, migration, and other environmental issues as vehicles of multilateral engagement between Israel and regional states. Climate change creates new opportunities for environmental engagement, cooperation and tension reduction.

For the last 15 years, the United States has used an interagency approach in applying Environmental Security to promote national security and diplomatic objectives, encourage stability and multilateral cooperation, and prevent conflicts. The Department of State (DOS) has established Environmental Hubs in U.S. embassies around the world that use environmental diplomacy to create cooperation among regional states.[11] The Department of Defense and its regional Combatant Commanders use Environmental Security as an engagement vehicle and have worked closely with these Hubs to build cooperative relationships among regional states and Military Support for Civil Authority and democracy. DOD cooperation with partner countries has been regularly supported by agencies such as the: U.S. Agency for International Development (USAID); U.S. Geological Society; Environmental Protection Agency; and Department of the Interior. These build partner capacity and capabilities to address Environmental Security issues and promote stability. It is important to understand that this international interagency cooperation is ongoing and already addressing the security dimensions of many climate change issues.

The 9/11 terrorist attacks have drawn the attention of the security policymaking community to the underlying conditions of terrorism. As the 9/11 Report states, “When people lose hope, when societies break down, when countries fragment, the breeding grounds for terrorism are created.”[12] The United States has found that attacking terrorists and their organizations is not sufficient to win the war on terror. New analysis of terrorism suggests that it should be treated as an insurgency with the people as the center of gravity, and highlights the importance of regional stability, good governance, and governmental legitimacy. Capable, stable regimes can address water and food security, health and disease management, sustainable development, energy requirements, and other needs of the people that constitute demands upon the political system. Doing so prevents social unrest and migration, humanitarian crisis, failed states, the spread of ungoverned territory, and the encroachment of terrorist ideology. As the two recent U.S. National Security Strategies make clear, terrorism has been the top, stated national security priority. The significant role of environmental issues in creating the underlying conditions terrorists seek to exploit has caused the security community to take notice; climate change can weaken political systems and exacerbate environmental threats.

In addition to the ongoing intelligence community National Intelligence Estimate, the well regarded Center for Naval Analysis Corporation (CNA) Report, *“National Security and the Threat of Climate Change,”* pointed out the major role climate change is playing in security. As the report states, climate change is a *“threat multiplier for instability in*

some of the most volatile regions of the world."[13] While many of these regions are part of the terrorist equation, all are important to U.S. national security interests, such as: energy access; terrorism; strong market economies, and nonproliferation. Thus, variables that exacerbate a threat should be addressed by the security community and the elements of national power, including the military, but not necessarily in a lead role.

The President has authorized the establishment of the African Command (USAFRICOM) and its framing documents state that the deputy commander should be from the DOS and its focus is not war fighting but helping to build partner capacity and promote regional stability. Environmental Security issues determine stability in much of Africa and the effects of climate change will greatly affect this relationship and very likely the engagement strategies of other regional commands.[14]

While debate continues on the causes of climate change, significant consensus for addressing its security dimensions already exists in the United States and creates many opportunities for alliance and partner nation cooperation on issues of major significance to regional stability.

THE ROLE OF THE DEPARTMENT OF DEFENSE

Climate change may be characterized as affecting U.S. national security at three levels. At a *global level*, climate change affects moisture patterns and energy retention and will have a direct impact on the Earth, the U.S. and its possessions and reduce the resources upon which human kind depends. More powerful storms, extended dry periods and droughts, periods of more intense flooding and increased migration may challenge the U.S. directly. At a *geopolitical level*, the melting icecaps, rising sea levels and loss of habitable space are creating new geopolitical areas of concern and complicate the ability of defense planners to project power, influence regional events and secure forward basing. At the *regional level*, changes in climate will threaten the survival of fragile states, create opportunities for extremist ideology and insurgencies, put at risk access to strategic fuel and non-fuel resources, and create instability that threatens U.S. national security interests.

The DOD has no overarching directive or policy guidance that directs DOD organizations to address the security threats of climate change or act to mitigate its effects. However, the nature of the military is such that once the Commander's intent is given, individual units may use their own initiative in accomplishing the mission. This is particularly valuable because of the "fog of war" which often prevents direct communication with the Commander and rewards units that may operate independently to accomplish the mission. This independent culture is evident in the approach of organizations within DOD that have recognized the need to address the economic and security of supply dimensions of energy, the environment and stability and have already undertaken significant activities in response to threats to U.S. national security interests relating to climatic disruption. The DOD Office of Net Assessment sponsored a study by Peter Schwartz and Doug Randall in 2003 that used scenarios to frame the potential national security implications of climate change. Although certainly not its first effort to come to grips with its security dimensions, this well publicized study generated much discussion, demonstrated the interest of the Department of Defense in Environmental

Security issues and encouraged further climate change related activities at all three levels.

GLOBAL LEVEL

At the global level organizations within DOD have begun to address its carbon footprint through a variety of efforts to conserve energy and reduce environmental pollution. Perhaps the best example of these efforts is provided by the office of Mr. Tad Davis, the Deputy Assistant Secretary of the Army Environment, Safety and Occupational Health. His office has undertaken a sustainability program that is saving the Department of Defense millions of dollars and is mitigating such climate change issues as clean water generation, energy efficiency, and emissions, and waste reduction.

The Army is using the concept of sustainability to ensure the wise use of scarce resources and the ability to accomplish its mission now and in future years. Sustainability refers to, "…the ability of a system to continue functioning into the indefinite future without being forced into decline through the exhaustion or overloading of the key resources on which that system depends."[15] It is a functional approach that is being successfully used internationally by the Environmental Protection Agency, USAID and the DOS. Sustainable development seeks to ensure that resources are consumed at a rate that provides for future generations by addressing the social, economic and environmental dimensions of development. The Army has created its own triple bottom line of sustainability that includes mission, environment, and community.

Recognizing that the planet's life supporting resources are declining and rising population and economic growth are increasing the pattern of resource consumption, the Army is seeking to meet this threat and public concerns over this equation by changing its pattern of resource management to minimize resource consumption while ensuring mission accomplishment, or, "sustain the mission, secure the future." Given the vast land holdings of Army bases, the energy and water resources that Army forces consume and the environmental impacts of operating and maintaining Army weapon systems, the application of sustainability to the Army mission is doing much to reduce Army contributions to greenhouse gases and address the security dimensions of climate change at the global level. The Army's motivation is captured in the Army Environmental Strategy; A sustainable Army is, "…simultaneously meeting current as well as future mission requirements worldwide, safeguarding human health, improving quality of life, and enhancing the natural environment."[16]

The Army began the application of sustainability at the base level using such important Army bases as Fort Bragg, North Carolina and Fort Lewis, Washington to apply the business transformation techniques of changed management, risk management, performance management, and professional development to challenge leaders in addressing triple bottom line elements. This holistic, bottom up approach was succeeded by an Army wide implementation of lessons learned about the benefits of sustainability and is now being applied at the international level to support the Combatant Command's work on stability. The focus has gone beyond leadership and management to address alternative energy, energy efficiency, clean water generation, and waste reduction technologies for both installations and theater operations. As a

result, the Army has: made 48 percent of its non-tactical vehicles alternative fuel capable; reduced its energy consumption by over 25 percent from 1985 levels; committed to reduce base carbon dioxide emissions by 30 percent and energy use by 35 percent by 2010; and created a partnership with the private sector that funded $543 million in energy efficiency projects through Energy Savings Performance Contracts.[17]

Of particular value in reducing Army environmental expenditures is the application of sustainability and environmental variables to the Future Combat Systems (FCS) design and development. This approach minimizes life cycle costs by reducing energy consumption and hazardous materials generation while increasing efficiency and combat effectiveness. At Fort Leonard Wood, Missouri, the Army is testing alternative fuels for tactical vehicles, such as the light High Mobility Multi-Purpose Wheeled Vehicle, and at the motor pool where two thirds of vehicles now use alternative fuels. Given that in Iraq the U.S. is consuming approximately 56 million gallons of fuel per month, the benefits of these programs are significant and save lives.[18]

The Army's energy and water conservation program has developed five initiatives to reduce energy consumption, water pollution and costs. The drivers of this program are to eliminate energy waste, reduce dependence on fossil fuels, increase energy efficient buildings, conserve water resources, and improve energy security and resulted in solar energy based communities and the adoption of U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) silver standards for new military building construction. The Army sustainability program has been successful at the global level because it demonstrated its value to military commanders. Reduced energy costs at bases release more funding for operations, maintenance and training. Maintaining or restoring oxygen producing forests and wetlands ensures realistic training ranges and garners public support for base expansion. While many DOD energy projects are underpinned by rising energy costs and insecure sources of supply, the Army sustainability program adds another dimension, global resource conservation.

The Air Force has taken a similar direction in its efforts to deal with energy, security and the environment. In an address to the recent Southern Command (USSOUTHCOM) Environmental Security Conference in Miami, Kevin Billings, Deputy Assistant Secretary of the Air Force for Energy, Environment, Safety and Occupational Health, spoke at length about the way the Air Force is addressing environmental and ecological issues and seeking to reduce the $7.0 billion that the Air Force spends on energy resources each year. Like the Army, the Air Force is focused on building energy efficient LEED infrastructure and finding synthetic fuels to power its aircraft and ground equipment. In 2006, the Air Force consumption of renewable energy totaled approximately 1 million million kilowatt hours. It is partnering with the Department of Energy's National Energy Technology Laboratory to improve carbon capture, sequestration and reuse technology, which will be necessary for coal conversion to synfuel, and to use biomass to power its synthetic fueled fleet. These programs and the base "greenway" concept which preserves forests and natural terrain, speak directly to reducing overall energy consumption, improving energy efficiency and mitigating the effects of greenhouse gases.[19]

There are two major DOD energy task forces nearing the completion of their work. The Defense Science Board Task Force on DOD Energy Strategy is examining DOD energy usage practices to determine technological opportunities for reducing energy

consumption while still achieving mission, force structure, and global posture objectives.[20] The DOD Energy Security Task Force, headed by the Director, Defense Research and Engineering, is defining an investment strategy to increase energy efficiency, reduce fossil fuel dependence, identify alternate energy sources and increase operational readiness.[21] Whether these reports will recommend a formalized DOD program for energy security remains to be seen but they have the potential to make significant contributions to reducing DOD's carbon footprint and providing economic incentives to the private sector to undertake climate change related science and technology research and development (RED). DOD is the nation's largest single consumer of oil, with daily consumption of 340,000 barrels per day, or approximately 1.8 percent of U.S. total.[22]

GEOPOLITICAL LEVEL

At a geopolitical level, the Department of the Navy has partnered with other agencies to begin an analysis of the climate change related, security implications of greatly reduced ice sheets in the Artic. The rapidly warming Arctic is an area of intense geopolitical interest to the U.S. and other world powers. Historically locked under a sheet of ice that denied resource access and economic development, and the passage of commercial or military surface ships, the warming of the climate has led to significant increases in the year round temperature of the region. The current rate of ice melt exceeds those predicted by the IPCC report published in June 2007 and portends an era of intense state activity to establish territorial control, resource access, and to come to grips with the geopolitical implications of significant environmental change.[23] The U.S. Navy has been encouraging this analysis.

In 2001, the Navy co-sponsored with the Arctic Research Commission the, *Naval Operations in an Ice Free Arctic Symposium*. The symposium identified the operational implications of an ice free Arctic for naval operations, reviewing possible naval missions and future operational requirements. This salient event drew the attention of many naval stakeholders to such critical strategic issues as, the Seas of Oktotsk and Japan remaining ice free year round and the Canadian Archipelago, and the Russian coast being open to navigation by non-ice strengthened ships during the summer months. It also recognized the economic importance of greater Russian access to its substantial Arctic resources (energy, mineral, timber) and speculated on climate change affects on the Arctic hydrological processes and resultant sociological changes.[24] Of particular note, it pointed out such vulnerabilities as the U.S having only three polar ice breakers, and the strategic importance of bilateral and multinational alliances in defining territorial boundaries, and interpreting the United Nations Convention on Law of the Sea (UNCLOS).[25]

The U.S. Navy conducted a second event in July 2007, *Symposium: On the Impact of and Ice-Diminishing Arctic on Naval and Maritime Operations*. This symposium extended the focus of the 2001 meeting and emphasized oil and gas exploration in response to heightened demand in Asia, the importance of collecting marine geology and geophysical data to support U.S. territorial claims and the strategic implications of commercial shipping. The persistence of elevated year round, Arctic temperature measurements, warmer water moving north through the Bering Strait over the last

decade, and the unexpected retreat of Arctic ice at a rate exceeding most computer models added a sense of urgency to the deliberations.[26]

The importance of these naval sponsored exchanges to U.S. geopolitical interests was underscored in August when the Russian Antarctic Research Fleet flagship followed its nuclear powered ice breaker to the North Pole, where two Russian parliamentarians descended in a Russian mini-sub to the Arctic Sea floor. After leaving a titanium Russian flag staking Russia's claim to the Arctic, one of the Russians, Artur Chilingarov said, "we must prove the North Pole is an extension of the Russian Continental Shelf," and subsequently, "the Arctic has always been Russian."[27] Canada has been expeditious in registering its concern over Russian territorial ambitions, and for good reason. Some estimates by geologists posit that 25 percent of global oil and gas resources as well as significant non-fuel mineral resources may soon be accessible in the Arctic via the northern sea route.[28] Canadian Foreign Minister, Peter McKay, dismissed the Russian claim, but Canada is planning on building eight additional patrol ships. This climate change phenomenon may also intensify existing territorial arctic disagreements between Canada, Denmark, the U.S., Norway and Russia.[29]

Russia's geopolitical initiative is more worrisome when set in the context of its strategic plan to reestablish itself as a world power. Russia is realizing significant wealth from its sales of oil and natural gas and is bartering access to these resources for power and influence in both Europe and Asia. Moreover, Russia has initiated a geopolitical strategy for engagement in Asia based upon weapons sales to salient states and the reconstitution of its regional military forces and bases.

Russia was the leading arms exporter to Asia from 1998 to 2005, with $29 billion in sales. Key recipients include China, India, Iran, which agreed to acquire a $700 million air defense system in 2005, and Indonesia. Indonesia, which is a littoral state to the oil choke points of the Sunda and Malacca Straits, with a Muslim population of 200 million, signed a $1 billion arms agreement that includes quiet and efficient Kilo-class submarines. Revenues from resource and arms sales will contribute to Russia's stated plans of reconstituting its Far East forces and Pacific fleet. These plans include building six new aircraft carriers, three of which would be stationed in Asia, and refurbishing its submarine base on the Kamchatka Peninsula, which fronts the Bering Sea.[30&31]

Climate change has the potential to alter the geopolitical arena in which the quest for state power in the contested Arctic. The currently affected areas range from the Arctic to resource rich Africa, where China is aiding drought stricken states as a quid pro quo for resource supply, and to South Asia, where access to glacial melt waters is of vital importance. If IPCC predictions prove accurate, to project U.S. power overseas will require extensive reexamination.

REGIONAL LEVEL

At the regional level, the Department of Defense has taken action that addresses the destabilizing issues climate change can multiply. Department of Defense documents now stress the importance of proactively addressing destabilizing issues. The 2006 *Quadrennial Defense Review* (QDR) states that the transformed DOD seeks to undertake "preventive actions so problems do not become crises".[32] DOD Directive 3000.05, *Military Support for Stability, Security, Transition, and Reconstruction* (SSTR)

Operations, stated that the immediate goal of stability operations, "is to provide the local populace with security, restore essential services, and meet humanitarian needs." Significantly, DOD Directive 3000.05 says, "stability operations are a core U.S. military mission…they shall be given priority comparable to combat operations."[33] These strategic level documents are important because they provide guidance to the Combatant Commands whose responsibility it is to translate policy into operations and planning at the regional level. Climate change makes a proactive regional security strategy essential.

The Combatant Commands should be thought of as the tip of the DOD spear, serving as they do as the military elements that execute DOD policy. They have two primary missions, war fighting and engagement. The operational plans that allow them to prepare for regional contingencies and be prepared to address operational threats to U.S. security interests are classified in nature. The engagement functions are generally unclassified and delineated in Theater Security Cooperation Plans (TSCP). The TSCP are designed to build good will and access with regional states, develop influence and partner military capabilities. The benefits of the TSCP programs are striking. General Tony Zinni, when serving as the Commander of the Central Command (USCENTCOM), often stated that if he did engagement right, he would not have to do war fighting. General Zinni proved that point when he interceded in the military conflict between India and Pakistan over Kashmir and encouraged a de-escalation of that conflict between the two nuclear powers.

A major function of the TSCP is to work with host nation militaries to build their capacity for and interest in supporting civilian authority. Because many developing countries have thinly staffed civilian agencies, the effectiveness of these agencies in protecting the vital resources of their countries and dealing with non-military threats is often limited. All too often, civilian agencies dealing with environmental security, resource conservation and climate change related threats are provided the least amount of governmental resources. However, the well resourced, host nation militaries can provide substantial support to civil authority: good communication, presence on distant frontiers and in border areas, good transportation assets, technical expertise, security missions, and preparation for crises and disasters. They are usually the best funded of all government agencies. Dedicating a portion of military capabilities to supporting these civilian agencies as they seek to confront environmental security and climate change issues, may be the difference between their failure and success; it may also mean the difference between increased desertification and the loss of arable land, deforestation, the spread of water borne diseases and large scale destabilizing migration. Because the effects of climate change can enflame preexisting tensions and trigger conflict, it is an excellent preventive defense strategy to use the TSCP proactively to address these destabilizing environmental security issues. The Combatant Commands have active programs to build the necessary military supporting capabilities and encourage regional military capacities and capabilities to combat the effects of climate change.

The Combatant Commands have existing environmental security and disaster preparedness programs. New leadership at several of the Commands is renewing the priority of their environmental security programs at this opportune time of enhanced awareness of the link between climate change and security. At USSOUTHCOM,

Admiral James Stavridis has directed his Command to reenergize its focus on environmental security. On September 17th and 18th, 2007 he opened USSOUTHCOM's the fifth major environmental security conference, which brought in critical regional allies and the U.S. interagency community to explore new ways to create effective partnerships in addressing climate change and other environmental security issues. The USSOUTHCOM program has been particularly successful. These major regional environmental security conferences have been attended by state presidents, vice presidents and ministers of defense and environment. In close cooperation with DOS Environmental Hubs in Brazilia and San Jose, the Command has built regional multilateral and interagency cooperation by conducting train the trainer workshops that brought together the police, civilian environmental mangers and military forces for common training in addressing such climate change issues as fire fighting, deforestation and disaster preparedness. In a region where governments struggle with narco-terrorists, limited resource's category 4 or 5 hurricanes and maintaining governmental legitimacy of democratic states, the development of this capacity is a welcome contribution to regional stability.

The USCENTCOM, which began its environmental security program under General Tony Zinni, built environmental security programs for its three sub regional areas: the Central Asian States; the Arabian Gulf; and the Horn of Africa. These programs have been particularly valuable and credited by the USCENTOM Deputy Combatant Commander with improving US-regional state relations in regions of critical importance to US national security and the war on terrorism. During the ongoing Iraq War, the Command has focused on water, medical issues and disaster preparedness in conferences, workshops and exercises with the Arabian Gulf countries supporting U.S. war efforts. In the arid Central Asia States, the Command addressed such issues as scarce water resources, salt resistant agriculture and disaster preparedness. In the Horn of Africa where droughts, migration, flooding and failed states are regular issues, the Command was instrumental in creating a multinational Center of Excellence for Disaster Management training in Nairobi, Kenya. Praised by Kenya's Vice President at its opening for addressing regional humanitarian issues, the Center continues to train regional military and civilian crises managers able to direct regional resources against multiple climate change related threats. The arrival of former USPACOM Commander, Admiral William Fallon to USCENTCOM has resulted in reexamination of Command programs in light of the restructuring of Combatant Command Area of Responsibility (AOR) and the loss of the Horn of Africa to the new Africa Command (USAFRICOM). The plans and policy directorate is actively exploring the use of environmental security and climate change to address the Command's evolving priorities.

In the Pacific Command environmental security has long been part of regional engagement efforts. Transnational issues, such as terrorism, and illegal logging and other trafficking activities play a major role in threatening US interests in the region. USPACOM has used these issues to build multilateral cooperation, and overcome misperceptions of U.S. foreign policy. Responding to partner nation military requests, USPACOM has stressed non-kinetic approaches to addressing the terrorist threat. The Command has treated terrorism as an insurgency, in which the center of gravity is the population. Underlying conditions such as inadequate fresh water, poor disaster management, and the illegal exploitation of resources, threaten governmental legitimacy

and invite the introduction of extremist ideology. In Southeast Asia, the Command cosponsored a series of conferences and workshops examining the role of these underlying environmental conditions in the growth of terrorism. These activities resulted in best practices workshops hosted by regional states in which the host countries educated other nations in the use of the military element of power to mitigate developmental issues such as poor soil fertility, reforestation, flood control and drought management to build governmental legitimacy and good will. On the Philippine Archipelago, Cholo and Basilan, the Pacific Special Operations Command (SOPAC) worked closely with the Philippine Armed Forces and local civilian authorities to successfully apply these lessons and defeat the terrorist threat.

In the vast USPACOM area of responsibility, changing climate patterns have affected monsoon intensity, giving rise to increased flooding and droughts. Other natural disasters, such as tsunamis, earthquakes and erupting volcanoes further challenge regional government efforts to address human security problems. Using its Multinational Planning Augmentation Team (MPAT), USPACOM facilitated the creation of a multilateral disaster response program and common standard operating procedures that have the capacity to deal with climate change effects and other disasters. The ability of USPACOM and its regional allies to successfully respond to these crises has paid large dividends. In Indonesia the effective response of the Indonesian and US Armed Forces to the Aceh tsunami enhanced the legitimacy of the newly elected democratic government and resulted in a decrease of 20 percent in the popularity of the Al Qaeda franchise, Jamaah Islamiah, and a 30 percent increase in the popularity of the United States.[34] Recognizing the power of meeting these soft security threats, the new USPACOM Commander, Admiral Timothy Keating is including environmental security as a major topic in his October 2007 Chiefs of Defense Force Conference.

Newly created, USAFRICOM's mission is predominantly humanitarian assistance driven, encouraging stability in the fragile petroleum and minerals rich, but drought and flood plagued continent. The Command identifies the threats to stability in its region and works with host nation military, regional organizations, the U.S. interagency, and other non-governmental organizations to build the local capacity to mitigate those threats. It is currently holding a series of sustainability workshops in which all of these organizations provide their insights into theater security cooperation planning. Most of the threats to stability in the region are environmental in nature. For example, in the Sudan and Nigeria, tensions between different religious and cultural groups are erupting into violent conflict because of the persistent drought and competition between herders and farmers for increasingly scarce arable land and water. Other climate change related issues threatening stability include disease, decreasing marine resources, drought, flooding and soil erosion. While the Command will be responsible for military operations against the evolving terrorist threat in weak or failed states, its primary mission is to address the underlying humanitarian conditions and poverty that encourage the spread of terrorist ideology and threaten regional stability. The chronic weakness of many African states makes them particularly vulnerable to predicted climate change.

It may be useful to conceptualize the role of the Combatant Commands in addressing this destabilizing issue as creating climate change resilient communities. The National Oceanic and Atmospheric Administration (NOAA) was tasked by Congress

in 1994 to assess Tsunami awareness and preparedness for parts of the United States. As a result of their analysis and research, NOAA developed a concept for mitigating the damage of Tsunamis: it is called Tsunami Resilient Communities and was created "to provide direction and coordination for Tsunami mitigation activities in the absence of a disaster."[35] Recognizing that no mitigation effort would be successful without the support of local communities, NOAA designed a plan to leverage planning, education and awareness to minimize losses and reduce fatalities and property damage. The seven (7) variables of resilient communities are designed to enhance national, state and local capabilities by: determining the threat; preparedness; timely and effective warnings; mitigation; public outreach and communication; research; and international coordination. This concept can easily be adapted to climate change and security.

CONCLUSIONS AND RECOMMENDATIONS

The Department of Defense is already doing much to address the security implications of climate change. However, much remains to be done.

Climate change is increasingly recognized as a multiplier effect for existing tensions and regional instabilities. It places additional stress on the state political system, complicating the ability of governments to meet the demands placed on the system by a suffering population, and reducing system resilience. This can lead to a loss of legitimacy, internal conflict, state failure and the growth of extremist ideology. Addressing the factors of sustainable development in a way designed to “sustain regional stability,” by building the capacity of states and local communities to mitigate the effects of climate change, would enhance the resilience of the political system and reduce the likelihood of state failure. The military, through its Combatant Command TSCPs, in close cooperation with U.S. interagency and international organizations, could play a significant role in creating climate change resilient communities. By enhancing the capabilities of regional militaries to support civil authority in applying the seven variables of resilience to the unique climate change effects on their countries, threats to regional stability and security can be reduced. This concept, however, needs to be led by the regional and international organizations and other U.S. agencies in a synchronized and coordinated process.

While it may be a popular perception that DOD has been reluctant to support climate change mitigation strategies because of political issues, I contend that to be largely incorrect. It is only recently that the security dimensions of climate disruption have attained national prominence and overcome the focus of climate change debate on the causes of climate change. A more important barrier to establishing a DOD wide emphasis on addressing climate change, greenhouse gases and their security dimensions is the well reasoned argument that climate change and environmental security issues are soft security issues that should be addressed by civilian organizations with that primary function; the DOD is the only organization capable of fighting and winning the nations wars and dealing with hard security issues and conflict. The problem with this reasoning is that it is reactive in nature and dooms the US to the expensive military solution of destabilizing regional conflicts that might have been prevented through proactive military intervention in its underlying causes.

Soft security issues left untended have the potential to destabilize regions and become hard security issues which require the introduction of combat forces and threaten U.S. security interests. The costly humanitarian relief efforts in Somalia, Rwanda and Haiti are a case in point. As the Provincial Reconstruction Teams (PRTs) demonstrate, until the U.S. adequately resources foreign assistance and agencies such as DOD and USAID, DOD will have no choice but to assume these stability missions. Concern over such "mission creep" is a barrier to enhanced DOD leadership in the climate change and security area. The active involvement of the regional Combatant Commanders in building partner military capacity to address destabilizing soft security issues such as the effects of climate change is a cost effective and proactive concept that should be reinforced by DOD priority and direct language in such influential documents such as the Global Employment of Forces (GEF) document.

As the security dimensions of climate change become recognized and debated, DOD should become more directly involved. At the global level, DOD can save millions of dollars and reduce its significant contribution to U.S. greenhouse emissions through such concepts as sustainability and incentivized energy efficiency programs. At the geopolitical level, DOD will realize new geopolitical vulnerabilities, revise its operational plans, determine possible new force structure adjustments, and order new weapons systems and capabilities such as ice strengthened naval vessels. At the regional level, climate change will exacerbate human security demands on fragile state political systems and present opportunities for Combatant Command regional capacity building to prevent failed states. Thus, for DOD, climate change brings opportunity and will become a driver for environmentally efficient and operationally less costly weapons systems, research and development and sustainable base management as well as heightened regional state interest in increased security cooperation. Certain events need to transpire in order to make this possible.

- It is time to move beyond debating the causes of climate change and recognize climate change as the threat to U.S. national security that it is.
- Appoint a DOD task force to define its roles and mission in addressing the climate change related threats to U.S. national security at the global, geopolitical and regional levels.
- While the ongoing National Intelligence Estimate and Military Advisory Board report are excellent first steps in coming to grips with the security dimension of climate change, more research needs to be done. Climatic Disruption has the potential to create multiple major disasters beyond the management capabilities of the national security community. Where are U.S. security interests threatened; how should these threats be addressed and by which organizations; and what resources will be required?
- DOD should direct the Combatant Commands (through its Global Employment of Forces (GEF) document) to consider climate change as a primary engagement issue. Good governance is the best defense against the destabilizing effects of climate change. Sustain stability by building climate change resilience.
- Appoint a senior DOD official to prioritize and synchronize DOD climate change activities.

- Because of its size, resources and capabilities, there is a danger that DOD may be seen as the "Mr. Fixit" of the U.S. climate change issue. This should not be DOD's role. DOD can reduce its energy consumption and carbon emissions; it can encourage technological research development in energy conservation, clean fuels, and alterative energy; it can prepare for military responses to new geopolitical realities; it can be proactive in building regional capabilities, and alliances to create climate change resilience and preserve regional stability. These missions make sense and will result in major sources of savings for energy, waste disposal and combat force deployments. However, DOD should not assume the climate change responsibilities of other agencies.
- The White House and Congress should insist on properly resourcing agencies such as the Department of State, USAID, USGS, EPA and NOAA so that they may properly execute these climate change missions. The current limitations of DOS and USAID in reconstruction and stabilization should not become a model for the DOD role in addressing climate change.

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