G|M|F The German Marshall Fund of the United States
STRENGTHENING TRANSATLANTIC COOPERATION

Policy Brief

Climate and Energy Program

November 2010

Facing the Climate Security Threat: Why the Security Community Needs a "Whole-of-Government" Response to Global Climate Change

by Nick Mabey

Summary: Climate change should be treated similarly to other strategic threats like terrorism and cyber-security. It is a global problem that relies mainly on civilian action by civilian authorities to reduce security risks to manageable levels and, if left unmanaged, will have serious hard-security implications. As security actors in many countries move from analysis of climate threats to response strategies, the need for better decision-support systems to design and prioritize action is becoming clear. To date, the security community's priority has been to manage the impacts of climate change without compromising security objectives. But given the inadequacy of current emission reduction commitments, security planning will need to be based on far more extreme climate scenarios. A more effective "whole-of-government" approach to the risk management of climate change would require the inclusion of climate change in national security processes, regular assessments of the effectiveness of climate security action, and a risk-management framework that expands responsibilities well beyond environment and energy ministries.

The Security Threats from Climate Change

Climate change is recognized as a significant threat to national security in a growing number of countries and international bodies. The United States, NATO, the European Union, the United Kingdom, Germany, and Australia have all published analyses of climate security risks. The UN Security Council debated climate change and security in 2007, when a wide range of countries outlined their views on the security risks posed by climate change. This broad concern was confirmed by a UN General Assembly resolution in 2009.

Security analysis suggests that climate change will affect a broad range of issues from state instability and border conflicts to energy and food security. Peaceful management of even moderate climatic changes will require investment in increased resilience in national and international governance and security systems.[1]

The reality of climate change will require fundamental changes in how international relations are conducted. It will change strategic interests, alliances, borders, threats, economic relationships, comparative advantages, and the nature of international cooperation, and will help determine the continued legitimacy of the United Nations in the eyes of much of the world.[2]

Security actors are beginning to respond to some of these threats. For example, extensive international diplomacy is underway to manage tensions over borders, resource access, and sea-lanes in the Arctic as the sea ice retreats.[3] Climate change is beginning to shape policy analysis and responses to instability and conflict in areas as diverse as Afghanistan, the Nile Basin, and the Bay of Bengal.[4]

[1] "National Intelligence Assessment on the National Security Implications of Global Climate Change to 2030," Evidence to House Permanent Select Committee on Intelligence and House Select Committee on Energy Independence and Global Warming, 25 June 2008, http://www.dni.gov/testimonies/20080625_testimony.pdf

[2] For an overview see "Delivering Climate Security: International Security Responses to a Climate Changed World," Royal United Service Institute, London, 2007, http://www.rusi.org/publications/whitehall/

[3] For a comprehensive reference of strategy documents on the Arctic from the United States, Russia, the EU, and others see http://www.geopoliticsnorth.org

[4] Few of these planning documents are currently

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Recent examples of security analysis include the 2010 U.S. Quadrennial Defense Review, which notes that climate change may act as an accelerant of instability and conflict and will shape the operating environment, roles, and missions that the Department of Defense will undertake.[5] The recent U.K. National Security Strategy also highlighted climate change as a critical driver of priority threats. A dedicated cross-government group on climate change will feed assessments into the new U.K. National Security Council chaired by the Prime Minister.[6]

Analysis to date has mainly focused on the security implications of climate change over the coming two decades.[7] These will be costly and complex to manage peacefully and are largely unavoidable under all plausible reduction scenarios of greenhouse gas emissions, given the inertia in both the energy and the climate systems. All countries are vulnerable to climate change impacts, though in the medium term, Africa and Asia will experience the highest direct impacts and tensions.[8] Global supply systems for food and energy will also be more frequently stressed and disrupted by extreme weather events, resulting in price spikes and threatening the type of widespread political instability seen in 2008.[9]

Over and above these medium-term impacts, if immediate action is not taken to reduce global emissions, the risks of breaching climate "tipping points" — where security impacts will be much higher than these estimates — increase rapidly. The risk of breaching tipping points grows quickly at average warming levels above 3°C; at these levels positive feedbacks in the climate system such as the die-back of the Amazon rain forest or release of methane from Arctic tundra could add an extra 1-2°C to global warming even with no additional human-made emissions of greenhouse gases.[10] Recent research posits even more extreme scenarios, where business-as-usual emission trajectories result in large parts of the world becoming uninhabitable due to heat stress in the next century.[11]

It is highly unlikely that the current relatively benign global security environment — with largely open trade, travel, and investment and declining conflict and poverty levels — would be maintained under the pressures of extreme climate change scenarios, whatever security interventions are undertaken.

These "worst-case scenarios" are not low probability; they are largely inevitable under current patterns of continued investment in high-carbon energy systems and deforestation. As atmospheric concentrations of greenhouse gases increase, there is little uncertainty over whether extreme impacts will occur, only when they will happen and their precise impacts.

Climate change is increasingly being considered in security decisions at all levels, from identification of strategic threats to refurbishment of bases and specification of equipment. However, while climate security analysis is at least as robust as any other medium-term security data, we lack the decision support systems needed to shape robust and cost-efficient security responses to the threats climate change poses.

The Challenges of Cost-Effective Investment in Climate Stability

We only have a weak understanding of how to make good security decisions in the face of current climate change and the interlinked issues of increasing resource scarcity and mismanagement. This is not a long-term problem but rather an urgent security challenge. Rebuilding Pakistan after the recent floods in a manner that supports long-term security objectives will require much better systems to analyze and manage the complex confluence of climate, economic,

published but an outline of the type of responses being considered can be found in "Broadening Horizons: Climate Change and the U.S. Armed Forces," Centre for New American Security, April 2010, http://www.cnas.org/node/4453; and "Climate Change and International Security, Paper from the High Representative and European Commission to the European Council," December 2008

[5] http://www.defense.gov/qdr/

[6] Section 4.E.2 of the U.K. Government's Strategic Defence and Security Review (October 2010) states: "This will involve improving the Government's ability to understand and respond to the national security impacts of climate change, which may exacerbate existing security threats. The FCO, reporting to the National Security Council, will take responsibility for coordinating work relating to these security impacts of climate change and resource competition." http://www.cabinetoffice.gov.uk/intelligence-security-resilience/national-security/strategic-defence-security-review.aspx

[7] For example, see the US National Intelligence Council research reports on impacts to 2030, http://www.dni.gov/nic/special_climate2030.html

[8] For example, see the Maplecroft Climate Vulnerability Index, http://maplecroft.com/about/news/ccvi.htmlglobal

[9] For links between stability risks and commodity prices, see Foreign Policy, "Failed State Index 2007"

[10] See Lenton, T. et al. (2008). Tipping elements in the Earth's climate system. Proceedings of the National Academy of Sciences of the United States of America, 105, 1786-1793

[11] See "Thermogeddon," New Scientist, Vol. 208, No. 2783, London, 23 October 2010

governance, and stability risks when planning long-term infrastructure investment.

For example, how much of the current disaster is attributable to heavier precipitation and how much to mismanagement and upstream deforestation? Should Pakistan's infrastructure be rebuilt based on current estimates of flood frequency? Or should they also be based on the — rather uncertain — predictions of regional climate models, some of which imply increasing frequency and severity of flooding? Building infrastructure to withstand more extreme conditions will be more expensive; should reconstruction budgets be increased or will this limit the extent of rebuilding and thus impose a direct economic development cost? Is a better alternative not to rebuild as before but to prioritise "soft" interventions that provide flexibility and resilience in the face of future floods, for example by relocating communities to less flood-prone areas? How will these interventions affect local power balances and stability? Will new water control infrastructures (e.g. dams, irrigation systems) undermine existing communal management systems and cause tensions between different groups? Are some areas now just not viable for sustainable habitation in the medium term?[12]

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Making immediate decisions to invest in particular infrastructure options cannot be avoided, given the reconstruction imperative. But the scientific uncertainty over future regional climate and the complexity of developing robust strategies for societal resilience also cannot be ignored. Given the major international assistance that will be committed to rebuilding Pakistan, it is vital that this supports — and does not undermine — future stability, security, and economic development. Without better decision-support systems for climate security, it is likely that much of this investment could increase rather than decrease security risks in the future.

To be sustainable in the longer term, these decisions must take into account both the impacts of the climate change we are already committed to and the future warming that would occur under different scenarios of global cooperation to limit climate change.

How Well Are We Managing the Climate Threat?

Climate change shares some central features with more traditional threats. They all have high degrees of uncertainty over the range, scale, speed, and discontinuities of threats, as well as significant uncertainty over the effectiveness and reliability of response strategies. They also present hard-security consequences that would require serious military responses if left unmanaged but need mainly civilian action to reduce long-term risks. Such responses include controlling civilian nuclear materials, reducing the influence of radical Islamic ideologies, and building effective governance in conflict-ridden states. As in other security areas, effective responses to climate change require a "whole-of-government" approach that balances risk prevention, threat management, and development of rapid-response capability.

All effective security strategies must rest on a willingness to rigorously, objectively, and actively analyze intelligence on potential threats. This analysis must not avoid considering worst-case scenarios that may have critical security impacts but be politically inconvenient. The 9/11 Commission famously criticized analysts and decision-makers for a failure of imagination when considering the nature of likely terrorist attacks on the United States. Not considering the full range of potential climate change impacts would constitute a similar failure of national security systems.

This not yet the case. At Copenhagen in 2009, a weak consensus was reached to limit climate change to below a 2°C average global temperature rise. However, the emission reductions pledged by countries at the summit — even if fully delivered — would result in global temperatures rising by 3-4°C; well into the range where damages become very severe and climate tipping points are likely to be breached.[13]

[12] For discussion and links see http://judithcurry.com/2010/09/20/pakistan-on-my-mind/

[13] Major climate-system tipping points, such as the dieback of the Amazon rainforest or release of methane from the Arctic tundra, could each add 1-2 °C extra global warming. Other tipping points include irreversible impacts such as a shift in the Asian monsoon or

At warming levels of 4°C and above, large areas of the world will experience widespread disruption to subsistence agriculture, food supply, and water systems, along with increased severe weather extremes.[14] All of these impacts are associated with high levels of social instability and growing international tensions. Climate change and growing resource scarcity will put great strain on international agreements to manage water, food, trade, borders, and other climate-sensitive resources, as is already evident in the Arctic. If climate impacts are to be managed peacefully, then targeted interventions will be needed in the next decade to improve the resilience and effectiveness of international resource-management agreements.[15]

Given the potential hard-security impacts of failing to limit climate change to manageable levels, security actors also have a legitimate interest in seeing the development of an effective global climate management regime that limits climate change to manageable levels.

International action on climate change is in many ways analogous to the response to nuclear proliferation. All countries acknowledge the risks of nuclear proliferation but are collectively failing to enforce a sufficiently robust counter-proliferation regime. However, in the case of the nuclear threat, major countries are expending significant diplomatic, economic, and intelligence efforts to convince other countries of the importance of tackling the threat and cooperating to build and sustain an effective international control regime. So the question arises: If the security threat from climate change were faced as rigorously as nuclear proliferation, how would we construct our strategies to deliver climate security?

Current responses to climate change are failing to effectively manage climate security risks. There is a mismatch between analysis of the severity of climate security threats and the political, diplomatic, policy, and financial effort being expended to avoid these risks. This arises partly from conflicts of interest between and within countries but also reflects failures inside governments to fully grasp the management of climate-change risks.

Learning from Risk Management of Security Threats

We know enough about climate science to know that we need to make decisions now. Extensive scientific analysis shows that the scale and patterns of currently observed changes in global climate can only be explained by human emissions of greenhouse gases; natural drivers of change — though present — are not strong enough on their own to generate these climatic changes. We also know that given the inertia in the climate system, global greenhouse gas emissions will need to peak in the next decade and decline by more than half by mid-century if our goal is to stabilize climate change this century below 2°C. This means energy systems in major developed nations will need to be carbon neutral by 2050, with emerging economies following soon afterwards.

There is no costless strategy of delaying action to manage climate security. Decisions taken around the world in the next two decades to invest in energy systems, infrastructure, and agriculture will largely determine the level of risk we face and the vulnerability of human societies over the next century as a result of climate change. The question we face is how to make robust decisions on the rate of emissions control and investment in resilience given the unavoidable uncertainties over the scale and distribution of future impacts.

Proponents of action to address climate change have often underplayed the range of uncertainty around projections of precise climate impacts. Conversely it is also well documented that those opposed to action on climate change have used exaggerated claims of scientific uncertainty as an argument for inaction.[16] However, this use of "uncertainty" by both sides of the climate change debate shows that neither understands that major security decisions are nearly always taken under significant levels of uncertainty. As General Gordon R. Sullivan, former Chief of Staff for the U.S. Army,[17] said when referring on action to limit climate change:

the melting of major ice shelves in Greenland and the Antarctic, which could lead to 2m of sea-level rise by 2100.

[14] Global estimates of climate impacts under a 4°C scenario can be found at http://www.fco.gov.uk/en/global-issues/climate-change/priorities/science/

[15] For example, see Jaroslav Tir and Douglas M. Stinnett, "Coping with the Consequences of Climate Change: International Institutions as Strategies for Mitigating Conflict over Water Resources," Department of International Affairs, University of Georgia, May 2010, http://climsec.prio.no/papers/Climate_Tir_Stinnett.pdf

[16] Oreskes, N. and Conway, E., Merchants of Doubt, Bloomsbury Press, London, 2010

[17] Also Chair of the CNA Military Advisory Board on National Security and the Threat of Climate Change, http://www.cna.org/centers/military-board

"We never have 100 percent certainty. If you wait until you have 100 percent certainty, something bad is going to happen on the battlefield. That's something we know."

Uncertainty per se should never be a barrier to action. Public policy decisions with far greater costs than climate change policies — from military procurement to interest rates to financial system regulation — are taken under far higher uncertainty than exists over climate change science, impacts, or policy choices.

In the face of a serious security threat and partial information, climate policy needs to learn some hard-won lessons from the security community and adopt a rigorous risk-management approach to climate change. This is the kind of approach that has been taken with other global security threats — from the Cold War to nuclear proliferation to international terrorism — and with which the security community has decades of experience of practical implementation.

The key to good policy under uncertainty is to systematically assess all of these issues, using all of the information we have now or can obtain in the future, rather than ignoring inconvenient uncertainty or "extreme" risks. A core lesson of the regulatory failures that led to the global financial crisis in 2008 is that seeing the world through the prism of a single theoretical model can result in policy-makers ignoring vital evidence of fundamental threats.

For example, decision-makers are used to thinking in terms of risks that are low-probability but high-impact, and those that are high-probability but low-impact. The presence of climate-system tipping points means that unless we dramatically reduce global emissions, high-impact events will have high probability. The tendency to conceive high-consequence events as low-probability is so dominant, it is hard for decision makers to engage with a serious risk that seems both likely and imminent.

Risk management is both an art and a science. It depends on using the best data possible but also on being aware of what we don't know and cannot know. It takes into account the biases in our data and in the way we analyze and use it. It requires complex — and often unquantifiable — trade-offs between different strategies to prevent, reduce, and respond to risks. It is both long-term and reactive.

All societies continually run public debates on managing similar existential risks: the balance of nuclear deterrence versus disarmament; civil liberties versus anti-terrorism legislation. Decisions are constantly made even when significant differences remain within societies over the right balance of action. However, history teaches us that constructing a shared risk-management approach can help build better understanding of different perceptions and risk attitudes and help promote alliances and partnerships based on common interests and shared vulnerabilities.

There is no costless strategy of delaying action to manage climate security.

Experience of responding to complex security issues provides valuable lessons for future climate change strategy. It suggests that both policy and public debates should be reframed around a risk management approach that explicitly considers both uncertainty around climate impacts and the potential for extreme climate scenarios to undermine national prosperity and security.

Developing a "Whole-of-Government" Approach to Climate Security

Given the consequences of failing to limit global emissions, the security community has a strong and legitimate interest in promoting an effective global response to climate change that avoids the most extreme — and unmanageable — risks.

In contrast to the widespread interest in engaging with the security consequences of climate change, there has been reluctance among military and other security actors in all countries to engage in the climate mitigation debate, even behind closed doors. This is understandable given the politicized nature of climate change policy in many countries and traditional fears of the constitutional implica-

tions of engaging in "upstream" policy issues. However, an active security voice in the climate change debate would be following precedents in other areas where civilian failures to reduce risk have severe security outcomes, notably energy security, failing states, proliferation, and terrorism-prevention policy.

These areas have all led to attempts — with varying levels of success — to form "whole-of-government" approaches to delivering security responses. These approaches aim to allow effective civilian–security sector coordination without crossing important constitutional boundaries and to create explicit management systems to manage conflicts between objectives, for example between proliferation controls on high-tech equipment and national competitiveness.

Security actors should promote the development of a "whole-of-government" approach to managing climate security. As with other security areas, creating a truly integrated process will require significant reforms over many years. However, there are four priority steps that would create a foundation for more effective action:

1. Clarity on national objectives on limiting global climate change

2. Independent national climate-security risk assessment

3. Developing a holistic risk-management approach to climate security

4. Cross-government strategies for managing climate-change impacts

5. Clarity on national objectives on limiting global climate change

The most certain way to mitigate climate security risks is to reduce the severity of climate impacts by limiting the amount of warming. The dynamics of climate change means that aggressive mitigation reliably reduces the probability of climate extremes. However, agreement on a more ambitious global action to limit climate change can only be reached if countries in turn have a clear view of their own national interests in reducing climate risks. The experience of the Copenhagen negotiations suggests few countries have a clear view of their national interests under the full range of risks associated with different mitigation goals.

Countries should explicitly identify the level of climate change risk they consider acceptable, based on a holistic risk assessment of how climate change affects national security interests and the risk of extreme scenarios. This could be expressed in different ways, for example, as maintaining a below 10 percent chance of exceeding 4°C; or an under 1 percent chance of major sea-level rises. However, only explicit national goals can provide the political underpinning needed to support an effective long-term global climate-change control regime.

2. Independent national climate security risk assessment

The foundation of good strategic decision-making in complex situations is honest assessment of the impacts on actual outcomes. Failure to separate policy development from assessment of impact often leads to biased evaluations that merely justify the initial policy choices. This fundamental tenet of intelligence assessment is largely missing from climate-change policy. Official assessments of the effectiveness of national and international climate strategies are largely in the hands of those charged with delivering them: environment and energy ministries. A notable exception on domestic policy is the independent U.K. Committee on Climate Change, which was established by Parliament and audits the goals and national delivery of U.K. climate policy. No country yet carries out independent assessment of its international strategies to limit climate change.

All countries should commit to carrying out explicit independent assessments of the effectiveness of national and international polices in achieving strategic climate-security outcomes, in addition to assessing critical climate-security risks to their interests. These assessments could be carried out by existing central bodies — e.g. the National Intelligence Council in the United States — and would be provided to the highest decision-making level on an annual basis. Where possible, the conclusions of these studies should be made public so as to inform debate and shape vital private investment decisions.

3. Developing a holistic risk-management approach to climate security

A responsible risk-management strategy will aim to reliably achieve the agreed national climate-change objective while simultaneously ensuring that adaptation and contingency plans are developed to effectively respond to higher impacts if these goals are not met or climate-change impacts are more severe than estimated.

Developing an integrated risk-management strategy for climate change requires countries to have an explicit policy discussion on the trade-offs and risks surrounding their chosen climate-change strategy. Using the national climate-change risk assessment, decision-makers — public and private — who are responsible for maintaining critical national infrastructure, stability, security, and economic activity should detail the impact on their objectives of more extreme climate-change scenarios. This should include identifying any need for greater budgets and capabilities to increase resilience at home and abroad to manage these impacts.

Only an explicit, integrated, and public risk-management strategy carried out across the whole of government — and which is led at the highest decision-making level — can ensure effective and balanced investment in the maintenance of national and global climate security. This implies coordination of climate strategy by central government systems equivalent to a National Security Council that can effectively coordinate a debate between all relevant interests.

4. Cross-government strategy for managing climate-change impacts

Adaptation planning must not be merely a technical exercise. It must take into account the broader political, economic, and social impacts of both climate change and adaptation measures in order to avoid exacerbating rather than reducing the costs of climate change. This will require stronger action in four areas:

- **Adaptation strategies for "perfect storms" and security impacts.** These strategies should capture the type of linkages seen in 2008, when interactions between drought, trade policies, and fuel and food prices led to food shortages and instability in Haiti, Mexico, Egypt, and elsewhere across the globe. Similar impacts have been seen in 2010 with rising grain prices linked to restrictions on Russian grain exports after a severe drought and opportunistic speculation. This would require more attention to areas such as dynamic analysis of emerging extreme events, better regional contingency planning of emergency food and fuel stocks, and stronger safeguards protecting global trade in food staples.

- **Increased resilience in international resource management regimes.** Peaceful management of resource tensions thrown up by climate change will need stronger international management regimes in order to preserve a rules-based global order. These changes could include active diplomacy to renegotiate the basis of resource-sharing mechanisms, enhance international arbitration mechanisms, and improve scientific cooperation. The time to strengthen regimes is now, when the impacts of climate change are still relatively low. This will require actions across a wide range of international, regional, and bilateral agreements. In some areas — e.g. transboundary water management and transboundary fisheries — international funding for climate adaptation could be made conditional on countries agreeing to the development of a climate-resilient and equitable resource-management regime.

- **Improved cooperation on preventive and humanitarian intervention.** Climate change will require a major increase in humanitarian and preventive missions by the international community and regional organisations. These will require better coordination, high levels of capability (e.g. civilian lift), and greater investment in preventative approaches to natural disasters. Currently only 5 percent of the EU humanitarian budget is spent on prevention. Collaborating entities (for example the EU and the African Union) should begin planning for responses to these high-impact scenarios, developing regional scenarios based on a 3-4°C planning assumption to drive the development of contingency plans and enhanced capability. The first step in this process could be the development of shared scenario planning and gaming exercises looking at security responses beyond 2030 in climate- and resource-vulnerable regions.

- **Effective decision-support systems for climate security.** Climate change is moving from the strategic phase

of identifying the problem and possible solutions to the operational phase of programming specific investments in mitigation, adaptation, resilience, and contingency planning. Normal climate science processes produce high-quality, independent research but do not necessarily supply the type of information needed by decision-makers.

Operationalizing risk management strategies in real security and development decision-making will require investment in improved decision-support systems – delivering more relevant information and new decision-making tools. Some of this is already happening. For example, the U.S. Navy Climate Change Roadmap commits to annually identifying and proposing additional studies and research regarding the national security implications of climate change on Naval missions, force structure, and infrastructure, including working to improve coordination and collaboration across all U.S. agencies carrying out climate impact assessment.[18]

Robust prioritization of climate-security interventions will require the development of new data through vulnerability assessments that explore the specific characteristics of affected communities, which will help determine their fragility or resilience in the face of anticipated climate change and resource scarcity. A core area for investment is in detailed, bottom-up monitoring of environmental, resource, and conflict interactions in vulnerable areas and countries. Analysts also need new tools to use this information to provide compelling investment cases for priority preventive actions, especially given current financial constraints.

The common need for additional data, tools, and approaches makes this an ideal area for potential cooperation within NATO and between security actors in different regions to save costs and build shared understanding and approaches to managing these complex risks.

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About the Transatlantic Climate Bridge

Transatlantic Climate Bridge

This paper would not have been possible without funding from the "Transatlantic Climate Bridge," an initiative jointly launched by the German Federal Foreign Office and the German Federal Environment Ministry to connect and support those working to address the challenges of climate change, energy security, and economic growth at the local, the state, and the federal level in the United States and Germany.

[18] Task Force Climate Change & Oceanographer of the Navy, 2010