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THE CENTER FOR CLIMATE AND SECURITY

Briefing Note

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Why and how to use foresight tools to manage climate security risks

Assessing climate security risks can be challenging, as there are significant and multi-faceted uncertainties involved. For practitioners who are looking for conceptual approaches to understanding and evaluating such risks, foresight tools offer a practical toolset for formulating robust responses, even in the context of significant uncertainty. This briefing note will discuss various options for engaging with foresight tools. It will also point to dilemmas and lessons learned.

1. Why foresight techniques are relevant to climate security challenges

Foresight tools employ skills that we all use intuitively – thinking through how situations might evolve or turn out, working with limited information, feeling for the limits of our knowledge and formulating approaches that seem optimal given what we know and can reasonably or plausibly speculate. By providing structures that support these kinds of approaches, foresight tools offer a structured way of asking, "What if?", and can support strategies to manage systemic risk.

Although people often draw upon their personal experiences to guide judgments, formal risk assessments attempt to objectively weigh the relative risks of alternative courses of action. The connections between environment, energy and security (EES) are not, however, necessarily obvious. Most climate risks are not only unique according to circumstance and geographical location, but also according to critical vulnerabilities and the ability of local institutions and communities to respond to variable combinations of factors.

Institutions and practitioners faced with devising responses to climate risk may not yet be familiar with the array of formal tools that exist, may not have integrated them into their work, or may not appreciate their utility in the face of complex risks like the ones posed by climate change and other environmental drivers. Incorporating

foresight tools into planning and decision support could offer benefits in supplanting analysis approaches that look for the most likely outcome ("What is most likely to happen?") in favour of devising strategies that are robust across a range of plausible outcomes ("Are we prepared if X, Y or Z happens?"). Failure to assess climate risks at the planning stage may result in acute security impacts that were not anticipated and therefore are very difficult to resolve. In contrast to concepts of energy and environmental security being viewed as external and largely peripheral concerns, it is important to establish that assessing risks is largely a complex, future-oriented modeling exercise.

Building familiarity with the basic skill sets for using foresight tools can provide practitioners with practical ways to strengthen institutional responses to climate and environmental risk, and enable decision-making that can better cope with significant levels of uncertainty. It allows for an examination of the strategic implications of potential futures, to identify necessary actions and move toward their implementation.[1]

Actors ranging from national security planners determining what defense assets will be required in 15-20 years, to local climate adaptation planners deciding which measures are most essential, can use foresight tools to support decision making for climate risk management.

2. Foresight tools

Anticipatory governance is a systems-based approach for enabling governance to cope with accelerating and complex forms of change. Scenario-building is one tool used in anticipatory governance; it involves describing a range of plausible futures. Gaming is a way of developing and testing scenarios that incorporates human decision-making. – Other foresight tools not addressed in this brief include horizon scanning, trend analyses and others.

Scenario-building[2] involves describing a range of plausible futures and can be used for risk assessment and contingency planning. In particular, these scenarios can assess the robustness of current and future strategies and policy options to respond to the situations outlined in those scenarios. In developing energy and environmental risk assessments in different parts of the world, the starting conditions for scenarios are of most interest. What unique combinations of conditions might we encounter in the future? What are key vulnerabilities in these complex systems? What are the critical uncertainties in understanding these system dynamics? In this sense, we are not planning for security *per se*, but rather exploring the environment within which planning might take place. The challenge is to create robust and objective descriptions based on scientific understanding.

Scenarios are a way of addressing complex topics and how these topics may interact in the future. Scenario building aims to step away from prediction, and instead consider what factors may lead to unpredictable outcomes. In a sense, scenarios channel uncertainty to allow consideration of those factors we take for granted, and how those unexamined assumptions can leave us vulnerable.

1 For more on these tools, see 'The World in 2050: A Far Future Scenario' in the conference report *Planetary Security: Peace and Cooperation in Times of Climate Change and Global Environmental Challenges*, p. 93 https://climateandsecurity.files.wordpress.com/2012/04/planetary-security-2015.pdf

2 Different types of scenarios are used in foresight exercises; one distinction is between event-driven scenarios, used for capability planning, and exploratory scenarios, used to prepare for the widest variety of futures. The scenarios discussed here are of the latter category.

One example comes from NATO's Framework for Future Alliance Operations (FFAO),[3] a planning document which provides recommendations for Alliance forces on what capabilities they may need to develop to operate successfully in the security environment out to 2035.

The 2015 FFAO references climate change as a factor in challenging access to and use of the global commons, and creating risks through the disruptive impact of migration, large-scale disasters, and state to state conflict. The most recent update to the FFAO includes scenarios such as:

'Continued, on-going, or newly emerging environmental concerns, as well as climate change could trigger state on state conflict… Disruptive migration is driven by turmoil in failed states that erodes personal and family safety and security, economic disparity and the hope for a better life, natural disaster, disease, and famine. Non-state actors, and unforeseen events (environment/natural disaster/climate) are principal enablers for disruptive immigration.'

As part of the broader FFAO, these scenarios help to inform the NATO Defence Planning Process. Scenarios are commonly used in military planning and training, and increasingly can be tailored to address climate-related factors, not only as contributors to potential conflict, but more often in 'non-kinetic' military operations and disaster response. Scenarios also form the basis for gaming and simulations.

Gaming, also referred to as serious gaming or wargaming, is a way of developing and testing scenarios that incorporates human decision-making, and allows players to observe the impacts of their decisions within the context of the game.[4] This can prepare decision-makers for developing risk management strategies within their institutions by familiarizing them with dilemmas and dynamics they may encounter in the future.[5]

Climate, energy and environmental factors can also be highlighted in more traditional wargames, used both in civilian and military education to work through responsibilities and consequences for both short and long-term climate changes. Military officers at the US Air University Wargaming Institute began to include environmental disasters into their training in 2011. The effects of changes to environmental conditions have also been gamed to look at their contributions to refugee flows, terrorism and insurgency.[6]

In the game, 'Food Chain Reaction, A Global Food Security Game',[7] a crisis was simulated in the global food system in order to explore how the private sector, governments and global institutions might respond. Players representing each of these sectors role-played different reactions, negotiations and decisions to manage the crisis, generating a chain reaction of consequences that revealed the complexities and interdependencies within the global food system. As a teaching tool, this prepares decision-makers for

3 North Atlantic Treaty Organization Supreme Allied Commander Transformation, 'Framework for Future Alliance Operations', August 2015. Http://www.act.nato.int/images/stories/media/doclibrary/ffao-2015.pdf

4 For more information, see E.D. McGrady and Catherine M. Trentacoste, 'Serious Games for Serious Players: Game Play with International Decision-makers', October 2014, https://www.cna.org/CNA_files/PDF/IRM-2014-U-008456-Final.pdf.

5 Catherine M. Schkoda, Shawna G. Cuan, and E. D. McGrady, 2016. "Examining Long-Term Climate-Related Security Risks through the Use of Gaming and Scenario Planning," Marine Corps University Journal, https://www.usmcu.edu/sites/default/files/MCUPress/MCUJ_si2016_CCP.pdf

6 2014 NATO Jean Monnet Advanced Study Institute 'Enhancing Strategic Analytical Capabilities in NATO Partner Countries', Information and Research Activity 'Towards a More Resilient European Neighborhood: Security Cooperation and the Management of Current and Future Threats in Europe's Strategic Orbit', 15-21 May 2014, Kyiv, Ukraine. http://ainstud.at.ua/2014_Jean_Monnet_Information_and_Research_project_.docx

7 Food Chain Reaction, http://foodchainreaction.org/ – accessed November 2016.

addressing these complexities to manage systemic risk in their professional contexts.

Finally, serious gaming can be used in the process of scenario building to surface a range of possible futures. One example was an effort in March 2015 to explore long term risks from climate change as it related to security around the world.[8] Participants included scientists, security experts, diplomats, and retired military personnel from Asia, Europe, the United Kingdom, and the United States. Participants came together for two days for game play and scenario building to consider interactions between changes in the physical climate and complex human systems from a security risk perspective. Given the considerable uncertainty inherent in describing the future, gaming and scenario building allowed for the use of imagination in a structured environment. As an outcome of the exercise, four major trends were identified: (1) climate change may increase nationalism and policies of internalization in developed countries; (2) large-scale climate-induced migration may impact a country's international policies, economic situation, and defining cultural attributes, changing the way they participate in global commons; (3) competition for limited resources may increase as a source of friction and shape policies and international relations; and (4) geoengineering technologies are not viewed in the same way by all countries, and there is potential for an emerging disparity between regions over the consensus on and control of these technologies. In the organisers' view, the game and scenario building was in some ways a harbinger of political trends now emerging internationally.

Anticipatory governance is a systems-based approach for enabling governance to cope with accelerating and complex forms of change. This allows for governance to get ahead of crises rather than habitually managing their aftereffects. It integrates scenario tools into preventative approaches to systemic issues, including climate and others.[9] Foresight is one of three key elements of anticipatory governance, along with mission-based management and budgeting; and monitoring and adjusting policy relative to initial expectations.[10] The foresight component works to identify early indicators or 'weak signals' to monitor. The potential consequences of these weak signals are then examined by using them as drivers in scenarios. These scenarios then allow for the evaluation of alternative policy responses.

3. Challenges and ways to overcome them

In the context of climate security risk management, grounding foresight exercises in relevant readings of climate science can make them better-informed and more likely to meet the challenges. For example, it may be important to distinguish between climate variability (weather) and climate change, depending on the timeframe the foresight exercise covers – e.g. when assessing periodic droughts that affect agricultural productivity in the Middle East vs. the long-term drying trend in the region.[11] When working with climate impact scenarios – for example on water availability or agricultural productivity – including climate science experts in foresight exercises can support accurate reading of those impact scenarios, including the level of uncertainty inherent in a particular scenario.[12]

8 https://www.cna.org/CNA_files/PDF/ICP-2015-U-010942-1REV.pdf

9 The Project on Forward Engagement, 'Anticipatory Governance', https://forwardengagement.org/anticipatory-governance/ – accessed November 2016.

10 Leon S Fuerth and Evan MH Faber, 'Anticipatory Governance – Practical Upgrades: Equipping the Executive Branch to Cope with Increasing Speed and Complexity of Major Challenges', National Defense University Press, October 2012. https://www2.gwu.edu/~igis/assets/docs/working_papers/Anticipatory_Governance_Practical_Upgrades.pdf

11 Kirsty Lewis, 'Climate science in climate security scenarios', *Climatic Change* (2014) 123: 11. doi: 10.1007/s10584-013-0945-7.

12 Ibid.

There are a number of challenges around integrating natural and social science information to provide actionable advice to policy makers, given the different analytical methods, language and scales used in each discipline.[13] For example, the differences in scale that exist in the various kinds of information available about the present and the future must be reconciled, e.g. wanting to know impacts and vulnerabilities at the community level but being equipped to think about the future primarily in terms of broad trends (especially with regard to climate change). Researchers in this field may also underestimate the complexity of the present: there is rarely a single interpretation of current security situations, so even scenarios, while attempting to simplify, need to account for this complexity.

Expectations may also differ between climate scientists and the security community around the purpose and utility of climate models, especially around their predictive capabilities. Social scientists working to inform decision-making to address climate-related vulnerabilities seek minimal uncertainty in models' predictions of the future climate. For climate scientists, a model is a tool used to explore and learn about the earth system, to understand how it will behave in response to a range of forcing actions. While climate science can tell us much more about our future than any other science, expecting a high degree of certainty about this future may be unrealistic.

4. Conclusion and recommendations

Foresight tools offer practical ways to think about and plan for climate security risks. They are one of the most effective ways to help decision-makers engage in long-range thinking, in order to envision the future and anticipate the consequences of current actions. These insights can then be used to readjust existing policies and approaches. Critical to this is facilitating exchanges between different disciplines, sectors, and experts (including physical and social scientists), and involving policymakers in all stages of the process to help create ownership. By examining the complex variables relevant to understanding and managing climate security risks, foresight tools can support a shift toward systems thinking and networked approaches that underpin the development of integrated policies for peace and stability.

Foresight tools are also useful in a more uncertain and unstable international political context, drawing on imagination to identify low-probability Black Swan events. Developing climate risk scenarios places decision-makers on a stronger footing in an environment of accelerating impacts and contracting financial resources to respond to them. Building familiarity with foresight tools, developing these thinking skills and integrating them into research, planning and policy making can support better risk management decision-making.

5. Brief guide to developing climate security scenarios

Scenario planning is a flexible process that can be adapted to a range of settings and requirements. The following offers a basic four-step process for developing scenarios to explore the potential security impacts of climate and environmental change:[14]

- Ensure participants include a cross-section of disciplines, e.g. physical and social scientists, whose expertise can highlight the complexity of the issues under discussion. Step one: Define the question.
- Identify the purpose and audience for the scenarios – e.g. to help those in the room

13 Kirsty H Lewis and Timothy M Lenton, 'Knowledge problems in climate change and security research', *WIREs Clim Change* 2015. doi: 10.1002/wcc.346.

14 From Kirsty Lewis, 'Climate science in climate security scenarios', *Climatic Change* (2014) 123: 11. doi: 10. 1007/s10584-013-0945-7.

think differently? To surface trends and inform planning and policies?

- What is the time frame being explored? What is the geographic scope? And what are the initial conditions?
- Does the scenario assess climate, or environment? Does the timescale address climate variability or climate change – when does the climate change signal emerge from the natural variability in the climate? Step two: Identify driving factors.
- Identify a broad range of drivers (both climate-related and non-climate-related), and consider which will be most important in the future, as well as those which are most important now.
- Systematically map the full range of known variation in the drivers and define key uncertainties. Include conditions at the extremes and 'wild cards'. When working with climate projections, consider how representative they are of the uncertainty range (including significant tipping points). Involving climate science expertise, as well as social science expertise, is important at this stage.

Step three: Scenario projection and boundary mapping

- Consider how the important driving factors might interact in the future, including the dynamic interplay between drivers over time (e.g. how climate vulnerability and fragility might impact adaptive capacities and future fragility risks).
- Map the boundaries of the uncertainty space by identifying the nature of the uncertainty and the range of possible outcomes.

Step four: Condensing the scenarios into consistent narratives

- Generate credible, plausible narratives that describe particular futures, drawing on the material from steps two and three.
- These can describe 'end states' – what the world looks like at a point in the future, – or 'timelines' – a description of how that future has evolved.

A fifth step, following from the scenario creation, would be to define robust policy options to manage climate-related security risks. Again, failure to assess climate risks at the planning stage may result in acute security impacts that were not anticipated and therefore are very difficult to resolve.

About the Planetary Security Initiative

The Planetary Security Initiative aims to help increase awareness, to deepen knowledge, and to develop and promote policies and good practice guidance to help governments, the private sector and international institutions better secure peace and cooperation in times of climate change and global environmental challenges. The Initiative was launched by the Netherlands Ministry of Foreign Affairs in 2015 and is currently operated by a consortium of leading think tanks headed by the Clingendael Institute.

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