

December 10, 2007

## **Enabling Strategic Intelligence on Energy and Environmental Security Impacts and Consequences<sup>1</sup>**

International Design Team Meeting  
Glasgow, Scotland 8-9 November 2007

### **Executive Summary**

In November 2007, an international strategy design team composed of government, business, and academic experts met in Glasgow to consider the elements, objectives, and requirements for a strategic intelligence capability on energy and environmental security. The discussion built on the proceedings of a workshop held in D.C. on 19 September, which assembled nearly forty experts to consider models for a similar capability (see Annex 1 for this workshop paper).

In developing the concept for a *strategic intelligence capacity on energy and environmental security*, the Glasgow Group made the following observations:

- At the national level, decision-makers lack sufficient knowledge regarding how key energy and the environmental security relationships can affect regional and global stability
- A viable strategic intelligence capability for energy and environmental security issues does not lend itself to the traditional national security framework
- Today's strategic environment features security-related challenges that are global in scale and systemic in nature, and can best be assessed with a strategic intelligence capability that is similarly global and systemic
- The Glasgow Group suggests building a new global commons security capability; i.e., an energy and environmental "knowledge ecosystem" in which a broad diversity of entities contribute to knowledge creation, aggregation, filtering and sense-making
- The proposed knowledge ecosystem could fill a current void in communicating to both public and private-sector decision-makers the national and international security implications of energy and environmental issues
- This strategic intelligence knowledge ecosystem will be open to government, commercial, and not-for-profit interests, enabling early warning for informed decision-making about possible energy and environmental impacts on a global scale

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<sup>1</sup> This paper embodies the views of the Glasgow Group, a team that met informally at the facilities of the Scottish Enterprise Network in a gathering co-sponsored by the U.S. Department of Energy's Office of Intelligence and Counterintelligence's Energy and Environmental Security Directorate. Participants in the meeting included experts from the Swiss Federal Institute of Technology's Center for Security Studies, the New School University in New York, Emory University in Atlanta, Idaho National Laboratory, and additional business and academic experts from both Europe and the United States. This paper does not necessarily represent the official positions of any institutions or governments with which the participants are affiliated.

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- The system will draw on diverse expertise, such as virology, evolutionary biology, network research, developmental economics, disaster management, political science, international relations, and various dynamical systems assessments methodologies in order to consider interdependent security-related phenomena
- There is a critical role for system “cultivators” who foster and sustain the collaborative, knowledge-creating community by targeting its activities to produce actionable, strategic intelligence on energy and environmental security concerns

### ***Proposal***

Consequentially, the Glasgow Group proposed steps to prototype such a ***strategic intelligence capacity on energy and environmental security***, to include an iterative approach of observe → design → test → improve. The proposed next steps are:

1. Focus initially on emergent issues that exemplify the convergence of energy and environmental concerns with significant embedded security implications
2. Identify and engage with expert knowledge sources and practitioner communities and assist in building bridges among them
3. Emphasize forging ties to, and integrating individuals and centers of expertise in, collaborative foresight, risk assessment, and complexity science
4. Demonstrate and prototype knowledge cultivation activities, specifically applying the “lens” of national and international security implications
5. Ensure processes to capture the strategic intelligence insights from these interactions
6. Craft enabling mechanisms (rules, technology tools, governance models etc) that support the emergent knowledge ecosystem, as and when appropriate
7. Regularly assess lessons learned, to include considering potential for scale-up and increasing traction with critical government and non-government customers and stakeholders

## Overview of Glasgow Discussion

### *Current Strategic (In)capabilities*

Understanding and anticipating security problems that stem from energy and environmental issues will be a powerful tool for government and business-sector decision makers. Such a capacity will benefit the intelligence community as well by providing knowledge and insights relevant to strategic intelligence assessments. Decision makers often lack the concrete data and pragmatic assessments necessary to understand fully how changes in the energy sectors or in environmental systems will affect other elements of either sector or system, national economies, global institutions, local cultures, or regional rivalries. Intelligence reports frequently focus in-depth on a single issue, thus ignoring many of the inter-relationships among diverse issues and key stakeholder groups. Decision-makers also may lack sufficient knowledge regarding the sensitivity of key relationships to regional and global stability and the fragility of local interactions to environmental perturbations.

The resulting knowledge gaps could lead to failures of foresight capability and to poorly framed policy decisions. In particular, the Glasgow Group expressed a shared concern that current security emphases and intelligence processes make decision-makers vulnerable to receiving good answers to the wrong questions, while other important questions remain unasked.

### *The IPCC Report as a Springboard*

The publication of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, November 2007) represents an important international statement on climate change science and its potential long-range impacts, including resource scarcities. At the same time, it is clear that systemic understanding of the interactions of climate change and other environmental issues *with* issues of global, regional, and national security has yet to be fully established. The gaps in knowledge currently remain outstanding and largely unaddressed in international dialogue and policy considerations. As such, the report from the IPCC represents an ideal starting point for the development of a strategic intelligence capability that focuses on systemic consideration of such impacts (including interstate and intrastate wars, political upheaval, violence and radicalization, health prejudice, dramatic changes in ways of life, simultaneously occurring stresses and disasters, etc.).<sup>2</sup>

The Glasgow Group concurred that the goal of strategic intelligence is to avert possible catastrophes through uncovering and articulating both near- and long-term security concerns. Considering energy and environmental security issues primarily within a traditional and, for these purposes, obsolete national security framework will not achieve the goals of a viable strategic intelligence knowledge ecosystem.

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<sup>2</sup> Recent reports have addressed the national security impacts of climate change and related energy issues. These include the National Security and the Threat of Climate Change report issued by The Center for Naval Analyses Corporation (April 2007) and The Age of Consequences: The Foreign Policy and National Security Implications of Global Climate Change issued by The Center for Strategic and International Studies (CSIS) and the Center for a New American Security (CNAS) in November 2007.

Just as combat commanders need to understand the full dynamics of the battlefield environment, decision-makers need broadly enhanced insight into the potential security consequences of both the global and regional dynamics affecting energy and environmental issues. Greater strategic insight will lead to more informed policy-making processes and, ultimately, to better decisions. Developing the requisite strategic intelligence capability could provide:

1. Early warning for decision-makers about emergent risks (before they become serious threats)
2. Compelling logics that transcend one-sided advocates and interest groups
3. Awareness of alternative future pathways regarding the development of energy technologies, international markets, and future environmental challenges, and thus the possibility to act, adapt, and shape rather than react

### ***A Global Systemic Shift in Security Realities***

In the government intelligence and security arena, strategic intelligence has generally focused on threats and challenges considered *external* to the state. Sherman Kent, considered an early pioneer of U.S. intelligence analysis tradecraft, suggested that strategic intelligence is the “kind of knowledge a state must possess regarding other states in order to assure itself that its causes will not suffer nor its undertakings fail because its statesmen and soldiers plan and act in ignorance” (see box on Strategic Intelligence for details).

Sherman Kent’s definition of strategic intelligence was a good answer during the Cold War (when he constructed it), but it is inadequate for today’s security environment. Currently, a strategic intelligence capability focused only on external actors and threats has built-in blinders to already evident and emerging security problems that are global in scale and systemic (interdependent) in nature. Whether we are concerned with organized criminal or terrorist networks, connections between air travel and dispersal patterns of pathogens, or globally-interconnected energy and environmental security concerns – a focus limited to external actors and threats cripples the development of strategic intelligence. The Glasgow Group elaborated on how present-day conceptions of national security, and the institutions supporting them, are operating under increasingly obsolete notions of “security”, specifically:

***From actors to factors plus actors:*** The Glasgow Group strongly urged a need to move from the concept of security as the protection of a set of actors (or societies) from the ill-intended actions of external actors – to a recognition that the nature and extent of disruptive forces go far beyond what the notion of “enemies of the state”. Energy and environmental forces are both global and interdependent, neither internal nor external, and generally constitute security *factors*. Such factors include the strain on primary natural resources and impacts in arenas beyond the energy resource area, to include water, agriculture, disease, societal stresses, threats to government legitimacy, and heightened potentials for international conflict and disease as well as popular unrest and radicalization. As such, we must consider actors broadly when addressing energy and environmental security, to include the beliefs, perceptions, actions, and unintended consequences of multiple actors on the world stage.

***From parts to the whole and its parts:*** Presently poorly understood interdependencies and global feedback loops create new dynamics between the parts (national economies and societies) and the whole (the global ecosystem and environmental feedback loops). Traditional security lenses cannot effectively understand or anticipate the new security threats and concerns that these feedback loops create. Moreover, traditional security or intelligence processes and institutions address are ill designed to address such concerns.

***From top-down organization to emergent knowledge ecosystem:*** Legacy assumptions and mindsets that form the basis of our current security institutions contribute to blind spots, instances where current institutions filter out indicators of significance to non-traditional security concerns. The Glasgow Group suggested these blind spots represent one of the critical elements requiring fixing; specifically, while specific types of government sectors tend to perceive energy issues as relevant, these same sectors give relatively little weight to environmental issues. An emergent strategic intelligence knowledge ecosystem composed of individuals with diverse interests, expertise and purpose, could have the effect of rebalancing this history, augmenting the relative weights given separately by governments to energy and environmental security issues.

***From specialists of parts to generalists who are specialists of the whole:*** Such a strategic intelligence knowledge ecosystem will have “requisite variety” of diverse expertise and cultures that is proportionately complex to the energy and environmental security agenda. As a result, the system will be socially robust enough to expect and correct for efforts to manipulate the system and will exhibit an explicit agenda of organizing and enabling systemic thinkers, or “generalists who are specialists of the whole”.

***From architecture of alienated knowledge to architecture of interconnected knowledge and participation:*** The Glasgow Group agreed that the greatest value of this proposed strategic intelligence knowledge ecosystem is its potential for building bridges among already existing networks and fostering interconnected knowledge and participation. Specializing in views of the “whole” will require shifting our emphasis from categories of knowledge and specialized experts working in isolation – to explicating the relationships between categories, occupations, and knowledge domains. This relationship architecture will form the organizing principles of the strategic intelligence knowledge ecosystem in a manner analogous to the wiring diagram of a traditional organization.

***From knowledge “managers” to knowledge “cultivators”:*** The role of system catalysts will be as “cultivators” or gardeners who adopt an ecosystem-like approach to establishing trust-based connections (through relation-building, normative values, incentives, etc.) between existing stakeholder groups. This will be the greatest value of the system because it will ensure human-to-human connectivity *before* crises emerge and reinforce human relationships that will be able to collaborate more rapidly and effectively once real emergencies are underway, thereby producing actionable intelligence both pre-event and in the midst of crises.

### ***Mirroring the Target<sup>3</sup>***

The Glasgow Group explored a number of the distinguishing characteristics of the energy and environmental security realities that participants maintained should influence what constitutes a strategic intelligence capacity in energy and environmental security. The participants agreed that a capacity targeted towards improved understanding and anticipation (i.e., “vivid rehearsal”) of energy and environmental security consequences must mirror the systemic interconnectedness and multidisciplinary nature of the environment. The group partially described the realities of the existing energy and environment sectors as:

- Distinct and yet often separate sectors (e.g. oil & gas, renewable energy sources, waste, efficiency, conservation), some mature and others emergent
- Strong social capital, but with few effective cross-linkages
- Dynamic system with great diversity, non-linear interdependencies
- Various communities of interests not generally well-connected (academic, corporate, activist, not-for-profits, foundations)
- Ephemeral interest to governments, private sector, societies, individuals
- Diverse stakeholder perspectives and priorities, but shared collective interest in future implications for the planet and for preserving ways of life

Consequentially, to mirror such realities, the emerging strategic intelligence capacity should include:

- Connecting existing distinct stakeholder communities, leveraging existing strong social capital, and forging new bridges among islands of inquiry
- Nurturing a systemic and non-linear capacity focused on strategic foresight and warning of security outcomes, threats and opportunities, to include the use of scenario analysis along with other “visioning” techniques; and
- Reaching beyond traditional sources of insight to access the necessary diversity of perspective and expertise

### ***A New International Strategic Intelligence Capability***

Since the identified challenges are global in scale and systemic in nature, the Glasgow Group recommended that the necessary strategic intelligence capability should create a set of international

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<sup>3</sup> The group reflected on the work of an English psychiatrist William Ross Ashby who framed the “Law of Requisite Variety” which describes that in all well functioning mechanical and biological systems “the regulator of any system must be a model of that system”. For details see “An Introduction to Cybernetics” by W. Ross Ashby, Chapman & Hall, and “Systems Thinking and the Practice of Government” G. Mulgan, Systemist, 2001.

strategic intelligence assets and an early warning system that supports the decision-making processes of global governance entities as well as public and private entities, such as reinsurance agencies. This strategic intelligence knowledge ecosystem, in the view of some, will be both an *enabler of new capabilities* and an *immersive work environment of the future* where individuals will go to understand and anticipate strategic consequences. The system could lead to the creation of significant operational demonstration projects that illustrate how current trends may be reversed, reducing future threats through the development of communities of trust that are able to address, both cooperatively and pragmatically, key energy and environmental challenges.

The Glasgow Group described what a new international strategic intelligence capability on energy and environmental issues could resemble. The most important products of this system could be relevant working hypotheses and *compelling logics* (in the sense of consequences, possibly including some not yet considered) transcending the narrow advocacy of special interest groups through shared access to, and decentralized validation of, global expertise. The system itself, participants agreed, could fill a current void in communicating to both public and private sector decision-makers the security consequences of energy and environmental issues. By convening scientists and analysts alongside societal experts of various kinds, this system could carry out adaptive and collaborative foresight inquiries on energy and environmental security questions.

Participants agreed that the user experience with this capability should be vivid, visual, and intuitive. They also agreed that it should harness the best available tools to encourage *user-created content* and should create *an action-learning environment*. In this context, the group hoped individuals could study the advantages and drawbacks of an interchangeability of producers and consumers of strategic intelligence at a future date. The Glasgow Group participants strongly urged that a multiple stakeholders must *participate globally* in and *share openly* the strategic intelligence endeavor, rather than any government or single institution owning the capability.

Vivid discussions must embody the capabilities of technologies designed to support a knowledge-creating community, to include the ability for scenario-building, visualization techniques, simulation models, on-demand “rehearsal” of the security impacts related to energy and environmental interactions. Face-to-face meetings will naturally constitute an additional community-building element of the proposed knowledge ecosystem. In addition, technologies will make the results of asynchronous interactions (both face-to-face and online) visible to others.

In addition, this strategic intelligence knowledge ecosystem may offer various capabilities, including prediction markets, visualization tools, environmental scanning, and alternative scenarios construction. Its uniqueness will be in *rapid aggregation and evaluation of knowledge and strategic insights*, through distributed and still-evolving knowledge accreditation systems (such as those popularized on E-Bay, Amazon, or digg.com). In particular, this system will link communities of diversity and expertise at local, regional and global levels, and enable *a credible and more objective intelligence source* than currently available through either governmental or non-government institutions working in the area of energy and environmental security alone. Ideally, such a knowledge ecosystem will embrace group sense-making behaviors and transcend the limitations frequently observed with small units of analysts operating within one organization alone – an especially valuable property when considering the boundary-spanning nature of the energy and environmental security challenges.

This proposed system will draw from multiple fields in order to consider interdependent security-related phenomena through the lenses of different types of assessment methodologies. One area of inquiry could include the interdependent relationships between glaciers melting, a potential environmental activism backlash, and renewed interstate competition for newly available resources, including energy (with the latter issue accelerating the first two). Another area of inquiry could involve the changes in the frequency and severity of both typhoons and hurricanes and result the impact on energy production and world populations, to include mass migrations of environmental refugees and the potential loss of legitimacy of multiple states. Scenarios analysis focusing on energy and environmental security issues resulting from low-probability, high-consequence events could be another possible area for work. The strategic intelligence knowledge ecosystem will draw on diverse expertise, such as virology, evolutionary biology, network research, developmental economics, disaster management, political science, international relations, and various dynamical systems assessments methodologies in order to consider interdependent security-related phenomena.

### ***Drawing Practical Lessons from Other Domains***

Given the need for a global systematic shift in security policies and the envisioned new international strategic intelligence capability, the Glasgow Group reviewed and assessed existing efforts in collaborative knowledge-creation and insight. The participants found many practical lessons from parallel developments in other domains, including product development, medicine, regional governance, and scientific research. These examples suggested that there is a critical role for “cultivators” who work to foster and sustain collaborative, knowledge-creating communities. Available data suggests that such communities are most successful when allowed to “grow” in a bottom-up and emergent fashion. Key priorities for the cultivators of the proposed knowledge ecosystem will be to:

1. Foster trust across community members
2. Promote normative values that encourage sharing of insights across networks and that overcome tensions between and within different nexus (e.g., intelligence community versus non-intelligence world, government versus non-government actors, within the academia among the physical, environmental, and social sciences)
3. Provide incentives to exchange knowledge
4. Identify instances where attribution vs. anonymity helps community conversations

The Glasgow Group discussed one case study and several effective examples of active collaborative professional communities. The case study, that of sermo.com, concerned an online knowledge ecosystem of more than 35,000 U.S. physicians who collaborate on sharing symptoms and developing diagnoses of frequently anomalous patient cases. Additional examples of knowledge ecosystems discussed included Wikipedia, fixing bugs associated with the Firefox web-browser, the Lego User Group community, and Google Mash-ups, among others.

### *Ownership Issues*

Key actors of this knowledge ecosystem will include the owners of knowledge and insights. A shared group identity will be an emergent property of the system. Specifically, some users will already be able to envision its value to them and their niche within such an effort, whereas others will discover a role only through engaging with the system. Decision makers may increase the extent of their participation once they see the value of the system for (1) generating early warnings about global and regional scale problems, (2) providing new insights not created elsewhere, (3) filling gaps in their knowledge, and (4) connecting to people with similar interests and problems. The system will help decision-makers to identify both prospective decisions and the practical alternatives of strategic response.

Given this, the initial expectations of the Glasgow Group are that decision-makers from governments around the world will become actors in the system. A successful system that cultivates insightful knowledge will draw additional analysts, knowledge creators, and other individuals who want to participate and make sense of the globally aggregated data. Additionally, the system will provide a nexus for participants from both developing and developed nations to share ownership in energy and environmental issues, as well as work together to make the system useful for international organizations, such as the United Nations, the World Bank, the Global Environmental Facility, and the UN Framework Convention on Climate Change.

As an unbiased alternative to media sources, citizens and voters can use the system to obtain the latest knowledge regarding political issues and candidates. The system should also provide knowledge and insights across disciplinary lines instead of through the narrow “stove pipes” of traditional institutions. These knowledge ecosystem attributes may help overcome the vulnerability and over-reliance on media or intelligence reports written from a single perspective. Finally, system users may emerge from existing stakeholder groups or communities with different perspectives, including those of non-governmental organizations, universities, national laboratories, or intelligence agencies – all who find that the system touches different but associated areas of contention and interest, such as mitigating strategies, adaptable resilience and repair strategies, weak signals and overcoming response “arthritis”.

### *Next Steps*

The Glasgow Group concluded that the next steps for their efforts should emphasize tapping into existing networks in the energy and environmental sectors, as well as working to forge and integrate ties to institutions and individuals with knowledge of complexity science and collaborative foresight techniques in an effort to build new bridges. As highlighted in the Executive Summary, the Glasgow Group agreed to frame this paper as a first stage, and though a collaborative process established a series of critical follow-up actions:

1. Focus initially on emergent issues that exemplify the convergence of energy and environmental concerns with significant embedded security implications
2. Identify and engage with expert knowledge sources and practitioner communities and assist in building bridges among them

3. Emphasize forging ties to, and integrating individuals and centers of expertise in, collaborative foresight, risk assessment, and complexity science
4. Demonstrate and prototype knowledge cultivation activities, specifically applying the “lens” of national and international security implications
5. Ensure processes to capture the strategic intelligence insights from these interactions
6. Craft enabling mechanisms (rules, technology tools, governance models etc) that support the emergent knowledge ecosystem, as and when appropriate
7. Assess lessons learned regularly, to include considering potential for scale-up and increasing traction with critical government and non-government customers and stakeholders

In particular, developing a business plan as well as identifying funding sources will be critical early steps. The Glasgow Group advised against focusing too soon on a specific design for the emerging knowledge ecosystem, suggesting that the links built between different stakeholder communities eventually will generate both design insights and a need for more coherence in the structure and governance of the emerging strategic intelligence knowledge ecosystem. As such, rather than any singular “leader” or architect imposing a forced design, the evolutionary design for this strategic intelligence capability ultimately will emerge from the networks and their evolving linkages.

### ***What is “Strategic Intelligence?”***

***Strategic intelligence*** is foresight and warning of events and trends in the larger global environment that could affect the well-being, or security, or a state, business, or other entity. It is situational awareness about potential security-related outcomes, risks, and opportunities in both the near term and the long term. It is not solely about the future, but rather includes a capacity to make better decisions in the present based on an informed consideration of the costs over time of various courses of action or inaction. Knowledge of history informs strategic intelligence as well. As such, strategic intelligence is a capability just as relevant to business, educators, and parents, as it is to governments, particularly in turbulent times. Variations of strategic intelligence include risk analysis, risk intelligence, disaster risk reduction, net assessments, foresight, futures, and intelligence.

***Performing strategic intelligence*** - Strategic intelligence generally depends on knowledge that is publicly available and thus labeled “open source” by government intelligence agencies. The methodologies strategic intelligence employs must be appropriate to the complexity of the questions it confronts. A key priority for strategic intelligence involved figuring out what the right questions are. In the energy and environmental security sector, for instance, strategic intelligence will develop answers to questions people in the “national security industry” are not yet asking – a point stressed by the Glasgow Group.

***Beyond analysis*** - particularly for systemic, complex strategic issues such as energy and environmental security, methodologies that span disciplinary, national, cultural, and cognitive boundaries and frameworks are essential. Unless the subject matter is appropriate to analytic techniques (which requires the ability to reduce and study a subject in discrete parts), strategic intelligence requires systems-based approaches which incorporate consideration of the impacts of feedback loops and other non-linear phenomena. The terms horizon scanning, environmental scanning, or alternative futures all represent a wide sweep of strategic intelligence efforts. Strategic intelligence is necessarily interdisciplinary, highly introspective about cognitive biases, preoccupied with unknowns, and open to multiple explanations and outcomes vs. a “bottom line” assessment or judgment. Good strategic intelligence intentionally highlights areas of uncertainty, but does so in ways that inform better decision-making, thereby avoiding false certainty and simplifications.