Climate and Security

Evidence, Emerging Risks and a New Research Agenda

Paris, 3-4 May 2012

Workshop Report

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Executive summary

This report summarises the key findings from a **research and policy workshop** on climate change and human security held in Paris on 3 and 4 May 2012.[1] Drawing upon an extensive literature review and the expertise of its participants, the workshop identified emerging risks that remained little understood and insufficiently addressed. This report highlights a new research agenda and key policy recommendations.

Scenarios

The identification of security risks related to climate change needs to be based on **more robust climate scenarios**. Current scenarios tend to oversimplify reality and are thus of limited use for policy-making. A key priority for security analysis has to be the development of relevant climate scenarios, with more emphasis to be placed on different **timescales**.

Peace and conflicts

Correlations between environmental changes and conflicts can be observed throughout history. However, current research does not allow us to devise satisfactory theoretical models that could explain such correlations. Consequently, a **causal linkage is yet to be proved**. The development of explanatory models could enable the **identification of potential future conflicts** associated with environmental changes.

Another key correlation exists between places that are vulnerable to environmental degradation and places where **peace-building efforts** are being made. Conflicts risk significantly increase vulnerability to climate change, and cooperation can reduce the vulnerability of conflict-affected societies. There is therefore a need to **frame climate policies within a peace agenda**, as the current absorption capacity of mitigation and adaptation projects into peace-building efforts is currently too low.

Resources

Many fragile states often share similar challenges**,** such as changing weather patterns, increasing societal vulnerabilities, and shifting demographics. As a result of these transitions, in many parts of the world, **humanitarian crises** have become the norm rather than the exception. Institutional responses will therefore need to move away from case-driven interventions to better address risks that are inherent to these periods of transition. In the context of climate change, humanitarian responses should focus on **strengthening state resilience** and the **capacity to adapt** to environmental changes.

Energy sources will also be significantly affected by climate change: energy models are likely to be disturbed, and climate change can generate tensions between mitigation policies, national security and geopolitics. Such tensions can **drive up energy prices**

[1]The workshop was the culmination of a research project conducted by IDDRI, the University of Exeter and the Woodrow Wilson International Center for Scholars, and supported by the Directorate for Strategic Affairs (DAS) at the French Ministry of Defence, the Department of Energy and Climate Change (DECC) in the UK, and the British Council in Paris. The workshop sought to provide a robust scientific foundation for policy decisions.

related to delayed **capital investment decisions**. The key to cross-compatibility of climate and energy security is to provide near-term cost reductions while maintaining or increasing supply availability and reliability. Policy makers will face at the same time strategic risks of energy dependency, water scarcity, nuclear proliferation, and transportation sector dilemmas.

Water is another key resource to be affected by climate change. Current assumptions about links between **water scarcity**, hydro basins, security and climate change may be overly simplistic. Water policy decisions will need to rely on more robust models to resolve conflicting demands, as the prioritisation of national over local scales could **reinforce vulnerabilities** and lead to maladaptation. Somewhat counter-intuitively, water shortages might however reinforce **cooperation** between states. This does not mean that **water conflicts** will not occur: though they have been extremely rare in the past, they cannot be ruled out in the future.

Strategic issues

Climate change is a creeping risk for **critical infrastructure,** such as roads, ports or airports. Vulnerability to extreme events exposes societies to a **cascade of failures and impacts**. Policy makers have not yet fully grasped the scale of these risks. Though critical infrastructure is mostly a national concern, this statement also holds true at the intergovernmental level as well. In that regard, the **response of Arctic states** to the challenges of climate change will set a precedent in many areas of international cooperation.

A new research agenda

Currently, robust bodies of research already exist around the **risk of violent conflict**, **forced migration** and **human security**. Other key themes, however, have not yet been properly addressed by research and policy. These include:

1. The risks of climate change to security policies;
2. The new geopolitics that will be induced by climate change;
3. Humanitarian crises and system resilience;
4. The risks brought about by mitigation and adaptation projects;
5. The linkages between climate policies and peace-building efforts.

Policy challenges

There is clear evidence that the human impacts of climate change are **being felt more quickly and more profoundly** than societies are prepared for. At the same time that climate change poses risks for society, it also opens **avenues for cooperation**. The work of humanitarians, the military and development agencies will need to evolve and be better coordinated. However, policy responses to climate change will need to avoid overly focusing on the security side of the issue. Indeed, security responses should not overshadow responses that address the root causes of climate change.

The security impacts of climate change have at times been used as a tool to persuade states to reduce their greenhouse gas emissions. It is important to base the climate security on empirical evidence and robust scenarios. A key challenge will therefore lie in the **use of climate information** by defence and security actors.

The workshop also formulated some concrete **policy recommendations**:

- Addressing issues pertaining to climate security **across different government departments**.
- **Assessing the current capacity** to respond to climate security challenges. Institutions, in particular, need to evaluate their resilience to climate-related crises.
- **Creating practical knowledge for action.** Significant opportunities exist for cooperation between research and policy, through the conduct of pilot projects, for example.
- **Sharing the work with a cross-section of policy makers.** It is necessary to share the burden and responsibilities between actors to tackle the many ramifications of the climate-security nexus.

Introduction

There is now a wide body of literature on the diverse linkages between climate change and security. Most of this literature, however, comes from grey literature, and remains controversial. For this reason, a project to conduct critical reviews of the literature on the key themes pertaining to the climate-security nexus (scenarios, peace and conflict, resources and strategic issues) was undertaken by IDDRI, the University of Exeter and the Wilson Center.

The project culminated in a workshop that was organised in Paris on 3 and 4 May 2012, with the purpose of discussing these critical reviews and defining a new research agenda as well as ways forward for policy makers. The whole project was made possible thanks to the support of the Directorate for Strategic Affairs (DAS) at the French Ministry of Defence, the Department for Energy and Climate Change in the UK (DECC), and the British Council in Paris.

The climate-security nexus has its roots in a range of arguments all premised on the idea that climate change will affect physical processes and potentially disturb social systems. From an academic standpoint, trends have been identified, but scholars have not yet been able to explain them fully or accurately. The state of the art is an abundant body of explanatory theories still in their early stages.

The language of security in climate change debates is rhetorically powerful, providing reasons for policy makers to buy into it. This outpouring issue relies today on politically oriented evidence causing policy dilemmas. As ministries of defence, overseas development and foreign affairs worldwide ponder how their assignments and activities could be affected by climate change, the workshop provided a sound and comprehensive scientific basis for understanding these linkages. Discussions mirrored trade-offs in setting priorities and balancing adequate resources for policy-making. The workshop underlined both the risks and opportunities of uncertainty-based decision-making.

Based on the workshop discussions, this report aims to meet three key objectives:

1) Providing an analytical assessment of the climate-security nexus for research purposes;
2) Outlining a new research agenda;
3) Developing concrete recommendations for policy formulation.

Disclaimer

This report reflects the rapporteurs' personal interpretations of the proceedings of the workshop and does not constitute as such any institutional policy of the DAS, the DECC, the British Council, or any other organisation or individual involved in the event.

Part 1. Research Workshop

About the research workshop

The first day brought together researchers for a presentation of the critical reviews, an opportunity to exchange points of view and to outline a research agenda. Participants included human geographers, political and social scientists, security specialists and geopolitical experts (see the list of participants in the Annex).

I. Scenarios: forecasting the trends

What is a scenario from a climate security perspective? Scenarios give information about key drivers of future changes in the geopolitical landscape. They take a holistic view of the climate-security nexus to cover a large picture of what stability is. They are based on the interaction of climate changes across impacts and the range of possible socio-economic responses. They develop **narratives about geopolitical changes** related to climate change.

Scenarios address the complexity of the interaction of climate science with human and environmental systems. As a consequence, it is unlikely that there will be one single optimal scenario design. There are **four types of scenarios** classified according to their entry point. Each of them encompasses policy dilemmas.

Emissions scenarios provide an energy/technology outlook that is highly relevant from a security-planning perspective. *Climate scenarios* are ideal for exploring feedbacks in the climate system and potential 'tipping points.' However, they often rely on 'best estimate' projections and 'high-probability' trends, usually from IPCC assessment reports, rather than on exploring more complex 'low-probability' trends. *First-order direct impacts scenarios* are based on a set of driving impacts rather than on climate variables and/or the system response. The socio-economic response is developed through the narrative. *Multivariate scenarios* contain information about socio-economic factors in addition to information about climate change, its impacts and changes in future greenhouse gas emissions. They account for vulnerability and exposure, response capacity, development, mitigation and adaptation policies.

Scenarios all share **limitations of security applications** with regard to policy-making. Issues of timelines and rates of change come first. How fast will climate changes impact human societies and how well do we know low-probability climate change, for instance? There is also insufficient attention to context and uncertainty. Scenarios only have few comparisons with natural variability. To make scenarios more worthwhile for policy makers, **scenario design processes should be relevant to decision-making**. Discussions converged towards a set of key questions that involve both policy and scenario communities: How should a scenario be set up? When should a scenario be written? And why choose a specific variable?

Researchers have identified three significant features for building **reliable scenarios**:

- **References**: These should be comprehensive and include non-climate literature. Each scenario should be framed with a limited number of variables.
- **Methods**: Even if scientists incorporate diverse methods to develop consistent scenarios, they will not be able to eliminate uncertainty.
- **Coordination**: Scenarios should be coordinated with on-going IPCC scenarios. There is an institutional challenge to improve matching scenarios.

Despite a robust approach to building scenarios, their **interpretation can be politically driven**. Scenarios are both a scientific challenge and a political issue.
The question of 'when?' echoes the utility of scenarios for policy-making. How can climate-security scenarios be useful if policy makers mostly look for more predictability? There is a gap in the use of scenarios with regard to decision-making processes. In terms of policy orientation, it is important to know when decision-making could integrate the information into policy planning. Otherwise, scenarios will remain a form of speculation that estimates a range of risks.

A third issue with current scenarios is that they are too general and unclear about variables. They rarely explore any of the uncertainty on impacts or question any of the simplifications used. Some scenarios result in **unsurprising conclusions** and crude pictures about oversimplified reality. There is a lack of consistency and robustness of current data/knowledge on the correlated issues, which undermines the results. Although each scenario may be plausible, this does not guarantee the success of governance and cooperation measures in the face of the climate change challenge.

II. Peace and conflicts: exploring correlations

Researchers have found evidence that climate change and political instability are linked. However, they need a **compelling theory of conflict** to support an historical correlation of climate stress over several human systems – sociologically, politically and economically. The panel agreed that efforts and funding should not focus exclusively on justifying the causality.

Participants called for **more case studies to validate correlations** about how environmental degradation is a problem to human security and how violent conflict affects the ability to adapt to environmental changes. In resource-dependent and conflict prone areas, three types of **environmental degradation** require attention: land tenure, land grabbing and resource income allocation. Participants prescribed straightforward military interpretations of the nexus. Policy makers should reduce the **environmental policy gaps** that are present within conflict resolution and prevention, cooperation mechanisms and peace-building.

A. Climate, conflict, and social stability: what do the data say?

Similarly to scenarios, statistics risk being used to **over-simplifying correlations for the purpose of establishing causality**. Participants were reluctant to steer climate security strictly towards the violent conflict nexus, and more concerned about the intractability of conflict causes.

Statistical analyses have a symptomatic issue with correlation validation because data do not speak enough on their own about causality. Researchers only support that there is **consistent evidence** of an association between climate variables and conflict or instability throughout history and across all spatial and temporal scales.

The main issue for this panel concerns was a lack of causal explanation from correlations. Data can only be used to explore one causal pattern at a time – e.g. government capacity, labour market effect, inequality, food prices, logistics and psychology. There are **many forms of climate-related conflicts** with **a unique combination of causal patterns**. Three structural factors, for instance, are the main drivers behind climate-driven land-use conflicts in the Sahel: agricultural encroachment that obstructs the mobility of herders and livestock, opportunistic behaviour of rural actors as a consequence of an increasing political vacuum, and corruption and rent-seeking among government officials.[2]

From a policy perspective, the **situation on the ground** appears more important than causal explanations. Researchers pointed out communication deficiencies with policy makers, which posed the risk to mislead their research. Instead of working separately, policy makers should facilitate case validation for researchers. It may also provide better trends and variables for scenarios and policy planning.

B. Climate vulnerability in fragile and conflict-affected societies

Participants disagreed on causal explanations of how climate vulnerability could impact conflict. The panel narrowed the question to how conflicts might hinder vulnerability to climate change. Discussions focused on **how violence in a society affects the ability to act** in the face of climate change, and noted that violence is simply inherent to the developing world. People incorporate it as one of the burdens of day-to-day life. When both environmental change and conflict co-occur, a conflict will often determine how resilient people are to climate change.

This session addressed questions of emerging norms such as **resilience**. Described in as vague terms as vulnerability, researchers fear that resilience may become an organisational principle in society. It is difficult at this stage to estimate how useful these norms are in analysing conflict. Recently, conflict studies have paid attention to the vulnerability of natural and social systems to climate impacts.[3] **Human security analyses** of the exposure of the poorest people to various threats to life, health, and wellbeing provide a vulnerability-sensitive framework.

The most vulnerable are often impacted in particularly negative ways by conflicts involving natural resources. Participants discussed opportunities to extend participation in political settlement processes to vulnerable actors. This implies bringing to the table actors who are usually excluded, such as women or minorities. For example, exposure of

[2]Participants referred to a recent publication of the Journal of Peace Research: Benjaminsen T. A., Alinon K., Buhaug H. & Buseth J. T. (2012). "Does climate change drive land-use conflicts in the Sahel?" Journal of Peace Research, January 2012, vol. 49 no. 1 97-111

[3]The IPCC itself breaks down vulnerability into three underlying factors of climate change: (i) exposure, (ii) sensitivity, and (iii) adaptive capacity.

women and girls to rape increases in insecure contexts where it is their responsibility to collect water and firewood.

From a policy perspective, the operationalization of resilience and vulnerability are challenging processes. They should nonetheless lead to transformative action. It is necessary to assess **which institutional changes can address climate stress**. Are they improving or weakening resilience through their policies? It is difficult to anticipate how politics will react to volatile climate change in the short term. Participants suggested focusing on **local capacity and institutional behaviour** related to coping mechanisms.

C. Peace-building and mitigation and adaptation projects

The peace-building debate was fruitful in assessing policy challenges of existing climate policies. Researchers examined whether adaptation and mitigation projects integrated peace into their agendas.

Robust evidence supports the need for peace-builders to be concerned about weather-related disasters. **For the past 20 years, every peace-building operation has taken place in a climate-vulnerable place.** Climatic disasters have occurred during every peace-building mission so far, or within the following two years – Kosovo being the only exception.

Currently, there is no case of full integration of peace-building and climate mitigation/adaptation. Very little capacity exists for assessing coping mechanisms and local adaptation within a national reconstruction plan in the aftermath of a conflict. Panellists did not know whether adaptation efforts are going too slowly or at the appropriate rate. Peace-building involves a wide set of challenges that are not fully understood by researchers or taken up by policy makers. It is characterised by a **difficult context for absorbing M&A policies**.

1) **A costly process:** Peace-building is a governance loophole in terms of funding, actors and institutions. In addition, there are many risks to assess because it is difficult to understand how to be secure in those contexts.
2) **A weak civil society**: Peace-building policies rely on local actors.
3) **Problems of coordination among institutions**: The peace-building context is characterised by considerable mistrust of government and foreign actors.
4) **A fragile ground for societal development**: Additional means are required to mainstream climate into post-conflict policies, which question the relevance of those efforts. Natural resources are more or less integrated, but remain a source of tension during the whole peace-building process. People expect their lives to improve immediately after war when in fact, peace-building is a frustrating path of slowly built roads, changing partners on the ground, and unstable government, etc.

The first policy action is to pinpoint the priority areas and put a 'voice' on the reconstruction process ground. Without a dedicated team on the ground, the chances of integrating M&A into the peace-building agenda will remain insignificant. Yet, there is a **range of risks** that should first be assimilated by peace-builders. These include the management of uncertainty, the negotiation of trade-offs, the transition to a new energy

economy and the details of REDD projects. Nor should climate change divert attention from other peace-building priorities.

Panellists agreed on **seven areas of action** specific to peace-building:

1) Assisting new governments in managing climate risks and improving governance;
2) Identifying which partnerships can be formed on the ground;
3) Building capacity for mediation and conflict resolution;
4) Concentrating socioeconomic efforts on resettlement and livelihood opportunities;
5) Developing climate-proof infrastructure to attract foreign investors;
6) Exploring public health and education as valuable entry points;
7) Improving the use of technologies that have not so far effectively strengthened the process.

III. Resources: competition, cooperation and scarcity

The governance of common resources attempts to mitigate the **tragedy of the commons**[4] through property rights and access to resources. There is much debate over whether or not this is an effective governance response. The legal and regulatory contexts surrounding these two responses vary widely across different areas, as does the ability to adapt to scarce resources.

The **transboundary facet of natural resources** may clash with sovereign ability to manage them. Factors that enhance or undermine individual security, access to resources and services are often externally driven. The panel discussed issues arising both from globalisation and local issues, reflecting a deep set of **human security challenges** for academic research.

A. Climate change as a driver of humanitarian crises and responses

The panel explored the relationships between climate change, humanitarian crises and political responses. Discussions about the nature of humanitarian crises focused on global drivers and future trends. These include **changing weather patterns** via the frequency, intensity and geography of extreme weather events; **increasing societal vulnerabilities** via the role of globalisation, urbanisation, and migration; and **shifting demographics** to anticipate future disaster loads. In drawing this complex picture of global trends, the challenge is not simply one of intervention and response, but also one of long-term development and sophisticated strategies.

Participants questioned the **apolitical quality of resilience**. The term would gain in depth by reflecting how change becomes a stress. They covered a range of missing links between power and resources, which feeds state-aided vulnerability. If a system does not follow the path of change fast enough, it risks collapsing in a violent manner, not strictly in the sense of conflict, but through corruption and political changes.

[4] The tragedy of the commons expression refers to the article of Garett Hardin published in Science in 1968. Available at http://www.sciencemag.org/site/feature/misc/webfeat/sotp/commons.xhtml

This approach is critical of the '*business as usual*' cycle of humanitarian aid. Climate change and globalisation are altering the humanitarian response from the provision of food to that of money and of access to marketplaces for displaced people. Humanitarian crises are no longer just about reducing high-level crisis impact indicators such as mortality.

Specific **policy gaps** were identified at both state and humanitarian system levels. Discussions emphasised the shift from a mind-set in which crisis response is exceptional and interventionist, to one in which **managing crises** is seen as **the norm,** part of sovereignty and internalised within more formal international and national arrangements.
States pay little attention to the capacity to implement policies in times of humanitarian crisis. They do not provide a reliable and systematic field data collection to evaluate and report humanitarian crises. Crisis management is now related to **risk management** and covers a large panel of capacity building. How can policy makers bring adaptation, emergency, development and risk communities to work together?
Several biases of the **humanitarian system** reduce its resilience to crises. The system is currently largely reactionary and ill-equipped to respond to long-term climate-related crises. The system is qualified as an exclusive, interventionist, evidence-based and neutral pressure aid system. It needs a larger humanitarian space with institutional responses based on a more resilient state.

B. Climate and energy security

Peer-reviewed literature and discourse on the impacts of climate change on energy security are limited and scattered across disparate fields of research. Grey literature often attempts to integrate physical and social sciences with policy analysis in qualitative work: social instability, deforestation, extreme weather and increasing supply. How these linkages will unfold in the future, however, remains speculative. **Energy analyses and scenarios need more frequent updates**.

The definition of energy security is arguably contextual, and comes from a myriad of oriented partial definitions from the grey literature. Most of this literature is heavily biased towards the US, at the expense of emerging literature from India and China. A consensual definition relies on the availability of adequate, reliable, and affordable energy supplies. Energy security is a multifaceted concept encompassing two key dimensions as a **threat multiplier** and as a **human security issue**.

Panellists presented robust evidence that climate and energy security is substantially linked to **climate change mitigation strategies**. Policy makers are faced with **delayed capital investment decisions and pricing dilemmas**. A human security perspective defines levels of dangerous interference according to the resilience of the group impacted by those changes. The key to cross-compatibility of climate and energy security is for efficiency measures to provide near-term cost reductions while maintaining or increasing supply availability and reliability. GHG emissions reductions would be less disruptive to energy security if they were implemented only after key technological solutions become available for large-scale deployment. Oil supply disruptions may also result in economic effects of price volatility.

Geopolitical and strategic risks driven by climate mitigation are especially significant. Developing alternative energy choices may cause or increase *power dependences* – China upon Africa, Western Europe upon Russia, or South Asia upon potential Nepalese hydroelectric capacity; *water scarcity*; *nuclear proliferation*; and *transportation sector* dilemmas such as biofuels, clean energy development and moving to natural gas. Climate policies might impact energy security, but could also create a sort of **energy security public good**.

C. Hydro-climatic change, conflict and security

The current picture of adaptation and water scarcity is overly simplistic. Many water impacts are left out of research. Little to no attention is paid to the side effects of water policies. This session helped to build up a global picture of **a complex issue**. Arguments were developed on hydro-climatic change and hazards, conflict, security and adaptation bodies of literature.

The number of transboundary basins presently at potential risk of hydro-political tensions associated with water variability could double by 2050.[5] Robust evidence of hydro-climatic tensions was presented for areas larger than the current focus in northern and sub-Saharan Africa. Understanding when and where **capacity building is needed in transboundary river basins** has become critical for greater resilience to change.

The panel discussion suggested ways to translate the multi-layered issues of climate security to the **water policy agenda**. *National security* may lead a state to be more active and accountable with regard to the potential privatisation of water management – the state either provides the service or regulates private management. Water management is not a one size fits all solution. The *national scale* for a water plant is not necessarily the optimal local solution. Large water infrastructure may be relevant at the national level when forcing population displacement at a local level. However, large scale and resilient infrastructure may be a response to state requirements to manage risk.
The *risk of maladaptation* is inherent to water policies. National natural resources should be assessed in the light of vulnerability. Social factors of governance are as important as technology in improving climate security. The panel was concerned that repackaging water issues under climate security would overshadow other issues of development.

IV. Strategic issues: global commons outside the box

The panel agreed that climate change alone is likely to cause international legal disputes, disrupt access to vital resources, damage critical infrastructure and open new geopolitical borders. Strategic questions are mainly about determining whether the

[5] "*In the existing 276 international river basins, the increase in water variability projected by most climate change scenarios may present serious challenges to riparian states.*" **Stefano (De) L., Duncan J., Dinar S., Stahl K., Strzepek K. M. & Wolf A.** (2012). "Climate change and the institutional resilience of international river basins," Journal of Peace Research, January 2012, vol. 49 no. 1 97-111

climate-security link is efficient or counter-productive. The panel brought up a difficult incentive equation to make climate change more secure.

A. The Arctic Ocean case study

Every time a new trade route has emerged, geostrategic power relations have changed globally. **Maritime boundaries** are particularly susceptible to re-evaluation as a result of climate change. Climate security addresses the possibility of seeing an increase in hostilities related to borders. The Arctic states and the international community's response to Arctic melt will set a precedent on how to manage the extension of boundaries.

There are two ways of looking at the Arctic in order to build a common understanding. The first option is an environmental security approach. The second involves national interests, for three reasons: a flag planted in the North Pole, vast energy resources, and a shortcut from Asia to Canada. The Arctic Ocean is a special climate-driven case study with global implications.

The panel supported a triple purpose, holistic academic-policy dialogue. This should first generate a **common understanding of the risks** of political, economic and cultural instabilities emanating from environmental state changes. It must then turn to building a **common acceptance** of integrated infrastructure to mitigate instability risks. This dialogue should finally reveal the **institutional interplay** to support the sustainable implementation of Arctic infrastructure based on common agreement.

While each of these phases is increasingly complicated in terms of **commitments** and **resource allocation**, together they represent a stewardship pathway to balance national and common interests.

B. Critical infrastructure

Critical infrastructure is an urgent strategic issue. When Hurricane Katrina landed on the coast, there was no homeland security system set up to manage emergencies. There is a **severe policy gap** in climate-proofing infrastructure. This introductory remark comes with yet another one. The interdependencies between extreme events and critical infrastructure expose states to **cascade failure** and **vulnerability-related impacts**. The disruption of infrastructure delivery potentially brings collapse, disturbs services, and causes public protest and mass displacement.

A policy response should further **invest in basic services** such as access to water, transport, communication and energy supply. Even if states and societies are different, they all look to protect their civilians by acting benevolently. Despite this acknowledgment, among other life-threatening issues on the infrastructure maintenance agenda, investment in critical infrastructure is decreasing in OECD countries.

Different kinds of tension surround the policy approach to the issue. **Geopolitical** tension lies in the dependence of the delivery of national critical infrastructure services

on the **scaling of transboundary issues**. National security frequently erects barriers to transnational infrastructure systems – the Europeanisation of the energy market, for instance.
The role of the state in **road maintenance** is critical for the harmonisation and equity of access and communication purposes. This role, however, has been changing over the last century due to competition between private firms. The privatisation of infrastructure makes climate proofing difficult due to economic reasons.
A final and central tension impacting the agenda relates to the **interdependencies** between different infrastructure sectors. They require an increased level of understanding, especially in relation to natural hazards. The notion of resilience would benefit policy makers.

Final outcomes with regard to **research and policy agendas** include seven points:

1) The need for additional research on the potential impacts on all infrastructure areas;
2) The need for additional work on the long-term planning process for risks medium term risks. The reduction of vulnerability and risk awareness;
3) Professional education on the issues and responses;
4) The impact of the economic downturn on long-term risks for investment in infrastructure. Encouraging investment decisions to take into account changing climate and consumer demands;
5) The question of how to make infrastructure resilient to the future impacts of climate change?
6) Building resilience into critical infrastructure, from concept to delivery, so that it can absorb these shocks and recover quickly. Flexible infrastructure assets can be modified without excessive costs.

C. Climate change, security and intergovernmental dialogue: a bridge too far?

Despite the conceptual and practical maturation of many climate security concepts, there is still a formidable **level of discontinuity** in terms of how best to frame the nexus, and the roles and potential roles of intergovernmental organisations (IGOs) in the climate security sphere. Why have prominent and seemingly well-placed IGO efforts thus far struggled to grapple with the security implications of climate change?

A first set of arguments comes from the convergence of **environmental issues rising** up the international policy echelons and the **expansion of security studies**. These two dynamics provide the basis from which climate security thinking has expanded into international arenas.

Discourses within IGO forums reveal differing state positions on security concepts and the appropriateness of 'securing' climate change. Consequently, the **role of the IGO community** is narrowed to offering logistical and resource-based support to individuals, communities and states facing climate adaptation capacity deficits.

If the bridge to an intergovernmental climate security dialogue is a bridge too far, one core reason is the discrepancy between security and sustainable development agendas. There is a need for **high political engagement** across current barriers to design a political response to the ubiquitous presence of climate insecurity drivers. This portends

difficult steps forward to grasp the complexity of environmental challenges for diplomatic spheres – a mirror of what a sovereign international system may be unable to overcome.

Conclusion. A new and robust research agenda

A **myriad of existing concepts** surrounds the debate. The research gaps relate to the nascent semantic vocabulary of climate security and its use by actors – human security, resilience, adaptation, risk reduction, disaster, vulnerability, mitigation, etc. The first day of the workshop debated the academic value of this vocabulary. Some of it emerged from the climate science while some existed prior to climate security. The climate security nexus encompasses broad definitions of some concepts and may change the initial meaning of others.

The **missing consensus** comes from **building causality** regarding the climate security nexus. Causality is a long, hard path for research. For instance, there are two steps to connecting climate change, natural disasters and security. Researchers must first examine the relationship between the changing climate and the natural event. They must then address second hand correlations from the social contexts to explain the security ramifications.

Theory building has accelerated in the last few years, echoing recent initiatives by the United Kingdom, Germany, Norway and the United States to encourage research groups within universities and think-tanks in order to support policy-making at the governmental level.

The following **research clusters** are a key step in settling climate security controversies from the nexus. Three explanatory bodies of research are well established: the risk of violent conflict, forced migration and the risk posed to human security. The workshop provided a complementary robust research agenda. New bodies of research should be formed around: risks to security policies, changing political landscapes, humanitarian crises and system resilience, insecurity due to mitigation and adaptation, and conflict and peace-building.

Existing research clusters

1. **The risk of violent conflict**

The aim is to understand causality based on correlations. Although widespread research has produced evidence of these correlations, there is a severe gap in research required to build a solid conflict theory. Researchers need to know more about multifaceted conflicts. This would impose acknowledgment a) of the social, economic and political consequences of climate change, and b) that social, economic and political issues determine the impact of climate change on people's lives.

2. **Forced migration**

The migration-climate nexus has received considerable attention from the academic side, but remains a policy vacuum in terms of reassessing the environmental factors of forced displacement. The nexus should be reconsidered in the light of undesirable forms

of population movement from either the point of view of migrants, or the places they move to. The other side of the nexus concerns the ways in which migration may facilitate adaptation and reduce insecurity.

3. Risks posed to human security

A better understanding of what human security is and what it implies covers two areas of research – first, poverty, livelihood, human vulnerability and the social aspects of climate impacts, and second, the policy and human rights protection aspects of them. The inclusion of human security to the policy agendas is still a challenging manoeuvre in need of additional researches with regards to individual insecurities.

Emerging research clusters

4. The risks of climate change to security policy

These include a possible increased risk of violent conflict in some countries, which in turn poses challenges to the security policies of neighbouring countries, the United Nations Security Council, and countries that contribute to peacekeeping missions.
These risks also include non-military threats, such as to infrastructure that is critical to the functioning of states. Disruption and cascade failure concern energy and water systems, the impacts of extreme events, and the vulnerability of key sectors.

5. Changing political landscapes

Changing patterns of geopolitics require a risk assessment of conflict or cooperation possibilities around transboundary issues. These include shared waters and resources in the Arctic, international rivers, risks associated with an expansion of nuclear power as a climate mitigation response, and cross-border flows following extreme events. Recognising complex changing political landscapes depends on the governance response. Cooperation mechanisms and intergovernmental dialogue form the cornerstone of a collective response based on states to deal with risks, laws to enforce and forums to discuss.

6. Humanitarian crises and system resilience

The humanitarian system is facing unprecedented climate-related crises. Climate change, demographic shifts and increasing societal vulnerabilities create long-term crises breeding more insecurity in fragile contexts. The system is ill-equipped to respond to climate crises. The response mind-set and funding are inconsistent with the nature of those crises. In sum, the system cannot absorb climate-related shocks that hinder its resilience.

7. The risks posed by mitigation and adaptation projects

The knowledge gap regarding those risks reduces policy incentives to develop mitigation and adaptation measures. Security risks associated with climate change responses generate activities that, if conducted poorly or for the wrong reasons, can in turn generate insecurities. Innovative policy can increase vulnerability, undermine biodiversity and livelihoods, dispossess vulnerable groups, and force migration; in short, it accentuates trends or sabotages other policy initiatives.

8. The linkages between climate policy and peace-building

Peace-building is a key part of stabilising a country after a conflict. The existence of these linkages adds new environmental factors to the destabilising peace-building process. How these linkages should be incorporated into peace-building is a sensitive pathway of 'do no harm' steps. These help to determine priorities among trade-offs such as social, economic, and environmental capacity building, and governance and political capacity building.

Part 2. Policy Workshop

About the policy workshop

The second day of the workshop aimed at fostering discussions between policy makers and researchers. It brought together British and French policy makers from environment, development, defence and diplomacy to build up a broad dialogue about climate security issues. Discussions were held under Chatham House rules.

The policy workshop was a means for researchers to determine useful research questions as well as to ascertain the policy concern. Researchers presented the outcome of their studies while policy makers were able to ask questions in order to inform future research. Policy makers are concerned with results and objectives. One of the main policy challenges is to arbitrate between counterproductive issues and the most catalytic ones. Another one is to deal with the political economy prominence in the response equation. **How can we set priorities among all the issues? How will policy-making evolve?**

I. Scenarios:

Scenarios raised one central question: **what level of preparedness does policy need and want to achieve?** The interdependencies of the issue set the challenge of how sophisticated the solutions should be. As a first step, policy makers thus agreed on the need to integrate climate security into their scenarios. Another step is to foster communication among policy-making communities.

Researchers cautiously reminded that the human impacts and social dimensions of climate change are being felt more quickly and more profoundly than societies are prepared for. This statement has two consequences for both researchers and policy-makers:

1. The climate community needs to leave its comfort zone. Climate science should conduct more short-term analyses to help policy makers grasp the issues at stake. Are the floods in Pakistan likely to occur again in the next decade? Are droughts becoming a regular threat?
2. The policy side should decide on ways to prepare for action according to the level of climate stress. A warning sign is that societies are not prepared now.

It has been made clear, however, that policy makers should not ask for predictions from climate science, only estimations. In fact, policy makers care less about the exact categorisation than about the broad security concerns raised by climate change. In brief, it does not matter which basket those concerns fall into. **The key policy question is what kind of preparedness is needed?** An analogy was made with the Marshall Plan. The key to successfully rebuild societies after World War Two lay in identifying how to support reconstruction and what relief was needed.

II. Peace and conflict: better knowledge of each conflict

The panel mainly discussed the importance of better understanding the local conditions of conflicts. **What is the biggest issue for policy makers: the discussions about causal links at the negotiation level or the situation on the ground?** With regard to this panel, policy makers expressed the hope that a more holistic view of climate security would help to provide a bigger picture of what stability is.

Policy makers are concerned that countries might have diverging national priorities. They insisted on the role of International Organisations (IOs) for their greater resilience to national priorities. **What are the institutional challenges?**

Although the link between climate change and conflict has been widely researched, no real scientific consensus has been reached yet. Correlations between conflicts and climate change should be explained by establishing complex, indirect linkages. As changes are slow to come, they are not necessarily easier to handle for society. Thus, they are difficult to communicate to populations in conflict-prone areas. Case studies reveal that **people affected by climate change are the least informed about it**.

Climate knowledge exists. The panel recognised that opportunities to integrate climate change expertise into peace-building have been missed so far. Prior to this integration, the first question to address is that of absorption capacity of climate tensions within fragile countries. These countries often prove unable to handle natural resources income without facing issues of corruption. Issues of patronage and elite appropriation put considerable strain on already scarce resources. Despite the aforementioned conflict barriers, opportunities to integrate climate change do exist, such as technological ones.
Panellists disagreed on **policy priorities**. If one considers the political context, disarmament, disengagement of ancient combatants and democratisation might come before climate security. For example, the high food prices in Liberia are to do with the political context and globalisation more than with climate change. With regard to other priorities, it may be unimportant how many percentage points climate change contributes to this.
Participants moved on to the **funding capacity** policy challenge. Peace-building funding reduces funding for adaptation, and *vice versa* without integrated policy making.

The panel pointed out the relationships between **diplomacy, defence and development** policy communities. Researchers need to better understand the policy links between them. A more holistic approach to peace is needed. If a policy maker is involved in diplomatic negotiations, there are ways in which he could bring national resource management into the negotiations. This encourages the inclusion of natural resources in negotiations while working on ground issues. Doing might diminish the risks pertaining to the inclusion of resources in peace agreements.
Participants mentioned **REDD**[6] as a tool for building confidence. Are researchers confident that adaptation and mitigation measures also cause conflict? Do we need more research, or do we need to pass on the information to policy makers now?

[6] REDD is a UN program that aims at Reducing Emissions from Deforestation and forest Degradation in developing countries. Information about the program are available online : www.un-redd.org/.

Peace-building specialists note that many **community-level activities** revolve around natural resources during and in the aftermath of a conflict. However, if community management is efficient in peace-building processes, the problem comes from the United Nations integrated missions. The UN system is in fact highly complex and brings even more complexity to the conflict picture.

Another set of arguments pointed out the **globalisation of risks** – an issue that already exists for pandemics. Policy makers are not able to develop a response to risks. Who decides to manage risks? Is it the state, or will the management be more decentralised? Will private actors play a role? Determining the characteristics of risk management is a crucial policy issue.

Policy makers wanted to know what they could achieve in M&A projects from a security perspective. They provided a set of questions to orient future researches. Are they too slow on the adaptation side? Is mitigation a missed opportunity? What additional efforts are required? Another way of looking at the problem is to examine whether climate change creates cooperation rather than conflict. Overall, policy makers sensed that researchers need **better knowledge of each conflict case**.

III. Resources: climate change is not the only game in town

The discussions of this session reminded that climate change is not the only game in town adding pressure to natural resources, especially in terms of **future crisis loads**. Urbanization, forms of governments, the global economy, and demographics among others play a part in triggering unrest. According to researchers, tomorrow's humanitarian crises will have more and more worldwide effects. They may have a pervasive influence and last longer.
Will policy have to consider a different approach towards humanitarian crises? How should we then evaluate their results?

The first challenge is to **reform the humanitarian system response**. This task involves several policy communities. Risk management and adaptation communities have engaged in a joint dialogue, but have not yet talked to the humanitarian community. The humanitarian crisis-management system should not depend on multiple policy-making communities, but rather on a common approach. Panellists advocated a new kind of leadership in the face of humanitarian crises, involving **dialogue between policy communities**. Civil-military cooperation was mentioned, but not unanimously supported. This should reconcile **different ways of approaching humanitarian issues.** The recent IPCC report on managing climate and disaster risks provides a possible response on how to cooperate across departments and ministries, and how to link the issues effectively.

The second challenge relates to the fact that 70% of the money goes into long-standing crises. Does this mean that the humanitarian system keeps people in crisis? **The reform concerns the way humanitarian aid is provided.** In a way, the system maintains vulnerable populations currently trapped by the multiple roots of crises. Political aspects of these roots have challenged the neutrality of humanitarians, actually redefining their role in the process. Unsurprisingly, dealing with the root causes of

humanitarian crises might get them involved in politics, then leading to an even more counterproductive final response. Developing countries need a more resilient system to cope with crises.

The third challenge concerns funding. A robust funding system is necessary, but this financial question is related to multiple stakeholders. Comments from the panel merged in the same direction. Money is mobilised once the disaster has already occurred, not beforehand with a view to prevention. **In terms of resource allocation, where should the money go to improve prevention?** Money is more effective as a preventive rather than a reactionary response. One conclusion of the policy makers' discussion was the need to develop a new funding structure.

For these reasons, **researchers believe that the likelihood of successfully reforming international organisations is limited**. If the humanitarian system is in crisis, it is important to rethink the way in which the issue is framed. Researchers advocated going back to basics. **What is a humanitarian response?** When a disaster happens, how do populations react and respond? They usually look for money, which suggests that other responses might be more irrelevant than expected. The question is one of how resilient the system response is. **Is the humanitarian response enough?**

If crises are a result of unsustainability, should policy makers question how to build this sustainability? Researchers called for a change in the mind-set of those in charge of the crisis response. Policy makers need to develop programmes and methodologies to reduce the probability of crisis. A key change in the mind-set is to identify the human signature in a disaster.

The discussions explored two main resources to which the sustainability of societies is related to: energy and water. **The climate/resources nexus** was defined as **a governance and geopolitical issue.** Researchers wondered if this was, as such, on the radar of foreign affairs and defence ministries.

The combination of energy and climate security is best approached by geopolitics. Moving to natural gas might make Western Europe dependent on Russia. Moving to nuclear power as a transitional energy might raise proliferation concerns. Energy security falls under more classical **national security strategies.** Better access to national classified documents would be useful to researchers, but governments should also investigate the phenomenon from their own point of view. The military could play a crucial role by keeping an eye on strategic areas and cutting its greenhouse gas emissions.

Issues related to river basins and **water security differ greatly from those related to** any other resource. In fact, history shows that water provides for cooperation rather than conflict. However, **policy makers underestimate** the impacts of climate change, drought and floods on livelihoods. States have a responsibility to provide civil protection and social security systems. The panel supported the idea of safety nets against livelihood disruption due to water scarcity. Researchers thought governments should improve their knowledge of natural resources within their territory.

Renewable resources as well as non-renewable ones exist within a complex political and economic context, which makes them more difficult to control. **Large-scale and climate-resilient infrastructure** is a key aspect of development policies. Researchers are worried that policy makers are missing a huge area of concern in development.

IV. Strategic issues: access to policy-making for researchers

Cooperation on environmental issues provides strategic leverage for states. Researchers who examined the causality of climate change found that **using security language in climate cycles may be difficult**. Yet climate security has gained political momentum. The challenge lies in balancing national interests with common ones, as well as building a common understanding of issues related to climate security.

Strategic concerns are manifold. They include international tensions linked to the control of oil, disruption of maritime routes, etc. The emergence of new trade routes may change the global balance of power. The Arctic, for instance, particularly affects the UK and France. As non-Arctic states but representatives to the Arctic Council, they should seek a special leadership role. Critical infrastructure requires protection and investment, but states have different infrastructure needs. How should different strategic stakes be addressed? Due to interdependencies between strategic issues, policy makers need to build an **integrated understanding of risk**.

Climate change is only one of many issues on policy-makers' agenda. Researchers are concerned that **international diplomatic** structures had lost their ability to work in a strategic long-term fashion. States need to engage their partners about the risks. Dialogue with South Sudan about building pipelines in some of the most climate-vulnerable places is very different to discussing this issue with Chinese partners.

Policy makers assert that climate change is part of their picture of peace. The **military** looks very carefully at environmental geopolitical risks. If policy makers integrate climate into their peace planning, what they ask for from researchers is what they should really understand about conflict dynamics. Defence policy makers often take action within a foreign policy framework to develop **early warning systems**. Some researchers doubt that these systems, including hot spots mapping, can be really predictive and useful.

Where will the new strategic framework come from? The relations between intervention and decision-making processes need to be better understood by researchers. The question is again linked to how to **create policy knowledge** and **access to policy-making** for researchers. It leads to a similar conclusion to the one reached by the other panels. Researchers will learn by carefully investing in case validation, and informing policy makers with their analyses.

Conclusion and policy recommendations

The workshop identified potential ways forward for addressing climate security from a research-policy perspective. Those recommendations question current response capacity, how to strengthen it and how to mainstream this response. The **lack of**

incentives amongst policy makers to use the available information and change policies will challenge this process.

1. **Leadership and high-level political will** are needed to ensure climate security becomes a cross-government issue. Leadership ensures coordination and generates incentives.

- Developing a sense of action. Policy makers should not think about what they could do in two years time, but about the consequences of today's action.
- Expressing values, objectives and strategic guidance.
- Discussions about responsibilities linking short-term action to long-term orientations are needed. If policy makers acknowledge the climate security challenge, their awareness will push them to use the information to act.

2. **Assessing the current capacity to respond to climate security**.

- Assessing current policies and good practices. Responses to climate security will be formulated simultaneously with gathering evidence from the ground. Knowledge about risks exists, and can be synthesised from tools and screening climate change projects.
- Understanding the impact of current policies over life support systems. Best practices in the delivery of overseas development and the effects of development-type interventions should be screened as a whole.
- Conducting pilot projects to test context-based forms of climate-compatible development.

3. **Creating practical knowledge for action**. A huge avenue for cooperation exists in investing in research and knowledge-sharing tools.

- Investing in theory-building and evidence identification.
- Governments need to make a significant review of the new IPCC chapter on Human Security. Researchers encourage policy makers to participate in the governmental review of the IPCC results.
- Providing access to decision-making and governance processes for research will confront capacity builders with knowledge brokers.
- Building more policy-research partnerships to avoid the long-standing problem of communication between policy makers and researchers. What policy makers want differs from what researchers know.
- Pooling lessons learnt and capacity building across institutions.

4. **Sharing the work with a cross-section of policy makers**.

- Identifying policies influenced by climate security. Policy makers can take inspiration from the research agenda of the workshop as a roadmap of issues.
- Targeting the relevant policy makers from diplomacy, development, environment and defence communities. Institutional reorganisation is needed within existing institutions to tackle climate security. This may increase coordination within and across institutions.
- Efforts from diplomacy and development should go into prevention and cooperation leading to a fair share of the burden.
- Potential roles for the military should not be strictly associated with weather-related disasters. They should be extended within the more robust framework of climate security.

- Improving coordination among institutions.
- Reforming funding should be associated with innovative ways to measure success.

Special recommendations for the defence sector

Potential roles for the military should not be strictly associated with weather-related disasters, but **extended** within the more robust framework of environment and security. Some of these fit squarely within the conventional mandates of these institutions, while others push them into new areas.

Military bodies, security analysts, foresight-focused actors and various branches of the IGO community will continue to endorse **prospective research studies**. These explore how strategic climate security trajectories might impact their role. Climate change alters the conditions for deploying and using equipment, people, structures, logistics and operations. The reform of defence will **review basic defence activities, planning, operations, equipment and the ecological footprint** in places where foreign action is being carried out.

National militaries, for example, may be instrumental in maintaining **energy supplies in strategic places**. Defence could take on a role for providing environmentally sustainable, geopolitically reliable and physically secured energy supplies.

The discussions also pointed out **insufficiencies in the current capacity to intervene in large-scale natural disasters**. Foreign assistance in emergencies suffers from a lack of coordination among actors. The armed forces have organisational, coordination and emergency capacities that could benefit the response. This opens avenues for a re-dimensioning of the capacity to respond to wider natural disasters. Critical infrastructure needs special attention in coastal and urban areas.

Steps forward

The security implications of climate change may not be of imminent concern in policy-making arenas. Some of them are already faced with additional stress and non-environmental risks. Yet, what matters now is how institutions view climate change and their **willingness to respond to the idea of climate change**. Food, water and energy markets will need to respond to more scarce resources caused or amplified by climate change patterns. Climate policies, if poorly implemented, could initiate vulnerabilities or accentuate various kinds of insecurities. Land use changes and forest management associated with REDD are just two examples of mitigation policies of this kind. Risk reduction infrastructure projects in the name of adaptation may severely impact livelihoods.

Policies can either make things worse – top-down policies to communities – or create a considerable **peace dividend** for human security – actions that seek to work with vulnerable people on adaptation, development and peace-building to facilitate locally appropriate responses. These will be guided by theories and evidence about climate change and security in particular places. Better theories will attempt to explain what happens and how insecurities caused by climate change emerge.

Theory building will affect policy-research cooperation to make research useful for policy-making. If policy makers want to avoid initiating pathways that result in conflict - such pathways being already initiated - and determine where to most effectively intervene, they need **knowledge brokers** to identify where to make changes and how to think about those changes.

To achieve this outcome, the workshop expressed concerns that researchers may be looking into the wrong questions. What do we want to know: how things get worse or what makes things better? We need to study **causes of peace** and increase our efforts to balance our understanding of vulnerability with that of people's capability to develop adaptive strategies that do work. In short, more **field research** is needed to find out about how climate change affects social outcomes. The chances of developing a major theory rapidly are slim, but in order to act quickly, both policy makers and researchers need to be comfortable with theories explaining climate security risks in a specific context. The challenge is to define and **prioritise** what risks and places are of concern.

A key final message from the workshop is to give greater attention to **power**. Because vulnerability is a function of power and discrimination, institutions can only appropriate and divert those processes. There is only little questioning that climate change leads to individual insecurity because of these underlying vulnerabilities. These are caused by denied access to political processes and markets, and limited freedoms and opportunities to make individual choices. It stresses why climate security should be of concern to development, diplomacy, humanitarian and defence policy makers. The climate security nexus is highly politically driven at both ends: the vulnerable people facing those changes and the institutions responsible for ensuring new policies emerge at the appropriate rate and level.