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International Dimensions of Climate Change

Report 2: The Implications of Climate Change for Global Governance and International Institutions

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Executive Summary

The transformation of the international system in the 21st century is dramatically altering the conditions for global governance. Rapid population growth, rapid climate change, further globalisation, greater global inequality, greater interdependence among state and non-state actors, significant demographic shifts, resource scarcity, a resurgence in extremist ideology and a relocation of the centre of global power from the Atlantic to the Pacific, are redrawing the geopolitical map.

This report, through an extensive literature review and consultations with academics and experts from the Ministry of Defence, Foreign and Commonwealth Office, NATO, as well as other think-tanks, considers how the implications of climate change for global governance and international institutions may affect international security out to 2050, and, in turn, what this could mean for the UK. The report is part of the Foresight 'International Dimensions of Climate Change' project which has been undertaken to augment the evidence base for the upcoming UK Government Climate Change Risk Assessment.

Putting Global Governance in Context

The international system has changed. Since the turn of the century, the continued relevance of global institutions to the maintenance of international security has been consistently challenged. While global governance structures continue to play a greater role than they ever have, state sovereignty and a lack of political will is likely to continue to inhibit the long-term development of global governance structures as a mechanism for maintaining international security.

Conflict prevention has become increasingly complicated. Contemporary threats to security are qualitatively different to 'traditional' Cold War threats. Insecurity is increasingly driven by a lack of state authority. At the same time, the emergence of an increasingly multi-polar world has meant conflict prevention efforts continue to be largely fragmented and controversial, weakening both the legitimacy and the capacity of global governance structures to address global challenges.

Nevertheless, *global governance structures remain important.* A reasonably stable system of global governance has remained intact since the end of the Second World War, and global governance structures will continue to be of paramount importance for the maintenance of international security.

Our Changing Climate

The *physical impacts* of climate change are complex and unpredictable, but will include higher global average temperatures, rising sea levels, and increasing scarcity of agricultural land and freshwater. The developing world is particularly vulnerable to these impacts.

The *socially-contingent* implications of climate change are even more uncertain. The complexity of security politics makes it vastly difficult to forecast how states will respond to environmental pressures. Cases will be dictated largely by the historical contexts in which such pressures are felt; these can be vastly different in different parts of the world.

We argue that *threats to international security are most likely to emerge where governance capacity at the state level is overstretched and unable to manage the physical impacts of climate change*. Where this occurs, civil unrest, inter-communal violence, mass migration, breakdown of trade, state failure, and international instability become increasingly probable. Global networks of trade and diplomacy, on which the security and prosperity of many states depend, are highly vulnerable to the type of disruption that localised conflict in certain parts (e.g. Middle East and South East Asia) of the world may cause.

Implications for Global Governance

The globalising of local issues. The localised impacts of climate change have the potential to impair the functioning of global networks of trade and diplomacy, and could result in demands for an international response which could involve military action. If global governance structures cannot meet demands for a multilateral response, powerful governments will look for other mechanisms to conduct preventative diplomacy and mediation in order to protect their interests.

The realignment of geopolitical interests. The potential for climate change to trigger widespread political and social upheaval is forcing states to recalculate the costs and benefits of specific relationships, partnerships and alliances in order to minimise the costs of climate change to their own interests. This 'geopolitical effect' could potentially exacerbate existing divisions in international institutions, or generate new ones, as states realign with one another according to their interests.

Sustaining legitimacy. The uneven distribution of climate change impacts along developed/developing world lines is likely to exacerbate divisions; a situation which, if unresolved, could fuel further discord between the developed and developing world. These divisions could reduce both state and public confidence in the capacity of global governance structures to facilitate trust-building measures on which so many international agreements rely.

Reduced capacity. The pressure on the resources of global governance structures is likely to increase as global temperatures increase, divisions are exacerbated and new geopolitical interests become entrenched. The danger is that this will incapacitate global governance structures at a time when they are increasingly likely to be needed to legitimise and facilitate interventions in failing states and regions.

Potential fragmentation. If state divisions over how to address the underlying causes and consequences of climate change cannot be overcome through UN negotiations, it is possible that the UN as an institution may be increasingly side-lined as states turn to more ad-hoc governance systems. Compared with the framework provided by the Bretton Woods institutions, such ad-hoc arrangements would likely contribute to a more fragmented and potentially less stable international system with multiple poles of authority.

Scenarios

Worst Case Scenario:

- Multilateral negotiations to prevent dangerous climate change collapse.
- Efforts to strengthen the adaptive capacity of the most vulnerable states are blocked.
- Global average temperatures rise by more than 2C over the coming decades.
- Localised impacts may trigger the political and economic collapse of a key pivot state.
- These localised events will be global in their impact as global networks of trade and diplomacy which sustain the security and prosperity of many states are increasingly disrupted.
- There will be higher demand for international intervention to stabilise affected areas and restore the smooth functioning of the international system.
- The capacity of global governance structures will be overstretched.
- Where global processes are too slow, those states worst affected by disruption to global supply chains are increasingly likely to pursue ad-hoc solutions which could trigger further disputes (including interstate conflict).

Most Likely Scenario:

- Multilateral negotiations to prevent dangerous climate change continue.
- Efforts to strengthen the adaptive capacity of the most vulnerable states continue, but the degree to which this occurs is dictated primarily by the economic resources and the pace of environmental change.
- Global average temperature rise is still likely to exceed 2C.
- Localised impacts could potentially trigger the political and economic collapse of already fragile states.
- These localised events will be global in their impact, however, shared interests make conflict over intervention unlikely.
- Attempts are made with some degree of success to establish and maintain frameworks through which to intervene and offer support to the worst affected countries.

- Where global governance structures are overstretched, there is likely to be greater reliance on regional organisations working in partnership with traditional global governance structures.

Implications for Specific Institutions

UN. The capacity of the UN to coordinate a global response to climate change has been restricted by fundamental divisions concerning how to address the underlying causes of climate change and manage potential impacts. For the UN to be utilised in response to the potentially devastating implications of climate change, a unified interpretation of climate change as a threat to security is needed.

EU. The geopolitical implications of climate change could potentially weaken the internal coherence of the EU as an institution, reducing its capacity to project soft power from a unified and coherent position. The picture is complicated by the likely uneven distribution of physical climate-related impacts across Europe. Such impacts will need to be managed carefully to avoid exacerbating divisions that could potentially undermine the stability of the Union.

At the same time, climate change presents the EU with an opportunity to expand its role in global governance. The success of such a project would largely depend on the ability of the EU to develop a coherent, long-term geo-strategy for engaging with the rest of the world; an area where the EU has not been strong in the past because of internal differences regarding security and foreign policy.

NATO. While the impacts of climate change are unlikely to weaken the internal cohesion of NATO directly, they will alter the geostrategic context in which the alliance operates and must pursue its political goals. This will force a reconsideration of NATO's strategic outlook. At present, some individual nations understand the security implications of climate change much more clearly than the rest. This could foreseeably lead to a great deal of frustration, problems securing funding and resources, and in the worst case lead to new alignments which break up the NATO alliance. The geopolitical interests of member states, which are likely to be impacted by climate change to at least some degree, will therefore be key for determining NATO's future role.

Implications for the UK

Climate change will pose a number of challenges to global governance structures and is already exerting a 'geopolitical effect' on the international system. The processes through which this occurs will have real impacts on UK foreign and security policy, although they are likely to be mediated to some extent by patterns of global governance.

Global networks are highly vulnerable. Global networks of trade and diplomacy operating beyond the full control of the UK government are highly

vulnerable to the types of disruption that climate change may cause. The UK, like many others, is heavily dependent on global governance structures such as the UN, NATO and the EU to maintain these global networks.

Ability to project soft power. The implications for the UK's ability to project soft power are likely to depend largely on the resilience of the global governance structures on which the UK depends. A relative decline of global governance structures through which the UK engages with the rest of the world, will contribute to a similar decline in the UK's influence over global affairs. The UK therefore has a significant stake in ensuring that global governance structures have the capacity and the legitimacy to intervene when and where needed.

Dependence on vulnerable states. The UK needs platforms that have both the legitimacy and the capacity to address transnational security issues as they emerge. However, there is a real danger that climate change will contribute to the weakening of these platforms (i.e. UN, EU, NATO, the Commonwealth, etc.). The UK will therefore need to be prepared to develop new ways of engaging with the international community. This is likely to require more direct engagement with the developing world in order to protect its interests from the potential instability that could result from climate change.

As the rapid transformation of global patterns of life dramatically alter the conditions for global governance it is difficult to predict the exact ways in which climate change will impact on international security. The implications of climate change for the UN, NATO and the EU reflect the broader impacts on global governance. Over the next 50 years, it is the globalising of localised impacts, rather than widespread physical environmental impacts, that is the most likely way that climate change will exert direct pressure on the international community.

Indirectly, the implications of climate change are most likely to be felt through the 'geopolitical effect' of climate change; whereby states manoeuvre for advantage on the basis of their expectations about how their interests will be affected. This shift in geopolitics is already occurring, exacerbating current tensions and weaknesses in the international system, undermining the legitimacy of key global governance structures, and making it increasingly difficult to mobilise the necessary coalitions needed for international intervention in the states and regions most vulnerable to climate change.

Significantly, both the physical and the socially contingent impacts of climate change are being felt around the world at a time when the UK needs to consider its position in global politics, the type of actor it wishes to be, and the partners it wishes to work with. While it is impossible to predict precisely how implications for global governance and international institutions will manifest, it is vital that we continue to develop our understanding of the array of possible futures that face us in order to encourage the development of a more resilient international system and to ensure that the UK is well placed to meet the challenges that are could emerge.

There is no causal link between climate change and a weakening of global governance structures. In responding to climate change, states have the opportunity to strengthen these structures through their responses, just as much as their responses could weaken them. The UK therefore has a clear interest in expanding its understanding of the implications of climate change for global governance, and should encourage other states to do same, to facilitate the development of a more resilient system of global governance.

1 Introduction

Based on the findings of IPCC (AR4 WGII), the UK National Security Strategy, the Stern Review, the US National Intelligence Council, and the UK Ministry of Defence's DCDC *Global Strategic Trends* report, we can expect that in the coming decades the world is likely to experience rapid population growth, rapid climate change, further globalisation, greater global inequality, greater interdependence among state and non-state actors, significant demographic shifts, resource scarcity, a resurgence in extremist ideology and a relocation of the centre of global power from the Atlantic to the Pacific (Stern, 2006; IPCC, 2007; NIC, 2008; Cabinet Office, 2009; DCDC, 2010). The transformation of global patterns of life is dramatically altering the conditions for global governance.

The nature and full degree of the security implications of climate change for the international community are still unmeasured and, to a large degree, not understood. The security sector traditionally finds it easier to assess the likely implications of nuclear proliferation than the potential consequences of an ice sheet collapsing in Antarctica, or the failure of the monsoon season in South East Asia (Personal interview conducted with an E3G researcher, 10/06/2010). This is because of the degree of probability involved in making assessments about how states may respond to potential aggressors. In contrast, the impacts of climate change will manifest in different combinations and in different ways in different parts of the world (IPPR, 2009). In most regions climate change is likely to have consequences that will impact upon local security problems and the dynamics of how those problems will emerge. This is forcing security sectors and governments to think practically and creatively as to what should be done to respond.

In this report, our focus is specifically on how the implications of climate change for global governance and international institutions may affect international security, and, in turn, what this could mean for the UK.¹ Our research is part of the Foresight 'International Dimensions of Climate Change' project which has been undertaken to augment the evidence base for the upcoming UK Government Climate Change Risk Assessment.

¹ Financial institutions, development organisations, etc. fall outside the scope of this report but will be explored elsewhere at a later date.

2 Methodology and Assumptions

2.1 Project Methodology

The research methodology for this report comprised the following:

- The project team conducted a literature review on structures and trends in global governance. Sources included academic literature on global governance theory, global environmental governance and climate change; grey literature from the UK Foreign and Commonwealth Office (FCO), the Ministry of Defence (MOD), relevant international institutions (the UN, EU, NATO), and NGO's responding to climate change including the Germany Advisory Council on Climate Change (WBGU), the Brookings Institution and E3G.
- Scenarios drawn from the IPCC AR4 WGII were used as a basis for projections about the long-term impacts of climate change on global governance and international institutions.
- Relevant information drawn from the above was supplemented with expert consultations with representatives from the FCO, MOD, NATO, academic institutions and other think-tanks.

2.2 Scope

In this report we look specifically at the implications of climate change for three global governance structures: the UN, NATO and the EU. Of these, the UN is the most 'global' as its membership includes 192 states. The EU and NATO are both regional institutions but qualify for our study because of their global influence, i.e. they contribute significantly to structured global governance. The UK is intimately connected with all three institutions; whatever the implications of climate change are for the UN, NATO and the EU, UK foreign and security policy will be affected.

2.2.1 The Centrality of States

There exists a multiplicity of global governance actors at all levels of society and the impacts of climate change on each are likely to be diffuse and diverse. However, the emphasis in this report is on international security, and as the dominant providers of security governance, states and state-centric institutions provide the primary focus of our analysis. Although we recognise the growing relevance of NGOs and other non-state actors as providers of security, it was not possible to discuss them in detail within the scope of our report.

2.2.2 Timeframe

The report looks at possible implications of climate change for global governance out to 2050. In an era of rapid change, it was highly unlikely that with the resources available, we would be able to make useful projections about the international system in 2100.

2.3 Assumptions

Global Governance In this report, global governance is defined as the 'structured' management of global processes in the absence of global government. Conceptualising global governance in this way distinguishes structured global governance from the global governance that inevitably emerges as a consequence from the patchwork of competing authorities at the international, national, local and even individual level.

Global Governance Structures Throughout this report we refer specifically to 'global governance structures'. This reflects our focus on international institutions and regimes as providers of structured global governance, rather than global governance as a naturally occurring patchwork of international, regional, national and local governance arrangements.

3 Analysis

3.1 Putting global governance in context

3.1.1 The international system has changed

The international system changed significantly after the Cold War. Bipolarity was no longer an impediment to a number of global institutions, as there was believed to be an opportunity for the UN and other global institutions to assume a more prominent role in the international system. This was demonstrated by the dramatic increase in the number of international peace-keeping operations in the early 1990s. For example, from 1945 to 1989, the UN initiated no more than 15 peacekeeping operations. In contrast, 18 missions were authorised between 1989 and 1994 alone (Brühl and Rittberger, 2001).

Nevertheless, since the turn of the century, there has been a propensity for states to act independently of a UN remit, i.e. unilaterally. As a result, the continued relevance of global institutions to the maintenance of international security has been consistently challenged, most recently with the US-led invasion of Iraq. Nor has the increase in peace-keeping operations necessarily translated into greater effectiveness in helping to halt or prevent armed conflicts. For example, the UN was extremely slow to stop the fighting in Bosnia, failed to produce a political settlement in Somalia, and did not prevent the genocide in Rwanda (Giddens, 2009).

At the same time, many developing states continue to show scepticism (if not hostility) to the operations of a number of global governance structures, primarily the Bretton Woods institutions. This is largely because they have been - and continue to be - perceived as conduits for Western states to pursue their own political and economic interests. While global governance structures continue to play a greater role than they ever have, state sovereignty and a lack of political will is likely to continue to inhibit the long-term development of global governance structures as a mechanism for maintaining international security.

3.1.2 Conflict prevention has become increasingly complicated

Contemporary threats to security are qualitatively different to what was seen during the Cold War. Insecurity is increasingly driven by a lack of state authority, the weakness of public representation, loss of confidence in the state to address public concerns, and the inability and/or unwillingness of the state and international institutions to regulate the processes of privatisation and informalisation that contribute to political and criminal violence (Held et al., 2010). Using conventional military forces to address these issues often results in a worsening of insecurity similar to that witnessed in Iraq, Afghanistan, Chechnya or Palestine. As some commentators observe, 'the danger of this growing security gap is only beginning to be grasped' (ibid.).

The role of global governance structures in conflict prevention has been further complicated by shifts in the global balance of power. At the United Nations, China and Russia have defended their allies, such as the Burmese and Sri Lankan government, against diplomatic interventions by the West. Concurrently, the US has marginalised UN mediation in the Middle East. Regional powers continue to defend their friends from international censure, for example in South Africa's opposition to European and American policies towards Zimbabwe, or Turkey's opposition to Israel's blockade of Gaza. In an increasingly multi-polar world, conflict prevention efforts continue to be largely fragmented, controversial and ineffectual. (Gowan and Jones, 2010).

Competing perspectives on the purposes of global governance continue to pose a significant challenge to multilateral cooperation (IPPR, 2009). These perspectives are typically characterised as 'zero-sum' and 'positive-sum'.² Most states operate a dual-track approach whereby a pragmatic balance between short-term and long-term interests is sought. However, the degree to which they adhere to each school of thought can vary substantially. For example, European states have tended to favour a rules-based system of global governance where some sovereignty is conceded to higher authorities. In contrast, postcolonial states - usually developing countries in the South - remain guarded about their sovereignty, fearing what they regard as the potential for Western neo-colonialism. The US, China and India have also been hesitant about the extent to which they allow the international system to encroach on their sovereignty, except perhaps where it has helped to entrench their superiority - as demonstrated by US commitment to the World Trade Organisation.

The future effectiveness of global governance structures therefore depends largely on the extent to which India, China and the US are prepared to participate in the development and expansion of multilateral institutions (IPPR, 2009). The continued lack of a common position among these key powers continues to weaken both the legitimacy and the capacity of global governance structures to address global challenges.

3.1.3 Global governance structures remain important

Despite these challenges, a reasonably stable system of global governance has remained intact since the end of the Second World War, and global governance structures will continue to be of paramount importance over the next 50 years. Most recently, the international response to the global financial crisis has highlighted the continued desire for multilateral responses and systems of global governance - spaces within a rules-based system where states can break free of zero-sum politics through confidence-building negotiations. Similarly, the UNFCCC summit in Copenhagen demonstrated that political will does exist among the international community to participate in multilateral negotiations at the UN, even though states are yet to commit to

² A zero-sum world is characterised by competition between states driven by the pursuit of power to guarantee security. In contrast, a positive-sum world is characterised by collaboration between states in order to achieve mutual prosperity and security.

a framework for action. Global governance structures are therefore clearly still important.

International security is increasingly dependent on the resilience of global governance structures; i.e. their capacity to facilitate global responses to the impacts of changing power dynamics, changing territorial boundaries, access to resources, the proliferation of non-state actors, failing states, and transnational threats, rather than their ability to counter threats through reactive measures (Kavalski, 2008). In the context of the rapid changes outlined above, the global governance structures that have emerged in the last sixty years are perhaps unsuited to the challenges ahead. The current international system is characterised by multilateralism within which unilateral actions have been relatively well contained (Personal interview conducted with an FCO adviser, 11/05/2010). However, it is uncertain whether this will be sustained. Developing and maintaining a resilient system of global governance to ensure continued stability will be a 'central theme' over the next 50 years of rapid change (DCDC, 2010).

While the limitations and weaknesses of current global governance structures may not be novel, the question that we address in this report is whether these structures can survive the additional pressures that are likely to result as the impacts of climate change are felt around the world. Whether this occurs, and the process through which it is achieved, will have real impacts on UK foreign and security policy (FCO, 2010).

3.2 Climate Change: An Overview

3.2.1 Physical Impacts

According to the findings of the latest IPCC report, the impacts of climate change are likely to be widespread, affecting all of Earth's continents and oceans. These observations led the IPCC to conclude that 'it is likely that anthropogenic warming has had a discernible influence on many physical and biological systems' (IPCC, 2007).

Briefly stated, projections of climate change over the next century point to the following:

- Global average temperature has increased by 0.8°C since the start of the 20th Century. By 2100, it is set to increase by 2-7°C depending on the extent of future greenhouse gas emissions and the development of mitigatory technology.
- Rising sea levels pose a significant threat to coastal populations and infrastructure.
- The combined effects of climate change and increased demand for food production are projected to alter the productivity and distribution of the world's main food-producing regions and accelerate soil degradation in previously fertile areas.
- Water scarcity is also set to increase in many places as a result of changing precipitation patterns. The number of people exposed to water

- In other areas, increased rainfall and greater frequency of monsoons will threaten agricultural production and trigger floods and landslides which could threaten both rural and urban populations (ibid.).

It is important to note that aggregate estimates of costs in the IPCC report mask the significant differences in impacts across sectors, regions, countries and populations. In areas of high sensitivity and low capacity (i.e. the developing world), the net impacts of climate change will be significantly larger than the global aggregate (ibid.).

3.2.2 Socially contingent impacts

The physical impacts of climate change are complex and unpredictable. When considering the social and political implications of climate change, the degree of uncertainty increases further. How humans and human systems respond is socially contingent, and affected as much by perceptions about what is likely to happen, as by what actually happens. Divergent perspectives on who or what is driving climate change, vulnerable to climate change, the projected distribution of physical impacts, and whether anyone has the power to do anything about it, have made it increasingly difficult for a consensus to be reached on how best to respond. Significantly, while there is continued uncertainty about the extent to which the physical impacts of climate change are being felt, socially contingent impacts are already affecting political, economic and social systems, and at least in the short-term, are posing much greater challenges to structured global governance and international security than the physical impacts of climate change (FCO, 2010; Haldén, 2007).

Precisely how these destabilising pressures become manifest, and the timeframes within which this might occur, is difficult to predict as they may be moderated by efforts to adapt or mitigate the worst physical impacts of climate change, or accelerated by so-called 'tipping points' in the climate system. Moreover, as we identified earlier the world is also set to experience rapid population growth, further globalisation, greater global inequality, greater interdependence among state and non-state actors, significant demographic shifts, resource scarcity, resurgence in extremist ideology and the relocation of the centre of global power from the Atlantic to the Pacific.

The interaction of all these different dynamics further complicates our understanding of what the implications of climate change might be for global governance and international institutions. The 'interactive, dynamic and non-linear nature' of security politics makes it vastly difficult to forecast how states will respond to these pressures (ibid.). However, we believe the case study in Box 1 below provides a template for the way in which conflict might be related to climate change. We should stress that the evidence to support the findings of this particular case continues to be debated. Individual cases will be dictated largely by the historical contexts in which such pressures are felt; these can be vastly different in different parts of the world. Being able to

project what form security relations will have both regionally and globally over the next 50 years is challenging even without major destabilising trends such as climate change.

Box 1

The case of Darfur

Weak states have limited capacity for governance, and many are unlikely to adapt to the environmental challenges of climate change. Weak states are likely to have youthful populations, large families and be dependent on rural production for their income. Extreme weather events and increasing temperature will exacerbate instability due to immediate shortages of food and water. Longer-term effects may include a degradation of agricultural land that increases internal and regional migration. Weak states will be insufficiently prosperous to procure alternative supplies through external markets. In addition, they often have poor human rights records and suffer endemic corruption which weakens governance and service provision, increasing the likelihood of recurring instability. As the severity and incidence of internal instability increases, exacerbated by climate change, long-term societal changes can occur, such as the creation of large numbers of orphaned children or the displacement of large ethnic or tribal groups.

Conflict in Darfur provides an example of how climate change may affect weak states. Prior to conflict, tensions were driven by drought. Although conflict began as a regional rebellion, the underlying cause was probably desertification, with a drop in rainfall of between 16% and 30% shifting the desert boundary 60 miles over 40 years. This desertification probably limited the ability of local eco-systems to support agriculture, resulting in tension and ultimately conflict between rival groups. The Sudanese government lacked the necessary infrastructure and resources to respond to the crisis. The initial regional uprising was suppressed through the recruitment of Arab militias, the Janjaweed, which waged a campaign of ethnic cleansing against Africans, resulting in around 500,000 deaths and 2 million environmental refugees.

Source: Reproduced from DCDC (2010) with permission.

The type of conflict illustrated in Box 1 demonstrates how climate change may contribute to local conflict. While this conflict may be localised geographically, one can see how similar conflicts, particularly in the Middle East and South East Asia through which many global networks operate, could have global implications.

It stems from this logic that threats to international security are therefore most likely to emerge where governance capacity at the state level is overstretched and unable to manage the physical impacts of climate change. Where this occurs, civil unrest, inter-communal violence, mass migration, breakdown of trade, state failure, and international instability become increasingly probable (CNA, 2007; Haldén, 2007; Abbot, 2008; Fetzek, 2009). Global networks, operating outside the control of any one state are highly vulnerable to the type of disruption that localised conflict in certain parts of the world may cause. Where climate change increases the pressure on local populations, disrupting trade and access to resources on which the rest of the world rely, localised impacts become a point of global concern. Without sufficient measures to

curb global climate change, potential social destabilisation and emerging conflict constellations will impact not only on individual countries or sub-regions, but will also affect the international community as a whole.

3.3 Implications for Global Governance Structures

3.3.1 The globalising of local issues

As we explained in the previous section, the localised impacts of climate change could potentially have implications that will significantly impair the functioning of global networks on which most states now depend for their prosperity and security. Any subsequent breakdown of the global chains on which the prosperity and security of many states relies is likely to result in demands for an international response which could include military action.

The worst case scenario would be the collapse of a 'pivot' state; 'a state whose regional importance is of such magnitude that changes in it will have reverberations across the region' (Haldén, 2007). To conceptualise a state as 'pivotal' is to say that a state may have stabilising and/or growth promoting effects in their region when they are strong, but when weak may destabilise and reduce economic growth in the region. The situation is further complicated because 'international intervention with the intention of remedying the situation in a large, populous and (formerly) resource-rich country is immensely more difficult than intervening in small and relatively resource-poor countries' (ibid.). Examples could potentially include Egypt, Nigeria, Kenya and South Africa. The collapse of one of these states would have huge ramifications for security both regionally and globally. The relationship between India and Pakistan could also be classed as 'pivotal' given the regional impacts of any change to their relations (ibid.).

We would expect global governance structures to coordinate the international response if a crisis cannot be solved locally. However, if global governance structures cannot meet demands for a multilateral response, or if intervention is complicated by domestic dynamics in the manner outlined above, powerful governments will look to other, more amenable mechanisms to protect their interests (Gowan and Jones, 2010). Equally, such alternative mechanisms may emerge if climate-related security events happen with increasing intensity and frequency, or in tandem with other security crises, and in the process overwhelm the capacity of global structures to respond.

In the past, in the absence of effective action through global governance structures, states have often opted for unilateral action or ad-hoc coalitions to protect their immediate interests (Haldén, 2007). Such action can further weaken the legitimacy of global governance structures as happened when the UN was by-passed by the US-led coalition which invaded Iraq. In the contemporary international system, such isolated acts have challenged but not endangered the multilateral system (Personal interview conducted with an FCO adviser, 11/05/2010). However, if such actions become more frequent – and in the context of climate change we have shown that this is a distinct

possibility – it is uncertain whether the current system of global governance will survive.

3.3.2 The realignment of geopolitical interests

The predominant drivers of recent geopolitical change in the international system over the last two decades have been the economic development of the so-called BASIC group (Brazil, South Africa, India and China), wider processes of economic globalisation and growing interdependence in the face of transnational threats. With the expansion of the G8 and proposals to reform the UN Security Council, it is increasingly apparent that a multipolar international system is emerging, where different sources of authority will be brought into increasing competition with one another.

More recently, it has become clear that climate change is a key geopolitical issue because of its potentially widespread impacts on access to, and the availability of, resources and habitable land, global infrastructure, energy security, economic growth and development, and political and social stability. Climate change is contributing to an 'unfamiliar geopolitical environment' and its potential to trigger widespread political and social upheaval is introducing new interests into the geopolitical calculations of states (IPPR, 2009). The changing climate is part of a 'sustained and pervasive attack on the status quo' with seemingly localised environmental impacts having implications for global transportation, international law, borders, food supply, stability of infrastructure, access to resources and the ability of states and other organisations to project power and maintain economic stability (Paskal, 2010).

This 'geopolitical effect' of climate change is already being felt in tandem with other potentially destabilising shifts in demography and resource availability. This is despite the fact that projections of physical change may not yet be manifest. For example, the recent UNFCCC summit in Copenhagen demonstrated a realignment of the geopolitical order as the BASIC group converged on a common position which was able to block EU-led proposals for binding GHG emission cuts. The 'geopolitical effect' is being felt in other ways as well, for example, the on-going conflict over Kashmir between India and Pakistan is being exacerbated by concerns about the future security of Pakistan's water supplies (Overdorf, 2009). Growing demands for renewable energy and clean technology, being developed to mitigate climate change, is also likely to contribute to the re-drawing of geostrategic interests as states compete for rare resources.

As states continue to shift their strategic stances in response to projections of climate change, they will have different objectives and demands in relation to global governance structures. States are being forced to recalculate the costs and benefits of specific relationships, partnerships and alliances in order to reposition themselves geopolitically to minimise the costs of climate change to their own interests, whether they are self-serving or otherwise. This will intensify primarily as the economic implications are recognised as increasingly severe, but moral pressure to act in the worst affected areas could also contribute to some form of action.

Having the power to shape or resist global climate policy has therefore become crucially important for the pursuit of national interests. This was amply demonstrated in Copenhagen where the final outcome was ultimately determined by the power of the BASIC group to block proposals for significant cuts to greenhouse gas emissions. The EU and those states most vulnerable to the physical impacts of climate change were the biggest losers at the summit because of their limited ability to shape the outcome of negotiations.

It is in this rapidly changing context that global governance structures are likely to be used by key states to determine which economies are allowed to develop, how and at what pace. These decisions will have ramifications for social and political stability around the world. At present, for many states the geopolitical costs of committing to emissions cuts continue to be perceived as outweighing the costs of doing nothing, and until the advanced developing countries are engaged as equal strategic partners with a clear influence over the direction of global climate policy, it is unlikely that a global agreement will be reached.

3.3.3 Sustaining legitimacy

The more time that passes without an effective response to climate change, the greater the impacts will be, and, with the globalising of local impacts, the more severe the implications for global governance and international security. A study conducted by the Brookings Institution reports that key global governance structures have failed to adapt to the growing power and influence of advanced developing nations. In particular, the global response to climate change has highlighted the way in which a number of developing states and communities continue to be excluded from decisions that directly affect their security (MGI, 2010). As we noted earlier, key global governance structures are often viewed sceptically by developing countries because Western interests remain embedded in the articles and statutes of leading international institutions such as the UN, the IMF and the World Bank (Held, 2010; Saxer, 2010). For example, on the boards of the IMF and the World Bank, Belgium and the Netherlands continue to wield more votes than China, yet such institutions (see also the WTO and G20) are likely to provide some degree of leadership in implementing global policy (Rybinski, 2009).

Whether the illegitimacy of such structures is real or perceived, it saps them of the political will needed to maximise their effectiveness. Because of the uneven distribution of climate change impacts along developed/developing world lines, these divisions are likely to be exacerbated; a situation which, if unresolved, could fuel further discord between the developed and developing world (Muldoon, 2004). The dynamics of recent climate change negotiations pursued through the UNFCCC echoed this discontent (Personal interview conducted with Cleo Paskal, 11/05/2010).

The danger is that these divisions will reduce both state and public confidence in the capacity of global governance structures to facilitate trust-building measures on which so many international agreements rely. Moreover, these

disputes over how to address the underlying causes of climate change could easily spill-over into other areas of concern making it increasingly difficult for states to forge an effective global strategy for maintaining international security. Such disputes are reflective of feelings among advanced developing states that they are often ignored at the 'top table' of security discussions and find that the current global governance system is weighted too heavily against them. Climate change negotiations provide an opportunity for these countries to openly challenge the West because it is still widely regarded as a 'soft' issue.

As we discussed earlier, in the absence of effective global governance structures through which to operate, states have increasingly opted to use unilateral action or ad-hoc coalitions to protect their immediate interests (Haldén, 2007). Such action can further weaken the legitimacy of global governance structures as happened when the UN was by-passed by the US-led coalition which invaded Iraq. In the contemporary international system, such isolated acts have challenged but not endangered the multilateral system (Personal interview conducted with an FCO adviser, 11/05/2010). However, if such actions become more frequent – and in the context of climate change we have shown that this is a distinct possibility – it is uncertain whether states will continue to pursue their security interests by participating in structured global governance.

3.3.4 Reduced capacity

At the global level, there exists no 'broader, more comprehensive concept of collective security on which the prevention of the worst global risks relies' (Evans et al., 2010). Current global governance structures largely reflect an international system built to regulate the behaviour of 'rational' states in order to prevent outbreaks of interstate war, rather than support governments whose resources to govern have become overstretched leading to a loss of confidence in the state and potential political, social and economic breakdown. Like many other transnational challenges, climate change cannot be addressed at the national level so international security increasingly depends on the capacity of global governance structures to provide the mechanisms through which states can meet transnational threats.

As long as global governance structures continue to operate within the traditional boundaries of security policy as they were designed, they will lack the functional capacity to enable international cooperation to deliver the mitigatory and adaptive strategies required to prevent the further deterioration of state and non-state relations in the international system. This growing 'operational gap' means that global governance structures are struggling to adapt their operations to the growing list of dangerous externalities which can no longer be managed nor contained within international borders (Muldoon, 2004). Yet as we have already shown the impacts of climate change are more likely to trigger a breakdown of law and order - threats to security are likely to stem from the overstressing or collapse of the governance capacity of states - rather than because states are aggressively pursuing territory and resources. Where we see a globalising of local conflicts, international

intervention and strategies of conflict prevention are likely to be essential for preventing the breakdown of global chains on which so many states depend.

If global governance structures lack the capacity to initiate this type of intervention, then it is increasingly likely that states will continue opting to take unilateral action, or form coalitions of the willing, in order to secure their interests. The legitimacy of such action may prove highly questionable as it would lack the mandate that a multilateral institution such as the UN has for extraterritorial intervention to maintain international security. Whether such intervention takes the form of unilateral or regional action, or is supported globally, will have important implications for the legitimacy of action, likely success, and potential spillover locally and internationally. A lack of institutional constraints may stoke further tensions if states clash over these issues (for example, China's support for North Korea at least partly stems from concerns about the potential for a massive refugee crisis along the China/North Korea border if there is a conflict).

The pressure on global governance structures is likely to increase as global temperatures increase, divisions are exacerbated and new geopolitical interests become entrenched (e.g. because of commitments made by governments to domestic populations). In the aftermath of the Copenhagen Summit it was clear that distributional conflicts (relating to the worst polluters and the worst affected) heavily linked to geopolitical interests (primarily national economic interests exacerbated by the recent global financial crisis), continue to inflame divisions and rivalries at the highest levels of negotiation. As we have already noted, the danger is that this will incapacitate global governance structures at a time when they are increasingly likely to be needed to legitimise and facilitate interventions in failing states and regions, the likelihood of which increases dramatically if the underlying causes of climate change cannot be addressed.

The collapse of global governance structures could exacerbate tensions between and within countries, undermine cooperation and generate further insecurity as countries and communities focus on protecting themselves from the impacts of climate change, potentially at the expense of others (Mabey and Silverthorne, 2010). Worryingly, as WBGU (2007) have already warned, 'it is almost inconceivable that a structured system of global governance could emerge with the capacity to respond effectively to the emerging global dynamics of conflict and instability'.

3.3.5 Potential fragmentation

The introduction of climate change into geopolitical calculations demonstrates new divisions as well as new alignments of interests in the international system. North-South divisions have traditionally dominated climate negotiations. These divisions are typically characterised by an on-going debate about 'common but differentiated responsibilities'; the transfer of technology, finance for adaptation, and management of intellectual property rights (Deere-Birkbeck, 2009). Developing countries in particular have a tendency to regard any cost to them as a result of the West refusing to pay for

the damage that it has caused to the Earth's climate system (Personal interview conducted with Cleo Paskal, 11/05/2010). However, as the implications of climate change continue to contribute toward a reorientation of geopolitical goals, a third division of interests has become increasingly apparent between a number of advanced developing states (China, Brazil, South Africa, India, Indonesia, etc.) and the rest of the developing world. These divisions are likely to be exacerbated as the impacts of climate change are increasingly felt. Against this backdrop, climate change is likely to further overstretch an already insufficient system of global governance.

Under the enormous pressure of climate change, global governance structures will have great difficulty managing the full range of adverse consequences discussed earlier. While the implications of new international alignments driven by climate change remain uncertain, the inherently divisive nature of climate change – because of the way geophysical and economic impacts are distributed – means that forging collective responses will be immensely difficult (Campbell and Weitz, 2008).

If state divisions over how to address the underlying causes and consequences of climate change cannot be overcome through UN negotiations, it is possible that the UN as an institution may be increasingly side-lined as states turn to more ad-hoc governance systems. Compared with the framework provided by the UN, such ad-hoc arrangements would likely contribute to a more fragmented and potentially less stable international system with multiple poles of authority (Forman and Segaar, no year given).

Greater regionalisation does have a number of advantages. For example, member states in regional structures are more likely to hold a shared cultural affinity and valuable local knowledge. They may be able to initiate a faster response to crises, and are also more likely to have a vested interest in maintaining security along their borders. However, while there is evidence that ad-hoc international grouping have been increasingly important for maintaining security, such a system also houses potential sources of conflict. In the developing world, there are often serious constraints on resources and institutional capacity which could potentially lead to an uneven patchwork of security arrangements around the world. It would also be necessary to clearly define the roles of such regional arrangements, as distinct from the UN Security Council.

We are therefore 'currently living in limbo' where neither the UN nor the regional organisations are totally capable of providing security, leaving several conflict situations unattended, a situation that will only worsen as climate change increases the risk of new conflict constellations and the destabilisation of both states and entire regions (WBGU, 2007; Tavares, 2010).

3.4 Scenarios

The idea that climate change negotiations are used as a way of newly powerful developing world countries to test out how far they can push for change or bypass international institutions could be short term, whereas those

stresses caused by climate change enhanced collapse of failed states, pressure on resources etc., may manifest only in the longer term as conditions become more extreme.

In order to clarify the implications of climate change for global governance and international institutions we have included two possible scenarios for the international system. We anticipate that, as the pressure from climate change grows, the implications for global governance structures will become more severe. Here we offer a worst case scenario and a most likely scenario. These scenarios were developed through our consultations with experts.

3.4.1 Worst case scenario

In a worst case scenario, multilateral negotiations to prevent dangerous climate change collapse because geopolitical posturing prevents the international community from agreeing to and implementing an agreement to mitigate climate change. Efforts to strengthen the adaptive capacity of the most vulnerable states are blocked by disputes over who should provide the finance for the necessary technology and knowledge transfers.

Meanwhile, global average temperatures rise by more than 2°C over the coming decades, with severe consequences for the Middle East and South East Asia in particular. Localised impacts include flooding, damage to infrastructure, water scarcity and desertification and agricultural decline, potentially causing the political and economic collapse of a key pivot state. These localised events will be global in their impact as global networks of trade and diplomacy which sustain the security and prosperity of many states are disrupted, increasing demand for international intervention to stabilise affected areas and restore the smooth functioning of the international system.

Under these conditions, the capacity of global governance structures will be overstretched by the need to address conflicts in multiple stress zones. Where global processes are too slow, those states worst affected by disruption to global supply chains are increasingly likely to pursue ad-hoc solutions, outside the legal framework offered by structures such as the UN. A lack of institutional constraints could trigger further disputes between different states over strategies of intervention and any potential spill-over into neighbouring states that may impact on other interests. As part of a worst case scenario this could foreseeably lead to interstate conflict as states take action to protect vital interests.

3.4.2 Most likely scenario

The most likely scenario is that multilateral negotiations to prevent dangerous climate change continue, however, it is difficult to see how much progress can be made until the economic consequences of failing to act become more severe. Efforts to strengthen the adaptive capacity of the most vulnerable states continue, but the degree to which this occurs is dictated primarily by the economic resources available (which are likely to be constrained in the near

term as the world recovers from the recent financial crisis) and the pace of environmental change.

At the same time, global average temperature rise is still likely to exceed 2°C, with severe consequences for the Middle East and South East Asia in particular. Localised impacts include flooding, damage to infrastructure, water scarcity and desertification and agricultural decline, potentially causing the political and economic collapse of already fragile states. These localised events will be global in their impact as the global chains which sustain the security and prosperity of many states are disrupted increasing demand for international intervention to stabilise affected areas and restore the smooth functioning of the international system.

However, shared interests in restoring these global chains make conflict over intervention unlikely. Attempts are made with some degree of success to establish and maintain frameworks through which to intervene and offer support to the worst affected countries. In an increasingly multipolar world this is likely to mean that the West will have to show greater trust in the developing world to protect their interests, in order that they themselves do not have to intervene. Where there is resistance to a certain course of action, it is unlikely that it will lead to violent conflict between states due to interdependence.

Where global governance structures are overstretched, there is likely to be greater reliance on regional organisations working in partnership with traditional global governance structures – this has already occurred to some extent but often it is unclear with whom primary responsibility for regional security lies. There should however be significant impetus to overcome this.

Ultimately, the uncertainty surrounding climate change and its impacts means that there are likely to be mistakes and course corrections as a result of governments not understanding the full-scale of the challenges they face (Evans et al., 2010).

3.5 Implications for Specific Institutions

As climate change intensifies, a critical test of global governance structures will be how well they adapt to meet increasingly complex risk parameters (social, economic, political and environmental) (Deere-Birkbeck, 2009). It is impossible to predict exactly what will happen to international institutions in the long-term. However, it is almost certain such structures will be affected by the growing significance of climate change as geopolitical issue and the economic and security ramifications of any response.

Climate change amplifies the likelihood of strategic incoherence within these institutions and, as we have already suggested, this may threaten their legitimacy and effectiveness as security actors (Personal interview conducted with an FCO adviser, 11/05/2010). The development of robust indicators and

early warning systems will be essential if existing global governance structures are to have the capacity to deal with the impacts of climate change (Personal interview with a representative from the MOD, 10/05/2010).

In the context of the broader implications of climate change for global governance and international institutions, we now look specifically at how the UN, NATO and EU could be affected. As we have already noted, the UK is intimately connected with all three institutions; whatever the implications of climate change are for the UN, NATO and the EU, UK foreign and security policy is bound to be affected.

3.5.1 Implications for the UN

The UN Security Council is at the heart of global security governance, possessing both the authority and the mandate to deliver security by virtue of its universal membership and the legal framework outlined in the UN Charter. However, the capacity of the UN as a whole to coordinate a global response to climate change has been restricted by fundamental divisions concerning how to address the underlying causes of climate change and manage the potential impacts.

The UN is faced with a number of inherent weaknesses. In the absence of reform, the UN continues to be seen as an instrument of the West. This image is not helped by the dependence of the UN system on the West for funding and resources, and the West's dominance in the Security Council – the capacity of all states to participate in the UN system is uneven as is their capacity to benefit from such a system. A further weakness is that recognition of transnational threats is not widespread, not because of inherent resistance to conceptualising issues such as climate change as threats to security, but because of a lack of exposure. Some states, particularly in the developing world, simply lack the capacity to engage in debates about transnational security and this in turn constrains what can be achieved through the UN (Personal interview conducted with an FCO adviser, 11/05/2010).

Even so, the fact that the UK was able to table an open debate about the security implications of climate change is indicative of the fact that institutions and mechanisms already exist within the UN which could be utilised in response to the potentially devastating implications of climate change. For example, through the creation of the UNFCCC in 1992, the UN has the capacity to engage states in negotiations to produce a legally-binding agreement to reduce GHG emissions and provide for the transfer of finance and technology to developing countries that desperately need to increase their resilience to climate change. On the basis of Chapter 7 of the UN Charter, the UNSC also possesses sufficient authority to compel states to address the underlying causes and consequences of climate change in order to maintain international security and possesses the coercive tools to back this up (Penny, 2007; WBGU, 2007). However, for such action to be taken, a unified interpretation of climate change as a threat to security would be needed, and as we have already shown, this is clearly absent. Without the political will to use the UN in this way, it is highly unlikely that we will see a

global deal whereby sanctions are placed on states that refuse to pursue emissions reductions.

The problem is exacerbated because climate change has come to occupy such a significant space in the geopolitical considerations of states and in turn has inhibited the capacity of the UN to overcome diverging interests. Climate change is a particularly contentious issue because any agreement to address climate change or finance adaptation efforts inevitably creates costs and benefits that impact on national interests. States maintain a keen interest in controlling the distribution of these costs and benefits and are able to use climate change negotiations to manoeuvre for political and economic advantage, as was amply demonstrated at the recent UNFCCC summit in Copenhagen (Purvis and Stevenson, 2010). While states continue to believe that action to mitigate climate change is essentially 'zero-sum', it is unlikely that an agreement will be reached through UN negotiations where consensus is paramount.

Competing geopolitical interests, increasingly shaped by climate change, are therefore weakening the political will of states to negotiate an agreement to mitigate GHG emissions. At the same time, the increasing urgency with which climate change must be addressed is placing a significant amount of pressure on the UN system to facilitate negotiations and ensure the international system is resilient to both the physical and socially contingent impacts of climate change – including being able to intervene where and when necessary to maintain international security. As Weiss et al. (2010) report, 'time is running out for the UN to position itself effectively to manage emerging issues in the midst of dramatically changing world politics'.

Fundamental disagreements over the legitimacy of the UN, responsibilities and short-term national interests continue to derail negotiations aimed at achieving a binding international agreement, weakening global confidence in the international system. More worryingly, there are knock-on consequences for the UN's capacity to maintain international security. As we pointed out earlier, one of the most salient effects of climate change is the potential destabilisation of states or even entire regions which may in turn demand some form of multilateral intervention. However, if the legitimacy of the UN has been damaged or if action is blocked because of conflict over how to address climate change, it may be difficult to mobilise the necessary coalitions needed for international intervention, or even secure UN support for such action (Haldén, 2007). There is essentially a requirement for all states to deepen and broaden their understanding of security before the UN can be used to initiate preventative action to really address climate change (Personal interview conducted with a representative from MOD, 10/05/2010).

3.5.2 European Union

The EU as an institution has been far more receptive to the broadening of the security agenda to address non-traditional, transnational threats to international stability. Two years ago, in an attempt to re-orientate the EU's security goals, Javier Solana, the former High Representative for Common Foreign and Security Policy of the European Union, called for climate change

to be mainstreamed throughout EU foreign and security policy (Solana, 2008). His argument is part of a wider security culture that has emerged in Europe, largely since the end of the Cold War, which in contrast to the US, for example, is more interested in conflict prevention and crisis management, than taking reactive measures using military force. The EU, along with NATO, is already preparing for a world where more interventions may be required to maintain international security. This has helped characterise the potential of the EU to respond to climate-related threats.

The growing geopolitical significance of climate change has had a noticeable impact on the relationship between the EU and the rest of the world, as well as among member states. The EU positioned itself as a global leader in climate change policy, and adopted a central role at UNFCCC negotiations to agree a deal which would mitigate dangerous climate change and transfer finance and technology to the states most vulnerable to climate change. According to Solana, the EU is in a 'unique position' to respond to the impacts of climate change on international security partly because of this leading role in global climate change policy (Solana, 2007). However, it has also meant that the EU's reputation at the global level has increasingly come to depend on its ability to influence the global response to climate change (Evans et al., 2010).

In the aftermath of the UNFCCC summit in Copenhagen, the EU's ability to project soft power has been questioned, as has its capacity to play a more active role in global governance. The EU has also been weakened by the recent global financial crisis, although it remains the largest single market in the world. However, the EU's influence has been consistently blocked by the veto power of the US and China (the world's two largest emitters, without whose support mitigation efforts will fail). At Copenhagen, the overriding geopolitical concerns of the US, China and the rest of the BASIC group, sidelined EU attempts to commit states to a binding agreement to reduce GHG emissions and provide for finance and technology transfer. The future direction of the EU in global affairs is now increasingly uncertain, although as the world's largest single market it is likely to remain an important player in an increasingly multipolar world.

More worryingly for the EU is the potential threat that the geopolitical implications of climate change carries for the internal coherence of the EU as an institution. There are significant divisions between the political and economic priorities of Western and Eastern European states; for example, Eastern Europe continues to rely far more heavily on coal, gas, and CO₂ generating manufacturing than the West and the economic burden of meeting emissions targets and developing renewable energy has been deemed too high in countries such as the Czech Republic, Hungary and Poland. This reduces the capacity of the EU project soft power from a unified and coherent position. The picture is complicated by the likely uneven distribution of physical climate-related impacts across Europe. According to the IPCC, the sensitivity of EU states to climate change varies considerably with the South being particularly vulnerable to the worst physical impacts (IPCC, 2007). Such impacts will need to be managed carefully to avoid exacerbating divisions that

could potentially undermine the stability of the Union.

Further divisions exist over how much each member state should contribute to a climate change fund to aid developing countries (Smith and Lennon, 2008). These divisions which threaten the EU's capacity to lead at the global level further reflect the way states continue to seek national advantage amidst the complex negotiations to address climate change; such are the geopolitical ramifications of any binding agreement (a reflection of the dual-track approach discussed earlier). As costs, burdens and insecurity increases, these divisions are increasingly likely to deepen (unless they can be shared), threatening the internal coherence of the EU, with knock on consequences for its ability to project its influence into parts of the world where there are interests to defend.

However, climate change may also present the EU with an opportunity to expand its role in global governance. The success of such a project would largely depend on the ability of the EU to develop a coherent, long-term geo-strategy for engaging with the rest of the world; an area where the EU has not been strong in the past because of internal differences regarding security and foreign policy (Personal interview conducted with an FCO adviser, 11/05/2010). If the EU were to develop a shared vision of security spanning across its 27 member states, it could occupy a dual role as both a political and a security actor. This would allow it to work towards addressing both dimensions of the climate change challenge, i.e. the immediate impacts and the underlying causes.

If the US continues to retreat from Europe as an area of strategic concern, the subsequent weakening of NATO (discussed below) would force the EU to take more strident steps towards becoming a security actor in its own right, for example, by building up the capacity of the new European External Action Service and bolstering its defence capabilities. The EU states collectively allocate less than 1.7% of their GDP on defence, less than the world average of 2.4% and US 4.5%, and despite 2 million personnel in their armed forces, the EU can barely deploy and sustain more than 100,000 soldiers abroad (Kern, 2010). Little progress has been made in developing a unified EU force partly because NATO still occupies a key role in European defence. However it is also because EU member states have been unable to articulate a clear and coherent European strategic interest that is realistic in scope and enjoys the support of all member states. The debate over the future of European defence has been hamstrung by national rivalries and mutual distrust, especially between Britain, France and Germany, the three biggest military powers in Europe (ibid.)

The erosion of European military capacity in recent decades will make it increasingly difficult for the EU to defend its interests collectively, without US support. Consequently, where climate change has localised impacts that threaten EU interests, the EU will be increasingly dependent on the rest of the world (particularly the US and NATO) to help protect those interests.

3.5.3 NATO

Since the end of the Cold War, the relative absence of state-led threats and increasing security interdependence globally have brought into question the relevance of a military alliance built to maintain security among an exclusive group of states. However, in response to a rapidly changing strategic environment, NATO Secretary-General, Anders Fogh Rasmussen, has led calls for NATO to play a significant role in the global response to climate change (Rasmussen, 2009).

It is unlikely that NATO will be involved in any political, economic and social responses to climate change; such action is more likely to be negotiated through other international bodies where NATO, as a military alliance, has no voice. Yet NATO could be important in other ways. Despite being a regional alliance, NATO's influence stretches around the world and Rasmussen therefore argues that NATO could serve as an important strategic hub for international dialogue about the potential security implications of climate change. As an organisation, NATO has already shown that it can rapidly respond to changing geopolitical circumstances as indicated by the speed at which climate change has been introduced into its security discourse (although it is yet to be fully articulated) (Personal interview conducted with an FCO adviser, 11/05/2010). Furthermore, as a reactionary force, NATO is ideally positioned to take on the role of 'first responder' in emerging conflict zones (ibid.).

Whether there is sufficient political will to use NATO in this way is likely to depend on the shifting interests of states in a changing geopolitical environment. While the impacts of climate change are unlikely to weaken the internal cohesion of NATO directly, they will alter the geostrategic context in which the alliance operates and must pursue its political goals. This will force a reconsideration of NATO's strategic outlook; a fact most recently recognised in the Group of Experts report which suggested that NATO could be called upon to help cope with the security consequences of climate change (NATO, 2010). The present challenge is that some individual nations understand the security implications of climate change much more clearly than the rest and this could foreseeably lead to a great deal of frustration, problems securing funding and resources, and in the worst case lead to new alignments which break up the NATO alliance.

If states are increasingly prepared to embrace a doctrine of preventative security within the UN, it seems probable that NATO will continue to occupy a supporting role to provide additional resources to UN-led security responses. NATO-led peacekeeping and state-building interventions could relieve some of the pressure on the resources of the UN. Alternatively, if the UN system weakens further, and the international system sees greater fragmentation, NATO could come to occupy a far more central role. The US and EU are almost certainly going to be on the same side of any geopolitical divide that is likely to emerge as a result of climate change and in the absence of a global

security response to climate change, regional alliances in general will become increasingly important for facilitating state responses to the potentially destabilising effects of climate change.

In either case, NATO will continue to operate primarily in defence of its members and as long as demand exists for the alliance, it is unlikely that climate change will undermine its mandate. Climate change is not a game-changer for NATO (Personal interview conducted with a representative from NATO, 8/07/2010). The types of responses for which NATO will be called upon are unlikely to alter. Instead the challenge for NATO will be to carry out these operations in difficult conditions (ibid.). NATO must have the equipment to be able to cope with a wide variety of climate-extremes if it is to be effective.

Consequently, the most plausible way that NATO could be undermined is if it fails to secure the resources and equipment it needs to operate in changing climatic conditions. This will depend largely on the funding capacities of member states, but also on NATO being seen as a legitimate force to use for interventions. For example, NATO-led interventions to protect the interests of its members, either in reaction to or to prevent conflict, in areas outside the borders of the alliance, may be met with hostility, particularly in the Middle East and South East Asia – regions particularly vulnerable to climate change.

Member states may decide to avoid working through NATO if its legitimacy is brought into question, consequently reducing the resources at the organisation's disposal. Those members may instead choose to operate through the UN, EU, or other structures which may be seen as more legitimate organisations through which to intervene for security purposes. The geopolitical interests of member state, which are likely to be impacted by climate change to at least some degree, will therefore, be key for determining NATO's future role.

Climate change is essentially altering the contemporary threat environment and could pose a significant challenge to future NATO operations. While NATO may still have a role to play in consultation and crisis response, the extent of this will depend on whether alternative mechanisms abrogate the need to resort to fragmented regional alliances to maintain security in a rapidly changing international system.

3.6 Implications for the UK

In this report we have shown that climate change will pose a number of challenges to global governance structures and is already exerting a 'geopolitical effect' on the international system. The processes through which this occurs will have real impacts on UK foreign and security policy, although they are likely to be mediated to some extent by patterns of global governance. In particular, whatever the implications of climate change are for the UN, NATO and the EU, UK foreign and security policy is bound to be

affected. Significantly, all this is happening at a time when the UK is reconsidering its position in global politics, the type of actor it wishes to be, and the partners it wishes to work with.

The UK is intricately connected to the rest of the world through global networks of trade, diplomacy, military alliance, transport, diaspora communities, communication and aid. The UK is essentially a hub for the global economy and is therefore highly dependent on the forces of globalisation for its economic power. Positioned at the end of a number of 'global chains' required for access to global markets and global influence, the UK's prosperity, influence and national security consequently depend heavily on stability overseas and the maintenance of global networks of trade and diplomacy (Cabinet Office, 2009; Personal interview conducted with an FCO adviser, 11/05/2010).

3.6.1 Global networks are highly vulnerable to climate change

Global networks operate beyond the full control of the UK government and are highly vulnerable to the types of disruption that climate change may cause. The IPPR Commission on Security in the 21st Century therefore predicts that the UK will almost certainly be influenced by the wider consequences of climate change through its potential to exacerbate conditions that increase the likelihood of state failure, violent conflict, humanitarian disaster and population displacement abroad (IPPR, 2009).

The UK, like many others, is heavily dependent on global governance structures such as the UN, NATO and the EU to maintain these global networks; in the future this is increasingly likely to demand interventions in fragile/failing states to prevent conflict. NATO and the EU are already preparing for this, and the UK is currently the global leader in spending on conflict prevention - although this constitutes only a minimal percentage of total defence spending (Mabey, 2007). The disruption of global supply chains (a potential consequence of climate change) would have serious economic consequences which in turn would weaken the UK's ability to project both hard and soft power in defence of its own national security and interests.

3.6.2 Ability to project soft power

The UK's ability to project power has already been ravaged by the recent global economic crisis. The decision by HM Treasury to no longer insulate the FCO against exchange rate fluctuations has cost the FCO £100m out of a budget of £830m for overseas posts. The MOD also faces a substantial and growing budget gap, and it is unclear whether the UK governments targeted aid budget of 0.7% of GDP is sustainable (Evans and Steven, 2010). Worryingly, this has happened at a time when international engagement, particularly with emerging economies, is increasingly important for maintaining the UK's influence abroad. The implications of climate change for global governance may therefore constitute a major threat to the continued security, influence and prosperity of the UK.

As a relatively weak power on the global stage, the UK will be increasingly reliant on its ability to project 'soft power' to persuade others to devote more energy, resources and political will to tackling global challenges. In this sense the UK must develop its ability to wield soft power and pursue thought leadership to encourage global action; it is unlikely that the UK itself will be able to dictate the 'endgame' in global governance – this will be the reserve of major powers such as the US, India and China (ibid.). The UK should therefore focus its resources on persuading these powers to structure global governance in a way that promotes the type of international system that the UK can prosper from and feel secure in.

The precise implications for the UK's ability to project power are likely to depend largely on the resilience of the global governance structures on which the UK depends. Because of its relatively weak position militarily and economically, the UK is increasingly reliant on structures such as the UN, EU and NATO to extend its influence abroad. For example, the former Foreign Secretary, David Miliband (2009) has argued that the EU magnifies UK influence around the world; others go further arguing that the UK is 'fundamentally dependent' on the EU if it is to have any impact on the direction of global governance (Personal interview conducted with an FCO adviser, 11/05/2010). Consequently, a relative decline of global governance structures through which the UK engages with the rest of the world, will contribute to a similar decline in the UK's influence over global affairs.

The UK therefore has a significant stake in ensuring that global governance structures such as the UN, EU and NATO have both the legitimacy and the capacity to support those states and regions which are most vulnerable to climate change. The FCO already recognises this dependence on the decisions and policies of other state governments and international institutions and has committed itself through Public Service Agreement (PSA) 27 to lead the global effort to avoid dangerous climate change (FCO, 2010). The UK lacks the hard power capabilities to launch unilateral interventions even if such action were justified and is therefore reliant on multilateral cooperation to protect its interests.

3.6.3 Dependence on vulnerable states

To ensure continued security and prosperity, the UK will need platforms (i.e. international institutions) that have both the legitimacy and the capacity to address transnational security issues. However, there is a real danger that climate change will contribute to the weakening of these platforms. In a worst case scenario, if climate change weakens and exacerbates current tensions and divisions in global governance structures, causing the international system to fragment, the UK risks finding itself without any clear platform for engaging with emerging economies at a time of significant geopolitical transformation of the international system. In such a situation the UK would need to be prepared to develop new ways of engaging with the international community in a world where trust and confidence in global institutions is severely weakened.

The UK must develop its diplomatic approach to make the UN, EU and NATO more effective, for example, by ensuring that member states fully understand the 'common' associated security implications of climate change, and by engaging the developing world as equal strategic partners where applicable. If these structures fail because of political divisions and weaknesses exacerbated by climate change, they will be less likely to be able to contribute to stabilisation and conflict prevention in fragile/failing states where UK interests may be threatened. Such interventions for the most part depend on the capacity and legitimacy of the UN, EU and NATO, which as we have shown could be difficult to sustain under the pressure of climate change.

The alternative for the UK would be to operate strategically through ad-hoc coalitions formed around specific policy goals, but doing so could contribute to the further weakening of the current global governance system, unless they are sponsored by global governance structures. However, if this were to occur, challenges could emerge over the level of responsibility to be vested in these coalitions – e.g. what level of authority/autonomy they should have. Significantly, in a worst case scenario, if the UK cannot secure support through the UN, EU and NATO (i.e. its major allies), one has to question whether the UK would be able to pull together a coalition to help defend its overseas interests.

Failing this, the UK will need to seek more direct engagement with the developing world in order to protect its interests from the potential instability that could result from climate change. In some respects the UK is in a more favourable position than many other developed states to do this. It continues to receive the goodwill of many former Commonwealth states, and the UK has a lot to offer the developing world in terms of technology and financial expertise to decrease the developing world's vulnerability to the worst consequences of climate change (Personal interview conducted with Cleo Paskal, 11/05/2010). However, in developing these partnerships the UK will be shifting its dependency onto many of the countries which are most vulnerable to climate change and it is unlikely that in the event of one of these states collapsing, the UK will have the capacity to intervene without multilateral support. This clearly represents a far less stable situation within which the UK will have to pursue and maintain its interests.

4 Conclusion

As the rapid transformation of global patterns of life dramatically alter the conditions for global governance it is difficult to predict the exact ways in which climate change will impact on international security. The nature and full degree of the security implications of climate change remain unmeasured, although we believe this study will help readers to understand how specific global governance structures are likely to be affected, and what this could mean for the UK.

The implications of climate change for the UN, NATO and the EU reflect the broader impacts on global governance. Over the next 50 years, it is the globalising of localised impacts, rather than widespread physical environmental impacts, that is the most likely way that climate change will exert direct pressure on the international community. Indirectly, the implications of climate change are most likely to be felt through the 'geopolitical effect' of climate change; whereby states manoeuvre for advantage on the basis of their expectations about how their interests will be affected. This shift in geopolitics is already occurring, exacerbating current tensions and weaknesses in the international system, undermining the legitimacy of key global governance structures, and making it increasingly difficult to mobilise the necessary coalitions needed for international intervention in the states and regions most vulnerable to the physical impacts of climate change. A growing 'operational gap' means that international institutions are struggling to adapt their operations to address climate change impacts which cannot be managed nor contained locally. In the short-term this operational gap is unlikely to narrow, nor can we be sure that this will occur in the long-term. What is clear however, is that without legitimate global governance structures in place, the impacts of climate change will pose an ever-greater challenge to international security.

The UK is intricately connected to the rest of the world through global networks of trade, diplomacy, military alliance, transport, diaspora communities, communication and aid. The UK is reliant on global governance structures such as the UN, NATO and the EU to maintain these global networks. The disruption of global supply chains (a potential consequence of climate change) would have serious economic consequences which in turn would weaken the UK's ability to project both hard and soft power in defence of its own national security and interests.

As a relatively weak power on the global stage, the UK will be increasingly reliant on its ability to project 'soft power' to persuade others to devote more energy, resources and political will to tackling global challenges such as climate change. However, in a worst case scenario, if climate change weakens and exacerbates current tensions and divisions in global governance structures, the UK risks finding itself without any clear platform for engaging with emerging economies at a time of significant geopolitical transformation of the international system. The UK therefore has a significant stake in ensuring that global governance structures such as the UN, EU and NATO have both

the legitimacy and the capacity to support those states and regions which are most vulnerable to climate change.

Significantly, both the physical and the socially contingent impacts of climate change are being felt around the world at a time when the UK needs to consider its position in global politics, the type of actor it wishes to be, and the partners it wishes to work with.

There is no causal link between climate change and a weakening of global governance structures. In responding to climate change, states have the opportunity to strengthen these structures through their responses, just as much as their responses could weaken them. The UK therefore has a clear interest in expanding its understanding of the implications of climate change for global governance, and should encourage other states to do same, to facilitate the development of a more resilient system of global governance.

While it is impossible to predict precisely how implications for global governance and international institutions will manifest, it is vital that we continue to develop our understanding of the array of possible futures that face us in order to encourage the development of a more resilient international system and to ensure that the UK is well placed to meet the challenges that are could emerge.

Please see Table 1 below for a summary of implications for the UK due to climate change impacts on global governance and international institutions.

Risk Description	Timescale (2030, 2050)	Likelihood	Relevant Climate Change Impact(s)	Impacts on UK (opportunities as well as threats)	
				Direct	Indirect
Worst case scenario					
Collapse of multilateral negotiations at the UN.	2030	Medium	Global temperature exceeds 2°C	Loss of negotiating platform from which to be heard.	Interests may be harmed by unilateral responses from other states. Loss of influence abroad. Demand for ad-hoc alternatives to multilateral negotiations through the UN.
Collapse of a 'pivot' state due to localised climate impacts	2050	Medium	Country-specific.	Depends on which state, but as a 'pivot', there are likely to be direct impacts on the UK's ability to access certain resources, markets and trade routes—	Potential spillover of instability into other areas of strategic concern. Global financial system on which the UK is highly dependent for prosperity is likely to weaken.
Capacity of key global governance structures is overstretched by demand for international support as climate change impacts are felt locally in different parts of the world.	2050	High	Country-specific.	Weakening of structures on which the UK relies for continued prosperity and security.	There will be increased demand for ad-hoc alternatives. The UK will be more reliant on the developing world for the maintenance of international security through regional partnerships.
Interstate conflict due to conflict over climate change	2050	Low	Country-specific.	Depends on which states are involved but interstate conflict could reduce access to certain resources, markets and trade routes. It is also possible that the UK could be dragged into hostilities.	Potential spillover of conflict into other areas of strategic interest on which the security and prosperity of the UK depend.
Most likely Scenario					
Multilateral negotiations continue.	2050	Medium	Global temperature is moderated to some extent.	Opportunity for the UK to lead in the development of climate-related policy.	Increase UK influence around the world.
Collapse of an already fragile state(s) due to localised climate impacts.	2030	High	Country-specific	Could threaten access to certain resources, markets and trade routes	Weakening of UK economy.

Greater demand for international intervention to restore/protect global supply chains.	2030	High	Country-specific.	Increased demand for UK to contribute resources (money, manpower, political influence) to support international interventions.	Involvement in illegitimate action could negatively impact the UK's image and global influence. This is more likely to happen if interventions are not sanctioned by legitimate institutions.
Greater reliance on regional structures where global structures are overstretched as climate change impacts are felt locally in different parts of the world.	2030	High	Country-specific	Weakening of structures on which the UK relies for continued prosperity and security.	The UK will be more reliant on the developing world for the maintenance of international security through regional partnerships.

Table 1 showing information capture for risk of climate change implications for global governance and impacts on the UK

5 Further Work

This report focussed specifically on what the implications of climate change for global governance could mean for international security. Financial institutions, development organisations, etc. fell outside the scope of our work. However, these other structures should not be neglected. How states choose to respond to climate change will largely depend on the extent to which the impacts are felt economically, and this will be mediated to a degree by international financial institutions, access to markets, and the continuation of trade. The continued smooth running of the global financial system is essential for reducing preventing tensions that may arise both domestically and internationally. We therefore recommend that more research is carried out to examine the likely impacts of climate change on the global financial system and the structures which comprise it.

We were also unable to explore the implications of climate change for the role of NGOs in global governance. NGOs comprise a significant sector in the international system and could potentially have a key role to play in developing international responses to climate change. Policy makers and public institutions often lack policy-relevant information and analysis on climate change. NGOs (and also scientific experts) are therefore important for providing analysis, transforming it into policy-relevant knowledge, and proposing adequate policy responses (Brühl and Rittberger, 2001). More research is required to understand the ways in which the roles of NGOs in global governance may change as the implications of climate change become clearer.

Lastly we recommend that more research is carried out to explore the likely impacts of climate change specifically on the UK defence and security sector. The UK may be in a better position than most states as the worst physical impacts of climate change are not expected to be felt here for many years, but this will not insulate the country from political, social and economic upheaval both domestically and abroad. Identifying where and how climate change is likely to contribute to such upheaval should therefore be a key strategic goal. It is also important that the defence sector is prepared (both in terms of knowledge and equipment) for the types of operations it may be called on for in the future. What is ultimately required is a continual reassessment of the security implications of both the physical impacts of climate change, and the political, social and economic consequences of adaptation, mitigation and overall resilience-building.

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