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Climate Change Fuelling Resource-Based Conflicts in the Asia-Pacific

Asia-Pacific Human Development Report
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Abstract

Combined with poor governance, climate change represents the largest and most global environmental variable to peace and security and its impacts are set to fall disproportionately on the world's most vulnerable populations with the Asia Pacific region facing some of the most widespread challenges. However, while the links between climate change and security have been recognised by both the UN General Assembly (UNGA) and the UN Secretary General, the issue remains dangerously peripheral to national, regional and international peace and security strategies.

Home to two-thirds of the world's poor, half the world's intra-state conflicts and with its populations more likely to experience natural disasters than any other region in the world, the Asia Pacific region is already facing dire supply and demand challenges. Many states are also already experiencing the adverse effects associated with of climate change, namely: increased extreme weather events, rising sea levels and increased resource scarcity. These are likely to act as 'threat-multipliers' to conflict in areas already facing development and security challenges and where the direct physical effects of climate change will be greatest.

Due to inequalities and inadequate social protection programmes, the regions' most vulnerable are also set to be the most exposed; a dynamic that could have dire humanitarian and security ramifications.

However, expected negative effects can be curbed through sound governance at international, regional and national levels. Progress made at the UNGA and discussions held at UNSC levels should be continued. Also, regional resource management can be a basis for peace and stability within and between states and sound national good governance practices must be prioritised.

The development of climate-friendly policies not only represent long-term peace and sustainable growth, they also present opportunities for building bridges across communities and countries through comprehensive representation and cooperation.

Key words: conflict, natural resources, climate change, Asia-Pacific

The views expressed in this publication are those of the author(s) and do not necessarily represent those of the United Nations, including UNDP, or the UN Member States.

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ACRONYMS

ADB	Asian Development Bank
APEC	The Asia-Pacific Economic Cooperation forum
APP	Asia-Pacific Partnership on Clean Development and Climate
ASEAN	The Association of Southeast Asian Nations
CoP	Conference of Parties
FAO	Food and Agriculture Organization of the United Nations
GHG	Greenhouse Gas
IDP	Internally Displaced Persons
IMF	International Monetary Fund
IOM	International Organisation for Migration
IPCC	Intergovernmental Panel on Climate Change
MDG	Millennium Development Goals
NAPA	National Programme of Action
PIFS	Pacific Islands Forum Secretariat
REDD	Reducing Emissions from Deforestation and Degradation
SAARC	The South Asian Association for Regional Cooperation
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
UNHCR	United Nations High Commissioner for Refugees
UNSC	United Nations Security Council

“Climate change affects everything the UN does - poverty, peace and security, development, and human rights. We cannot sustain gains toward our Millennium Development Goals or preserve the ecosystems that sustain us, we cannot ensure safety and stability for the poor and vulnerable without progress on climate change.”

UN Secretary General Ban Ki-Moon, UN climate summit, Cancun, December¹

EXECUTIVE SUMMARY

- Climate change represents the largest and most global environmental variable to peace and security and its impacts are set to fall disproportionately on the world's most vulnerable populations. The knock-on effects of climate change could compound existing low-intensity conflicts, spill insecurities into neighbouring countries and create new bases for insecurity. However, while the links between climate change and security have been recognised by both the UN General Assembly and the UN Secretary General, the issue remains dangerously peripheral to national, regional and international peace and security strategies.
- Many Asia Pacific countries are already experiencing the adverse effects of climate change, namely: increased extreme weather events, rising sea levels and increased resource scarcity. These are likely to act as 'threat-multipliers' to conflict in areas already facing development and security challenges and where the direct physical effects of climate change will be greatest, leaving many Asia Pacific countries particularly exposed. The region is home to two-thirds of the world's poor and almost half its intra-state conflicts. It is already facing dire supply and demand challenges, and its populations are more likely to experience natural disasters than any other region in the world.
- Low-and high-intensity resource-based conflicts in the region have thus far been primarily intra-state and this trend is likely to continue with climate change. Resource-based conflicts are likely to be both within and between sectors and user-groups with causes and effects also crossing state boundaries. Resource-based conflicts in the region already also stretch across borders and this has affected sub-regional stability.
- Several overarching conflict risk factors are present and relate primarily to supply and demand dynamics. This is true particularly in regards to water. For example, seven of the world's greatest rivers, fed by glaciers in the Himalayas and the Tibetan plateau, supply water to roughly 40 per cent of the world's populations. Yet as these glaciers decline several countries, primarily China where many of Asia's key rivers originate, may divert waters as their own needs increase. This could adversely impact on other countries, however, and low-intensity conflicts already exist over several proposed dam projects.
- Due to inequalities and inadequate social protection programmes, the most vulnerable sectors of society are likely to be the most exposed to the adverse effects of climate change. These are primarily the poor, indigenous peoples, the displaced, women, children and the elderly. If improperly addressed, climate change effects threaten to further impact on these vulnerable social groups; a dynamic that is likely to have humanitarian and security ramifications which may undermine progress toward the UN Millennium Goals (MDGs).

- Information with which to form comprehensive and targeted peace and security-based approaches on existing and possible resource conflict faultlines is insufficient and at times contradictory. This is particularly true of smaller-scale tensions and conflicts that easily go unnoticed but could increase with environmental stress. Increasing information on resource-based conflicts is central to developing sound mitigation and adaptation policies.
- Regional resource management can be a basis for peace and stability within and between states and this has been true particularly in regards to shared water management. The development of climate-friendly policies not only represent long-term peace and sustainable growth, they also present opportunities for building bridges across communities and countries through comprehensive representation and cooperation.

Recommendations overview

The decisions that states and the international community take today directly impact on the vulnerability of populations, sectors, peace and security. However, climate change has been framed primarily within scientific and environmental discourse and less so within contexts of development and security. At national levels, several National Adaptation Programmes of Action (NAPA) address key issues yet, while there is no one-size-fits-all solution to conflict mitigation and climate change adaptation, these are mostly ad hoc and unlikely to prevent conflict (see 3.1 Existing Mechanisms: Strengths and Weaknesses, page 48). This is also reflected in regional and international approaches. Recommendations are contained in full in section 3.2 Looking Ahead: Risks and Opportunities, page 57.

- ***At the national level***, curbing the effects of climate change that could undermine security means increasing information of conflict and natural resource fault-lines, prioritising good governance, and advancing the involvement of local communities and vulnerable groups in the identification of problems and solutions. This could also mean prioritising natural resource management; adjusting domestic demand and trade to alleviate vulnerability in regards to international market fluctuations and local availability. NAPAs and Disaster Risk Reduction (DRRs) strategies should also incorporate conflict prevention and resolution strategies and ensure comprehensive participatory processes;
- ***At the regional level***, countries must advance coordination and cooperation based on information sharing and through the development of a regional perspective to countering the effects of climate change with sustainable human development. Regional agreements and mechanisms should also be seen as a coordination of common regional needs and as an opportunity to increase the voice of regional bodies within the international fora. Its growing political and economic strength, particularly through China and India, should be mirrored in their influence in other areas that promote active peace;

- *At the international level*, the international community must advance the issue of climate change and security. Address should span across its multilateral bodies – with a focus on resource-conflict prevention and should include for example, the UN Security Council and other UN agencies such as the UNEP, UNDP and UNDPA. Support should be garnered for Asia Pacific countries to incorporate resource-conflict mitigation and resolution strategies into national and regional policy and legislation.

1. INTRODUCTION

Home to half the world's poor, the Asia Pacific region is especially vulnerable to resource-based conflicts and the adverse effects of climate change. It is host to a large proportion of the world's conflicts and its population is especially exposed to humanitarian catastrophes associated with natural disasters. These are predicted to increase as a consequence of climate change and, coupled with societal, economic and political vulnerabilities, leaves some of the world's most vulnerable states exposed to heightened risk of conflict.

On 3 June 2009, the UN General Assembly unanimously adopted Resolution 63/281 titled "Climate change and its possible security implications," where it invited major UN organs to "intensify efforts in addressing security implications of climate change." This represented the first formal recognition by the international community of the potential security implications of climate change and recognized the "respective responsibilities of the principal organs of the United Nations, including the primary responsibility for the maintenance of international peace and security conferred upon the Security Council" and invited "the relevant organs of the United Nations, as appropriate and within their respective mandates, to intensify their efforts in considering and addressing climate change, including its possible security implications."² This underlined the urgency and need for international, as well as national, attention.

However, as highlighted in the 2004 report by the UN High Level Panel, "[r]arely are environmental concerns factored into security, development or humanitarian strategies. Nor is there coherence in environmental protection efforts at the global level...[r]egional and global multilateral treaties on the environment are undermined by inadequate implementation and enforcement by the Member States."³ This contradiction is mirrored in climate change and security discourse and could, in and of itself, counteract existing efforts to mitigate and adapt to climate change.

Studies that chart the inter-linkages between environmental change and security are based primarily on the resilience, or lack thereof, of social systems to change and not on a direct 'cause and effect' dynamic between, for example, climate change and conflict. In 'Climate Change and Armed Conflict' by James R. Lee, the effects of environmental change over centuries are explored and Lee compares the effects of climate change on security to the dynamics present in 'slow wars', highlighting that "the chances for conflict will gradually accumulate and appear as a long-term process...[where the] prolonged effect may do more to destroy the social fabric for many years to come...[and] be more dangerous and more volatile."⁴

Climate change will exacerbate recognized influencers of conflict that include issues of natural resource management and governance, while also acting as a 'threat multiplier' through issues associated with an increase in extreme weather events, sea level rise, and competition over perceived or actual threats to resource availability. The most crucial variable, however, in the climate change and security dynamic is the timely commitment,

or lack thereof, of individual states and the international community. Unaddressed, the effects of climate change threatens to embed destructive dynamics between poor resource management and insecurity, while enhanced local and international governance and resource management would provide a platform for active peace and sustainable development. Climate change represents the most global environmental variable in international peace and security and today's climate change mitigation and adaptation choices will be central in determining prospects for future peace and sustainable human development.⁵ Addressing the issue thus necessitates a marriage of strong international coordination and state-based actions with security, governance and sustainable human development at its core.

1.1 Scope of Study

The aim of this paper is to present a background to resource-based conflicts and how they may be influenced by climate change in the Asia Pacific region. In so doing, this paper first examines the relationship between security, natural resources, and climate change. Second, this paper looks specifically at this issue in the Asia Pacific region, presenting case studies from South and West Asia, East Asia, and the Pacific. Case studies have been chosen on a basis that they illustrate varying, but not all, areas of concern from across the region. These are glimpses into the problem and do not represent the full scope of issues generally neither in the region nor within countries presented, this paper presents an appraisal of existing address of this issue and explores options for future action that may underpin peace and security in a climate change context at local and international levels.

The issues of resource-based conflicts fuelled by climate change and security are both extremely broad and, in the case of the latter, relatively complex and evolving. Both have been subject of debate with varying levels of agreement and disagreement. As this paper is the result of desk-based research conducted over a period between November 2010 and January 2011, it does not purport to represent all dimensions of the issue of resource-based conflicts nor of climate change in the Asia Pacific region, nor does it assume to present all existing mechanisms and possible solutions. It should be noted that no mechanisms exist which specifically address resource-based conflicts fuelled by climate change. Conflict and resource management varies from country to country and is largely dealt with as problems arise. As such, focus has been placed on existing climate change mechanisms in order to chart where gaps exist and where priorities should be focused.

Reflecting this gap, one of the principal conclusions is that there is an urgent need for further exploration and understanding of this issue both within communities, the region and globally in order to determine best ways forward.

Throughout this paper, there are several important baseline approaches:

1. In line with IPCC findings, this paper is developed on the basis that **a) climate change is actual**, and **b) human activity is the main cause**. There is overarching consensus that climate change is caused by human activity and that climate change is increasing the earth's surface temperature at previously unseen rates.⁶

2. References to conflict in this paper will refer to disputes over perceived or actual incompatibility of interests, and further be categorized as either non-violent - low intensity conflict-, or violent -medium and high intensity conflict (see Figure 1: Conflict Intensities).

3. Neither natural resource scarcity nor climate change lead directly to violent conflict. Instead, they can act in concert with a multitude of factors that can impact negatively on peace and human security.

4. This paper is concerned primarily with conflicts connected to resources necessary for human development and survival. This is in contrast to resources that are non-essential for survival and include, for example, high-value gems and metals.

5. In reference to vulnerability, this paper addresses primarily the causes of, and effects on, human systems that may undermine peace in a climate change context. This is in contrast to an examination of the vulnerability and resilience of crucial ecosystems to climate change.⁷

Figure 1: Conflict Intensities

State of violence	Intensity group	Level of intensity	Name of intensity	Definition
Non-violent	Low	1	Latent conflict	A positional difference over definable values of national meaning is considered to be a latent conflict if demands are articulated by one of the parties and perceived by the other as such.
		2	Manifest conflict	A manifest conflict includes the use of measures that are located in the stage preliminary to violent force. This includes for example verbal pressure, threatening explicitly with violence, or the imposition of economic sanctions.
Violent	Medium	3	Crisis	A crisis is a tense situation in which at least one of the parties uses violent force in sporadic incidents.
	High	4	Severe crisis	A conflict is considered to be a severe crisis if violent force is used repeatedly in an organized way.
		5	War	A war is a violent conflict in which violent force is used with a certain continuity in an organized and systematic way. The conflict parties exercise extensive measures, depending on the situation. The extent of destruction is massive and of long duration.

(From: Heidelberg Institute for International Conflict Research, *Conflict Barometer 2010*, p. 88)

1.1 Background

The nature of global security has changed over the past 50 years; no longer do traditional military conflicts between states dominate security discourse. Since the end of the Second World War, conflicts have become increasingly intrastate. The end of the Cold War, which saw the support and funding for proxy wars between states recede, has in part influenced this trend.⁸ Conflicts today are principally internal and self-financed, though many with international dimensions and natural resources have played a central role in this dynamic. Illustratively, in a report by the United Nations Environment Programme (UNEP) it was highlighted that in the past 60 years 40% of conflicts have been tied to natural resources and that since the end of the Cold War eighteen conflicts have been driven by natural resources. The report also summarised that “intrastate conflicts over the past 60 years indicate that conflicts associated with natural resources are twice as likely to relapse into conflict within the first 5 years.”⁹

In recognition of the possible destructive ties between natural resources and security, the UN General Assembly World Charter for Nature asserted in 1982 that “[c]ompetition for scarce resources creates conflict.”¹⁰ More than 20 years later, the former UN Secretary General Kofi Annan established the High Level Panel on Threats, Challenges and Change, mandated to examine modern threats to peace and security. The Panel produced a report of their findings in a 2004 titled *A More Secure World: Our Shared Responsibility* where it was found that “[e]nvironmental stress, caused by large populations and shortages of land and other natural resources, can contribute to civil violence.”¹¹ Still, despite widespread recognition, existing address is largely unrepresentative of the ties between environment and security – a dynamic which exposes the world’s most vulnerable populations and which, in the face of climate change, is likely to be compounded by the absence of sound development and implementation of urgently needed policies and legislation.

1.1.1 Natural resource-based conflicts

Because climate change effects the environment and, by extension, natural resources, the dynamics that connect natural resources and insecurity are also those which may intensify with the effects of climate change. Thus, it is important to examine the relationship between natural resources and conflict in order to grasp how climate change may affect resource-based conflicts.

Since the early 1990s there has been an increase in the availability of publications within the international community, academia, media and NGO sphere which have discussed the issue of natural resources and conflict among,. A debate now exists also on exactly how these ties connect and just how relevant they are. However, that they are bound to each other, even if not directly, is extensively evidenced in many scenarios from across the world and throughout history (see for example Box 1: Natural Resources and the UN Security Council).

Any conflict emerges as a result of several factors and rarely from one alone; the processes that lead to conflict are multi-dimensional and complex. The same is true of the link between natural resources and conflict and, more specifically, between climate change and conflict. They are linked by a variety of elements that heighten the risk of insecurity and expose, on a macro level, primarily fragile, crisis and failed states,¹² and on a micro level, the world's most vulnerable groups and individuals. Furthermore, the link between resources and conflict is often a reflection of underlying resource management and governance issues.

Box 1: Natural Resources and the UN Security Council

The Security Council has adopted several resolutions that recognise the ties between resources and conflict. For example: UNSC Resolution 1376 (2001) on the Democratic Republic of Congo “[r]eiterates its condemnation of all illegal exploitation of the natural resources of the Democratic Republic of the Congo, demands that such exploitation cease and stresses that the natural resources of the Democratic Republic of the Congo should not be exploited to finance the conflict in that country;” UNSC Resolution 687 (1991) on Kuwait asserted that Iraq was “liable under international law for any direct loss, damage – including environmental damage, and the depletion of natural resources...;” UNSC Resolution 1459 (2003) on diamonds, expressed “deep concern the linkage between the illicit trade in rough diamonds from certain regions of the world and the fuelling of armed conflicts that affect international peace and security;” and UNSC Resolution 1478 (2003) imposed timber sanctions on Liberia in recognition of the role played by the timber industry in fuelling conflict and insecurity. Also, on 14 September 2005, the UN Security Council passed Resolution 1625 underlining its commitment to strengthen its role in conflict prevention, highlighting a “need to adopt a broad strategy or conflict prevention, which addresses the root causes of armed conflict and political and social crises in a comprehensive manner” and “reaffirms its determination to take action against illegal exploitation and trafficking of natural resources and high-value commodities in areas where it contributes to the outbreak, escalation or continuation of armed conflict.”

It has been found that, the absence of greater focus on the environment and natural resources in the peace-building process,¹³ intrastate conflicts are more likely to be prolonged and also to escalate. Similarly, cross-border conflicts tied to natural resources are found to be more likely when a state with poor governance mechanisms experiences resource depletion and where a key resource is shared between two states.¹⁴ The opposite can also be true: a shared resource can also serve as a backdrop for cooperation; this has historically been the case in regards to, for example, water (see 2.1 Risks and Vulnerabilities).

Three ties between natural resources and conflict are defined in one study as the *resource curse*, *resource conflicts* and *conflict resources*.¹⁵ The *resource curse* is characterised by a combination of natural resource wealth with other elements including poverty, corruption, poor economic growth and civil war. *Resource conflicts* concerns competing

demands over mainly renewable natural resources but also in regards to actors' perception of the value of, and incompatible claims over, both renewable and non-renewable resources. *Conflict resources* exist in a situation where the financial rewards of resources drive and sustain armed conflicts (see Figure 2: Analytical Framework of Resource Wars).

When coupled with the failure, by either will and/or inability, of states to address tensions around natural resources fairly and peacefully, natural resources can become a source of tension or of inducing and/or prolonging conflict and/or undermining peace. Good governance and sustainable human development are determinant factors in the level of vulnerability to insecurity and conflict. While unsustainable and poor management of natural resources can increase a country's likelihood for conflict, it is also important to note that conflict itself can negatively impact on the environment which can in turn effect resource availability and compound cycles of insecurity. The same is also true of poor mitigation efforts: inadequately planned and implemented, these can have adverse effects on the environment and security (see 2.1 Risks and Vulnerabilities).

Figure 2: Analytical Framework of Resource Wars

Conflict factors	Key concepts	Relations between resource and conflict	Major geographical dimensions	Potential variables and measurements
Vulnerability	Resource curse	Resource sector undermines governance and economic performance, making violent conflict more likely	Peripheralization and uneven development: resource dependence shaping political economy and mode of governance	<ul style="list-style-type: none"> • Evolution of resource abundance and dependence (annual variations in export and fiscal revenues) • Ownership structure and mode of exploitation (private vs. parastatal, artisanal vs. industrial) • Socioeconomic indicators (spatially disaggregated measures of poverty; capital flight and foreign direct investment)
Risk	Resource conflicts	Resource sector motivates disputed processes of allocation, making violent dispossession and resistance more likely	Territorialization: spatial control of resource central to cost-benefits allocation and identity mobilization	<ul style="list-style-type: none"> • Conditions of access to resources (legal status and practices) • Instances of conflicts and violence (population displacement, demonstrations, repression, homicides) • Processes of identity formation and mobilization (sectarian institutions and voting patterns)
Opportunity	Conflict resources	Resource sector rewards belligerents, making the escalation and prolongation of violent conflict more likely	Interconnection: ease of access to resource revenues crucial in sustaining conflicts	<ul style="list-style-type: none"> • Characteristics of the resource (price and weight) • Regulatory environment (level of illicit trade, strength of regulatory institutions) • Proximity to transport and marketing infrastructures (borders, airports, buying offices)

(From: Le Billon, Philippe. "Diamond Wars? Conflict Diamonds and Geographies of Resource Wars." *Annals of the Association of American Geographers* 98:2, 2008. p. 349).

1.1.2 Mapping Conflicts in a Changing World

Violent armed conflicts, whether intra-national or international, generally receive more focus than low intensity conflicts. This is mirrored in policy focus and implementation, which prioritises involvement in high-intensity conflicts. However, low intensity conflicts indicate underlying problems that could escalate in the face of increased resource scarcity associated with climate change. Low intensity conflicts are also more likely to go unnoticed and/or may only provoke attention when tensions have escalated, for example, to the point of conflict outbreak, or when implications have spread through, for example, migration.¹⁶

The dynamics of resource management and security have also steadily changed due in part to changing supply and demand dynamics in regards to resource availability but also reflecting the changing reach of resource trade. While the majority of tensions and conflicts are confined within state borders and between communities, they often exist within broader cross-border dynamics. As reported in a 2008 study by the Centre for Security Studies (CSS) and SwissPeace, titled *Linking the Environment and Conflict Prevention*, there is “an increase in the frequency and intensity of conflicts between different groups of users regarding lands and other resources...also caused by international, multi-dimensional forces which the populations don’t understand or over which they have little control.”¹⁷

Box 2: Resources and Security on the Afghanistan/Pakistan border

Type: Violent direct-use resource conflict within the forests sector

The Pakistan/Afghanistan border is one of the most dangerous regions in the world. Both countries have recently experienced devastating floods, caused in part by severe deforestation, which are projected to increase with climate change. Government oversight and sound resource governance in the area has been lacking and the timber sector has gone largely unregulated. This has allowed criminal networks to operate unhindered, victimising both local communities and helping undermine security in the area.¹⁸ For example, in 2006, a logging ban was introduced in Afghanistan in recognition of the country’s deforestation problems. However, the ban could not be enforced and logging continued unabated under the Taliban who oversaw the transfer of logs from Kunar province in Afghanistan across the border to Pakistan a dynamic that has now become “part and parcel of the insurgency.”¹⁹ This is not new. A similar ban was introduced in Pakistan in 1992 after devastating floods were found to be partly the result of deforestation. Logging companies instead harvested timber illegally in Afghanistan.²⁰ As is common in areas where insecurity and poor forest governance exist together, forest communities in the Pakistan/Afghanistan border region lack protection, and reportedly fall victim to the criminal logging industry activities.²¹ While a study on conflict timber concluded that the impact of the timber trade in the area appeared to be limited, it concluded that [c]ontinued deforestation could, however, give rise to grievances and thus fuel conflicts at the local level.²² This signals an urgent need for drastically improved governance and resource management in the region in the face of increased extreme weather events and resource scarcity associated with climate change.

The CSS and SwissPeace study classifies resource-based conflicts as either ‘indirect use’ conflicts, ‘direct use’ conflicts, or ‘complex conflict hotspots’ that may combine direct and indirect use conflicts.²³ This differs from Lebillon’s Analytical Framework (above), which illustrates the causes and motivations for conflict. The CSS and SwissPeace study maps the makeup of resource-based conflicts.

‘Indirect use’ conflicts are often marked by heightened violence and characterised in part by the extraction and trade of resources that are internationally scarce and locally abundant. Conflicts are usually intra-national, though international conflicts have also been noted to occur, for example, within the fisheries sector over Exclusive Economic Zone (EEZ) rights.²⁴ In the context of climate change and the threat posed by rising sea levels in the Pacific, addressing issues over EEZs and fishing rights will be particularly important (see for example section 2.2.3 Pacific). This is also true in the case of the South China Seas, where fishing rights are already a source of tension between states (see for example Case Study: China).

Internal ‘direct-use’ resource conflicts can be split into three categories, all of which reflect dynamics within a given state and which marginalize the poor: 1) conflicts within an economic sector, 2) conflicts between economic sectors, and 3) conflicts relating to large development projects.²⁵ Conflicts in this category are often slow to escalate and are often addressed once they have increased in intensity. With increased resource scarcity projected with climate change, the early identification and address of these conflicts is essential.

Conflicts within an economic sector may include, for example, clashes between large and small resource-related projects and operators. For example, in the case of forests, communities who derive their livelihoods, food and medicines from forests are often side-lined in favour of large logging operators (see Case Study: Indonesia). *Conflicts between economic sectors* occur when competing interests exist over a given resource. This could include, for example, conflicting claims and needs over water sources. *Conflicts relating to large development projects* occur when competing interests between local communities and large-scale projects develop – these are often in areas otherwise occupied by local communities.

International ‘direct use’ conflicts are categorized as either 1) international fresh-water conflicts, 2) international territorial conflicts, and 3) conflicts relating to ecosystem services.²⁶ *International fresh water conflicts* occur where there is water scarcity and shared water sources, it may not be a conflict necessarily, but it can serve as a destabilising factor (see for example Case Study: China and Box 5: Water in the Asia Pacific: A Source of Peace or Conflict?). *International territorial conflicts* are often related to natural resources in a given area under dispute. *Conflicts related to ecosystem services* regards primarily climate change. Notably, the CSS and SwissPeace report found that there exists a latent

conflict between developed countries, primarily responsible for climate change, and developing countries most vulnerable to its adverse effects.²⁷

Harnessing information of resource-based conflicts is essential in building peace in a climate change context. It is a key component in preventing resource-based conflicts fuelled by climate change and provides a platform from which to base sound development and implementation of prevention and peace-building strategies. And, while it is significantly less costly to prevent the development of violent conflicts than to address their outbreak, and while low-intensity conflicts are a key entry point for conflict prevention, mechanisms at national, regional and international levels to prevent such conflict are sorely lacking.²⁸ Comprehensive and integrated action at local and international levels are necessary; anything less would be unrepresentative both of the global nature of resource trade and climate change (see 3. ADDRESSING RESOURCE-BASED CONFLICTS FUELLED BY CLIMATE CHANGE).

1.1.3 Climate Change and Security

Climate change threatens to shorten the road between natural resources and conflict in the absence of comprehensive governance mechanisms. Its effects threaten to adversely impact on resources that are essential to human security. This can in turn lead to the revaluation of important resources: where non-renewable resources have traditionally been more associated with conflict than renewable resources, this could change as 'survival resources' become more scarce and therefore of higher value.²⁹

Without proper mitigation and adaptation, tremendous strain will be placed on already exposed national, regional and global infrastructures. Yet despite recognition of this by the international community (See section 3.1 Existing Mechanisms: Strengths and Weaknesses), agreement on how to address the security implications of climate change remains unrepresentative of the magnitude of the problem, equated by UN Secretary General Ban Ki-Moon to “the danger posed by war to all of humanity - and to our planet...”³⁰

The impacts of climate change will vary across the world and the knock-on effects of these impacts will also be diverse. Some countries may gain short-term economic benefit³¹ while most, particularly poor and developing countries, will experience exacerbated adverse consequences that will likely affect security. Depending on the region, three principal direct physical effects of climate change that could have implications on security have been identified as 1) an increase in natural disasters, 2) rising sea levels, and 3) increased resource scarcity. Tellingly, all have been projected for the Asia Pacific region (see Figure 3: Possible Pathways from Climate Change to Conflict).

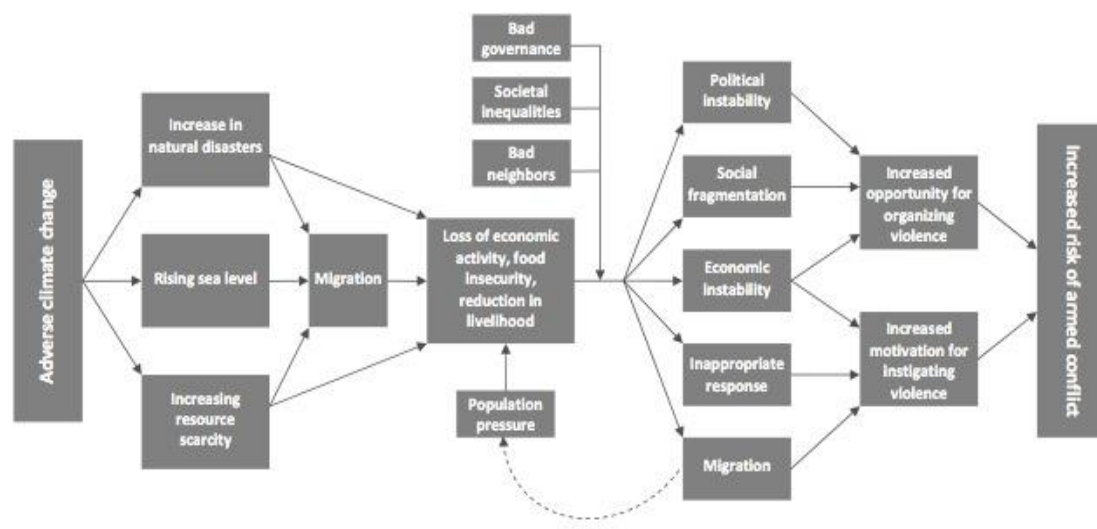
An increase in natural disasters can affect security by decreasing resource availability and can lead to humanitarian catastrophes and mass sudden migration. Migration can increase the vulnerability of populations and increase the likelihood of conflict by taxing already fragile dynamics. Rising sea levels are expected to adversely impact primarily on river deltas and small island states. Communities in low-lying coastal areas face widespread

flooding and entire states have been told to prepare for submergence, including the Maldives and several Pacific island states (see 2.2.3 Pacific). Resource scarcity associated with climate change can also present new challenges as countries move to secure resources necessary for their own populations while potentially adversely affecting neighbouring countries (see Case Study: China).

It is important to note that the first two effects, an increase in natural disasters and rising sea levels, can also lead to and/or exacerbate the third, increased resource scarcity which can also, as highlighted above, be a contributing precursor for conflict. This means that, while the natural resources and conflict dynamic already exists, it also does so within a climate change context both as a direct physical result of climate change and also as a knock-on effect of other climate change impacts, placing resource scarcity as a central issue that should be addressed in both security and climate change discourse. This is illustrated in Figure 3: Possible Pathways from Climate Change to Conflict, below, which shows how climate change can adversely affect economic activity, livelihoods and food security which, coupled with factors such as bad governance, regional insecurity, social inequalities and inappropriate response and mitigation, can increase insecurity and opportunities and motivations for violence and conflict.

In a study by the German Advisory Council on Global Change, *Climate Change as a Security Risk*, it was found that climate change could affect security generally by 1) exacerbating existing environmental accelerators of conflict, 2) by creating new pathways to conflict that can emerge as a result of the effects of climate change, and 3) through the effects of climate change increasing due to inadequate mitigation efforts.³² The study also highlighted 6 principals ways in which climate change could present a threat to international peace and security: 1) through the possible increase in the number of weak and fragile states as a result of climate change, which could develop into failed/weak sub-regions and stretch the capacity of international coping mechanisms, 2) through risks presented for global economic development, which could change regional supply and demand dynamics and lead to cross-border tensions, 3) through risks of growing conflicts between the main drivers of climate change and those most exposed to its affects, 4) through the risk to human rights and the industrialized countries' legitimacy as global governance actors, curbing their action and influence possibilities, 5) by triggering the intensification of migration, and 6) by overstretching classic security policy due to increased insecurity and climate change impacts.³³

Figure 3: Possible Pathways from Climate Change to Conflict



(From: Buhaug, Gleiditchsh and Theiesen, Implications of Climate Change for Armed Conflict 2006, p. 21).

Building resilience to climate change and resource scarcity involves addressing political, societal and economic factors. The extent to which resource scarcity may undermine security depends in large part on wider factors including governance, management and distribution of resources. These may negatively impact on existing developmental and security issues if unaddressed.

Peace, Conflict and Resource Management

Good governance and sound equitable resource management is central to safeguarding peace, development and environmental security. Where good governance is present, corruption and insecurity is usually minimal and resource management is likely to be fair and coupled with sound social protection programmes that reduce vulnerability to climate change.³⁴ On the other hand, poor governance, corruption and the mismanagement of resources undermines sustainable human development and increases the vulnerability of the most exposed groups, sectors, countries and regions to the threat-multiplying effects of climate change.

The development and implementation of policy and legislation plays a determining role in peace and security outcomes. For example, poor resource management can force individuals and communities to migrate in search economic stability, water and food and can undermine security (see section 2.1 Risks and Vulnerabilities, page 27). The fact that some states are in a position to avert adverse effects of climate change should be seen as an opportunity, especially when compared to small island states that have limited options in addressing issues associated with rising sea levels.

The Maldives, for instance, are threatened with the possibility of complete submersion by 2100 and have declared intentions to become completely carbon neutral by 2020.³⁵ Still, the future inhabitability of the Maldives lies primarily in mitigation choices of the world's largest GHG emitters. On the other hand, many countries have a host of options available to them that would decrease the vulnerability of its people and resources to climate change effects by improving governance and resource mechanisms. For instance, Myanmar, rich in natural resources could manage its resources to address dire poverty issues, while benefitting sub-regional stability and energy security (see Box 3: Myanmar and Nepal: 2 Examples of Resource Management Impacts on Security).

Several factors in national resource governance have been found tied to the stability and security of country. In a study by Stephen R. Tyler, *Policy Implications of Natural Resource Conflict Management*, it was found that public policies on natural resources that have been shown to undermine security have included: 1) *uncoordinated planning and investment*, which can intentionally or unintentionally be coupled with the marginalization of local communities, 2) *inadequate information and consultation*, which can intentionally or unintentionally be coupled with minimal consultation with local communities, 3) *discriminatory or unclear tenure policies*, which marginalize local communities, often in favor of industrial ventures regardless of traditional use and which further ostracize local communities, 4) *population displacement and marginalization*, both voluntary and forced often through public policy on large-scale resource projects can lead to marginalization and conflict, 5) *piecemeal approach to reform*, indicates lack of comprehensive address of reform, where one area is addressed without considering another can create tensions between, for example, sectors or government agencies, 6) *vague policy direction*, indicates a gap between policy and implementation due to poor planning and communication which can leave policy open to interpretation and misunderstanding and can present contradictions between implementation depending on priorities and interpretation, and 7) *inadequate support for reforms*, undermining the sound implementation of policies.³⁶

The effects of resource management choices on security often also stretch beyond national borders and reflect the reality of climate change in regards to, for example, water, forests and energy (see 2.1 Risks and Vulnerabilities). Governance also stretches beyond the government bodies to the private sector, where global business interests can, when combined with weak national governance, underpin the inequitable allocation of resources thereby contributing to factors that increase vulnerability and insecurity mentioned (see for example Box 3: Myanmar and Nepal: 2 Examples of Resource Management Impacts on Security).

Yet, although the dynamic between natural resources and conflict have been widely recognized (see section 1.1.1 Natural resource-based conflicts, page 14) the central role that resource governance could and should play in peace-building, conflict prevention and resolution has been neglected and this has, in part, resulted in sometimes inadequate and non-integrative approaches (see section 3.1 Existing Mechanisms: Strengths and Weaknesses). As one report charting resource and conflict management summarized, “no specific school of thought can be

identified.”³⁷ Addressing resource management and security in a climate change context necessitates a holistic approach that reflects local realities, the global trade in natural resources, and the trans-boundary nature of the causes and effects of climate change (see section

3.2 Looking Ahead: Risks and Opportunities).

Box 3: Myanmar and Nepal: 2 Examples of Resource Management Impacts on Security

Myanmar: Source of Conflict

Type: one-sided violent indirect-use resource conflict. Sector: Energy.

Myanmar’s governance and resource management has come under stark criticism by both the international community, as well as various environmental and human rights groups. Corruption and mismanagement of Myanmar’s natural resources have caused serious environmental degradation and left a large majority of Myanmar’s population poor.³⁸

Community participation in development and implementation of projects has been negligible and associated with broad-spectrum human rights abuses. In a recent publication by the Pa-Oh Youth Organization it was found that the Tigyit coalmine was integrally bound to severe water pollution, the displacement of entire villages and the seizing of farmlands. The majority of energy produced powered an iron mine factory, failing to meet the dire energy needs of local communities.³⁹

The Shwe gas and oil transport pipelines have also been a source of controversy - tied to corruption, grave human rights abuses and identified as fueling tensions between local communities. The internationalization of this dynamic is reflected in criticism of international investment firms in Europe and the fact that the principal users of Myanmar’s energy are not its poor, but neighboring China and Thailand.⁴⁰

Nepal: Source for Peace

Type: Non-violent direct-use resource conflict. Sector: Forests.

Nepal is in the process of developing a new constitution against a backdrop of significant political, socio-economic, environment and security challenges. Critical to its success will be its ability to address of key development and security issues. With pressing water supply strains and a forestry sector historically tied to high-intensity conflict, good resource governance will be critical. Notably, however, Nepal has strong foundations to build on.

During the Nepal’s 10-year civil war, forests were a cause of conflict, funding source and place of refuge for armed groups. More recently, however, Nepal’s forest management has been found by ECOSOC to be a “leading example of the achievement and continuing challenges of community based forest management.”⁴¹ Its management system has been credited with notable environmental improvement, and has reduced the countries vulnerability to climate change.

Still, non-violent conflict exists between Nepal’s Community Forest User Groups (CFUGs); with smaller CFUGs often sidelined, and large powerful groups reaping majority of benefits. The address of pressing land tenure and property rights will be central to preventing the transformation of what is currently referred to as one Nepal’s successes into a situation of violence. Existing forest management practices must build on its strengths while also remaining cognizant of

If the Myanmar government fails to change policy on resource management the vulnerability of its population will increase with the impacts of climate change. Ensuring equitable and participatory management and access to resources, particularly in regards to water, food and energy, will be central in climate change adaptation.

the role of forests have played in both high and low-intensity conflict and also in decreasing vulnerability to climate change effects.

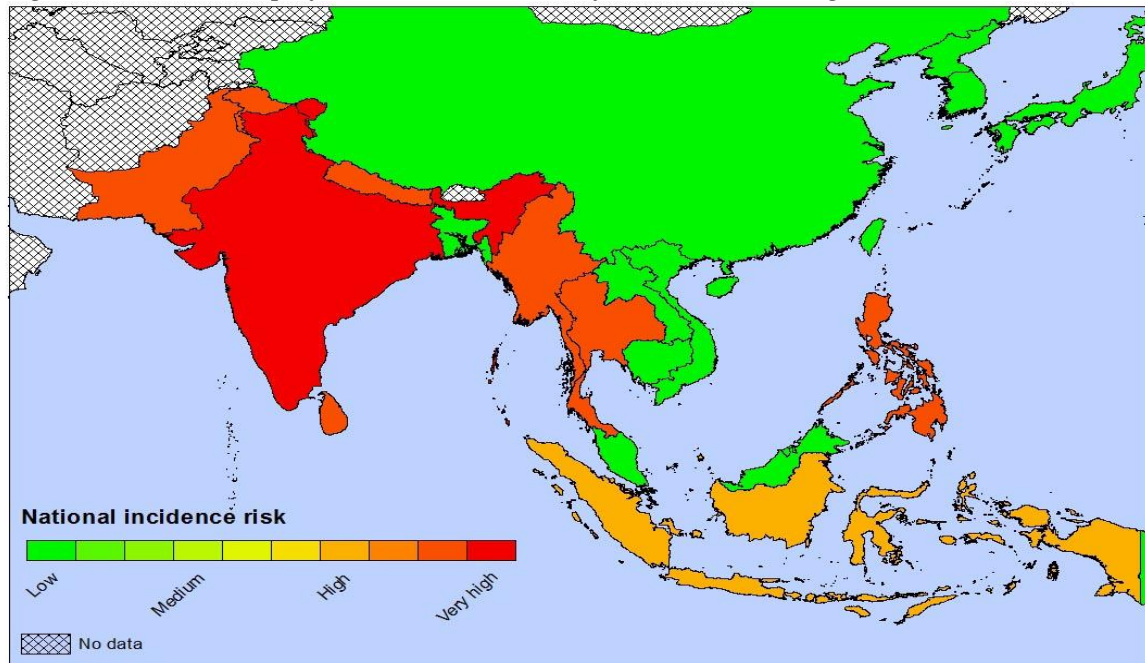
2. CLIMATE CHANGE, RESOURCES AND CONFLICT IN THE ASIA PACIFIC REGION

The Asia Pacific region is vulnerable to the adverse effects of climate change through its existing issues of poverty, governance, insecurity and exposure to natural disasters. These exacerbate both security and environmental issues that in turn compound the effects of natural disasters and conflict, leaving the region vulnerable despite its considerable economic growth and progress toward the UN Millennium Development Goals (MDGs) aimed at eradicating poverty.⁴²

The Asia Pacific is home to half of the world's total population and two thirds of the world's poor with 1.8 billion living on less than 2 USD per day, of which close to one billion live on less than 1.25 USD per day.⁴³ Those living in the region are also four times more likely to be affected by natural disasters than people living in Africa and 25 times more likely than those living in Europe or North America.⁴⁴

The Asia Pacific is also particularly vulnerable to conflict (see Figure 4: Hazard map of armed intrastate conflict in the Asia region, 2008). In 2008, nearly half of the world's intrastate conflicts were in Asia, where also one third of all battle-related casualties during the past 25 years have been.⁴⁵ As summarized in UCDP and PRIO's 2009 *Patterns of Peace and Conflict*, "Most of the recent wars have taken place in Asia; a pattern visible throughout most of the period following the Second World War. Another disturbing trend is that Asian conflicts tend to last longer than conflicts in other regions."⁴⁶

Figure 4: Hazard map of armed intrastate conflict in the Asia region, 2008



(From: PRIO in UN-OCHA report: NGI (2009): Risk assessment and mitigation measures for natural and conflict related hazards in Asia Pacific. NGI report no. 20071600-1. Page F2).

In regards to resource-based conflicts in the Asia Pacific region, it is “resource conflicts” that are prevalent – i.e. when there is a conflict of interests within or among groups over competing interests (see 1.1 Background). This is particularly true when the needs of some user groups are side-lined and omitted from policy and legislation development and implementation. This dangerous dynamic is fortified when approaches to policy are top heavy and lack consultation with and participation of vulnerable groups and communities. This disempowers communities whose ways of life are often neglected and whose rights are ignored, which can in turn can create a negative cycle that traps people in poverty while also exposing both communities and states to conflict over resources as supply and demand imbalances increase.

Figure 5: IPCC projected impacts of Climate Change on the Asia-Pacific

Climate change impacts on Asia*

- * By the 2050s, freshwater availability in Central, South, East and South-East Asia, particularly in large river basins, is projected to decrease.
- * Coastal areas, especially heavily populated mega-delta regions in South, East, and South-East Asia, will be at great risk due to increased flooding from the sea and, in some mega-deltas, flooding from rivers.
- * Climate change is projected to compound the pressures on natural resources and the environment associated with rapid urbanisation, industrialisation and economic development.
- * Endemic morbidity and mortality due to diarrhoeal disease primarily associated with floods and droughts are expected to rise in East, South and South-East Asia due to projected changes in the hydrological cycle.

Climate change impacts on Small Islands

- * Sea level rise is expected to exacerbate inundation, storm surge, erosion and other coastal hazards, thus threatening vital infrastructure, settlements and facilities that support the livelihood of island communities.
- * Deterioration in coastal conditions, for example through erosion of beaches and coral bleaching, is expected to affect local resources.
- * By mid-century, climate change is expected to reduce water resources in many small islands, e.g. in the Caribbean and Pacific, to the point where they become insufficient to meet demand during low-rainfall periods.
- * With higher temperatures, increased invasion by non-native species is expected to occur, particularly on mid- and high-latitude islands.
- * Taken from IPCC synopsis report, 3.2.2 impacts on regions

The Influence of Climate Change

Projected consequences by the IPCC for the Asia Pacific region are largely negative. The 2007 IPCC report found that “[c]limate change is projected to impinge on sustainable development of most developing countries of Asia as it compounds the pressures on natural resources and the environment associated with urbanisation, industrialisation, and economic development,”⁴⁷ and that, in regards to Pacific islands, “accelerated coastal erosion, saline intrusion into freshwater lenses and increased flooding from the sea cause large effects on human settlements.”⁴⁸

The 2007 International Alert report, *A Climate of Conflict: the Links between Climate Change, Peace and War*, found that “[f]ailure to help already stressed communities cope with the additional pressure to their livelihoods caused by climate change means that existing grievances will intensify and the risk of violent conflict will increase.”⁴⁹ The report assessed the degree to which countries could be exposed to greater risk of conflict

in a climate change context and identified 46 states with high risk of conflict. In the Asia Pacific these included Afghanistan, Bangladesh, Myanmar, India, Indonesia, Iran, Nepal, Pakistan, the Philippines, Solomon Islands, Sri Lanka. An additional 56 that could face a risk of violent conflict in the long term were also identified. In the Asia Pacific these were Cambodia, Fiji, Kiribati, Laos, Maldives, Papua New Guinea, Thailand, Timor-Leste, and Vanuatu.⁵⁰

Particularly vulnerable are the region's small islands and also densely populated coastal cities in, for example, China and India, and mega-deltas in such as the Ganges-Brahmaputra and Mekong, where tens of millions will be at increased risk of acute flooding, extreme weather events and loss of coastal wetlands.⁵¹ Overall, in Asia, 1.4 billion people live in low-lying regions. The 10 countries with the highest number of people exposed to flooding are all in Asia, whilst the region has the highest absolute exposure to severe tropical storms. With rising sea levels, these populations face the acute threat of permanently losing the coastal land on which they reside and derive their livelihood. And in South Asia, it is thought that crop yields could decrease by 30%, creating food insecurity in predominantly agricultural economies.⁵²

Myanmar and Vietnam have been identified by one study as potentially the most fragile states, in which natural resource and climate change may fuel conflict, Indonesia, Malaysia, Nepal and Thailand less so.⁵³ But significantly, the high exposure of some countries and regions of Asia is likely to be as much the result of their vulnerability – the high population densities in the case of the Asian mega-deltas, for example - as climate change impacts.⁵⁴

Ensuring a future of security and growth necessitates inclusive and equitable sustainable development. Economic growth in the region has not been inclusive and, together with the projected effects of climate change, this threatens the realisation of MDG goals. The level of growth experienced in the region is expected to continue and the International Monetary Fund (IMF) has estimated that Asia's economy will be 50% larger than it is today and will account for one third of global output in just 5 years.⁵⁵ This necessitates present-day efforts to prioritize the MDGs in order to place sustainable human development and good governance at the core of growth and planning.

2.1 Risks and Vulnerabilities

Studies show that the majority of world's armed conflicts since the end of the Cold War have been in regions heavily reliant on agriculture⁵⁶ - a sector integrally tied to food security, and the 2010 Maplecroft Food Security Index has already found that "climate change is having a profound effect on global food security."⁵⁷ Notably, in 2009 the Asian Development Bank (ADB) also highlighted that "[m]ore than 60% of the economically active population is dependent on agriculture for their livelihoods in Asia and the Pacific."⁵⁸

Climate change effects are heightened by land degradation, both by increasing the socio-economic vulnerability of populations, and also by decreasing the capacity of the land to withstand pressures associated with population growth and climate change.⁵⁹ For

instance, between 1990 and 2005, in many Asian and Pacific countries forest areas declined by roughly 1 per cent every year and have thereby added to overall carbon emissions, damaged natural ecosystems that provide natural life supporting systems such as water purification and water composition, and, through increasing desertification and soil mineral depletion, have crucially hampered the agricultural sectors on which the poor mainly depend for their living.⁶⁰ Food and water security are also integrally bound to the human security and projected scarcity is likely to increase the vulnerability of populations. At the centre of this correlation lies chronic inequality manifested in poverty and gender-based marginalisation that, when coupled with a decrease in natural resources essential for survival, threaten overall development and security in the region.

Large portions of Asia Pacific's population are being left exposed to various threats including those posed by climate change. They are exposed through issues of poverty, with the poor being substantially more exposed than middle and upper classes; gender inequalities, with women substantially more vulnerable than men; age inequalities, with the elderly and children more vulnerable; the ability to protect, with the disabled more vulnerable than the able; and also through the marginalization of indigenous and traditional peoples.⁶¹

Demographers estimate that over the next 40 years Asia, with nearly 5.5 billion, will host approximately 60 per cent of the world's population. With the vast proportion of this population growth projected to occur in the poorest countries of the region and within the poorest segments of Asian national populations,⁶² soundly addressing the development needs of the region is a critical part of climate change adaptation and mitigation.

Poverty, Food Security and Livelihoods

One study has found that poverty, often intertwined with a heavy reliance on natural resources for income, together with poor health and nutrition, was tied to the outbreak of conflict⁶³ – an essential factor to consider in the face of decreasing fresh water availability, and is illustrative of the fact that many vulnerable sectors and groups are inextricably linked (see also Annex II: Food Scarcity and Conflict). Together with projected decline in food availability, this can be a further accelerator to conflict, particular in light of that food demand is predicted to increase by 60-80% by 2050.⁶⁴ Notably, one report found that in 2025, the global food market “will have equal economic value to the present oil market...and that about 25% of this will be driven by water scarcity and the needs of water scarce countries which gave to import food.”⁶⁵

Poverty is also inextricably tied to livelihood security: with little or no income, those under the poverty line have little capacity to adapt – even if only temporarily – to price hikes in the global market which can increase existing tensions and/or create new ones. For example, global food price hikes in 2008 led to violent riots in several countries. In Bangladesh demonstrations over price hikes led to clashes between protesters and police that ultimately led to 24 people being injured.⁶⁶ Also, as summarised by the USAID report, *Livelihoods and Conflict*, “[l]ivelihood failure can contribute to the emergence of conflict by weakening the social fabric of a society, making people resort to violence to

obtain necessary resources, and increasing individuals' vulnerability to those with an interest in promoting conflict for political or economic gain."⁶⁷

Underpinning this dynamic is local and global natural resource governance which has increasingly placed resources in the Asia Pacific under strain and has contributed to curbing development, has threatened livelihoods, food and water insecurity, affected health and also increased the risk posed by natural disasters – themselves accelerators of insecurity. But vulnerabilities are not solely due to local governance factors alone and this is reflected in the effects of, for example, the global financial and economic crisis.

Box 4: Extreme weather events: Flooding and Conflict

Flooding, which is expected to increase with climate change, has historically been associated with periods of insecurity and conflict. For example, the 1970 Bay of Bengal typhoon, which claimed between 300,000 and 500,000 lives has been credited with contributing to the outbreak of civil war in eastern Pakistan which itself claimed an estimated 3 million lives and led to the creation of Bangladesh. Tensions following the typhoon escalated to conflict when those most affected found that the response by the then Pakistan central government was lacking. A separatist movement, the Awami League, was formed and clashes between it and the central Pakistan government escalated. Post independence in 1971, there was further heightened insecurity following floods in 1974 and 1988.⁶⁸ Other ties between flooding and insecurity have included: flooding in Orissa in 1980, after which clashes between students and businesses occurred; flooding in Bihar, India in 1987, after which there were clashes between looters and the police; flooding of Yangtze in 1997, after which there were concerns that the security situation would deteriorate and where the Chinese government ordered strong response by Chinese Security forces; and flooding in west Bengal in 2000, after which clashes between looters and aid workers developed.⁶⁹ More recently, floods in Sri Lanka in January 2011 have been credited with contributing to the outbreak of violence in the town of Kattankudy. 11 of Sri Lanka's 25 districts were affected, destroying crops and killing livestock. Anger over the relief effort led to demonstrations and several civil servants required medical attention.⁷⁰ While flooding experienced was not necessarily directly tied to resource-based conflicts, extreme weather events did add pressure to issues of scarcity as vulnerable populations struggled to obtain resources necessary for survival. This dynamic can also lead to migration and other security issues (see for example, see Case Study: Bangladesh and Case Study: Pakistan).

In the Asia Pacific region, countries with high domestic demand were least affected by the crisis, while nations with high focus on exports were hardest hit.⁷¹ By the end of 2009, however, Asia's outputs and exports had returned to pre-crisis levels and the region has been cited as leading crisis recovery and pulling the world out of recession⁷² largely due to India and China,⁷³ who experienced rapid growth even during the crisis.⁷⁴ As highlighted in 2010 by ESCAP, "excluding these fast-growing sub-continental economies, the Asia Pacific developing economies contracted in 2009 by 0.6%."⁷⁵

While findings reflected in *Achieving the Millennium Development Goals in and Era of Global Uncertainty: Asia Pacific Regional Report 2009/10* revealed that considerable progress towards the MDGs had been made in the region, with the greatest advances made in South East Asia and the least in the Pacific,⁷⁶ accurate data after 2008 on the impacts of the global financial crisis hit was unavailable at the time of reporting. It was estimated, however, that the crisis could result in an additional 35 million people in dire income poverty and an additional 900,000 children suffering from malnutrition from 2008 to 2015.⁷⁷ Similarly, in a recent report by the Asia Pacific Forum, it was estimated that two thirds of the population in the Pacific, 6.44 million people, could be exposed the effects of the crisis. These were projected to be principally women, children and the elderly.⁷⁸

Gender Inequalities

Women make up 70% of the world's poor, are responsible for 65% per cent of food production in Asia⁷⁹ and have, as summarized by a report by ActionAid and IDS, "less access to financial resources, land, education, health, and other basic rights than men and are seldom involved in decision making processes."⁸⁰ Women are also particularly vulnerable to both the immediate and long-term effects of climate change and conflict – a dynamic of gender inequality that is common in the Asia Pacific region where inequality often stretches from the private confines of home to government institutions and legislation. The UNDP 2010 Asia-Pacific Human Development Report found that "[d]iscrimination and neglect are threatening women's very survival in the Asia-Pacific region, where women suffer from some of the world's lowest rates of political representation, employment and property ownership. Their lack of participation is also depressing economic growth"⁸¹ and climate change is expected to worsen current gender inequalities and further increase the vulnerability of women.⁸²

Women are particularly exposed to extreme weather events. In Bangladesh, for example, a staggering 90% of victims from the 1991 cyclone were women and children.⁸³ Women are also particularly vulnerable at times of insecurity and conflict as sexual assault and abuse can sometimes used a conflict tactic.⁸⁴ Exploitation of young women and children also often accompanies periods of environmental difficulty⁸⁵ and it has also been found that during and after extreme weather events women and children are also subjected to increased violence.⁸⁶

Also, if resource-based conflicts increase, so too will the likelihood that women will become more exposed. However, as highlighted by a USAID report, *Women and Conflict*, "women are rarely mere passive victims of conflict and should not be treated as such...[they can]...play active roles in the events that lead to fighting and instability...yet they have also served as the forerunners of peace movements."⁸⁷ Similarly, the same is true in a climate change context. As ActionAid and IDS reported in *We Know What We Need*, women have an integral role to play in resource management, conflict prevention and resolution, and climate change adaptation:⁸⁸ this must be reflected in national and international strategies (see

3.1 Existing Mechanisms: Strengths and Weaknesses).

Migration

The first IPCC report in 1990 found that the greatest impact of climate change could be the displacement of millions caused by shoreline or coastal erosion and agricultural disruption.⁸⁹ It has been estimated that anywhere between 25 million to 1 billion may be forced to migrate due to climate change.⁹⁰ Other studies have challenged the notion of 'climate refugees', or their future numbers. Either way, it has been found that poor states are the most likely to bear the burden of climate migrants.⁹¹ A report from 2008 by the International Organisation for Migration (IOM) titled *Migration and Climate Change* highlights that “[f]orced migration hinders development in at least four ways; by increasing pressure on urban infrastructure and services, by undermining economic growth, by increasing the risk of conflict and by leading to worse health, educational and social indicators among migrants themselves.”⁹²

Populations of the region’s island states are potentially the most likely to become international migrants. This could occur gradually, as a reflection of the gradual erosion of work opportunities and as response to decreased food and water security, or suddenly, in response to extreme weather events. This may also be determined by coping capacities and governance issues (see Annex III: Environmentally Induced Migration and Conflict). Migration in a climate change context is likely to be primarily gradual and opposed to sudden⁹³ and can undermine security. This is reflected in 1998 UN Security Council Resolution 1199, wherein the UN Security Council recognised massive migration flows to be a risk factor to peace and security.⁹⁴

Worryingly, existing mechanisms do not currently encompass or address the rights of those displaced due to climate change or other environmental strains. The UN High Commissioner for Refugees (UNHCR) recognises a refugee as someone who "owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion, is outside the country of his nationality, and is unable to or, owing to such fear, is unwilling to avail himself of the protection of that country..."⁹⁵ Unaddressed, citizens who are forced to leave their homes could, on top of already belonging to one of the world's most vulnerable groups, face the additional burden of statelessness.

Resource Sectors

Climate change is set to impact on water, food and energy availability in the Asia Pacific region and, as these are essential for survival, their dwindling supply will also be cause for greater competition and an increased likelihood of conflict. Climate change effects can also have adverse impacts on forests, which are essential for the mitigation of climate change. The management and use of these sectors also impact upon each other.

Also, as populations continue to grow, particularly in China and India, energy demands will increase. The Asian Development Bank (ADB) found that “[e]missions from energy use are projected to increase by 100% between 2007 and 2030, at which point the region

will be responsible for 45% of all global energy-related emissions (compared with 31% in 2007).”⁹⁶ As developing countries in the region continue to see a rise in demand for energy, so too will emissions grow without comprehensive mitigation measures; this necessitates a transfer to cleaner and more sustainable energy sources. Nuclear energy, increasingly used by China, India, Japan, and South Korea to produce electricity, may present new access and proliferation challenges in volatile areas that include Iran and North Korea. However, the severe damage caused to Japanese nuclear power plants by the March 2011 earthquake and tsunami, may cause countries in the region to review their nuclear strategies.⁹⁷

Energy and GHG emissions are also intrinsically tied to forests and are central to both climate change mitigation and adaptation through their capacity to contain carbon dioxide emissions and to curb the physical effects of, for example, sea-level rise and flooding. Bangladesh has, for example, adopted policies to protect and extend its mangrove forests. This has helped lessen its vulnerability to the effects of climate change by countering erosion associated with extreme weather events and of rising sea levels.⁹⁸

South and Southeast Asia contain many of the world’s remaining rain forests and these are threatened by commercial logging and land clearance operations. In the 2006 Stern Review, *The Economics of Climate Change*, commissioned by the UK government, it was found that climate change “is the greatest and widest-ranging market failure ever seen” and, with deforestation accounting for more than 18% of global emissions, asserted that “[a]ction to preserve the remaining areas of natural forest is needed urgently.”⁹⁹

Deforestation, the result of both legal and illegal logging, has also been associated with conflict, so-called ‘conflict timber’.¹⁰⁰ A report by the ARD charting conflict timber identifies two types: type 1 is “conflict financed by trees”, and type 2 is “conflicts among competing stakeholders for control of trees” and finds that conflict timber in Asia is primarily type 2. This has included, for example, Indonesia (see Case Study: Indonesia, page 38) and Cambodia where, in the 1990s, the Khmer Rouge derived about 10-20 million USD per month during the dry season from cross-border timber sales with Thailand.¹⁰¹

As the international community develops strategies to curb GHG emissions, it is thus essential that these are soundly developed and matched with mechanisms that will ensure that trade does not contribute to low- and high-intensity conflicts. Indeed, as concluded in a 2009 report by Human Rights Watch, *Wild Money: The Human Rights Consequences of Illegal Logging and Corruption in Indonesia’s Forestry Sector*, “there are many worrisome aspects to the way carbon trading may be implemented that, if not addressed properly, could have a significant impact on forest governance, corruption, and human rights. In particular, there is a critical need for adequate safeguards to be in place to accurately monitor the actual logging rates and their legal compliance, and stop the flow of cash if forests are not protected.”¹⁰²

Box 5: Water in the Asia Pacific: A Source of Peace or Conflict?

Global water use is increasing at a rate twice as fast as population growth.¹⁰³ With water being a central component in, among other sectors, health, agriculture, industry, private use and electricity generation, its distribution will play a central role in determining how this changing supply and demand dynamic may impact on security and wellbeing. As *Linking the Environment and Conflict Prevention* summarized “the common issue in water and food security is the possibility that it can “indirectly nourish conflict in the general context of political repression, poverty, marginalization, loss of sustainable livelihoods, precarious living conditions and destabilization.”¹⁰⁴

As demand for water grows with economic development and population growth, the IPCC also projects a decrease in fresh water availability in many parts of the Asia Pacific. This is likely to be experienced first and foremost at local levels, exacerbating existing inequalities while further exposing vulnerable groups to insecurity. However, the nature of water in many Asian states surpasses state boundaries and many countries are vulnerable to the decisions of other states.

When water crosses state boundaries it often becomes highly politicised and a growing apprehension of the potential implications of dwindling water supplies has sparked debates over so-called “water wars.” However, water-sharing agreements between states have historically been the source of cooperation rather than conflict.¹⁰⁵ On the other hand, studies have also shown that countries that share rivers are more likely to engage in violent conflict,¹⁰⁶ and that when there is a significant change in rainfall patterns in one year, the likelihood of violent internal conflict in the following year increases substantially.¹⁰⁷ In a report by International Alert from 2007, it was found that China and India are among those countries that could face violent conflicts over water rights.¹⁰⁸

Also, in a study on environmental conflict it was found that in 15 of 75 case studies, dams were a contributing factor to violence and tension between states.¹⁰⁹ It was also found that when local participation is low, there is a marked increase for intrastate conflict.¹¹⁰ In geo-engineering terms, China has huge ambitions for hydropower from the three great rivers - the Salween, the Mekong and the Yangzi – which it hopes will help to maintain its growth. On the Mekong alone China has planned or built eight dams. The Xiaowan dam is due to be finished within two years and will be China’s biggest hydropower project after the Three Gorges on the middle Yangzi. Proposals for 13 dams on the Salween, delayed by unusually vociferous protests about their social and environmental costs, will probably be re-started; many locals have already been resettled.¹¹¹

The risk of conflict between states over potential dwindling water supplies caused by climate change, specifically the potential risk of capture of water resources by particular countries, could be especially important. Several rivers in the Asia Pacific region stretch across states and as the water from melting glaciers decline, so may China's diversion of those waters increase to feed its own population as needs increase. This will inevitably adversely affect those who depend on these headwaters for fresh water and agriculture production. Chinese infrastructure projects in Tibet, China where many Asian rivers originate, affect communities in neighbouring countries

that depend on these rivers (see Case Study: China). Water systems are also a significant source of energy through, for example, the provision of hydroelectricity and affected river systems could, therefore, also affect energy. Inadequate water supply also affects several other areas of security and developmental importance such as agricultural production, public health, and livelihoods. (See also Annex I: Water Scarcity and Conflict).

The glaciers of the Himalayas, Hindu Kush and Tibetan Plateau currently supply water to 1.3 billion living in key Asian river basins including the Mekong, Irrawaddy, Indus, Ganges, Brahmaputra, Yangtze and Yellow River, especially during the dry season. And yet dry season flows appear to be gradually falling – some predict steeply - as the glaciers recede due to rising temperatures, and water supplies are increasingly erratic – droughts now appear to follow flooding.¹¹² Water sharing agreements, undermined by changing water flows and levels, may also become sources of dispute, if not conflict. For example, fishery access agreements could cease to be relevant as fish move to other areas due to climate change. And rising sea levels and changing coastlines due to climate change may exacerbate, or shift the focus of existing border disputes over the South China Sea and Exclusive Economic Zones that extend 200 nautical miles out to sea from the coastline.¹¹³

Sub-regional trade dynamics have also received attention in reference to a 2010 agreement reached between Myanmar, Thailand and China concerning the possible development of a hydropower plant in the Salween River in Myanmar. India has expressed concerns over how the project could impact on its downstream-use, while China has asserted that impacts would be minimal.¹¹⁴

Without comprehensive review of national water management systems, and in the absence of comprehensive water agreements between states, the chances that water scarcity will undermine security is high. Several countries in the Asia Pacific region have sought to address this issue. At national level, this is true for Bangladesh, and at international level, this is true for ASEAN (3.1 Existing Mechanisms: Strengths and Weaknesses). However, existing tensions over water supply indicate that existing mechanisms are not enough: it will ultimately be up to states to decide whether or not national and regional water management will be a catalyst for peace or for conflict.

2.2 Resource-based Conflicts and the Effects of Climate Change

Data on resource-based conflicts in the Asia Pacific region is lacking and/or contradictory. For example, one study from 2000 noted that tensions involving natural resources in the Asia Pacific region included: Afghanistan (opium/heroin, emeralds, natural gas and oil routes); Myanmar (timber, rubies, heroin, oil); Cambodia (timber, rubies, oil); Timor-Leste (oil); Indonesia-Aceh (oil); Indonesia-West Papua (timber, copper, oil, hydropower); Papua New Guinea-Bougainville (copper); Philippines (timber, marijuana).¹¹⁵

While more recently, the 2010 Institute for International Conflict Research (IIIC) noted that 12 Asia Pacific conflicts within the 114 Asia Oceania classification conflicts were in part resource-related. These involved Bangladesh, India, Myanmar, China, Vietnam, Taiwan (Province of China), Brunei, Indonesia, the Philippines, Malaysia, Pakistan, the Solomon Islands, and Timor-Leste. Of these 12 conflicts, 6 are of crisis intensity, 2 are manifest conflicts, and 4 are latent conflicts (see Annex VI: Asia Pacific Conflicts with Resource-Issue Dimensions). However, the findings do not appear to reflect several resource-based conflicts including, for example resource-based conflicts in Myanmar and Nepal (Box 3: Myanmar and Nepal: 2 Examples of Resource Management Impacts on Security) nor in Fiji, for example, which stated in September 2010 that resource based conflicts was one of its top priorities.¹¹⁶ In another study on environmental conflicts from 1980 to 2005, and based on 4 environmental contributors to conflict: water, land/soil, fish and biodiversity, showed that in the Asia Pacific Region most environment-related conflicts were to do with water and/or soil. It is important to note, however, that the findings did not purport to represent all resource-based conflicts in the region.

While information exists on resource-conflicts in the Asia Pacific and reveal several common denominators, there are also several significant differences in conflict identification. As a result, data on which to form comprehensive and targeted peace and security-based approaches on existing and possible resource conflict faultlines are therefore not comprehensive. This is further complicated by poor reporting due to corruption, fear and lack of access that inhibits the availability of comprehensive information that would show where resource conflict faultlines exist. This is particularly true of smaller-scale tensions and conflicts that easily go unnoticed but that could increase with environmental stress. Increasing information on resource-based conflicts is central to developing sound mitigation and adaptation policies (see Box 6: Mind the Gap: Identifying Sources of Conflict).

2.2.1 East Asia

East Asia is likely to experience increased precipitation and temperatures associated with climate change. It's also particularly exposed to natural disasters both in terms of its geographic makeup and also number of people affected. This stands to be further affected by land-use change and deforestation. Most countries in East Asia, however, are only minimally responsible for climate change. China, on the other hand, is a key player in this regard: it emits more GHGs than any other country in the world and its mitigation efforts will play a determining role in long-term climate change. Its adaptation mechanisms will also have direct impacts in many countries across Asia (see section 2.2.2 South and West Asia). In East Asia, the reliance of countries on the Mekong River for water can become a source of tension as China feeds its own population. The Mekong River flows out of China and feeds Laos, Myanmar, Cambodia, and Vietnam; decreased flow to end-users and increased use by countries nearer the source threaten to have adverse effects on agriculture, water access, and health. For these reasons, China's importance in combating the effect of climate change is and will be profound.

Case Study: China

China is now the world's largest greenhouse gas emitter and has invested in the development of clean energy. Its efforts to feed its growth and the needs of its booming population and economy effects its neighbours and will continue to do so. As a principal player in the global economy, China is also in a key position to play a positive and central role on climate change mitigation and adaptation regionally and internationally.

As China has grown stronger it has also cultivated new needs to secure resources in order to support the rising living standards of its population, which amounts to one-fifth of the world's total. Industrialisation and urbanisation has jumped China's share of the world's metal consumption from 10% to 25% since the late 1990s.¹¹⁷ China is also now Saudi Arabia's biggest customer, importing roughly half of its oil, a share that will increase to two-thirds by 2015 and four-fifths by 2030. Also, due in part to constraints on domestic activities in forestry, China is also one of the world's largest timber importers.¹¹⁸ Whilst it has one-fifth of the world's population it only has 7 per cent of the agricultural land, land which is quickly diminishing through increased desertification. In development terms, Beijing views the South China Sea as a major source of nutrition for its people. And yet it consumes only a third of the world's average consumption of fish.¹¹⁹

China's demand for water over the coming years is only likely to increase. And yet there is increasing evidence that climate change may affect its critical water sources in the Himalayas and along the Mekong River Basin.¹²⁰ The first Chinese government national assessment on climate change in 2006, predicted that whilst precipitation levels were likely to increase drastically over coming decades, severe water shortages would too. Indeed, drought, heat waves and extreme weather events were expected to become more commonplace, and most likely to hit hard the agricultural sector.¹²¹ Over recent years this sector of China's economy, if not the country as a whole, has been hard hit by a series of large droughts, relieved only by devastating flooding last summer.¹²²

Significantly, China's water problems have far reaching effects regionally. Seven of the world's greatest rivers, including the Ganges and the Yangzi, are fed by the glaciers in the Himalayas and the Tibetan plateau, the so-called 'Water Towers of Asia,' which supply water to roughly 40 per cent of the world's population.¹²³ For India and China water supplies from this strategically sensitive region is set to exacerbate tension in their already troubled relations. Several of the big rivers of north India, including the Brahmaputra, which feeds millions, rise in Tibet, China. As a taster of what may come, last summer China undertook to build a dam on the Brahmaputra, which it calls the Yarlung Tsangpo, exacerbating long-held Indian fears that Beijing would divert the river's waters to Chinese farmers.¹²⁴ Thailand, Laos, Cambodia and Vietnam have long complained that China operates on the Mekong without prior consultation. A *Bangkok Post* editorial accused China of "Killing the Mekong"; distraught Thai, Laotian and Cambodian fishermen and farmers have blamed the Chinese dams of reducing fish stocks, cutting irrigation and disrupting livelihoods. In reality, whilst less than one-sixth of the total Mekong catchment is in China, it has held some of the dry-season flow back,

which is crucial to neighbouring countries during the dry season. Over recent years and until the 2010 floods, water levels on the Mekong, the river basin of which is the greatest inland fishing region in the world, were desperately low, following a long, brutal drought in Yunnan.

China has undertaken to more than double its reliance on renewable energy by 2020, and is positioned to become a leading player in wind, solar and hydropower industries.¹²⁵ It is the leading producer of wind turbines and it is making massive investments in its electricity grid – on hydropower in particular. By comparison to its leading competitor, the US, China has stricter fuel-emission standards and a more favourable and predictable market for private investments in clean energy technology. It has been argued that China long-term objective is to secure a leading position so that it can be secure during the transition to the new era of clean energy. At the same time it is now the leading manufacturer of components for renewable energy technologies. Above all, China is investing massively to achieve its goals – roughly \$1,000bn over the next 10 years.¹²⁶

China has traditionally been unwilling to co-operate on environmental matters with its Association of Southeast Asian Nations (ASEAN) partners on matters affecting the South China Sea.¹²⁷ Ethnic, cultural and political differences have not been easily overcome, and overlapping claims to central parts of the sea have caused repeated political skirmishes between China and various ASEAN members, and still do. That said, as regular high politics interaction has become more frequent fora have emerged which have slowly enhanced co-operation, although China's active political engagement and participation is key. But economic and sovereignty issues for China remain a stumbling block and it remains extremely wary of multilateral fora.¹²⁸

There may be signs that China is now willing to engage with concerned governments in the region, however. In April 2010, China explained at the Mekong River Commission, the inter-governmental body supposed to resolve disputes, blaming the low water levels on climate change, a claim supported by a number of international water and environmental experts.¹²⁹ And later in July, China took officials from Thailand, Laos, Cambodia and Vietnam to view both the Xiaowan and Jinghong dams. That said, it could be that China is now seeking to curry favour with these resentful countries to which it hopes to sell the electricity and possibly also to assist in the construction of hydroelectric dams in the lower Mekong.¹³⁰ Whatever the case, increased regional cooperation is essential in order ensure that that the region does not see an increase in tension and mistrust.

China has experienced considerable economic growth that is likely to continue. However, growth has been tied intrinsically to resource management and choices made in China over recent decades has resulted in severe degradation which is undermining – though not halting –its successes. As China seeks to adapt to climate change and simultaneously respond to growing resource-demands of its population, the choices it will make will directly impact on countries in the sub-region. Incorporating conflict prevention and resolution mechanisms into China's resource, environmental and climate change policies could dramatically increase the potential for sound national and regional peace. Such an approach is necessary not only for China, but for the region as a whole,

and should be matched also with sound trading practices at national, regional and international levels (see section 3.2 Looking Ahead: Risks and Opportunities).

Case Study: Indonesia

Indonesia's forests have become synonymous with conflict, corruption and deforestation, and are responsible for over three-quarters of Indonesia's GHG emissions.¹³¹ Two key relationships are central in this regard – on the one hand there is deforestation and climate change, and on the other is the forest sector and conflict. Linking both is illegal logging, which at one time reportedly cost Indonesia an estimate USD 2 billion per year.¹³² Under President Yudhoyono, however, considerable advancements have been made although illegal logging continues. Addressing the adverse characteristics of Indonesia's forests sector, in particular the corruption within this dynamic, would underpin peace and security by both mitigating climate change and cutting links between timber and insecurity.

Indonesia's deforestation rate is fastest in the world. According to a 2007 report commissioned by the World Bank and the UK Department for International Development (DfID), it is now among the top 3 emitters in the world.¹³³ Indonesia has also been host to one of prime examples of conflict timber, – a dynamic that has permeated Indonesia's forestry sector to a backdrop of violence and corruption. In recognition of this link, the partnership between Indonesia and EU's Forest Law Enforcement, Governance and Trade (FLEGT), included the establishment of several Conflict Resolution Forums, with full mandates to “amicably resolve forestry related conflicts.”¹³⁴

The dilemma facing Indonesia's forests can, in part, be dated back to policies developed before its current administration. An Associates in Rural Development (ARD) report from 2003 examined conflict timber in Indonesia in 6 of its provinces and found that, although there were variations on the characteristics of conflict timber between provinces, there was one over-riding theme in all cases and that was the influence of previous governments from the colonial period and/or from Suharto's authoritarian rule over Indonesia's resources and forests in particular.¹³⁵ Suharto's regime tightly controlled resources for its own profit with minimal benefit for the Indonesian population. Conflict was suppressed through intimidation. Post Suharto, and with decentralisation, conflicts linked to the timber trade occurred between and within businesses, communities, foreign interests and varying levels of government and security forces.¹³⁶ This has been compounded by subsequent influences including bureaucratic, political and military weakness, corruption and the decentralisation process.¹³⁷

With illegal logging reportedly costing Indonesia an estimated USD 2 billion per year,¹³⁸ President Yudhoyono introduced a crackdown in Indonesia's forestry sector in 2005. Since then illegal logging has dipped considerably but corruption and illegal logging still remain rife. This is reflected in other resource sectors as well and has adverse consequences for, in particular, forest communities but also Indonesia's overall population. For example, Human Rights Watch found that between 2003 and 2006, funds lost to illegal logging were equal to the total amount of Indonesia's entire health spending

for the same period.¹³⁹ The realities and costs of Indonesia's illegal logging industry also stretch into other resource sectors. Notably, a government task force assigned to investigate illegal activities revealed that only 67 of 352 plantations were operating legally in Central Kalimantan, and that only 9 of 615 mine operators were operating legally.¹⁴⁰

As reflected in this case study, an unregulated or corrupt forestry sector can present issues of deforestation, climate change vulnerability and conflict. While efforts to cut ties by Indonesia's current administration with Suharto's legacy and the problematic decentralization that followed has at times been difficult it has also seen considerable and noteworthy improvements. These have also reflected the regional and global reality of illegal logging that is reflected in, for example, the fact that when Europe banned imports of illegal timber, destruction of Indonesia's forests halved.¹⁴¹ Other notable steps have been taken in this direction. China and the United States, the world's largest importers of forest products, have entered into an agreement to ban the import of illegal and unsustainably harvested timber from countries including Indonesia and Papua New Guinea.¹⁴² Similar legislation should be introduced holistically within the Asia Pacific region and globally in order to ensure that illegal logging is halted and should be matched with international regulations that ensure transparency and accountability (see section 3.2 Looking Ahead: Risks and Opportunities).

2.2.2 South and West Asia

South Asia, home of half the world's poor¹⁴³ and classified by the World Bank as particularly vulnerable to the effects of climate change¹⁴⁴ has high and growing population levels, serious poverty issues and is exposed to conflict and environmental stress. For example, 50% of South Asia's population was affected by an extreme weather event between 1990 and 2008 leaving about 60,000 dead and 45 billion USD in damages.¹⁴⁵ In a study by the German Advisory Council on Global Change, *Climate Change as a Global Security Risk*, it was found that the climate change effects in the India, Pakistan and Bangladesh sub region could "increase social crisis potential which is already characterized by cross-border conflicts (India/Pakistan), instable governments (Bangladesh/Pakistan) and Islamism" (suggested change: religious fundamentalism Islamism).¹⁴⁶

In 2008, in recognition of the regional dimensions of climate change, the South Asian Association for Regional Cooperation (SAARC) environment ministers adopted the Dhaka declaration on climate change and Action Plan on Climate Change stretching from 2009 to 2011 where it identifies key thematic areas of cooperation: adaption; mitigation; technology transfer; finance and investment; education and awareness; management of impacts and risks; and capacity building for international negotiations.¹⁴⁷ National and regional security issues that could arise from climate change, however, are not mentioned. This mirrors a general truth: peace and security is largely sidelined from climate change discourse.

River water in South Asia supplies both downstream and upstream countries and has increasingly become a political issue with increased tensions of water supplies. Due to

climate change, Himalayan glaciers, which supply water to several of South Asia's most crucial rivers, are retreating. Because of the dependency of the rivers which draw their water from the glaciers, disrupted water supplies to the rivers could have widespread consequences for the sub region and its populations (see 2.1 Risks and Vulnerabilities). This, coupled with the projections of increasing weather events, higher temperatures, changing precipitation patterns, growing populations and increasing needs and use of water could be extremely problematic. Distribution of fresh water is unequal and this is exacerbated by pollution and changes associated with climate change. This has been both a source of cooperation in the past and also of tension. For example, tensions between India and Pakistan have risen from over the Baglihar dam construction over River Chenab in Indian-administered Kashmir.¹⁴⁸

People living along the coastlines of Pakistan, India, and Bangladesh also face repercussions of rising sea levels, which could cause mass migration. Central to this is the Indus River Basin, which is a primary water source for millions in both India and Pakistan. In order to create hydropower, dams and canals have been built which has also resulted in the drying of certain parts of the Indus River Basin and resulted in increased migration across national borders. The Ganges River Basin, which is of both economic and religious importance, is also a source of tension between India and Bangladesh.

Case Study: Pakistan

In 2007, the IPCC projected that changes associated with climate change could worsen existing environmental stressors in Pakistan and lead to affected land, agriculture, poverty and unrest.¹⁴⁹ Pakistan is vulnerable to potential adverse effects of climate change due in part to pre-existing elements of insecurity, namely: environmental stressors such as earthquakes and floods, economic weakness and political divisions, poor government oversight and resource management and a growing strength of radical Islamist groups.¹⁵⁰ These factors also exist in a cyclical relationship with Pakistan's development. In Pakistan's 2010 report on its progress toward the MDGs, it noted that several factors from the global economic crisis to domestic security issues to devastating 2010 floods, would negatively impact on Pakistan's economy and its realisation of MDG goals and targets.¹⁵¹ There is growing concern this dynamic could impact negatively on national and cross-border security with, in particular, Afghanistan and India.

Pakistan's primary natural resources, water and arable land, at one time represented an area of security. Today, the opposite is true. Pakistan is facing damaging water shortages due in part to inadequate and inequitable water management systems and distribution.¹⁵² With 97% of water usage in Pakistan used for agriculture, the decline in water availability also signals worrying signs for food security and for those whose livelihoods depend on agriculture. The sector employs approximately 54% of Pakistan's workforce.¹⁵³ Pakistan is also heavily deforested, a factor that has been cited as contributing to the 2010 floods, identified by the UN as the largest humanitarian crisis in recent history - an estimated 20 million people have been affected by the floods with 10 million homeless, 1,700 lives lost,¹⁵⁴ 2.7 million displaced,¹⁵⁵ and 5.3 million jobs lost or affected.¹⁵⁶ The floods have caused concern that Afghan and Pakistani militant groups could capitalise on weak government oversight to increase control and legitimacy,

thereby deepening insecurity. This has been true in the past. For example, following the 2005 earthquake in the Northwest Frontier Province (NFP) and Azad Kashmir, militants were quick and effective in the provision of assistance. This helped them garner support and legitimacy.¹⁵⁷

At the centre of concerns over regional security dynamics are tensions over water. An article published in the Washington Post in January 2009, stated “[t]he water crisis in Pakistan is directly linked to relations with India. Resolution could prevent an environmental catastrophe in South Asia, but failure to do so could fuel the fires of discontent that lead to extremism and terrorism.”¹⁵⁸ Tellingly, reports state that militant groups have seized upon increasing tensions between Pakistan and India over water. Jamaat-u-Dawa, the charity wing of the anti-Indian Lashkar-e-Taiba, which was responsible for the 2008 attack in Mumbai which claimed 163 lives, refer to water tensions in anti-Indian rhetoric.¹⁵⁹

While the relationship between Pakistan and India is one of the most tense in the world, water agreements have historically been a source for cooperation through the 1960 Indus Waters Treaty that assigned water access between India and Pakistan. However, this could change. Recent tension concerning the Kishenganga power project in Kashmir and Jammu, which Pakistan fears will affect its water supply and its agricultural industry, led Pakistan to file a case in May 2010 with the International Court of Arbitration in its attempts to prevent the project from continuing. This marked the second time in only 3 years and since the signing of the Treaty in 1960, that Pakistan invoked arbitration under Article IX of the Indus Water Treaty.¹⁶⁰ In January 2011, Pakistan was made to withdraw its petition.¹⁶¹ However, water tensions are not only cross-border. The Kalabagh Dam on the Indus River in the Punjab Province of Pakistan is stirring tensions with Sindh and Baluchistan Provinces and the Northwest Frontier Province (NFP).¹⁶²

IPCC projections highlight that melting Himalayan glaciers can adversely affect the Indus River. Together with projected rise in monsoon variability, this is a worrying projection for Pakistan's water and agricultural sectors and regional security. The change in extreme weather patterns and their devastating effects on the most vulnerable and exposed sectors and populations in Pakistan is a worrying sign of the toll that environmental destruction and change can take on security.

Essential to mitigating the threat-multiplying effects of climate change in Pakistan and the region is increased oversight, heightened regional cooperation and information sharing and, above all, equitable natural resource management and distribution that results in balanced supply and demand dynamics that consider the most vulnerable people and sectors. The region should also explore the possibilities of expanded livelihood choices for its vulnerable populations. This would decrease the likelihood of conflict in the face of, for example, extreme weather events. Establishing participatory resource-conflict prevention and resolution mechanisms within, for example, climate change strategies would further decrease the likelihood of conflict in Pakistan and the sub-region.

Case Study: Bangladesh

Bangladesh is classified as a country most vulnerable to the impacts of climate change and is already experiencing its adverse effects.¹⁶³ This is due in part to its high exposure to extreme weather events, particularly floods and cyclones, and sea level rise. When coupled with inadequate governance structures, high population density, widespread poverty, and reliance on natural resources and ecosystem services, climate change effects could undermine security through migration and increased resource scarcity.

More than 5 million Bangladeshis live in areas that are very vulnerable to cyclones and storm surges and every year, between 30 and 70% of the country is flooded,¹⁶⁴ placing pressure on land availability, agriculture, and water security and straining development.¹⁶⁵ However, Bangladesh has seen improvement in its resilience to climate change through its efforts on adaptation. For example, when Cyclone Sidr struck in 2007, Bangladesh had taken efforts to increase its disaster preparation. While damage was nonetheless devastating, it has been estimated that if Bangladesh had not taken the measures that it did, the human and financial toll would have been far greater.¹⁶⁶ Notably, the inclusion of women in decision-making on disaster preparedness has also lessened their vulnerability.¹⁶⁷ Similarly, the same is true of the diversification of income amongst high-risk agriculture communities that also lessened potential adverse social impacts on livelihood.¹⁶⁸ While measures taken have increased Bangladesh's resilience to climate change, the challenges confronting Bangladesh in the face of climate change are not negated as considerable challenges remain - not least of which is the nexus between natural disasters, migration, and security.

In the Chittagong Hill Tracts (CHT), disputes over land span as far back as the late 1970s. Between 1979 and 1985, the Bangladesh Government relocated hundreds of thousands of Bengalis to the CHTs promising access to land and food. Indigenous communities in the area have long opposed the settlement of Bengalis and have called for autonomy, are amongst the most marginalised in the country, and have faced human and civil rights abuse in the face of conflict between the Shanti Bahini, the military arm of the Parbatya Chattagran Jana Sanghati Samiti (PCJSS) and the Bangladesh Government, which ended with the Chittagong Hill Tracts Peace Accord, signed in 1997. There have been accusations however, that the accord has not been honoured by the government and settlers and resentment is growing. For example, February 2010 saw several violent altercations in the CHT with homes burnt and lives lost. The Accord outlined that land owned by indigenous peoples be returned to them but as many do not have proof of ownership, resentment is growing. Meanwhile, Bengalis who were relocated to the CHT do not want to leave¹⁶⁹ and meanwhile, India has asserted that Bangladesh Army operations in the CHT region have caused mass migration into India.¹⁷⁰

With an increase in extreme weather events comes also the risk of increased migration to both the CHT region and across the border to India. India has responded to migration issues with its neighbour by erecting a barbed wire fence along their shared border with the expressed goal of keeping out Islamic militants, illegal smuggling and trafficking.

The fence, however, has already become a source of tension with suspicions, fears, and accusation from both sides¹⁷¹ and reports of several hundreds killed by border security guards.¹⁷²

With the increased environmental and human pressures that are projected with climate change, existing tensions between the two countries are unlikely to decrease and, as such, increased cooperation and planning is necessary and this must also mainstream the needs and involvement of the poorest, which include indigenous groups, into building national, and regional resilience climate change and conflict.

Through its adaptation mechanisms, Bangladesh has considerable strengths to build upon in regards to its National Adaptation Programmes of action (see section 3.1 Existing Mechanisms: Strengths and Weaknesses) that could, in several cases, be looked to as an example of sound adaptation policy that could be considered for inclusion in other adaptation policies. However, Bangladesh and the sub region could further build upon these strengths by expressly incorporating resource-based conflict mitigation and resolution in its NAPA and other policies and ensuring representation of vulnerable groups including, in particular its indigenous peoples – a necessity that is true also for the region as a whole (see section 3.2 Looking Ahead: Risks and Opportunities).

2.2.3 Pacific

Scientific research now advises many small island states to prepare for humanitarian catastrophes borne by increased extreme weather events and rising sea levels (see Figure 5: IPCC projected impacts of Climate Change on the Asia-Pacific). While the majority of migration is internal, long-term uncertainties coupled with increased GHGs could internationalize much of the migration associated with disappearing states.

In their submission to the UN Secretary General's report *Climate Change and its possible security implications*, the PSIDS highlighted that they were facing “rising sea levels, changing weather patterns and natural disasters, soil erosion, loss of coral reefs”¹⁷³ and that this had adverse effects on food security, water security, public health, physical and social infrastructure, the loss of lives and livelihoods, migration, loss of islands, territorial integrity, sovereignty, legal rights, conflict and unrest, and sociocultural impacts.¹⁷⁴

Several Pacific island states have experienced “heavy inundation of heavily populated coastal areas, loss of freshwater, failure of agriculture and other results of saltwater intrusion”¹⁷⁵ and resettlement and migration.¹⁷⁶ Extreme food and water shortages that have been aggravated by the effects of climate change have displaced individuals and communities in Vanuatu, Micronesia, Papua New Guinea, Tuvalu and the Solomon Islands.¹⁷⁷ Food and water supplies were also recently negatively affected due to salt deposits and contaminants caused by rising sea levels. In Kiribati, water shortages reached critical levels and threatened to plunge Kiribati into a state of emergency.¹⁷⁸

Case Study: Solomon Islands

The Solomon Islands, a Pacific island nation with a population just over half a million comprises of nearly one thousand islands and has an economy which is heavily dependent on its agricultural, forestry, and fishing industries. Logging exports accounts for a significant proportion of the Solomon Islands' GDP.

The islands were deeply affected by civil conflict between the late 1990s and 2003. In late 1998, Guadalcanal militants, the Isatabu Freedom Movement (IFM), mounted a violent campaign of harassment against migrants, mostly from a densely populated island, Malaita. In response, a rival militant group, the Malaita Eagle Force (MEF), comprising ex-policemen and youths, together with a paramilitary group named the Police Field Force, mounted a military coup in June 2000. Serious violence continued until the Townsville Peace Agreement (TPA) later that October (the ceasefire still holds), although there was a pattern of low-level violence, widespread looting and lawlessness throughout the islands until the deployment of the Australia-led Regional Assistance Mission to Solomon Islands (RAMSI) in July 2003.¹⁷⁹

Such conflict, it has been argued, illustrates that even in a small island state such as this the unequal distribution of resources can cause violent conflict and tension.¹⁸⁰ The socio-economic setting in the Solomon Islands sees a dependence on primary commodity exports (logging and fishing account for roughly 30 to 40 per cent of its GDP for the past two decades¹⁸¹). This, together with its youth-heavy population, can provide appropriate conditions for a 'resource war'. Notably, a range of actors, including ex-militants, politicians and businessmen, benefited financially from the violence and disorder, particularly during the post-coup phase of the conflict. Important to the coup were middle class businessmen and politicians "whose personal wealth and status (were) tied up with who control(led) the state... (and the coup was in reaction to the introduction of) ...anti-corruption regulations which ... upset established business connections."¹⁸² Such anti-corruption reforms had become necessary. In essence, political morality had fallen to such a low level that national politicians were noticeably in the pocket of various Asian logging companies seeking and gaining ready access to the Solomon Islands' forests for logging rights in return for bribes and sweeteners, some of which was used to fund elections campaigns.¹⁸³ Even so, following the coup and ceasefire, pervasive corruption continued to affect the post-conflict demobilization process. The state, rather than lootable primary resources, had become the subject of predation.¹⁸⁴

Set against this history of conflict and poor development, the Solomon Islands face the prospect of changes in their environment caused by climate change, which, it is argued, will exacerbate underlying tensions and undermine security. The Solomon Islands have seen a gradual long-term change in its climate over the past 30-100 years. Temperatures in the Solomon Islands have increased, but more rapidly in the past decade. Rainfall levels have decreased between 20-40 per cent in the last century and sea levels are estimated to have increased 15-25 mm between 1993-2001.¹⁸⁵ More widely, it is predicted that temperatures may increase by between 1-3 degrees Celsius before the end

of the century, and within the same timeframe, in a country already prone to flood and drought, it is estimated that rainfall levels could fall or rise by roughly 15 per cent, undermining food security. Sea levels may rise by 20-60 centimeters.¹⁸⁶

In general terms, it has been argued that climate change may fundamentally undermine food security of southern Pacific nations, including the Solomon Islands, as they are heavily dependent on food imports but their ability to pay for them may become hampered because of adverse strains – falling soil fertility and fish abundance - placed on their agricultural and fishing sectors.¹⁸⁷ The Pacific Adaptation to Climate Change (PACC), a Global Environment Facility-funded project, has been working to address main medium-term effect of climate change in the local area – the threat to food security. With the effects of rising sea levels, supplies of taro, the staple root crop in Ontong Java atoll, and local ferns are dying due to rising salinity levels in the swamp. Food security for atoll islanders and coastal villagers in Solomon Islands is already in decline, which is affecting their health as well as their education - some children do not attend school because they lack sufficient food. And the islanders are unable to profit for surplus sales, stagnating local economies.¹⁸⁸

Some local communities in the Solomon Islands traditionally have been well versed in adapting to climate change and/or extreme weather events (coastal protection, food sources, housing, etc.). A notable characteristic of these societies has been its mobility (migration) in the face of internal or external stresses, although these adaptive strategies cannot necessarily be attributed to climate change alone.¹⁸⁹ And recently there have been signs of local success in combating possible sources of resource conflict. In 2009, local communities and tribal leaders in the Choiseul (or Lauru) region of the Solomon Islands, with outside assistance, agreed to create an ambitious network of marine and terrestrial protected areas using a holistic perspective that accounts for both current and anticipated consequences of climate change. The aim has been to identify and target for ecosystem-based adaptation, communities, natural defenses, food and water resources most threatened by climate change, and to implement new practices that limit the degradation and exploitation of important resources. The early signs are encouraging. The Parama reef at the northwestern tip of Choiseul, set aside as a marine protected area in 2006, had by early 2010 already seen a remarkable increase in the density of fish and other sea-life.¹⁹⁰

Despite these signs of promise, the Solomon Islands has yet to implement measures necessary to efficiently manage its forests, a key source of its recent conflict and vulnerability to climate change and potential insecurity. But in 2008 its government did take the important step of acknowledging that the state of government coordination and legislation over this sector had played a crucial role in long lasting conflict over customary land ownership and resources and undertook to work to try to address this problem. This would represent a small but significant step in generating political will designed to tackle a significant local resource-based conflict on an area which is also crucial within climate change discourse. Such a policy needs to be developed by other governments across the Pacific region with the prioritization of participatory processes (see section 3.1.1.1, Existing Mechanisms: Strengths and Weaknesses: National).

3. ADDRESSING RESOURCE-BASED CONFLICTS FUELLED BY CLIMATE CHANGE

Placing climate change squarely within peace and security discourse in 2007, the Nobel Peace Prize was awarded to the Intergovernmental Panel on Climate Change (IPCC)¹⁹¹ and former US Vice President Al Gore "for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change."¹⁹² In his acceptance speech, IPCC Chairman R K Pachauri said "[h]ow climate change will affect peace is for others to determine, but we have provided scientific assessment of what could become a basis for conflict."¹⁹³ Since then, there has been an increase in research on how the links between climate change and conflict, but there still exists no body holistically coordinating information and response to the issue.

Charting existing mechanisms that address resource-based conflicts fuelled by climate change, and indeed climate change and security generally, reveals a largely porous area of policy and legislation. Much of the debate and hesitation that surrounds the climate change and security dynamic is centered on causality and sovereignty. Mechanisms that do exist do not address the issue in a peace and security context.

For example, as the possibility of uninhabitable states becomes increasingly likely, questions of territorial and sovereign rights will also come to the fore. It is therefore important to address legal issues on the sovereign rights of governments whose states become submerged including, for example, the right to exploit Exclusive Economic Zones (EEZs), and whether or not states who lose their land due to the effects of climate change brought on primarily by other nations, can claim compensation. Adapting to climate change also means recognizing the interrelationships between the environmental and security and taking measures to sever ties that may increase the risk of conflict.

Globally, the capacity of governments to deal with the more dire consequences of climate change will depend on institutional strength and capacity and political will. This will also help determine the humanitarian consequences and degree of assistance necessary from the international community through, for example, UN organs such as the Office for the Coordination of Humanitarian Affairs (OCHA) and the UNHCR.

As there are no existing mechanisms that address the issues of resource-based conflicts fueled by climate change, focus in this section has thus been on the few instances where climate change and security have been addressed together by the international community. This is followed by an inventory of action on climate change relevant to the region.

The UN Security Council and Climate Change

Attention to climate change and security by the UN Security Council, the only UN body specifically mandated to address issues that may threaten international peace and security, took place in 2007 in a debate entitled "the possible security implications of

climate change” attended by more than 50 member states.¹⁹⁴ It exposed a clear delineation between states that supported or opposed Security Council attention on the matter. These stark divisions and concerns expressed in the debate have prevented further Security Council attention on this issue.

This may change, however. Germany, which joined the Security Council for a period of two years in January 2011, has stated that it considers climate change to be a security issue that warrants urgent attention. Its Ambassador to the UN stated “[i]n New York this is a current, and for some countries, existential problem and we would like to take up these issues and bring them before the Security Council.” He noted, however, that several members of the Security Council could resist debate on this issue citing concern over relevance to its mandate. However, as reflected above, the nature of contemporary threats to security vary significantly from the traditional inter-state military threats common during the Cold War and recognition of this has been reflected in Security Council recent responses to, and debates on, thematic threats to peace and security.¹⁹⁵

Prior to the 2007 Security Council climate change debate, the UK distributed a concept paper titled “Energy, Climate, and Security.” In it the UK stated that the focus of the debate would be “the security implications of a changing climate, including through its impact on potential drivers of conflict.”¹⁹⁶ It went on to outline six principal climate change consequences that may threaten international peace and security: border disputes; migration; energy supplies; other resources shortages; societal stress; and humanitarian crisis.¹⁹⁷ The concept note did not state that climate change effects would directly lead to conflict, rather the “cumulative impacts of climate change could exacerbate these drivers of conflict, and particularly increase the risk to those states already susceptible to conflict.”¹⁹⁸

Opponents of the debate included Brazil, China, India, South Africa, and Russia. They claimed, for example, that climate change was an issue of sustainable development and not of security - that the debate interfered with the responsibilities of other UN bodies. Concern was also expressed over whether Security Council action on climate change would assign sweeping and uniform responsibility by all states, omitting the reality of causes of, and responsibility for, climate change, and that this would infringe on state sovereignty. Furthermore, concerns were expressed that the costs of mandatory climate change mitigation could cause negative socio-economic knock-on effects and reverse development.

As one study of the legal dynamics of climate change and the Security Council found, “[P]olitical will of individual Security Council members will be determinative of the ability of this organ to meet effectively the challenges posed by climate change...the Security Council possesses sufficient legal authority to address both the causes and consequences of this threat. Whether its individual members chose to exercise this authority in practice remains the crucial ingredient.”¹⁹⁹

3.1 Existing Mechanisms: Strengths and Weaknesses

In 2009, in addressing the question of the international community's effort on conflict prevention and the environment, the Swiss Ambassador to the UN stated, "[c]urrent initiatives to develop new information technology schemes either focus on peace building or on environment, but seldom contain a authoritative overview of existing best practice or lessons learnt on environment related conflict prevention...[w]hile existing lessons from the field clearly indicate that there are no quick fixes and no one-fits-all solutions at the operational level, there are still important gaps with regard to working instruments and tool-kits, such as mediation guidelines for resource sharing, training modules on environmental diplomacy, interactive information management tools; environmental indicators for peace-building strategies, specific sanctions regimes and guidelines to improve environmental sensitivity of peacekeeping missions, development and scaling up of positive experiences..."²⁰⁰

Indeed, there has been a fundamental failure at national and regional policy level to address the question of security and climate change and, given the vulnerability of the Asia Pacific region to the effects of climate change, this is perhaps one its greatest policy weaknesses. Still, there have been several notable regional climate change adaptation developments which mirror an increasing awareness of the importance of participatory processes, which are essential to conflict prevention, and efforts to address resource-based conflicts. But these have been irregular and would benefit from a clear and cohesive strategy. By comprehensively recognizing and addressing the relationship between resource-based conflicts and climate change this could reveal key areas of vulnerability and opportunity for peace building and inter-community and cross-border collaboration.

In light of an absence of mechanisms that address resource-based conflicts in a climate change context in the Asia Pacific region, this section charts some fora that address climate change, conflict prevention or resource management which might be well positioned to address resource-based conflicts in a climate change context.

3.1.1 National

Asia Pacific country strategies on climate change vary greatly. Many have, or are expected to, develop National Adaptation Programmes of Action (NAPA), a platform for Least Developed Countries (LDCs) to prioritize activities that address immediate adaptation needs as they regard climate change, and many also are party to regional forums that address various climate change issues or resource-sharing agreements (see section 3.1.2 Regional).

The question of resource-based conflicts in the region has however only been addressed as needs arise and mostly on an ad hoc basis. This is largely due to a lack of recognition of resource-dimensions in both low- and high-intensity conflicts (see Box 6: Mind the Gap: Identifying Sources of Conflict). Also, despite evidence that public policy on

resource-based conflict prevention mechanisms that prioritize participatory processes are most successful, these are far from being cohesively represented in the region and reflect a prevalence of top-down approaches in policy formation and implementation. Many states, however, have taken notable steps to address this.

Also, as regional trade has moved beyond mainly localized extraction and use (see section 1.1.2 Mapping Conflicts in a Changing World) there has also been a gradual shift away from community-based resource management and conflict resolution; parties now involved in disputes over natural resources largely now refer resolution to government agencies.²⁰¹ This is due in part to associated government authority, expediency and cost,²⁰² but is also accompanied by varying issues – all of which highlight a need for more pro-poor and community-based resolutions. For example, when there is actual or perceived bias by government authorities and-or elites, this creates an imbalanced base from which one might develop and implement resource-based conflict prevention and resolution mechanisms. One-sided solutions, which often tend to favor powerful and influential parties, marginalize vulnerable groups and are seldom long lasting.²⁰³ Hindered or unfavorable community access to resource-conflict dispute mechanisms can also be hampered by concurrent conflicts, in particular in cases where violent conflicts are present or where structural violence is such that communities become afraid of presenting grievances to government agencies. For example, during Nepal's civil war, communities were largely unable to avail themselves of government resolution mechanisms due to rampant insecurity.²⁰⁴ In Indonesia complaints by local communities on the activities of logging companies made during the Suharto regime were not only largely ignored, but countered with intimidation and further insecurity.²⁰⁵ Placed in a climate change context, vulnerable groups are likely to be exposed to increased stress and thus the necessity for comprehensive and sound resource-based conflict prevention and resolution mechanisms that address their needs are paramount.

National Adaptation Programmes of Action (NAPA) priority areas are considered to be those that may increase costs and vulnerabilities for given states if unaddressed. NAPA priority projects by sector include: Cross-sector; Food security; Coastal Zones and Marine Ecosystems; Early Warning and Disaster Management; Education and Capacity Building; Energy; Health; Infrastructure; Insurance; Terrestrial Ecosystems; Tourism; and Water Resources.²⁰⁶ Yet despite widespread recognition of climate change-related resource scarcity, these do not include overarching resource-conflict prevention and resolution mechanisms. These are instead contained within diverse contexts that vary greatly from country to country.

One example of resource-conflict recognition is contained in Bangladesh's 2005 NAPA, which explicitly recognized that diverse claims over water by different stakeholders often causes conflict and highlighted a need for sustainable conflict management of, in particular, the water sector with focus on capacity building.²⁰⁷ Also, the Solomon Islands 2008 NAPA recognized the role which pre-existing governance challenges and conflicts over resources and land play in inhibiting comprehensive adaptation, stating that "lack of coordination within sectors is a theme that is reflected in most sectors, in part due to weak government framework and capacity constraints. In the case of the Forests Sector

lack of coordination is also due to conflict over land ownership and resources.”²⁰⁸ The Solomon Island NAPA also highlighted also that it was taking steps “to reduce conflict over customary land through their formal recording of ownership and mapping of their land boundaries.”²⁰⁹ Cambodia listed land use conflicts as a potential risk and barrier in its implementation of its NAPA, but listed no conflict prevention mechanisms.²¹⁰ Similarly, the Kiribati NAPA highlighted that coastal erosion had led to the relocation of villagers resulting in conflicting claims over land which made no mention of conflict prevention mechanisms either,²¹¹ despite the fact that coastal erosion is expected to increase with climate change (see Figure 5: IPCC projected impacts of Climate Change on the Asia-Pacific). The fact that Bangladesh and the Solomon Islands recognized the role of resource-based conflicts within their national adaptation plans, is a significant development within climate change discourse, which needs to be developed further across the region.

Also noteworthy is the fact that several, though not all, states have placed vulnerable groups and communities at the center of their planning. Bangladesh, for instance, stated in its 2005 NAPA that “in all ecological regions the poor (including women, elderly and children) are the most vulnerable and likely also to be the most adversely impacted by climate change”²¹² and expanded on this in its 2009 climate policy where it highlighted that “all programmes focus needs of this group for food security, safe housing, employment and access to basic services, including health.”²¹³ This approach is also reflected in several Pacific state NAPAs that also incorporate notable participatory processes. In the development its 2007 NAPA, Tuvalu conducted substantive community consultation with island communities and grassroots groups. The development of how best to address the issue of climate change was “based on stakeholders’ observation and traditional expertise” and included the consultation of church organizations, Civil Society Organizations (CSOs) and non-government organizations (NGOs).²¹⁴ This approach, too, could also be built upon across the region.

The representation of women in NAPAs also varies greatly. As women are the primary users of natural resources slated to be affected by climate change, are subject to rampant gender inequalities, are particularly vulnerable at times of extreme weather events, conflict and insecurity, their participation in the development of conflict prevention and climate change mitigation strategies is essential; not only because of their vulnerabilities, but also because of their strengths. Their representation, however, in adaptation strategies largely varies between countries. For example, women are featured at the center of planning and implementation in Bangladesh’s NAPA²¹⁵, while they are not mentioned at all in Laos’ NAPA.²¹⁶ Addressing this shortfall, and even harmonizing approaches as appropriate across borders, will be essential in the mitigation of resource-based conflicts in the face of climate change.

3.1.2 Regional

The Asia-Pacific region hosts an array of regional institutions that are able to work effectively and informally to address problems in response to, for example, environmental hazards, natural disasters, as well as security threats, when there is consensus on common risks and when individual governments and institutions are willing

to assume responsibility for taking collective action. These regional institutions have been able to operate more flexibly in contrast to the constraints of regional political rivalries.

However, several arrangements have duplicated effort and have not addressed broader and longer-term regional challenges, such as the security implications of climate change or existing regional resource management tensions. Several frameworks exist that could, with the necessary political will, promote peace building based on cross-border resource cooperation and coordination.

Particularly relevant in mitigating resource-based conflicts fuelled by climate change are agreements and alliances that address the use of natural resources. Water agreements, for example, have been known to underpin cooperation between states. This includes, the Indus Waters Treaty (see section 2.2.2 South and West Asia) and also the Mekong River Commission (MRC), an agreement reached between Cambodia, Laos, Thailand and Vietnam in 1995, and joined by China and Myanmar as dialogue partners a year later, works on managing jointly shared water resources and developing its economic potential. Although initially formed with no remit on climate change adaptation, much of the commission's work now focuses on sustainable development and environmental monitoring that assess the impact on the poorer population of the Mekong basin. This agreement may be seen as a prime example of how aspects of regional economic cooperation can be changed to collectively combat the impacts of climate change and could be used as a model for other agreements between regional countries with shared water resources.²¹⁷

Reflecting increasing recognition of the realities of climate change is the recent development of 'Protecting the Himalayan Glaciers', an initiative created in April 2010 between China, India and Nepal for the conservation and sustainable development of the Mount Kailash Region of the Himalayas, which involves collaboration on ecological and climate change monitoring and data sharing. While it has no focus on conflict prevention in regards to resource-based disputes, it has brought together the region's two largest competitors and major GHG emitters, China and India, to work together towards preserving a common natural resource. Despite its relative youth it has been argued that this initiative could be "a significant boost to climate change cooperation ... (and) ... could be an important stepping-stone for the management and conservation of a region that includes the sources of some of Asia's largest rivers."²¹⁸

Attention within regional multi-lateral fora on sector security focus primarily on energy security, for example, through the Asia-Pacific Economic Cooperation forum (APEC) – the only regional institution that draws members from Asia and the Americas, but does not consist of South Asian countries, such as India. As APEC works primarily by consensus on shared goals and has no binding provisions, its members are not compelled to meet commitments, other than by peer pressure and review. Only in its 2007 'Sydney Declaration' did it formally begin work on climate change centered on energy efficiency and security issues, although the fact that APEC leaders later withdrew specific emission reduction goals included in an earlier draft of the Copenhagen 2009 called into question

its commitment to its goals on climate change. Its inability to harmonize efforts among its members demonstrates, perhaps, the limitations of APEC and other Asian regional organizations.²¹⁹

Although it does not represent the majority of Asia Pacific countries, the Asia-Pacific Partnership on Clean Development and Climate (APP) has arguably the most operational work plan of any of the regional institutions that deal with climate change. This is due in part to member countries including some of the largest economies that are collectively responsible for more than 50% of GHG emissions, including Australia, Canada, China, India, Japan, the ROK, and the United States. Member countries collaborate among themselves in independent task forces with the private sector to focus on cost effective public-private industry technological solutions to the climate change problems, with a broader goal of promoting investment and trade in environmentally friendly, energy-efficient technologies. The specific nature of its projects is arguably the APP's biggest advantage and principal limitation; on the one hand their goals may be practical and implementable; yet on the other it does not yet have the mechanism to translate technically feasible solutions into government policies, which ultimately it will need to achieve success.²²⁰ While the APP does not have a focus area on resource-based conflict prevention, it does specifically address areas that are essential to peace building. For example, it's Renewable Energy and Distributed Generation Task Force, in its prioritization of zero-emissions energy development, also recognizes the critical role that wide-scale renewable energy can play in "alleviating poverty by improving access to energy services, as well as increasing job opportunities and improving air quality and health."²²¹ With China and India as members, the APP could represent a unique and authoritative forum within which to address Asia's cross-border tensions over, for instance energy and water sources. In order to ensure equability, however, this would need to ensure the integral involvement of countries which are impacted by, in particular, water use.

The Association of Southeast Asian Nations (ASEAN) works to build consensus discreetly and to avoid public action that could be perceived as challenging member state sovereignty. Its work on climate change emerged primarily from its efforts taken to address widespread haze pollution that affected the region, caused mainly by fires in Indonesia's tropical peat forests. The issue caused ASEAN members by and large to cooperate to a significant extent and is an important example of how regional cooperation can work to address mutual interests.

Notably, in 2005, it developed the ASEAN Strategic Plan of Action on Water Resources Management. The plan specifically recognized the conflict and climate change dynamic stating that "demands may both cause greater economic competition for water resources and also potential conflicts at community, national and potentially international levels." It also highlighted that to "manage potential changing environmental and social demands effectively, comprehensive strategies and action plans are needed to develop sustainable water management systems."²²² Other areas of co-operation – for example, infrastructure development aid, that can serve adaptation purposes; law enforcement and customs cooperation, needed to prevent illegal logging – may indirectly assist ASEAN efforts to

reduce GHG emissions. It has also entered into formal partnerships through ASEAN Plus Three (China, Japan, and the ROK), which focuses on climate change, as well as “dialogue partnerships” with a larger number of countries, including India and the US. Nonetheless, ASEAN Plus Three efforts on climate change thus far have been limited and have demonstrated that “sovereignty (has) exerted the stronger influence (than common action).”²²³

Another primary Asian regional body is the South Asian Association for Regional Cooperation (SAARC) made up of India, its six immediate neighbors and Afghanistan. SAARC works around periodic heads of state and ministerial summits. SAARC's work on climate change, led by its Expert Group on Energy and the Environment, has been driven primarily by energy security concerns. An achievement of SAARC's 2007 Climate Change Declaration, an action plan designed to address adaptation, mitigation, technology transfer and capacity-building strategies, has been the establishment of five centers of excellence for climate change–related research. Encouragingly, most recently in April 2010, an intergovernmental expert group on climate change was established to oversee timely implementation of the action plan.

Previous SAARC environmental collaboration has centered on disaster management, for example in the wake of the 2004 tsunami, which may offer scope for its action plan to address other areas of common concern such as cross-border climate refugees. But despite the vulnerability of its members to sea level rises and flooding, in particular the Maldives, all members give priority to economic growth over concerns on climate change, reflecting possibly the most pressing concerns amongst developing states in the address of climate change.

The Pacific Islands Forum Secretariat (PIFS), created to implement the decisions of the Pacific Islands Forum, is an inter-governmental organization aimed at enhancing cooperation between Pacific states. As well as its role in harmonizing regional positions on various political and policy issues, the Forum Secretariat has technical programmes in economic development, transport and trade. Military and police personnel from PIFS nations formed part of the peacekeeping forces have been used in the region in the past decade, notably in the Solomon Islands in 2003 and in Tonga in 2006.²²⁴ PIFS has also provided advocacy for increased international support aimed at assisting small-island developing states’ mitigation and adaptation efforts on climate change. It has actively engaged with the Development Partners Climate Change partnership and is an active member of the Pacific Climate Change Round Table.²²⁵ The Pacific Islands Framework for Action on Climate Change (PIFACC), a ten year action plan between 2006-2016 aims to ensure that Pacific Island residents build their capacity to respond to the risks and impacts of climate change.²²⁶

3.1.3 International

Given the global nature of the threat posed by climate change to resource and security issues international mitigation efforts require international co-operation. And yet no international body is holistically addressing the issue of climate change and conflict, nor of resource-based conflicts. There exist, however, many platforms through which other

issues of climate change are addressed, particularly frameworks within the United Nations, where the prevention and resolution of resource-based conflicts could be addressed (see

3.2 Looking Ahead: Risks and Opportunities).

The most widely adopted treaty on climate change to date is the United Nations Framework Convention on Climate Change (UNFCCC) with nearly global membership. Recommended actions on climate change under the UNFCCC have no binding nature and are entirely voluntary and recommendations have not been implemented by many states.²²⁷ The UNFCCC itself highlights that “[t]he global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response.”²²⁸ Unfortunately, insufficient cooperation and international response is now dwarfed by the magnitude of the threats posed by climate change and the UNFCCC is not mandated to address the effects of climate change related to threats to international peace and security.

The Kyoto Protocol, a protocol to the Framework Convention, first opened for signatures in 1998, came into effect in 2005 and expires in 2012. Although targets for GHGs are binding for its parties, there are no long-term restrictions, and it is not globally ratified. The 2009 Copenhagen climate talks illustrated clearly the persistent disagreement between developed and less developed countries on how best to proceed. The cooperation of BASIC (Brazil, South Africa, India and China) at the conference also illustrated that countries preferred to form alliances and negotiate on the basis of economic congruence as opposed to geographical proximity.²²⁹ That said, the climate talks a year later in Cancun, whilst not a breakthrough, “beat expectations by producing new, if modest, agreements,” primarily an agreement aimed at reducing deforestation and forest degradation, also known as REDD+ (see below), as well as a new \$100 billion dollar fund for “long-term” climate finance from the developed to the developing world. An independent board will run the fund with the World Bank acting as a trustee. Placed within these agreements were an encouraging number of achievements²³⁰ which may offer new mechanisms - a new board, programmes and institutions - and crucially funds, for achieving goals which could mean that the UN process can now move on from the “flawed” Kyoto protocol.²³¹

Other international programs are the G-20, which includes China, India, and Indonesia, and Japan and the ROK, Asia's three fastest growing and two most advanced economies, has begun to take on a global consensus-building role on climate change - “trying to move toward agreed goals and their implementation and seeking to establish broad aggregate measurements and equally broad commitments on both emissions and financing.”²³²

Of paramount importance also to the ties between forests and climate change is Reducing Emissions from Deforestation and Forest Degradation (REDD) - an initiative designed to provide financial incentives - carbon “offsets” - to reduce GHG emissions from deforestation and forest degradation. Its focus in the Asia-Pacific region is on Vietnam,

Cambodia, Bangladesh, Bhutan, Nepal, Sri Lanka, the Philippines, Solomon Islands, Indonesia and Papua New Guinea.

Critics of REDD scheme have accused these offsets of allowing the main polluters, governments and corporations, to buy their way out of the problems that exacerbate social and environmental conflict in those places which rely on the forest ecosystems for their livelihoods. Indeed, it has been argued that REDD and now REDD+ would provide governments and organizations with greater control over the forests than indigenous communities. The organization Global Witness argued in June 2010 REDD "carries considerable risks for forests and local communities and will only succeed if civil society is engaged as an independent watchdog to ensure that the money is used in accordance with national laws and international guidelines."²³³

In regards to energy, the International Energy Agency (IEA), an offshoot of the Organization for Economic Cooperation and Development (OECD), is an intergovernmental organization that conducts technical work and research into, and provides advice for, its members on current energy policy and best practices. Its mandate also covers aspects of economic development and environmental protection. Significantly, in recent years it has broadened its scope to conduct extensive data gathering and technical assistance missions in Asia. But its key limitation is its inability to perform as a mobilization and coordination mechanism beyond its membership, which importantly does not include the key energy markets of China and India. Smaller OECD members who are concerned that these larger countries will dilute their influence have resisted their proposed membership of the IEA.²³⁴

One paper has highlighted some possibly important bilateral efforts in Asia aimed at combating the adverse effects of climate change. The US Agency of International Development (USAID) has, for example, funded assistance programs with APEC and ASEAN. In Indonesia USAID has worked extensively in improving governance aimed at preventing illegal logging to reduce deforestation or forest degradation. The recently formed Joint U.S.-China Collaboration on Clean Energy, which draws on global expertise and collaborates with private companies to develop and facilitate clean and efficient energy use in China, "represents an important dialogue between two of the world's largest greenhouse gas emitters."²³⁵

Also, the World Bank funds its own as well as donor money to World Bank clean energy, energy efficiency and climate change-related projects in Asia (about US\$6 billion). In South Asia, it supports adaptation projects to help countries most affected by climate change deal with its impact. The Asian Development Bank (ADB) also funds efforts focused on Asian environmental sustainability underpinning regional economic development and poverty alleviation. The ADB's mitigation and adaptation work promotes energy efficiency and aims to increase access of the region's most vulnerable to climate change, the poor, to clean forms of energy.²³⁶

There have been several notable advancements in regards to addressing key vulnerabilities. For example, in 2008, in recognition of the particular vulnerability of

women to climate change, the Commission on the Status of Women (CSW) declared gender perspectives in climate change one of its key focus areas, and following the 2010 COP 16 climate negotiations in Cancun, agreements recognized women and gender equality as central to effective climate change mitigation and adaptation. In Nepal, a UNEP and IUCN project has been developed which aims to “facilitate mainstreaming environmental rights and the principle of sustainable development that represent the interests of all Nepali Citizens, with particular attention to those of women, poor and marginalized people.”²³⁷

Supporting national strategies that address increasing extreme weather events is the focus of the UN International Strategy for Disaster Reduction Asia & the Pacific. It operates within the Hyogo Framework for Action, a ten year UN action plan adopted in 2005 to protect lives and livelihoods against disasters and works specifically through a network of national and regional platforms to mobilize government action on disaster reduction and, at regional government level, to assist the formulation of national action plan on disaster risk reduction within national development plans. It also looks to co-ordinate efforts with regional partners’ networks at the national level, including the ISDR Asian Partnership on Disaster Reduction (IAP) and other relevant players, and is an invaluable platform from which to address the realities of how resource-based conflicts might be introduced or accelerated by the effects of climate change, particularly in regards to increased extreme weather events (see for example Box 4: Extreme weather events: Flooding and Conflict).²³⁸

While there exist many notable national, regional and international mechanisms within which resource-based conflicts could be addressed in a climate change context, none currently do. Neither is there address of, at the broadest sense, climate change and security issues. However, several options exist to address this gap and these are presented below.

Box 6: Mind the Gap: Identifying Sources of Conflict

High-visibility conflict characteristics often become the focal point in conflicts, with environment-related issues pushed aside.²³⁹ As highlighted by the UN Department of Economic and Social Affairs (UNDESA), “[t]he mechanisms through which natural resources induce conflicts are often deeply rooted in economic and social structures and call for integrated approaches in addressing peace and development.”²⁴⁰ The identification of resource-based instigators of conflict does not negate underlying issues of, for example, governance. However, recognition can serve as an invaluable tool for early warning and symptoms identification. This will be particularly vital in regards to low intensity direct-use resource conflicts in the context of climate change. However, harmonized and holistic information on resource-based conflicts is sorely lacking, revealing a gap in information that will need to be addressed in order to inform sound policy and approaches on conflict prevention and climate change adaptation. For example, although natural resources have been noted as playing a central role in Nepal’s decade-long civil war and subsequent instability, this is not clearly represented in discourse. The Heidelberg Institute Conflict Barometers during the civil war period and beyond never listed resources as a conflict item, attributing conflicts solely to issues of “system/ideology, national power.”²⁴¹ On the other hand, detailed reports by the ARD exist on the role that the forest and water sectors play in insecurity, while a report by the UNEP lists yarsa gumba as fueling the civil war.²⁴² The UNEP report does not, however, mention forests or water in the context of Nepal, neither does the ARD report refer to yarsa gumba. While this is not necessarily strange (agencies, of course, vary in focus and scope), it perhaps indicates an absence of comprehensive representative information from which to base proactive, integrated and long-term conflict prevention and climate change adaptation.

3.2 Looking Ahead: Risks and Opportunities

Comprehensive climate change mitigation and adaptation is an essential component in peace building and conflict prevention; by prioritizing good governance through sustainable human development, sound resource management and pro-poor approaches, the needs and rights of the world’s most vulnerable people and sectors are addressed while helping safe-guard a peaceful future. The development of climate-friendly policies not only represent long-term peace and sustainable growth, they also present opportunities for building bridges across communities and countries through comprehensive representation and cooperation. In a study charting options for resource management in a climate change context, it was found that the benefits of sound resource management and climate change action could include poverty alleviation, reduced demand for humanitarian assistance, enhanced sink capacity and biodiversity conservation.²⁴³

As summarized by former UN Secretary General Kofi Annan: “Environmental degradation has the potential to destabilize already conflict-prone regions, especially when compounded by inequitable access or politicization of access to scarce

resources...Programmes relating to the environment not only are a vital way of systemically reducing one of the worst sources of tension within or among societies, they can also have a positive impact locally by promoting dialogue around shared resources and enabling opposing groups to focus on common problems. This is particularly the case with respect to shared water resources.”²⁴⁴

The following recommendations are geared toward national governments and regional bodies in the Asia Pacific, NGOs and CSOs, and the international community. Recommendations contained herein do not purport to represent all needed or available actions and opportunities and, in recognition of this, are therefore followed by suggested ‘universal approaches’ that reflect needed reforms across all stakeholders in the Asia Pacific region.

3.2.1 Asia Pacific Governments

The direct effects of climate change, including increased weather events and rising sea-levels, will primarily be experienced first and foremost within local contexts, exposing primarily vulnerable populations that depend on the sectors that stand to be most effected by climate change (see section 2.1 Risks and Vulnerabilities).

In order to mitigate resource-based conflicts in a climate change context, it is therefore essential that state-based actions mirror this reality. As such focus by national governments should:

- 1. *Incorporate environment and security factors into development, conflict prevention and climate change strategies, particularly in NAPAs***, ensuring cross-sector approaches toward MDG goals with consideration for IPCC data and projections. This should include mainstreaming security issues into Disaster Risk Reduction strategies (DRRs) and into the address of various intra-state resource custody chains and cross-sector dependencies, ensuring the engagement of vulnerable groups.
- 2. *Recognize and address current problem areas relating to low- and high- intensity resource conflict and anticipate new problem areas***, recognizing also the need to develop cohesive conflict prevention strategies and addressing internal governance challenges, existing land tenure and property rights issues. Oversight issues and shortfalls in resource-based conflict prevention and resolution should also be addressed through, for example, the development of conflict prevention strategies in consultation with vulnerable groups, CSOs and NGOs.
- 3. *Ensure that ‘one-size-fits-all’ approaches to resource conflict resolution and climate change adaptation are avoided***, by ensuring climate change adaptation strategies are context-specific, participatory, and pro-poor, prioritizing strong vulnerable-groups representation and front-lining community empowerment and ownership.
- 4. *Act now to decrease vulnerabilities and promote good governance and sustainable human development***, in particular through resource management of energy, water,

land and forests and identify possible economic and peace building benefits, including increased employment, in climate change mitigation and adaptation strategies. This should also include:

- i) ***Increased engagement across sectors and stakeholders***, prioritizing engagement and close cooperation with national and international NGOs and CSOs in an effort to ensure equal representation ‘trickle-up’ approaches, and of the private sector;
- ii) ***Harnessing of traditional adaptation practices***, with the active participation of vulnerable groups, in particular women and indigenous groups who have history of resource management and are primary users of natural resources. This should also involve the participations of religious groups and youth leaders;
- iii) ***Development of targeted conservation plans*** that mirror specific local needs and climate change vulnerabilities. This can help mitigate large-scale migration and the success of such strategies can be seen, for example, in Bangladesh;
- iv) ***Decouple economic growth from environmental pressures***, developing sound green policies in order to underpin a gradual movement towards low-carbon, environmentally friendly, climate resilient economies. This should be coupled with economic diversification and increased livelihood choices. In Pacific Island states, this may mean addressing sustainable national consumption, whereas in South Asia, this may mean sustainable consumption coupled with increased national consumption.

5. ***Frontline awareness raising and training at all levels and across all sectors on natural resource-use***, with focus on sustainable use while also harnessing best practices and lessons learnt from within and between communities. An example of such a system exists with India’s Center for Environmental Education, which has developed broad spectrum strategies designed to mainstream environmental sustainability across several target areas including, for example, focuses on children, the media, industry and also climate change. Such programs can prove essential for capacity building on information gathering, analysis and solutions-identification on resource based-conflicts.

6. ***Review national policy and legislation and practice due diligence in the review or development of any old or new projects***, ensuring fiscal transparency, environmentally sound practices and activities that do not undermine communities, resource availability, development and security.

3.2.2 Regional government bodies

The effects of climate change will be felt across national boundaries and will reflect the realities of the environment and its resources, stretching through across borders through, for example, waterways, forests and the extreme weather events.

As summarized by the Stern report, "...reducing the risks of climate change requires collective action. It requires co-operation between countries, through international frameworks that support the achievement of shared goals. It requires a partnership between the public and private sector, working with civil society and with individuals.

It is still possible to avoid the worst impacts of climate change; but it requires strong and urgent collective action. Delay would be costly and dangerous."²⁴⁵

Regional coordination represents opportunities for regional, mutually beneficial cooperation and peace building. In order to maximize the opportunities presented, regional bodies should:

1. ***Prioritize regional cooperation, building on existing ASEAN, SAARC, and PIFS partnerships***, with a focus on benefits and burden sharing in order to support sustainable human development that empowers local communities and considers effects across state boundaries. Coordinated actions could curb possible competition of increasingly scarce resources that could increase vulnerability to conflict and undermine development gains across borders.
2. ***Include natural resource based conflict prevention into overall climate change strategies***, increasing information sharing between states on natural resources, and ensuring the active participation of vulnerable groups. Climate change and conflict prevention strategies should be included in ASEAN, SAARC and PIFS frameworks.
3. ***Prioritize resource management agreements between states and through regional bodies that underpin peace and cooperation*** with the active participation of, in particular China and India, using for example the Integrated Water Resource Management (IWRM) mechanism that takes a cross-sector approach to water management, going beyond strictly water management spheres and mirrors the realities of climate change. IPCC predictions and expected population growth should be factored into dialogue and agreements.
4. ***Strengthen coordination within and between SAARC, ASEAN, and PIFS***, both as a platform for information gathering, sharing and awareness raising, and as a platform to bring synergized adaptation and mitigation policies to the fore within international community discourse on climate change and security. If the UN Security Council were to officially recognize climate change as a potential threat to peace and conflict, it would be essential that Asia Pacific countries be involved in such a development from the start, and that policies be channeled through regional coordination.

3.2.3 Non-Government Organizations (NGOs), Civil Society Organizations (CSOs)

1. ***Underpin bottom-up approaches***, aiding the empowerment of communities and vulnerable groups, by lending voice internally and internationally to specific needs and threats in regards to resource-based conflicts and climate change. This should include aiding representation of vulnerable groups' interests in NAPA and DRR strategies.
2. ***Help ensure that policies and legislation are context-specific***, including in the continuation and/or introduction of new projects on trade, technology, infrastructure, such as in the development of dams and industrial logging projects.
3. ***Aid in awareness-raising and capacity building at community-level***, harnessing traditional adaptation strategies, resource management mechanisms, and conflict prevention practices.
4. ***Increase lobbying activities***, ensuring heightened attention by news media, policy-makers, donors, the private sector and other stakeholders, and advocate for change where necessary. This should be underpinned by increased information gathering on resource-based conflicts in the region.
5. ***Provide assistance to governments and communities, where appropriate, in resource management, conflict prevention and mediation***, through the provision of non-partisan and pro-people expertise on resource, conflict, and climate change dynamics.

3.2.4 The International Community

1. ***Consolidate and prioritize resource-conflict prevention mechanisms***, ensuring financial and other support for resource-conflict mitigation strategies. This should build on UN General Assembly Resolution 63/280 whereby recognition of ties between climate change and security was accompanied by a call for UN agencies to increase attention to the issue. This should be addressed through:
 - i) **The UN Security Council**, reviewing its mandate to include environmental security as a key issue of conflict prevention and recognize that climate change could pose a threat to peace and security. As such, the UN Security Council could also consider the establishment of a subsidiary body with a pivotal role in coordinating climate change-related security issues which could work closely with key stockholders, for example, ASEAN, SAARC and PIFS, the IPCC, ECOSOC, OCHA, ISDR, UNHCR, IOM, WTO and the World Bank. The UN Security Council could, while adhering to the principle of common but differentiated responsibility, address this issue by looking at overarching issues

- concerning security and climate change, and also by addressing immediate and regional issues.
- ii) **The UN Department of Political Affairs (UNDPA) and the UN Peace building Commission (UNPC)**, prioritizing and funding critical roles in conflict prevention and ensuring that resource-based conflicts and climate change are factored into peace building and conflict prevention strategies;*
 - iii) **The UN Environment Programme (UNEP)**, ensuring its upgrade to a UN specialized agency following recognition by international environment ministers in February 2011 that increased attention was needed on environment issues, especially in light of climate change. This should be matched with the provision of an independent budget, adequate funding, an expanded mandate, and support for the establishment of programmes that ensure environmentally sensitive and resource-aware peace building and conflict prevention and resolution programs in a climate change context. The UNEP could address resource-based conflicts, for example, in its Post-Conflict and Disaster Management Branch (PCDMP) and its Division of Early Warning and Assessment (DEWA);*
 - iv) **The UNEP and UN Development Programme (UNDP)**, building on existing coordination and cooperation between UNDP and UNEP, such as seen in the Poverty Environment Initiative (PEI), in order to address symbiosis between development, security and environment, particularly at local and regional levels;*
 - v) **The UNEP, the UNDP, the Food and Agriculture Organization (FAO), UNDPA, and also with the United Nations High Commissioner for Refugees (UNHCR) and the International Organization for Migration (IOM)**, strengthening inter-agency ties in addressing resource-based conflicts and their possible promulgation in the face of climate change;*
 - vi) **The World Bank**, strengthening its Conflict Prevention and Reconstruction Unit (CPRU) to include address of resource-based conflicts, their prevention and how incidents may increase with climate change effects. This could be incorporated into, and supported by information contained in, World Bank Strategic Environmental Assessments (SEAs);*
 - vii) **The UNISDR**, ensuring the address of low- and high-intensity resource-based conflicts in existing national and regional platforms including the Asian Partnership of Disaster Reduction (IAP), reflecting the reality that while natural disasters and insecurity are often linked through governance issues, forced migration, scarcity dynamics and opportunism accelerate these ties.*
- 2. *Provide international support for the inclusion of resource-based low- and high-intensity conflict prevention and resolution strategies in both national and regional arenas that recognize cross-sector realities***, prioritizing the following areas: empowerment and training schemes for communities and vulnerable groups; the

development of cross-community and cross-border information sharing schemes on best practices and lessons learnt on climate change adaptation and resource-based conflict mitigation and resolution. These should ensure the active involvement of vulnerable groups with particular focus of women who stand to be the most effected by climate change, are primary natural resource users and managers, and are especially vulnerable during conflict.

3. ***Support the development of a low- and high-intensity resource-based conflict database.*** This could be a new database following structures of, for example, the Uppsala Conflict Data Program (UCDP) and the Heidelberg Institute Conflict Barometer, and/or considered for incorporation into existing indexing mechanisms such as the UN Human Development Index (HDI). Information gathered should be used to identify fault-lines, match them with IPCC projections, and inform strategies for peace building, conflict prevention, and conflict resolution.
4. ***Ensure that world agriculture markets represent equal opportunities for developing countries*** and match trade with IPCC projections on climate change effects that could fuel resource-scarcities. This should involve close coordination and cooperation with, for example, the DPA, WTO, the UNDP, the UNEP and FAO.
5. ***Take concrete steps to ensure that resource trade does not underpin conflict.*** Due diligence in all countries and sectors along the commodity chain is essential. Trade should be made conflict-free, legal, and sustainably sourced and consider methods for the creation of public/private partnerships and development assistance through multilateral and bilateral means to strengthen financial incentives to trade sustainably and fairly. This needs to be further explored to find ways that financial incentives could be identified.
6. ***Global introduction of laws that prohibit trade of illegally traded goods such as illegally sourced and traded forests products,*** ensuring the introduction and/or full implementation of policy and legislation targeted and curbing financial transactions on resource trades.
7. ***Target development towards promoting active participation and representation of vulnerable groups and communities, the rule of law, transparency and, in particular, good governance.*** This could improve governance and mitigate security risks posed by climate change. Aid should also support holistic and consultative information gathering and capacity building on nation-specific resource conflict vulnerabilities and generally increase recognition and action on resource-based conflicts
8. ***Ensure transparency and efficacy of REDD+,*** appointing an independent monitor to ensure accountability of stakeholders and representation of vulnerable groups, particularly as relates to indigenous peoples and forest communities and prioritizing community-forestry.

- 9. *Ensure the sound development and implementation of climate change mitigation and adaptation strategies***, ensuring comprehensive, sound and rigorous strategies are in place and avoiding rushing toward solutions that have not been fully developed thereby threatening to undermine efforts.

3.2.5 Universal approaches

At all levels, one-size-fits-all approaches to climate change, environmental security and conflict prevention risk running counter to good intentions. For example, it is clear that priority action areas for island states in the Asia Pacific related to resource scarcity and migration issues will need to be addressed differently than scarcity and security concerns related to upstream and downstream water management in South Asia. Still, while the diverse ways that climate change will affect Asia Pacific states and sub-regions should be reflected in tailored approaches, the ties between climate change and security necessitate several over-arching changes regardless of geography, focus and responsibility. These are outlined below:

- 1. *Improve overall coordination and cooperation between sectors, agencies, and countries***, harmonizing micro and macro-level strategies with interdisciplinary approaches in preventing resource-based conflicts and mitigating the effects of climate change so that actions in one focus-area do not undermine actions in another. This can also provide invaluable insight from best practices and lesson-learned studies.
- 2. *Abandon short-term thinking in favor of long-term strategies***, prioritizing planned adaptation development and peace building whilst also reflecting the realities of climate change and resource-use on long-term and active peace and security. Strategies should focus on conflict prevention and resource management within states, their neighbors, the sub-region and the international community. At the international level, this would mean ensuring that the long-term effects of climate change are reflected in international agreements and sound trade policies that reflect changing supply and demand realities. At the national level this would involve reviewing existing resource management practices and considering the prioritization of community-led resource management.
- 3. *Address wide-spread marginalization of vulnerable and unrepresented groups in the development and implementation of climate change mitigation, resource-use and conflict prevention strategies***, moving away from ‘top-down’ and ‘one-size-fits-all’ approaches in favor of ensuring participatory processes at all levels of problem and solution identification, and policy and legislation implementation within national, regional and international fora.
- 4. *Recognize good governance, climate change and resource management as a development and security issue that stretches beyond national boundaries***, ensuring that state practices do not underpin the social and environmental vulnerability of other states. This should be true both for Asia Pacific countries but also for other regions, primarily Europe and North America.

5. ***Ensure private sector participation and compliance with good governance standards and Corporate Social Responsibility (CSR) guidelines***, through the development of sound incentives programs in the development and use of safe and sustainable resource use and trade, particularly in regards to energy. This should be matched with general private sector regulation and accountability that should prioritize ending indirect resource-use conflicts.
6. ***Avoid presentation of climate change effects, including projected increase of natural disasters, as a direct cause of scarcity and insecurity***, which could gradually increase feelings of mistrust, panic and disempowerment at individual and community-level, or be used as a ‘scapegoat’ in place of required governance reforms.
7. ***Explore options of information dissemination and awareness raising*** through, for example, local, regional and international media, as well as through education programs and initiatives.

Box 7: Research and Information Sharing

As reflected in this paper, many studies and senior-level assertions on the ties between natural resources, the environment and conflict have found that comprehensive information and strategies are lacking. Together with an absence of comprehensive data on resource-conflict vulnerabilities in the Asia Pacific region and the lack of a precedent similar to that of current climate change projections, the region and international community is not currently equipped with sufficient accurate data on which to base sound policy.

Research can provide an invaluable source of information for resource-conflict prevention and resolution. The timely and sound use of such information would make a marked difference in the knowledge base and adaptive capacity of communities, states and regions. Research at community, country and regional level should include:

- The involvement of communities most vulnerable to climate change and resource-based conflicts - particularly where government oversight is lacking;
- An appraisal of low and high-intensity resource-based conflicts in the Asia Pacific drawing on, for example, local media, and community-based research;
- Development of a database collated from accurate, appropriate data on low and high-intensity conflicts pertaining to natural resources, alongside IPCC climate change projections, to map where threats and opportunities lie;
- Multidisciplinary and multi-stakeholder address;
- Share best practice and lessons learnt approaches and toolkits, including training for information gathering, analysis and use, conflict mediation approaches, and concrete action examples.

Research should be harnessed at community level with a view to inform policy makers at national, regional and international levels.

4. CONCLUSIONS

In the absence of comprehensive and sound governance as well as resource management mechanisms, environmental impacts such as those associated with climate change accelerate tensions. This trend is likely to continue with climate change and presents the possibility that low- and high-intensity conflicts in the Asia Pacific will increase. Insecurity is largely based on pre-existing governance issues, however. Methods of resource management within and across borders, and also through inequalities that serve to underpin insecurity will ultimately play a decisive role as to how climate change will impact on the region.

With the Asia Pacific region hosting almost half the world's total conflicts and two-thirds of the world's poor, the risk that increasing destructive extreme weather events, dwindling resources and sea-levels rise poses on heightening existing instabilities is high. In a statement to the UN Security Council at the debate on energy, security and climate change, former UN Secretary General Kofi Annan stated, "environmental degradation has the potential to destabilize already conflict-prone regions, especially when compounded by inequitable access or politicization of access to scarce resources."²⁴⁶

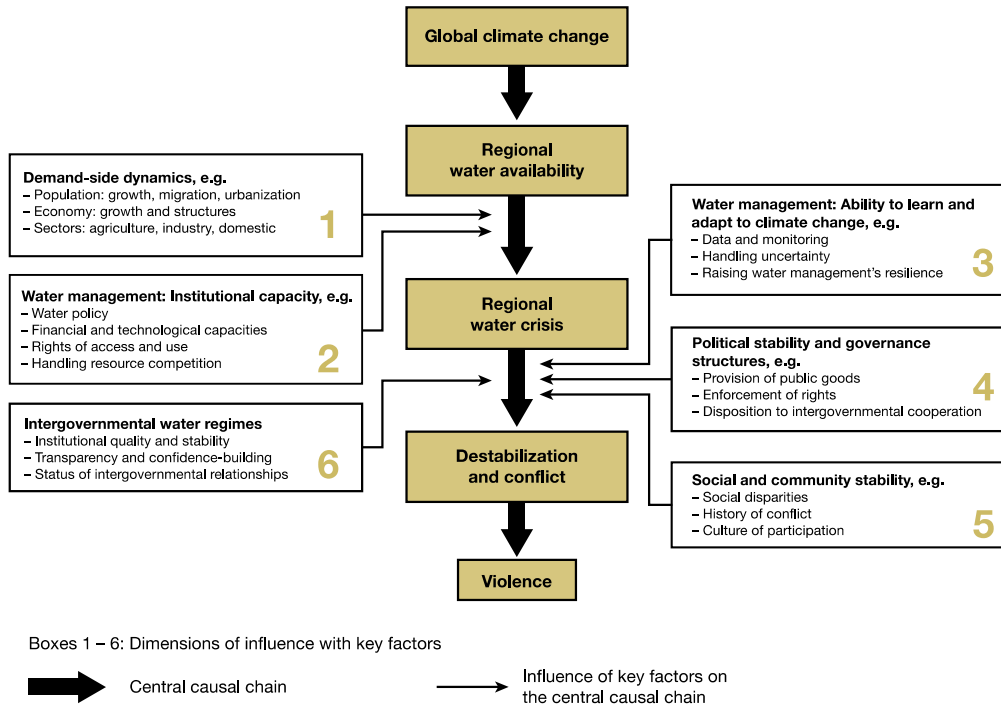
In recent years concern has increased over whether rising demand for natural resources such as food, water and land will hit supply limits thereby causing increased violent conflict over scarce resources – particularly, but not exclusively, because of the projected impacts of climate change. And yet while climate change is generally acknowledged as a threat to the region, Asia Pacific as a whole has not yet responded collectively to it. Indeed, many governments, particularly those of populous developing countries, see this threat as secondary to the demands placed on them for sustaining livelihood and economic growth.

There have been notable developments in national, regional and international address of climate change as regards resource-management and population vulnerabilities. However, these need to be made more robust, ensuring cross-sector and multi-stakeholder representation and must be matched by the inclusion of strategies to mitigate and resolve resource-based conflicts, including cutting ties that bind trade to insecurity and conflict. As reflected in the General Assembly resolution, climate change necessitates the consideration of action across stakeholders both within development structures but also, for example, security structures.

The most crucial variable in how climate change and natural resources can or will influence security lies in the action, or inaction, of states and the international community. Much will depend on the political will of states locally and regionally to harness existing resources and opportunities and to decide between a climate change context that is backed by peace, equality and cooperation, or by insecurity, scarcity and mistrust. In sum it is political will, and not climate change in itself, that will determine whether or not climate change will fuel conflict or represent opportunities for peace.

ANNEXES

Annex I: Water Scarcity and Conflict



From: WBGU Conflict constellation: 'Climate-induced degradation of freshwater resources: Key factors and interactions'. (German Advisory Council on Global Change (WBGU), 2008, p. p. 84)

Annex II: Food Scarcity and Conflict

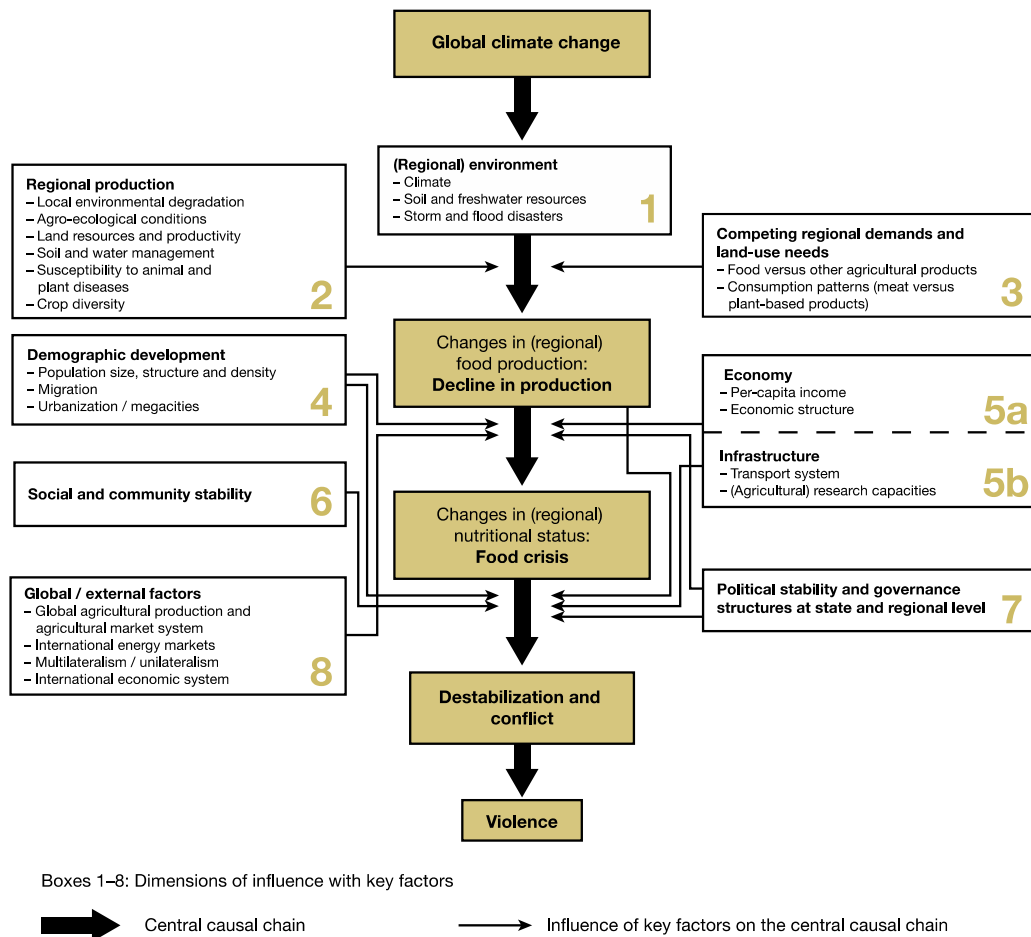
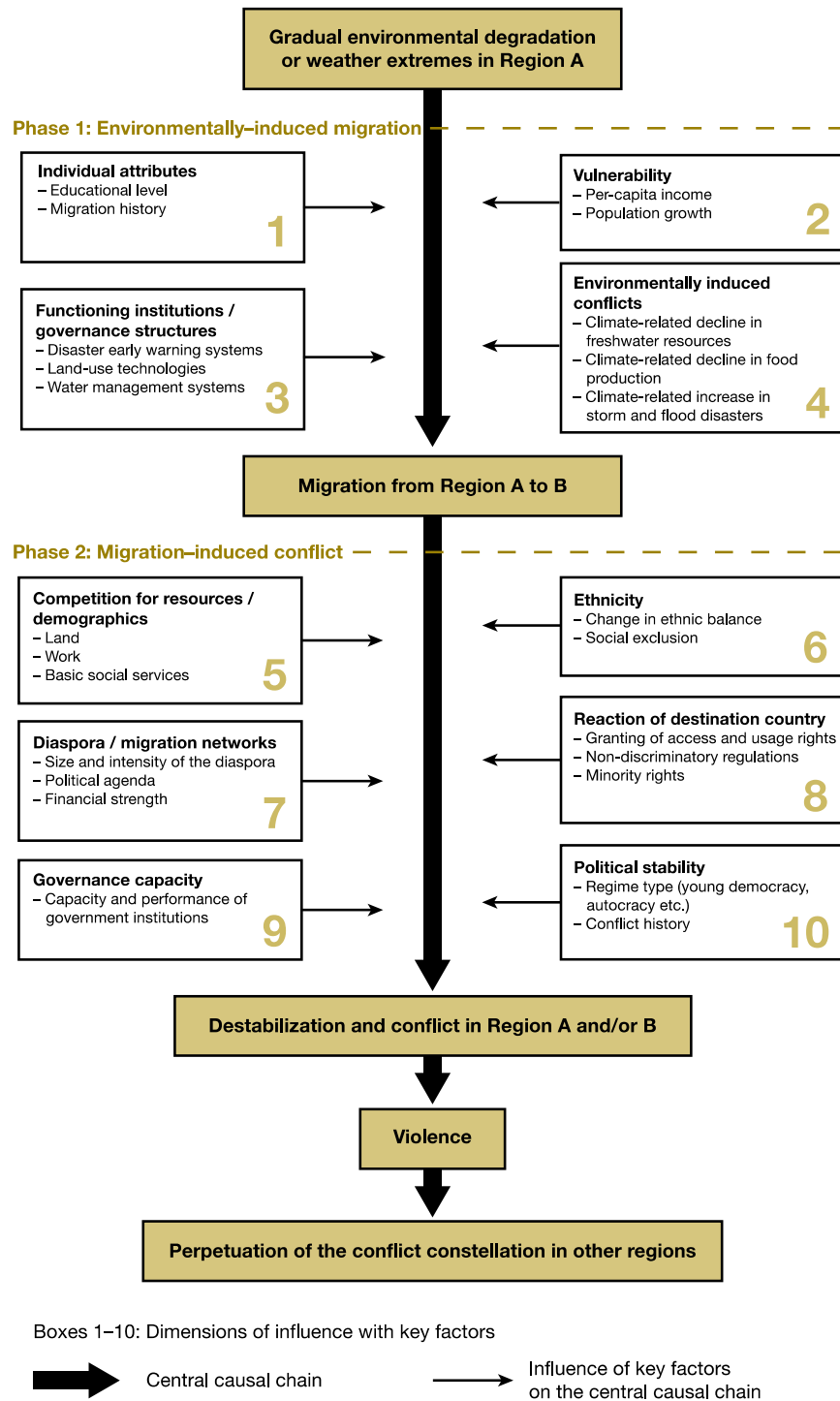


Figure 6.3-2
 Conflict constellation: 'Climate-induced decline in food production': Key factors and interactions.
 Source: WBGU

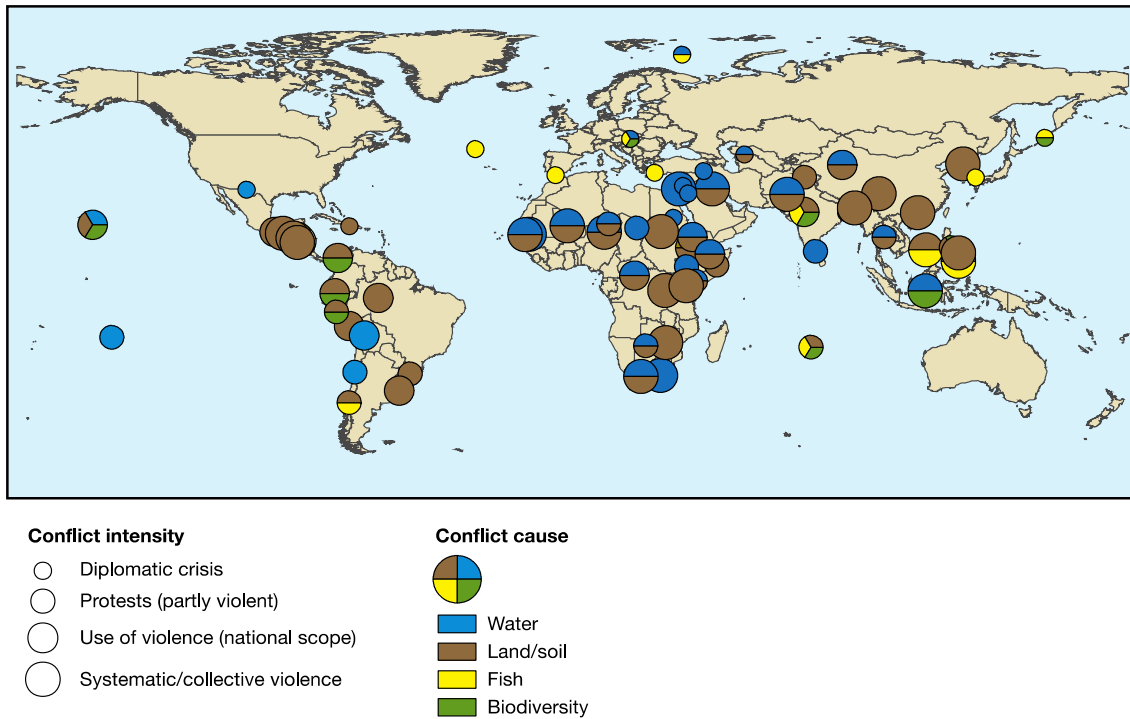
From: WBGU Conflict constellation: 'Climate-induced degradation of freshwater resources: Key factors and interactions.' (German Advisory Council on Global Change (WBGU), 2008, p. p. 97).

Annex III: Environmentally Induced Migration and Conflict



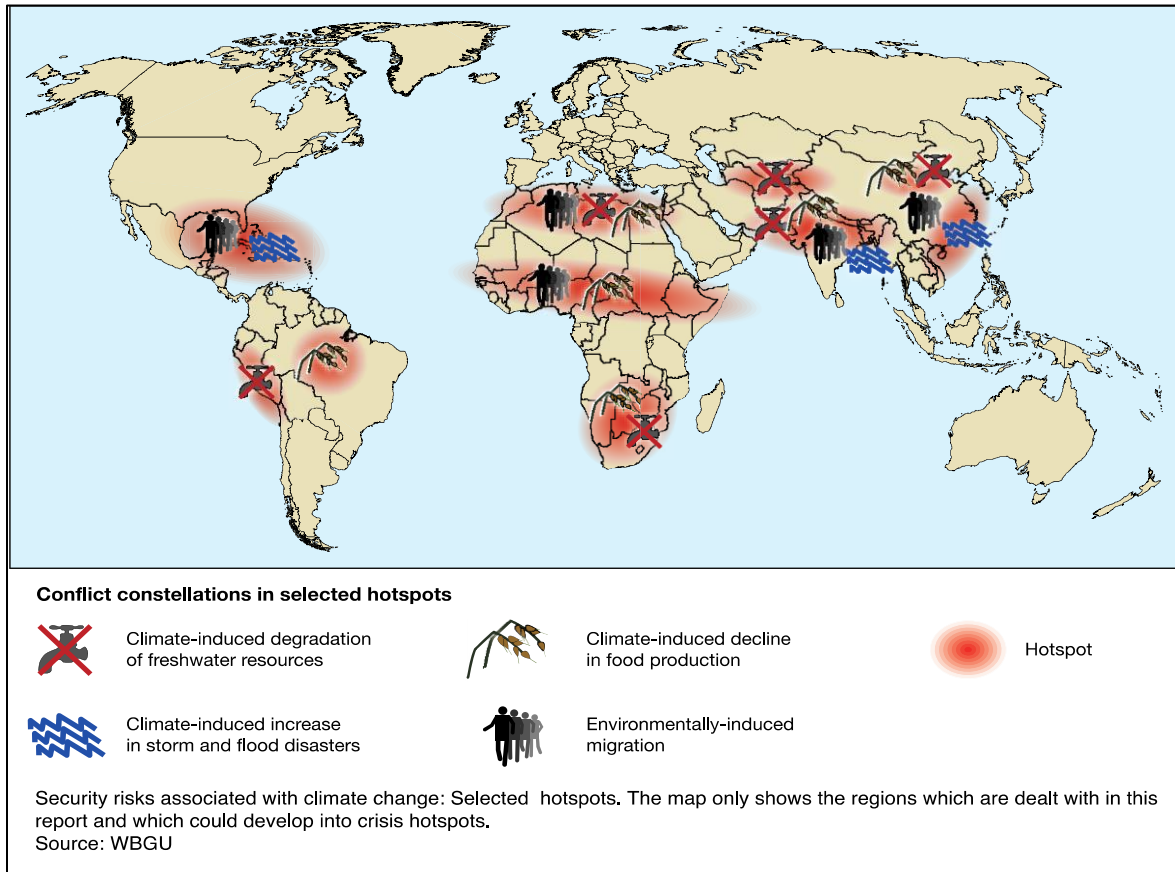
From: WBGU Conflict constellation: 'Environmentally induced migration': Key factors and interactions (German Advisory Council on Global Change (WBGU), 2008, p. p. 119).

**Annex IV: Map of environmental conflicts from 1980 to 2005:
Causes and intensity.**



From: German Advisory Council on Global Change (WBGU) 2008, page 32, sourcing Carius et al., 2006.

Annex V: Examples of security hotspots and adverse climate change effects



From: German Advisory Council on Global Change (WBGU) 2008.

Annex VI: Asia Pacific Conflicts with Resource-Issue Dimensions

Name of Conflict	Conflict Parties	Conflict items	Start	Intensity
Bangladesh – India	Bangladesh v. India	Territory, resources, other	1971	Latent conflict
Bangladesh - Myanmar	Bangladesh vs. Myanmar	territory, resources, other	1991	Latent conflict
China (Tibet)	Tibetan government-in-exile Tibetan Separatists vs. government.	Secession, system/ideology	1912	Crisis
China - Vietnam et al. (Spratly Islands/Paracel Islands)	China (People's Republic of China) vs. Taiwan (Province of China) vs. Brunei vs. Vietnam vs. Indonesia vs. Philippines vs. Malaysia	territory/resources	1945	Manifest conflict
Indonesia (GAM/Aceh)*	GAM, KPA, Par tai Aceh vs. government	autonomy, resources	1953	Crisis
Indonesia (OPM/Papua)	OPM vs. government	secession/resources	1949	Crisis
Japan - China (Senkaku/Diaoyutai Islands)	Japan vs. Taiwan (Province of China), China (People's Republic of China)	Territory, resources	1972	Manifest conflict
Pakistan (BLA et al./Balochistan) secession, resources	BLA, BRA, BLF, BLUF vs. government	secession/resources	1998	Crisis
Philippines (MILF/Mindanao)	MILF vs. government	secession, system/ideology, resources	1977	Crisis
Philippines (MNLF/Mindanao)*autonomy, system/ideology, 1969 3	MNLF vs. government	autonomy, system/ideology, resources	1969	Crisis
Solomon Islands (ethnic groups)	Islanders of Guadalcanal, IFM vs. Islanders of Malaita, MEF	Regional predominance, resources	1978	Latent conflict
Timor-Leste - Australia*	Timor-Leste vs. Australia	resources	2001	Latent conflict

(From: Heidelberg Institute for International Conflict Research, *Conflict Barometer 2010*, p. 53-56)

Annex VII: Asia Pacific and the UN Security Council debate on Climate Change and Security

The following is a summary of comments by the UK and Asia Pacific UN member states present at the 2007 UN Security Council debate on climate change and its possible impacts on security. (Source: United Nations, 2007. Security Council holds first-ever debate on impact of climate change, 5663rd meeting, (New York: United Nations, Department of Public Information).

United Kingdom (Host)

While there was some doubt about whether the Council was the right forum, the Council's responsibility was the maintenance of international peace and security, and climate change exacerbated many threats, including conflict and access to energy and food. Charged with the maintenance of international peace and security, the Security Council could go a long way towards building a shared understanding of what the effects of climate change would mean to international peace and security, now and in the future. The United Kingdom agreed that a full account of climate risks should be undertaken when examining the root causes of conflict. The fact that so many delegations without membership in the Council had chosen to speak was proof of the bitter truth that instability was first visited upon those that were already struggling with other development and security concerns. She stressed that, for the United Kingdom, climate change was a security issue, but not of "narrow national security". It was about collective security in an increasingly fragile world for all.

Bangladesh

The representative from Bangladesh said that energy and environment issues were critically important to the debate on sustainable development, particularly for developing countries. But, even though the development aspects of the phenomenon had been extensively deliberated, the security implications of global warming had not merited consideration by intergovernmental bodies in the United Nations.

China

Developing countries believe that the Security Council has neither the professional competence in handling climate change – nor is it the right decision-making place for extensive participation leading up to widely acceptable proposals.

India

The representative for India said the appropriate forum for discussing issues relating to climate change was the United Nations Framework Convention on Climate Change. In so far as international peace and security was concerned, if developed countries reduced their greenhouse gas emissions and energy consumption, it would considerably reduce such threats through a reduction in the need for privileged access to energy markets. Nothing in the greenhouse gas profile of developing countries even remotely reflected a threat to international peace and security, yet their taking on greenhouse gas mitigation targets would adversely impact their development and increase their insecurity.

Indonesia

Supported the position of the Non-Aligned Movement and said that, while his delegation could agree with the objectives of today's debate, it believed that the issue was being addressed effectively in other fora, including the Commission on Sustainable Development, which would deliberate on the issue of energy and climate change at its fifteenth session.

Maldives

The representative for the Maldives said that he was heartened by the increased attention to environmental degradation and climate change, he said. Today's debate should stress the fact that close cooperation and coordination among all principal organs was indispensable for the United Nations to remain relevant and capable of meeting the existing and emerging threats and challenges.

Marshall Islands

The representative for the Marshall Islands said that the fate of his country and many other small island developing States already experiencing the earliest ecological impacts of climate change, was not an isolated concern, but the first link in a chain of world events that would weaken the structure of global peace. Indeed, in addition to consideration by other United Nations and international bodies, the issue of climate change deserved the ongoing attention of the Security Council and needed to be an item on the 15-nation body's regular agenda.

Micronesia, Federated States of

The representative for the Federated States of Micronesia said that, for his country, like other small island developing States, climate change had been a serious security problem for quite some time. From the viewpoint of an islander, living on island atolls merely a few metres above sea level, global climate change was a security threat that must be confronted urgently by the Council. The circumstances of climate change that confronted the world today were unprecedented and threatened to render meaningless all apparent social and economic achievements and developments in all areas.

Pakistan, speaking on behalf of the wider membership "Group of 77" and China.

The ever-increasing encroachment of the Security Council on the roles and responsibilities of the other main organs of the United Nations represented a "distortion" of the principles and purposes of the Charter, infringed on the authority of the other bodies and compromised the rights of the Organization's membership.

Palau

The representative for Palau, aligning himself with the statement by Papua New Guinea, said that small islands like Palau were particularly challenged by rising sea levels, and he called the Council's attention to the risks posed by "warming", which was not specifically identified in the concept paper. Global warming threatened to destroy coral reefs.

Papua New Guinea

Papua New Guinea spoke on behalf of the Pacific Islands Forum saying that the impact of climate change on small islands was no less threatening than the dangers guns and bombs posed to large nations.

Philippines

The representative for the Philippines broadly associating his delegation with the views of the Non-Aligned Movement and Group of 77 and China, said the Philippines was participating in today's debate because of the importance it placed on energy, security and climate change issues.

Solomon Islands

The representative for the Solomon Islands said his country, located in a disaster-prone region, faced the effects of climate change on a daily basis, and regarded the phenomenon as not only a development issue, but also a security concern. His delegation believed that all the main organs of the United Nations should seize the opportunity to address the issue, which threatened the survival of millions of people worldwide, and particularly those in the small island developing States.

Tuvalu

Said that, as with the issue of security threats of HIV/AIDS, it was strongly believed that the Security Council should permanently place on its agenda the issue of climate change and environmental security. The Security Council should review its mandate to fully embrace the concept of environmental security.

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Notes

1 (Ki-Moon, 2010).

2 (UN General Assembly 2009).

3 (UN High Level Panel on Threats, 2004, p. p. 27).

4 (Lee, 2009, s. p. 24).

5 Sustainable human development is defined by the UNDP as “development that not only generates economic growth but distributes its benefits equitably; that generates the environment rather than destroying it; that empowers people rather than marginalizing them. It gives priority to the poor, enlarging their choices and opportunities, and provides for their participation in decisions affecting them. It is development that is pro-poor, pro-nature, pro-jobs, pro-democracy, pro-women and pro-children.” (UN Development Programme (UNDP) Report of the Administrator, 1994).

6 The IPCC highlighted in its 2007 Fourth Assessment Report that the increase in global average temperature was 90% likely due to human activity and concluded that “[t]he observed widespread warming of the atmosphere and ocean, together with ice mass loss, support the conclusion that it is *extremely unlikely* that global climate change of the past 50 years can be explained without external forcing and *very likely* that it is not due to known natural causes alone,” (IPCC, 2007b, p. 39). The IPCC also presented in the same report that carbon dioxide resulting from human activity had grown by 70% between 1970 and 2004, with eleven of 12 years between 1995 and 2006 representing the “warmest years in the instrumental record of global surface temperature (since 1850).” (IPCC, 2007b, p. p. 36).

7 The IPCC outlines two ways in which the world is vulnerable to climate change – 1) through the vulnerability of its natural systems, such as tropical forests, glaciers, and coral reefs and human systems, which include “mainly water resources; agriculture (especially food security) and forestry; coastal zones and marine systems (fisheries); human settlements, energy, and industry; insurance and other financial services; and human health.” In a climate change context, the IPCC defines vulnerability as “the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.” (IPCC, 2007c, p. p. 21).

8 (Buhaug, Gates, Hegre, & Strand, 2007).

9 (Uppsala University and the International Peace Research Institute in Oslo as cited in: UN Environment Programme 2009, p.5).

10 (United Nations, 1982).

11 (UN High Level Panel on Threats, 2004, s. p. 15).

12 These terms are defined by the Crisis States Research Centre (CSRC) as the following: a fragile state is “a state significantly susceptible to crisis in one or more of its sub-systems. (It is a state that is particularly vulnerable to internal and external shocks and domestic and international conflicts)”; a crisis state is “a state under acute stress, where reigning institutions face serious contestation and are potentially unable to manage conflict and shocks. (There is a danger of state collapse)”; a failed state is “a condition of “state collapse” – e.g., a state that can no longer perform its basic security, and development functions and that has no effective control over its territory and borders.” (Crisis States Research Centre (CSRC), 2006).

13 (UN Environment Programme (UNEP), 2009).

14 (Evans, Resource Scarcity, Climate Change and the Risk of Violent Conflict, 2010, s. p. 13).

15 (Le Billon, 2008).

16 See for example (Centre for Security Studies (CSS) and SwissPeace, 2008).

17 (Centre for Security Studies (CSS) and SwissPeace, 2008).

18 (Associates in Rural Development, 2003, pp. pp. 141 - 149).

19 (Tromfimov, 2010).

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- 20 (Ahmed & Mahmood, 1998).
- 21 (Shamsie, 2010).
- 22 (Associates in Rural Development, 2003, p. p. 149)
- 23 (Centre for Security Studies (CSS) and SwissPeace, 2008, ss. pp. 21- 24).
- 24 (Centre for Security Studies (CSS) and SwissPeace, 2008, s. p. 21).
- 25 (Centre for Security Studies (CSS) and SwissPeace, 2008, ss. pp. 20-22).
- 26 (Centre for Security Studies (CSS) and SwissPeace, 2008, ss. pp. 22-24).
- 27 (Centre for Security Studies (CSS) and SwissPeace, 2008, s. p. 25).
- 28 (Centre for Security Studies (CSS) and SwissPeace, 2008).
- 29 (Lee, 2009, p. p. 2).
- 30 (Osborn, 2007).
- 31 Melting of the Arctic ice sheets due to climate change, for example, will allow commercial traffic in Arctic waters. This brings other issues, however, principally in regards to rights claimed and disputed by both Russia and Canada. (CTV News, 2010).
- 32 (German Advisory Council on Global Change (WBGU), 2008, s. p.1).
- 33 (German Advisory Council on Global Change (WBGU), 2008).
- 34 (International Institute for Sustainable Development (IISD), International Union for Conservation of Nature (IUCN), Stockholm Environment Institute (SEI), Worldwatch Institute, p. p.6).
- 35 (BBC News, 2004).
- 36 (Tyler, 1999).
- 37 (Centre for Security Studies (CSS) and SwissPeace, 2008, p. p. 18).
- 38 (United States Central Intelligence Agency (CIA), 2011).
- 39 (Pa-Oh Youth Organization (PYO), 2011).
- 40 (Earthrights International, 2010)
- 41 (UN Economic and Social Council (UN ECOSOC), 2010, p. p. 1).
- 42 The goals are to: eradicate extreme poverty and hunger; achieve universal primary education; promote gender equality and empower women; reduce child mortality rate; improve maternal health; combat HIV/AIDS, malaria, and other diseases; ensure environmental sustainability; and develop a global partnership for development (United Nations, 2010).
- 43 (UN Economic and Social Commission for Asia and the Pacific, 2010).
- 44 (UN Economic and Social Commission for Asia and the Pacific (UN ESCAP), International Strategy for Disaster Reduction (ISDR), 2010, p. p. vii).
- 45 (Peace Research Institute Oslo (PRIO) in UN OCHA /Norges Geotekniske Institutt (NGI)Report, 2009, p. p. 36).
- 46 (Uppsala Conflict Database (UCDP) & Peace Research Institute Oslo (PRIO)PRIO, 2008).
- 47 (IPCC, 2007a, p. 494).
- 48 Ibid.
- 49 (International Alert, 2007, p. p. 17).
- 50 (International Alert, 2007).
- 51 (Evans, 2010, s. p. 4).
- 52 (Cha, o.a. 2010, p. 64 & 44-45, quoting the United Nations Framework Convention on Climate Change (UNFCCC), Climate Change: Impacts, Vulnerabilities and Adaptation in Developing Countries, April 29, 2009).
- 53 (Volke, Hampel-Milagrosa, & Schure, 2007, p. pp. 2 & 23).
- 54 (Evans, 2010, s. p. 4).
- 55 ibid.
- 56 (de Soysa & Gleiditsch, 1999, p. p. 15).
- 57 (Maplecroft, 2010).
- 58 (Asian Development Bank (ADB), 2009, p. p. 8).
- 59 (Food and Agriculture Organization (FAO), 2009).

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- 60 (UN Economic and Social Commission for Asia and the Pacific, 2010, pp. pp. 136 - 137).
- 61 These groups are not necessarily separate from each other; an individual, group, or community can be subject to several qualifications of vulnerability, thus increasing their exposure to various risks.
- 62 (Cha, et al., 2010, p. p. 65).
- 63 (Brainard & Chollet, 2007)
- 64 (German Advisory Council on Global Change (WBGU), 2008, p. p. 90)
- 65 (Crisis States Research Centre (CSRC), 2006, pp. p. 35, quoting Zehnder, 2002).
- 66 (India Daily, 2008).
- 67 (United States Agency for International Development (USAID), 2005, p. p. 2).
- 68 (German Advisory Council on Global Change (WBGU), 2008, p. p. 33).
- 69 Ibid.
- 70 (Week, The, 2011, p. p. 15)
- 71 (Singh, 2010).
- 72 *ibid.*
- 73 UN ESCAP found that the developing economies in Asia Pacific region “achieved an annual growth rate of 4.0%, making it the fastest-growing region in the world. However, almost all of this growth came from the two most populous countries: China, which grew by 8.7%, and India, by 7.2%. Indeed, excluding these fast-growing sub-continental economies, the Asia Pacific developing economies contracted in 2009 by 0.6%.” (UN Economic and Social Commission for Asia and the Pacific, 2010).
- 74 For example, India’s economy saw an increase of 9%, primarily from its domestic market, from 2007 to 2008 – this was then followed by a slowdown in growth, but still growth nonetheless. (Shah, 2010).
- 75 (UN Economic and Social Commission for Asia and the Pacific, 2010).
- 76 (UN Economic and Social Commission for Asia and the Pacific (UNESCAP), Asian Development Bank (ADB), UN Development Programme (UNDP), 2010, p. p. 1).
- 77 *ibid.*
- 78 (Asia Pacific Forum).
- 79 (ActionAid, Institute for Development Studies (IDS), 2007, s. p. 4)
- 80 (ActionAid, Institute for Development Studies (IDS), 2007, s. p.4)
- 81 (UN Development Programme (UNDP), 2010).
- 82 (Commission on the Status of Women (CSW), 2008).
- 83 (Global Humanitarian Forum, 2008, p. p. 68).
- 84 (United States Agency for International Development (USAID), 2007, s. p. 1).
- 85 (United States Agency for International Development (USAID), 2007, s. p. 74).
- 86 (International Institute for Sustainable Development (IISD), International Union for Conservation of Nature (IUCN), Stockholm Environment Institute (SEI), Worldwatch Institute, s. p. 6).
- 87 (United States Agency for International Development (USAID), 2007, p. p. 1)
- 88 (ActionAid, Institute for Development Studies (IDS), 2007).
- 89 (IPCC, IPCC First Assessment Report 1990 (FAR), 1990, p. p. 20).
- 90 (International Organization for Migration (IOM), 2008, s. p. 11).
- 91 (Evans, 2010, pp. pp. 12 - 13).
- 92 (International Organization for Migration (IOM), 2008, s. p. 10).
- 93 (German Advisory Council on Global Change (WBGU), 2008, p. p. 119)
- 94 This was in regards to the threat that the situation in Kosovo was posing on international peace and security. (UN Security Council, 1998).
- 95 (UN General Assembly, 1951).
- 96 (Asian Development Bank (ADB), 2009, p. p. 10).
- 97 (Agence France Press (AFP), 2011)
- 98 (UN Development Programme (UNDP) Newsroom, 2010).

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- 99 (Stern, 2006, p. p. i).
- 100 (UN, 2001).
- 101 (Global Witness, 1995).
- 102 (Human Rights Watch (HRW), 2009, s. p. 69).
- 103 (Crisis States Research Centre (CSRC), 2006, pp. p. 36, quoting Zehnder, 2002).
- 104 (Centre for Security Studies (CSS) and SwissPeace, 2008, p. p. 35).
- 105 One study showed that of 1831 interstate events concerning water, 67 % were of cooperation and most that were not cooperative, did not result in outright conflict. There were in total 37 cases of actual "military or violent confrontation" (Michel & Pandya, 2009, p. p. 90).
- 106 (Gleiditch et al. in Michel and Pandya 2009).
- 107 Referenced in Michel and Pandya, *Troubled Waters: Climate Change, Hydropolitics and Transboundary Resources* 2009 page 92 as "M. A. Levy, C. Thorkelson, C. Vörösmarty, E. Douglas, and M. Humphreys, "Freshwater Availability Anomalies and Outbreak of Internal War: Results from a Global Spatial Time Series Analysis," paper presented to the International Studies Association March 22–25, 2006, San Diego.
- 108 (International Alert, 2007, p. p. 13).
- 109 (German Advisory Council on Global Change (WBGU), 2008, pp. p. 85, quoting Carius et al.).
- 110 (German Advisory Council on Global Change (WBGU), 2008, p. quoting Carius et al.).
- 111 Notably, the giant hydropower companies operate with impeccable political connections and a lack of transparency. It is believed perhaps 500,000 locals, mainly ethnic minorities, have been displaced and forcibly resettled as a result of the dam construction projects. Protestors have been threatened with less compensation, if not jail. (Economist, The, 2010a).
- 112 (Evans, 2010, ss. p. 11-12).
- 113 (Evans, 2010, s. p. 14).
- 114 (BusinessGreen, 2010).
- 115 Others have included Algeria (oil); Angola (oil, diamonds, timber, ivory, uranium); Chad (oil, uranium); Colombia (oil, heroin, cocaine, gold, emeralds, coal); DR Congo (copper, cobalt, diamonds, gold, timber, uranium, oil, minerals); Iraq-Kuwait (oil); Liberia (timber, diamonds, iron, rubber, drugs); Mozambique (timber, hydropower, shrimps, ivory, gas); Peru (cocaine); Senegal-Casamance (marijuana); Sierra Leone (diamonds, rutile, bauxite); Sudan (oil, timber, gold); Turkey-Kurdistan (heroin); Western Sahara (phosphates, oil). See Le Billion, Philippe., *The Political economy of resource wars*, in *Angola's War Economy: the Role of oil and diamonds*, Jakkie Cilliers and Christian Dietrich eds., (Pretoria: Institute for Security Studies, 2000): 21-42. See also Westing, A.H. 1986. *Global resources and international conflict: environmental factors in strategy policy and action*. Oxford University Press.
- 116 (UN Development Programme (UNDP) Pacific Centre, 2010).
- 117 (Kaplan, 2010, pp. pp. 23-24 & 28).
- 118 (Sun, Cheng, White, West, & Katsigris, 2004).
- 119 (Swanström, p. p. 104).
- 120 (Freeman, et al., 2010, p. p. v).
- 121 (Global Greenhouse Warming).
- ¹²² However, key water supplies from glaciers in the nation's northwest have decreased by 21 per cent since the 1950s, and all China's major rivers have shrunk over the past five decades.¹²² A study in 2007 by the Institute of Mountain Hazards and Environment concluded that climate change linked to the contraction of wetlands at the source of China's two longest rivers, the Yangzi and the Yellow River (or Huang He), had reduced the volume of water flowing in the rivers. The wetlands at the origin of the Yangzi had contracted by 29 per cent, whilst just under 20 per cent of small lakes at its source had dried up, despite increased rainfall. A WWF study also found that the Tibetan Plateau, which used to boast 36,000 glaciers covering an area of 50,000 square kilometres and which feeds several of the major rivers in China and Southeast Asia, had, over the past century, shrunk by 30 per cent (Terra Daily, "Climate Change Sucks Water From China's Two Longest Rivers", July 27th 2007).

And in late 2009, the first-ever large-scale report on the Yangzi and climate change adaptation estimated that temperatures across the Yangzi River Basin could increase up to 2 degrees Celsius over the next 50 years, with extreme weather events – storms and drought - becoming ever more frequent for the 400 million inhabitants who depend of the river basin for their livelihoods. Specific adaptation measures discussed in the report include strengthening existing infrastructure, such as power supply, transportation as well as river and coastal dike reinforcement. Other steps involve promoting Integrated River Basin Management (IRBM), switching to more flexible cropping systems, and reducing human impact on fragile ecosystems (see WWF, “Yangtze warned to prepare for more droughts, floods and storms”, November 10th 2009). At the same time, the UNFCCC went further to say that the melting of the Himalayan glaciers due to global warming could cause flooding, water shortages and land degradation that could affect 1 billion people (see UNFCCC, “Climate Change: Impacts, Vulnerabilities and Adaptation in Developing Countries”, April 29th 2009, quoted in *CSIS*, pp. 44).

123 (Lemont, 2009).

124 (Economist, The, 2010b).

125 This focus on energy efficiency is a high priority for China - energy consumption per building area is two-to-three times that of developed countries and energy efficiency generally is a lot lower than other advanced countries. Large Chinese industries also consume roughly 20 per cent more energy than their equivalents in developed countries. (Global Greenhouse Warming).

126 (Stanislaw, 2010).

127 One report found that “... it seems that *high politics* determines the outcome of any South China Sea initiative, and as long as environmental experts fail to show states the security implications of today's policies, environmental co-operation will not be prioritised. Environmental experts just have to keep on struggling while waiting for the states themselves to realise the need for co-operative endeavours.” (Naess, 1999, p. p. 122).

128 (Naess, 1999, pp. 59-62, 106-7).

129 See The Economist 2010a, and The China Daily 2010.

130 (Economist, The, 2010a).

131 (Asian Development Bank (ADB), 2009, p. p. 11).

132 (Environmental Investigation Agency (EIA), Talpak, 2010).

133 (PEACE, 2007).

134 (EuropeAid).

135 The imprints to Suharto's regime on today's conflict timber dynamic is cited as 1) bureaucratic and military dominance, 2) corporatism, 3) patronage, and 4) centralization. (Associates in Rural Development, 2003).

136 (Associates in Rural Development, 2003, p. p. 13).

137 (Associates in Rural Development, 2003).

138 (Environmental Investigation Agency (EIA), Talpak, 2010).

139 (Human Rights Watch (HRW), 2009, p. p. 2).

140 (Jakarta Globe, 2011).

141 (Jakarta Globe (b), 2011).

142 (Nature Conservancy, The, 2010).

143 (World Bank Group).

144 These have been cited by the World Bank as: 1) Poverty and population increase; 2) Threats to water supply and agriculture; and 3) Vulnerability to natural disasters. (World Bank Group, 2009).

145 (World Bank Group, 2009).

146 (German Advisory Council on Global Change (WBGU), 2008, s. p.3).

147 (SAARC).

148 (Jasparro and Wirsing 2006).

149 (IPCC, Working Group II, 2007, s. p. 488).

150 (Congressional Research Service (CRS), 2010).

151 The 2010 report stated that “Pakistan has faced serious challenges in the last four years, stemming from a sudden meltdown in the global economy in 2008, along with a sharp rise in oil and food prices earlier that year. At the domestic front security issues, war on terror and IDPs have put further pressure on our economy. Furthermore the most recent catastrophic floods, have affected approximately more than 20 million people, ravaged different urban and rural areas and caused damage to the infrastructure and agriculture of the country. This will adversely impact the overall economy and the achievement of many of the MDG goals and targets”. (Government of Pakistan, 2010, s. p. vii).

152 (Woodrow Wilson International Center for Scholars, 2009).

153 (Pakistan Agricultural Research Council).

154 (UN Office for the Coordination of Humanitarian Affairs (OCHA), 2010).

155 (UN Office for the Coordination of Humanitarian Affairs (OCHA)).

156 (International Labour Organization (ILO), 2010).

157 (Congressional Research Service (CRS), 2010, s. p. 12).

158 (Zardari, 2009).

159 (Polgreen and Tavernise 2010).

160 (The Indus Waters Treaty, 1960).

161 (Deccan Herald, The, 2011).

162 (Congressional Research Service (CRS), 2010, s. p. 17).

163 The following have been observed: Summers are becoming hotter, monsoon irregular, untimely rainfall, heavy rainfall over short period causing water logging and landslides, very little rainfall in dry period, increased river flow and inundation during monsoon, increased frequency, intensity and recurrence of floods, crop damage due to flash floods and monsoon floods, crop failure due to drought, prolonged cold spell, salinity intrusion along the coast leading to scarcity of potable water and redundancy of prevailing crop practices, coastal erosion, riverbank erosion, deaths due to extreme heat and extreme cold, increasing mortality, morbidity, prevalence and outbreak of dengue, malaria, cholera and diarrhoea, etc. (Chowdury, 2009).

164 (Satter, 2010).

165 For example, in the report *Achieving the Millennium Development Goals in and Era of Global Uncertainty: Asia Pacific Regional Report 2009/10*, progress in the region toward the Millennium Development Goals are mapped and it noted that Bangladesh “reports on more than 80 per cent of the indicators but is off track on half of these – with slow or no progress on poverty reduction, on education, on improving maternal health, on forest cover or on extending services of clean water and basic sanitation.” (UN Economic and Social Commission for Asia and the Pacific (UNESCAP), Asian Development Bank (ADB), UN Development Programme (UNDP), 2010, s. p. 17).

166 (Global Humanitarian Forum, 2008).

167 (UN Development Programme (UNDP), 2004, s. p. 21).

168 (UN Development Programme (UNDP), 2004, s. p. 24).

169 (Indigenous People’s Issues and Resources, 2010).

170 (Hussein, 2009).

171 (Prasad, 2005).

172 (Hussein, 2009).

173 (Pacific Small Island Developing States (PSIDS), 2009).

174 Ibid.

175 (UN General Assembly, 2009).

176 Ibid.

177 (Pacific Small Island Developing States (PSIDS), 2010).

178 (Solomon Times Online, 2009).

179 (Allen, 2007, p. p. 2).

180 (McGovern & Choulai, 2005, p. p. 5).

181 (Allen 2007, p 6).

182 (Allen, 2007, p. p. 8).

183 (Bennett, 2004, p. p. 9).

184 Other long-term factors at play in the conflict included a sense of grievance of perceived injustices at the hands of both colonial and notably corrupt and wasteful postcolonial governments, particularly in regard to the distribution of the benefits of development. These grievances have been compounded by the emergence of an elitist postcolonial political culture, which, for the most part, has been closely associated with the notoriously corrupt logging industry, which have worked the forest resources of the Solomon Islands at an unsustainable rate. Ethnicity also appears to have been an underlying, but not key, issue, as well as rapid population growth during the 1980s and 1990s and governmental failure to provide adequate health and education. (Allen, 2007), (Bennett, 2004, pp. pp. 12 - 13).

185 (Rasmussen, Mataki, May, Birk, Mertz, & Yee, 2009, ss. pp. 5-6).

186 (Barnett, 2007, s. p. 32).

187 (Barnett, 2007, ss. pp 33, 35, 36).

188 (Habru, 2010).

189 (Rasmussen, Mataki, May, Birk, Mertz, & Yee, 2009, ss. pp. 10-11).

190 (Cohen, 2010).

191 Established by the United Nations Environment Program (UNEP) and the World Meteorological Organisation (WMO) in 1998, the IPCC is a scientific and intergovernmental body leading the assessment of climate change “to provide the world with a clear scientific view on the current state of climate change and its potential environmental and socio-economic consequences”. The IPCC reports consist of assessments from three working groups: Working Group 1 on the “The Physical Science Basis”, Working Group II on “Impacts, Adaptation, and Vulnerability”, and Working Group III on “Mitigation of Climate Change.” (IPCC n.d.).

192 (nobelprize.org 2007).

193 (Pachauri 2007).

194 (United Nations, UN Department of Public Information 2007).

195 For example see *UNSC Resolution 1888 (2009)* on women, peace and security; *UNSC Resolution 1540 (2004)*, under Chapter VII, on the non-proliferation of weapons of mass destruction (WMDs); *UNSC Resolution 1373 (2001)*, under Chapter VII, on addressing threats caused by terrorism; *UNSC Resolution 1325 (2000)*, on women, peace, and security; *UNSC Resolution 1308 (2000)*, on addressing impacts of HIV/AIDS worldwide.

196 (United Kingdom Mission to the United Nations 2007).

197 Summarised: 1) *Border disputes*, identifying rising sea-levels and melting ice as major factor in changes to the earth's water and landmass, stating that “possible submergence of entire small island states, dramatically receding coastlines and the development of new shipping routes” could lead to international disputes, 2) *Migration*, recognising that as a consequence of climate change through, for example, sea-level rise, there could be large-scale human displacement that could in turn exacerbate potential or existing conflicts and instability, 3) *Energy supplies*, siting climate change as a likely complicating factor in the “competition over scarce energy resources, security of supply, and the role energy resources play once conflict has broken out”, marking it as another exacerbating factor in existing or potential conflict and instability. 4) *Other resource shortages*, marks climate change as a likely cause of increased resources scarcity as aggravator of potential or existing conflict and instability and sites the importance of adaptation strategies 5) *Societal stress*, recognising the possible adverse affects of climate change on development, particularly for the world's poorest countries which would in turn exacerbate existing or potent conflict and instability, 6) *Humanitarian crisis*, siting climate change and likely resulting extreme weather events that could help lead to humanitarian crisis that could have cross-border political and security impacts. (United Kingdom Mission to the United Nations 2007).

198 (United Kingdom Mission to the United Nations, 2007).

199 (Penny 2007). For more analysis on the legality of the UN Security Council addressing climate change, see also: Gupta 2008.

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- 200 (Swisspeace, 2009, pp. pp. 74-75).
- 201 (Tyler, 1999, p. p.6).
- 202 (Tyler, 1999).
- 203 (Tyler, 1999).
- 204 (United States Agency for International Development (USAID), 2006, p. p. viii)
- 205 (Associates in Rural Development, 2003, p. p. 59)
- 206 (UNFCCC).
- 207 (Ministry of Environment and Forest Government of the People's Republic of Bangladesh, 2005, p. p. 28).
- 208 (Solomon Islands Ministry of Environment, 2008, p. p. 23).
- 209 (Solomon Islands Ministry of Environment, 2008, p. p. 39).
- 210 (Cambodia's Ministry of Environment, 2006).
- 211 (Republic of Kiribati, 2007, p. p. 11).
- 212 (Ministry of Environment and Forest Government of the People's Republic of Bangladesh, 2005, p. p. 34).
- 213 (Government of the People's Republic of Bangladesh, 2009, p. p. xvii)
- 214 (Tuvalu Ministry of Natural Resources, Environment, Agriculture and Lands, 2007, p. p. 10)
- 215 (Ministry of Environment and Forest Government of the People's Republic of Bangladesh, 2005).
- 216 (Lao People's Democratic Republic, 2009).
- 217 Ibid., pp. 56.
- 218 Ibid., pp. 57.
- 219 APEC's Energy Working Group (EWG) focuses on the goal of climate change adaptation but primarily from a perspective of energy and sustainable growth issues, such as developing commercially viable technological innovation of carbon capture and storage. APEC's Energy Security Initiative (ESI), launched in 2000, is the principal mechanism through which the EWG addresses long and short-term energy security. APEC members are now also working with other organizations from beyond the region, such as the International Energy Agency on various issues such as energy indicators and clean and renewable energy technologies. The Renewable Energy and Energy Efficiency Partnership, the Energy Charter Secretariat and Asia-Pacific Partnership on Clean Development and Climate now have 'guest status' in the EWG. APEC's efforts to progress energy efficiency and encourage technological innovation have been cited as examples of activities that serve the dual purpose of mitigating the adverse effects of climate change and securing energy supplies. (Cha, o.a., 2010, ss. p. 46 - 48).
- 220 Ibid, pp.48-9.
- 221 (ASEAN, 2005).
- 222 (ASEAN, 2005).
- 223 Ibid., pp. 49-50.
- 224 (Pacific Islands Forum).
- 225 (Pacific Islands Forum).
- 226 (South Pacific Regional Environment Programme (SPREP)).
- 227 Ibid.
- 228 (United Nations 1992, preamble).
- 229 (Cha, o.a., 2010, s. p. 52).
- 230 For example, a Cancun Action Framework on adaptation; a new programme on technology transfer; an associated new technology executive body.
- 231 (Economist, The, 2010).
- 232 (Cha, o.a., 2010, s. p. 52).
- 233 (Hance, 2010).
- 234 (Cha, o.a., 2010, s. p. 53).
- 235 Ibid., pp. 55.

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- 236 (Cha, o.a., 2010, ss. pp. 53-54).
- 237 (UN Environment Programme (UNEP)).
- 238 (UNISDR; <http://www.unisdr.org/>).
- 239 (Centre for Security Studies (CSS) and SwissPeace, 2008, p. p. 72).
- 240 (UN Department of Economic and Social Affairs, 2004, p. p.1).
- 241 See Heidelberg Institute for International Conflict Research Conflict Barometer Panorama reports from 1996-2011. Available on <http://www.hiik.de/en/konfliktbarometer/>.
- 242 (UN Environment Programme (UNEP), 2009, p. p. 11)
- 243 (International Institute for Sustainable Development (IISD), International Union for Conservation of Nature (IUCN), Stockholm Environment Institute (SEI), Worldwatch Institute).
- 244 (UN Secretary General Report, 2006, p. p. 10).
- 245 (Stern, 2006, p. p. xxvii).
- 246 (UN Secretary General , 2007).