Climate Change and Conflict Prevention: The Relevance for the International Process on Climate Change

Background Paper

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Executive Summary

Since the 1980s, a growing body of literature has dealt with the relationship of environmental problems and conflict prevention. More specifically, evidence is mounting that the adverse effects of climate change can, particularly by interacting with a number of other factors such as scarcity of natural resources, contribute to an increasing potential for conflict. On the other side, effective climate and environmental policies hold the promise to lessen such potential. Despite the significance of the issue, however, conflict prevention has not yet been established as a topic in the international process on climate change.

The role of climate change in increasing the potential for conflict, and the role of effective climate policy in lessening it, is particularly relevant to two major strains of discussion in international climate policy. First, the rationale for taking preventive action to mitigate climate change appears to be strengthened, as such climate change mitigation also represents a contribution to reducing conflict potential in general. As it generally leads to a decrease in energy demand, it reduces dependence on foreign energy supplies and enhances the security of energy supply. Second, the need to take appropriate adaptation measures in order to respond to any increased conflict potential diligently is highlighted. Furthermore, careful analysis of the impacts of climate change on the potential for conflict may allow identifying and determining regional and substantive priority areas of action so as to reduce the potential for conflict, by implementing adaptation measures as appropriate.

Related to the issue of adaptation is the question of vulnerability of our human system. Vulnerability to climate change refers to the degree to which a system is susceptible to or unable to cope with its adverse effects. The adaptive capacity depends on very different context variables, for example on the access to resources, the skill and knowledge to use them, or the stability and effectiveness of economic, social and cultural institutions. Accordingly, in addition to the analysis of the impacts of climate change on the potential for conflict, the degree of capacity of livelihoods or regions to adapt to respective impacts appears to be relevant for the identification of regional and substantive priority areas of action in the context of conflict prevention.

While the relevance of the issue of climate change and conflict prevention for pertinent international political discussions on the future development of climate policy – such as the further strengthening of international commitments to reduce greenhouse gas emissions and the appropriate priorities in financing adaptation activities – is evident, no authoritative international scientific assessment of the issue exists yet. Since the interna-

tional process on climate change is science-based, an obvious possibility for linking the aspect of climate change and conflict prevention to the UNFCCC process would appear to be through scientific channels.

Set up by WMO and UNEP in 1988, the Intergovernmental Panel on Climate Change (IPCC) produces the most authoritative international scientific assessments that are regularly fed into the UNFCCC process and constitute its major scientific basis. The IPCC is an intergovernmental body organised in three working groups dealing with the science of climate change, impacts and adaptation, and mitigation options. It is headed by a Chairman and a Bureau. The IPCC generally produces full Assessment Reports covering the causes, effects and mitigation options regarding climate change, Technical Papers on particular issues based on already existing assessment reports, and Special Reports as assessments on special issues.

The options to introduce the issue of climate change and conflict prevention to the IPCC process are as follows. A Technical Paper on the issue of climate change and conflict prevention hardly appears to be possible, since the issue has not yet been addressed in the main assessment reports of the IPCC. Initiating a Special Report requires careful preparation since the IPCC has limited resources to produce them (i.e. only issues considered to be of first priority are usually selected). The issue could also be dealt with in two envisaged Special Reports on the relationship between Climate Change and Sustainable Development as well as on Climate Change and Water. Another option consists in taking the issue of conflict prevention up in the IPCC's regular Assessment Reports. The work of the IPCC Working Group II on the impacts of climate change appears to be most appropriate for addressing the topic since it has already dealt with social impacts in the past. The contents of the Fourth Assessment Report of the IPCC are currently under discussion and the IPCC plenary is scheduled to decide thereon in early 2003. Furthermore, specialised expert workshops co-sponsored by the IPCC have in the past explored particular items of scientific discussion.

In any event, considerable knowledge about the link between climate change and conflict prevention already exists. Sound climate policies can already contribute to conflict prevention. As a result, interested Parties can use this knowledge to define priorities both in international discussions on mitigation and adaptation within the UNFCCC and its Kyoto Protocol and in their domestic implementation.

1. Introduction

Since the 1980s, the debate on the relationship between environmental degradation and resource scarcity on the one hand and security on the other hand has intensified steadily. Since its early days, this debate has seen diverse concepts of environmental security being put forward by various policy-makers and institutions (for an overview see Gleditsch 1997; Carius and Lietzmann 1999; see also the annual reports of the Environmental Change and Security Project of the Woodrow Wilson International Centre for Scholars). In the wake of this debate and following the end of the Cold War in the late 1980s, environmental stress has become established as an important non-traditional security concern. As a result, environmental stress has been found to trigger or catalyse acute or latent conflicts rather than being a root cause of such conflicts. It can contribute to or result in mass migration and refugee movement. Environmental degradation has so far generally increased conflict potential in domestic contexts, in particular in developing countries. Whether environmental stress actually leads to conflict or even violence depends on socio-economic framework conditions, demographic pressure and conflict history (Carius/Imbusch 1999). Global environmental change as a long-term pressure is also likely to intensify already existing local and regional conflicts over renewable resources (shared water or agricultural land) that are often coupled with poverty, migration and the marginalization of arable land.

However, impacts of global environmental change do not necessarily lead to violence and have not yet posed concrete threats to national security. In this context it is noteworthy that since the mid-1990s the debate on environment and security has broadened by exploring the "human security" dimension of environmental change (Lonergan 1999; Pachauri 2000). This integrative and interdisciplinary concept, developed by the United Nations Development Programme (UNDP 1994) is understood to include economic, health, and environmental concerns and is also a result of the redefinition of the overall concept of national security (Spector/Wolf 2000; Evans et al. 2000). Human security is achieved "when and where individuals and communities have options necessary to end, mitigate or adapt to threats to their human, environmental and social rights" (Lonergan 1999). The main components of the human dimension of security are the assurance of fundamental needs such as food, health, basic income, a healthy physical environment or a personal feeling of safety (Spector/Wolf 2000: 415). This broader approach encompasses the problem area of poverty, inequity and global environmental change and has been addressed earlier by the Brundtland Report in 1987 (World Commission on Environment and Development 1998).

Since the end of the 1980s, the issue of *climate change* has increased in importance on the agenda of international environmental politics. The early milestones of the international process on climate change comprise the establishment of the Intergovernmental Panel on Climate Change (IPCC) in 1988, the Second World Climate Conference in 1990, and the adoption of the UN Framework Convention on Climate Change (UNFCCC) in 1992. In recent years, climate change has even become one of the major topics of international affairs due to the negotiations of the Kyoto Protocol which only recently was finalised through the so-called Marrakesh Accords (see Oberthür/Ott 1999; Ott 2001; Bail et al. 2002)

Relevant research results on the nexus of climate change and the conflict dimension already exist (see for example Gleick 1989; van Ierland et al. 1996; Barnett 2002) and are confirmed and specified by a recent review on climate change impact research (Brauch 2002). The results suggest that there is no mono-causal linkage between climate change and conflicts. Climate change impacts do not pose a military threat nor can they be solved by traditional military means. However, climate change impacts can – in combination with other factors – contribute to environmental stress and may pose a challenge to human security (Pachauri 2000). For example, the number of environmental refugees is likely to increase as a result of rising sea-levels in the delta areas. For the same reasons the security of people in Tuvalu and Kiribati is threatened since their long-term ability to remain on their island is at risk. Given that people are going to be displaced as a consequence of climate change impacts, the UNFCCC has been referred to as "an important security treaty, making certain negotiating groups such as the Alliance of Small Island States security coalitions" (Barnett 2002: 2). Thus, climate change impacts might contribute, in combination with disputes on scarce resources, to increasing instability and potential for conflict in some regions.

Seen in this light, climate protection policies represent a means of conflict prevention (see generally Oberthür 1999). The ultimate objective of the UNFCCC is to stabilise atmospheric concentrations of greenhouse gases (GHGs) "at a level that would prevent dangerous anthropogenic interference with the climate system" (Article 2 FCCC). Accordingly, taking preventive action to mitigate climate change is at the core of the international regime, and this approach is to be further developed in the future. As such, climate change mitigation also represents a contribution to reducing the potential for conflicts, for example, through enhancing the security of energy supply (MacKenzie 1997; European Commission 2000a). In addition, the need to take appropriate adaptation measures is emphasised in the UNFCCC Framework Convention and the issue of adaptation has gained importance in the context of climate change during the last years. The identification and implementation of adequate adaptation measures can contribute significantly to responding

to any increased conflict potential. Careful analysis of the impacts of climate change on the potential for conflict may allow identifying and determining regional and substantive priority areas of action so as to reduce conflict potential, in particular by implementing adaptation measures as appropriate. Both of these two basic options for responding to the problem of climate change and its implications for conflict prevention are further dealt with in section 3 of this paper.

In addition to the international climate change regime, there are a number of international and regional institutions and fora dealing with either climate change policies or prevention or mitigation of crisis and conflicts. Several approaches have tackled the issue of climate change and global warming and their potential security implications so far, mainly referring to monitoring issues. The United Nations Environment Programme's (UNEP) Executive Director Klaus Töpfer attempted to include crisis prevention and early warning into UNEP's mandate to monitor global environmental change (United Nations Task Force on Environment and Human Settlement 1998; UNEP 1999). Moreover, the issue has been dealt with in several ways within the OECD context. First, the Development Assistance Committee (DAC) of the OECD is about to extent the environment and resource chapter in the OECD's Guidelines for Conflict Prevention (OECD 2001). Second, the DAC work on good governance, capacity development and conflict and peace is undertaken by the Network on Good Governance and Capacity Development (GOVNET) and the Network on Conflict, Peace and Development Co-operation (CPDC Net), respectively. The DAC Network on Conflict, Peace and Development Co-operation is the only international forum where conflict and peace-building experts from bilateral and multilateral development co-operation agencies meet to define common approaches in support of peace. Third, there are also ongoing discussions in the OECD Annex I expert group. Fourth, the OECD's Working Party Global and Structural Policy (WP GSP) is currently pursuing a Climate/Development Project in cooperation with DAC where climate change and conflict prevention should be discussed with strong participation of developing countries.

At the European level, the European Commission will establish until 2008 a global monitoring system for environment and security (European Commission 2001) as part of the European Strategy for Space (European Commission 2000). As part of a comprehensive monitoring system, earth observation technology and remote sensing data are to be systematically applied to monitor the implementation of the Kyoto Protocol. In addition, several institutions are dealing with the issue of conflict prevention, such as the Conflict Prevention and Reconstruction Unit of the World Bank, which is dedicated to easing the transition to sustainable peace and supporting socio-economic development in conflict-affected countries. The respective activities might also strengthen regional capacities to cope with potential negative effects of climate change.

These examples illustrate that the link between global environmental change/climate change and security is dealt with in a variety of institutions worldwide. However, this paper deals exclusively with the relevance of conflict prevention in the context of the focused international process on climate change. Given that the scientific discussion on the role of environmental problems in the emergence of conflict and the international political process on climate change have so far hardly been linked, this paper aims at contributing to filling this gap by discussing the options for combining both strands of the discussion. In particular, it will explore which options exist for integrating and making the broader scientific discussion on environmental policy and conflict prevention fruitful for the international process on climate change.

To this end, this paper will proceed in three steps. First, it will investigate how the results of this discussion may be made to bear fruit for the international scientific process on climate change led by the Intergovernmental Panel on Climate Change (IPCC). Second, the potential relevance of the topic for the activities and discussions within the context of the UNFCCC and its Kyoto Protocol will be assessed. Finally, the paper's main findings are summarised in the conclusions.

2. Conflict Prevention and Avoidance as a Potential Topic for the IPCC

This section investigates to what extent the issue of climate change and conflict prevention is relevant to the IPCC which assesses the consensual scientific knowledge in the area of climate change, and how it may be introduced in the IPCC's work. To provide the background, first the role, organisational structure and scientific outputs of the IPCC are described. Second, this section examines to what extent the IPCC has already dealt with issues related to climate change and conflict prevention, including vulnerability to the adverse effects of climate change. Finally, how the IPCC might take up the issue of climate change and conflict prevention as a topic of its work in the future is explored.

2.1 The IPCC: Objective, Organisation and Output

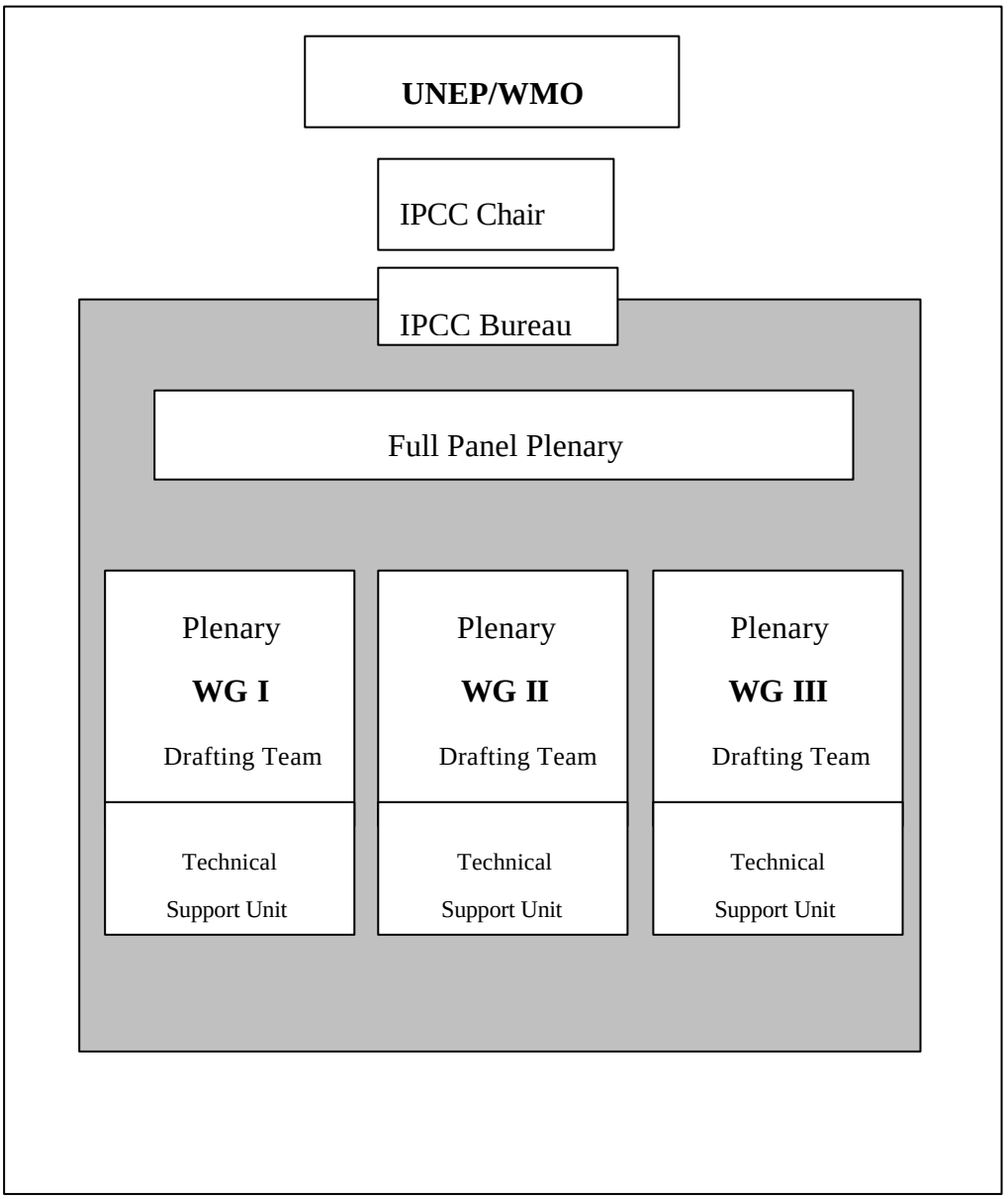
The Intergovernmental Panel on Climate Change (IPCC) produces the most authoritative international scientific assessments that are regularly fed into the UNFCCC process and constitute its major scientific bases. The IPCC is an intergovernmental body organised in three working groups dealing with the science of climate change, impacts and adaptation, and mitigation options. It is headed by a Chairman and a Bureau. The IPCC was set up in 1988 by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) with the mandate to regularly review the state of scientific knowl-

edge on climate change (for an analysis see Alfsen/Skodvin 1998; Agrawala 1998; Depledge 2002).

Organisation and objective

All the member states of the United Nations and the WMO can participate as full members in the IPCC and its working groups. Apart from the structuring and the endorsement of IPCC products (see below for more details), the plenary of the Panel decides on the IPCC Principles and Procedures as well as on the budget, it elects the IPCC Chairman and the

IPCC Organisation



rest of its Bureau. The Chairman invites members of governments and other bodies as well as experts from WMO/UNEP member countries or international, or non-governmental organisations to participate in the plenary sessions of the Panel which meets about once a year. It is worth noting that scientists may be invited in their own right to contribute to the work of the IPCC. The IPCC Bureau, the IPCC Working Group Bureaux and any Task Force shall reflect balanced geographic representations with due consideration for scientific and technical requirements (IPCC 1998). The IPCC Bureau comprises thirty members: the IPCC Chairman, the three Vice-Chairs, the members of the three Working Group Bureaux (two Co-Chairs and six Vice-Chairs each) and the two Co-Chairs of the Task Force to oversee National Greenhouse Gas Inventories Programmes (IPCC-NGGIP; see below).[1]

The IPCC defines its role as follows:

> "The role of the IPCC is to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation. IPCC reports should be neutral with respect to policy, although they may need to deal objectively with scientific, technical and socio-economic factors relevant to the application of particular policies" (IPCC 1998: Section 2).

Accordingly, the IPCC does not conduct research nor does it monitor climate related data or other relevant parameters. It bases its assessment mainly on peer reviewed and published scientific and technical literature.[2] To attain this objective, three Working Groups (WGs) were set up in 1988. Their respective tasks have been subject to slight variations over the years.[3] For the Third Assessment Report (TAR), the scope was decided as follows:

I) Working Group I (WG I) assessed the scientific aspects of the climate system and climate change.

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1 The Task Force was established at the 14th session of the IPCC in October 1998.

2 According to the latest revision of the IPCC rules of procedure, the following material can also be relevant for the work of the IPCC: industry journals, internal organizational publications, non-peer reviewed reports or working papers of research institutions, proceedings of workshops (IPCC 1999: Annex 2; see critically Skodvin 2000: 414-415).

3 For the Second Assessment Report, WG II dealt with impacts, adaptation and mitigation, whereas WG III addressed the cross-cutting economic and social dimensions (Depledge 2002: 2).

II) Working Group II (WG II) addressed the vulnerability (sensitivity and adaptability) of socio-economic and natural systems to climate change, and options for adapting to it. It also focused on human health, with an emphasis on regional, sectoral and cross-sectoral issues.

III) Working Group III (WG III) assessed options for limiting greenhouse gas emissions and otherwise mitigating climate change.

Assessment Procedures

In order to start the assessment process, the WGs have clearly defined and approved mandates and work plans as established by the Panel which, however, are subject to ongoing improvements concerning the scope and structure of the output (for an analysis of the assessment process see Agrawala 1998: 623-628; focusing on the last revisions of the TAR in particular Moss 2000 and Skodvin 2000). For instance, suggestions to advance an integrated assessment of climate change resulted in increased attention to coordination across the Working Groups on so-called 'cross-cutting' issues such as the relationship of climate change to development, sustainability, and equity (Moss 2000; Depledge 2002).

The preparation of the TAR exemplifies the complexity of the internationally co-ordinated assessment process (see Moss 2000). The starting point was a workshop of members of the research community where background preparations started and ideas on the structure of the report were developed. In a second step, then IPCC Chair Robert Watson included these suggestions in a White Paper that was circulated for review by both experts and government representatives. This paper served as the basis for the plan and procedures finally adopted by the Panel in 1997 (see IPCC 1997). After the agreement on the proposed scope of each of the WGs (see IPCC-XIII/Doc. 4) the IPCC Secretary requested governments and IPCC focal points, as well as experts and organisations, to propose lead authors for the TAR.

The *lead authors* that are identified by the Working Group Bureaux on the basis of the proposals, are responsible for the production of designated sections.[4] As outlined in the IPCC procedures (IPCC 1998: Annex 1), lead authors typically work in small groups which ensure that the various components of a section are assembled and integrated (for more detail see Alfsen/Skodvin 1998: 10-12). With the collaboration of the members of the ap-

[4] For instance, in addition to a small core of dedicated staff in the Technical Support Unit, more than 100 lead authors and several hundreds of contributing authors participated in the work of Working Group I on the TAR (Karoly 2000: 469).

propriate Working Group Bureau, lead authors develop at a scoping meeting the concrete chapter structure, which is subsequently approved by the Working Group plenary. The essence of the lead authors' task is the synthesis of material drawn from the expert contributions, mainly material from the peer-reviewed and internationally available literature. They also have, in conjunction with *review editor*s, to take into account expert and government review comments when revising the text. *Co-ordinating lead authors* are in charge of co-ordinating major sections of a report, while *contributing authors* prepare technical information in the form of text, graphs or data for assimilation by the lead authors into the draft section.

The reports of the WGs are drafted and reviewed by hundreds of experts from all over the world. The experts who act in their personal capacity are nominated by governments, by a Working Group Bureau, by lead and contributing authors as well as by intergovernmental and non-governmental organisations. The comprehensive review process is organised in two phases, an expert and a government review.

The IPCC produces several types of reports that are finalised following different procedures (accepting, approving or adopting[5]) in the respective bodies (WG drafting team, WG plenary, and full (IPCC) Plenary[6]):

- The periodic *Assessment Reports* by the three WGs are accepted as a whole by the appropriate WG plenary. Until today, three Assessment Reports have been published, in 1990/1992, in 1995/1996 and the most recent one in 2001. In contrast to the full Assessment Reports, the *Executive Summaries* and the *Summaries for Policy-makers*, that form part of the overall reports, are subject to line-by-line approval by the appropriate WG plenary and they must be accepted by the full Panel plenary. The *Synthesis of the Reports* of all WGs are subject to line-by-line approval by the full Panel plenary.

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5 According to the IPCCC definitions of approval procedures, the "acceptance" of IPCC Reports at a session of the Working Group or Panel signifies that the material has not been subject to line by line discussion and agreement. The "adoption" of IPCC reports is a process of endorsement section by section and "approval" signifies that the material has been subject to detailed line by line discussion and agreement (see IPCC 1999).

6 The WG Drafting Team mainly comprises the Lead and Contributing Authors (in a way as the "Scientific Core" as Alfsen/Skodvin (1998: 11) put it), the WG plenaries are composed of national delegations (government officials, policy-maker, scientist with governmental affiliations as well as partly independent scientist).

- *Special Reports* are assessments on special issues that are subject to the same review, acceptance and approval procedures as the assessment reports in general.
- *Technical Papers* are reports on specific issues; they based on already existing assessment reports and are therefore not subject to the same acceptance and approval procedures as the assessment reports.

In addition, *supporting material* is prepared for consideration by the IPCC which is not subject to formal IPCC review processes. This material results from workshops and expert meetings (including the respective proceedings) which are useful or necessary for the completion of a WG's working plan or a task of the IPCC. An IPCC co-sponsorship of events such as expert workshops is possible if it has been determined in advance that it will be a useful contribution to the IPCC work.

2.2 The Relevance of Conflict Prevention for the Work of the IPCC

The IPCC has not yet taken up the issue of conflict or conflict potentials explicitly although relevant research results exist and are already published in peer-reviewed scientific journals (see for example Gleick 1989; van Ierland et al. 1996). According to this research, future climatic changes will have widespread societal impacts that can also increase conflict potentials. It is worth noting that it depends on varying context variables whether an increased environmental stress indeed leads to conflict (Carius/Imbusch 1999: 20-22). The impacts of climate change could contribute to and reinforce already existing socio-economic and environmental pressures (Brauch 2002: Chap. 2.5). Whether heightened pressure induced by climate change impacts indeed result in growing conflict potential depends on their future development and on a number of socio-economic context variables. Both relevant climate change impacts and socio-economic context variables have already been dealt with in the existing IPCC assessments. As outlined above, the TAR of the IPCC addressed its impacts (WG II) and the response options to mitigate the problem (WG III) or to adapt to the changing conditions (WG II).

Impacts

In the TAR, WG II addressed on the one hand the vulnerability of both natural and socio-economic systems to climate change. On the other hand, it dealt with options for adapting to climate change. As WG II took into account the social dimension of impacts, a linkage to the issue of climate change and conflict potential becomes obvious. Conflict potentials clearly are social impacts, therefore this issue would fit into the mandate of WG II of the IPCC.

More specifically, regarding the special character of impacts WG II distinguishes between three relevant concepts (IPCC 2001a: 6):

1. Sensitivity (as "the degree to which a system is affected, either adversely or beneficially, by climate-related stimuli"),
2. Adaptive Capacity (as "the ability of a system to adjust to climate change[..] to moderate potential damages [….] or to cope with the consequences"), and
3. Vulnerability (as "the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change").

The adaptive capacity refers to the above mentioned socio-economic context variables and therefore it is the area where either conflict potential or conflict prevention capacity might be part of the assessment of a society's vulnerability. Climate change impacts could contribute to increasing environmental stress or *sensitivity* and this might subsequently in relation with other forces increase regional conflict potentials. At the same time, it follows that the adaptive capacity influences the ability to reduce vulnerability and to increase the potential for conflict prevention.

To a certain degree, the assessment of WG II already recognizes the specific importance of this kind of impact dimension through the finding that developing countries will be hardest affected by climate change, as they are more vulnerable to its adverse impacts and have less adaptive capacity. By assessing the potential impacts of future climate change across sectors and regions, key concerns are identified and it is emphasized that the ability of human systems to adapt to and cope with climate change depends on different factors. The TAR recognises that "many communities and regions that are vulnerable to climate change are also under pressure from forces such as population growth, resource depletion, and poverty" (IPCC 2001a, 8). Moreover, the potential occurrence of socio-economic disruptions or migration as a consequence of climate change is mentioned (IPCC 2001a: 12; on the issue of climate change and environmental refugees, see, for example, Myers/Kent 1995). However, the linkage to existing or latent conflict constellation is not made explicit and the analysis of the interaction of climate change with other pressures remains vague or limited due to, inter alia, methodological problems regarding the assessment of future developments of the different pressures. Accordingly, further research is required to strengthen future assessments, in particular with respect to integrated assessments of interactions between climate change impacts and other stress-factors such as pre-existing water shortages, desertification, population growth, etc. that may reinforce certain potentials for conflict. The need for an improved assessment of Impacts, Vulnerabilities, and Adaptation is also formulated by Working Group II of the IPCC in its TAR (IPCC 2001a, 17).

Adaptation

The IPCC has explicitly included the topic "Adaptation" in the Second and Third Assessment Reports of Working Group II (IPCC 1996; 2001a) and also dealt with adaptation strategies in its 1994 Technical Guidelines (IPCC 1994). Adaptation is considered an important response strategy, keeping in mind that even with reductions in greenhouse gas emissions, changes in climate are likely to occur. Policy responses like the implementation of effective water resource management techniques therefore cannot only be applied to adapt to hydrologic effects of climate change but also to lessen vulnerability of a region in general (IPCC 2001a, 9). With respect to adaptation options for coastal and marine management, the TAR of WG II highlights the effectiveness of solutions that integrate several policy sectors, such as climate change, disaster mitigation, and land planning (IPCC 2001a: 12). In this respect, the relevance of the existing research on unifying effects of co-operative arrangements for transboundary water resources (e.g. Wolf 2001) are obvious. This research has revealed that the establishment of co-operative institutions for the joint management of natural resources can contribute to enhancing cooperation between different countries. If the IPCC were to deal with the issue of climate change and conflict prevention, such findings could represent important and valuable contributions.

Hence, the work of WG II on adaptation measures offers important links to the issue of climate change and conflict prevention. This issue could play a prominent role especially when priorities for adaptation activities are defined. In order to develop strategies to cope with future climate change impacts, a full understanding of vulnerability is necessary (see Klein/Downing 2002). Accordingly, an integrated assessment of vulnerability should take into systematic account the potential for both conflicts and conflict prevention measures. In addition, further research is needed concerning the question of what kind of adaptation activities may be prioritised to minimise conflict potential.

Mitigation

In this context, the expertise of Working Group III on mitigation measures is also relevant. It is worth noting that the issue of mitigation received its own report during the third assessment cycle whereas the issues of climate change impacts and adaptation measures are integrated in one assessment. Actions of mitigation – defined by WG III as "an anthropogenic intervention to reduce the sources of greenhouse gases or enhance their sinks" (IPCC 2001b: 3) – may yield extensive benefits in areas outside of climate change, for example with respect to resource use or degradation, but also reductions in other pollutants jointly produced with greenhouse gases. Hence, the benefits of limiting greenhouse gas emissions are not only that climate change damages will be avoided but also that secondary benefits associated with the relevant policies could be achieved. However, as

of yet, the IPCC assessments do not mention the reduction of conflict potentials as a secondary benefit of climate change mitigation.

2.3 Options for Integrating the Topic into the IPCC Work

As outlined above, the IPCC produces different types of reports that may be used to take up the issue of conflict prevention and climate change. In the following, the feasibility of the different options is assessed:

- A *Technical Paper* on the issue of climate change and conflict prevention hardly appears to be possible, since the issue has not yet been addressed in the main assessment reports of the IPCC.
- The preparation of a *Special Report*: A special report on climate change and conflict prevention might have the aim to examine the implications of climate change and response options for existing or latent conflict constellations. The next IPCC Bureau meeting at the beginning of August 2002 in Geneva will provide the first opportunity for such an initiative. To this end, the existing but indirect links in the current assessment reports on the issue of conflict prevention and avoidance can be built upon.

  A related option might be to attempt to deal with the issue of climate change and conflict prevention in the context of the proposed *Special Report on "Climate change and Sustainable Development"* (SRCCSD). An expert meeting to prepare the groundwork for such a report is planned (see Dec. 9 of IPCC 2002). The fact that the issue of conflict prevention is part of the sustainable development debate (see for example World Commission on Environment and Development 1987: ch. 11; Carnegie Commission on Preventing Deadly Conflict 1997: 86; UN Secretary General 1998: sec. IV, B; WWF 2002: 15) provides a rationale for integrating the issue in the envisaged SRCCSD. A decision on the SRCCSD may be taken at the next plenary scheduled for February 2003.

  In addition, the issue of conflict prevention could be included in the Special Report on *Climate Change and Water*. At the XIX session the Panel decided to entrust the Bureaux of WG I and II, in consultation with WG III, with the preparation of a scoping paper for a possible Special Report (see Dec. 8 of IPCC 2002). Since the potential for conflict over scarce water resources is well-known, there is good reason to include the theme of climate change and conflict prevention in this special report. At the same time, it represents only one aspect of the much broader theme so that a demand to address the issue in another context would persist.

- Another option is to deal with this issue as part of the regular *Assessment Report*. A growing body of literature exists that could be reviewed by the lead and contributing authors. The IPCC is currently in the process of considering the overall programme for the Fourth Assessment Report (FoAR). Apart from discussions about the general outline of this report (shortening underlying reports, switch of focus to new findings, making the reports more comprehensible to policy-makers) the IPCC Bureau was to consult the UNFCCC SBSTA on its requirements as an input for the FoAR (according to Decision 2 of the XVIII Session of the IPCC). As the above discussion has shown, the closest links between the existing work of the IPCC and the issue of climate change and conflict prevention exist in the area of IPCC WG II. If a fourth report on cross-cutting issues such as sustainable development, uncertainty or equity was agreed upon (see Depledge 2002: 8), the issue of climate change and conflict prevention could feature therein.
- The issue could also be advanced within the IPCC context by means of an *expert workshop* including experts with different disciplinary backgrounds, members of governments, NGOs and business representatives. This might constitute a first step towards including conflict prevention as a topic in an Assessment Report or producing an IPCC Special Report on the issue.

3. Links to the UNFCCC and its Kyoto Protocol

In the following section, the major links between the debate about climate change and conflict prevention on the one side and the international regime on climate change on the other are identified and investigated. To this end, first the major provisions and the institutional structure of the international climate change regime constituted by the UNFCCC and its Kyoto Protocol are introduced briefly. Subsequently, the major threads of discussion under the UNFCCC and its Kyoto Protocol are analysed as to their relevance for the debate on climate change and conflict prevention. The emphasis will be on mitigation of climate change and adaptation to its impacts as the major themes of the international climate change regime.

3.1 The International Climate Change Regime: A Brief Overview

The international regime on climate change is built upon two international treaties, the UN Framework Convention on Climate Change (UNFCCC) of 1992 and its Kyoto Protocol that was adopted in 1997. Since the Kyoto Protocol represented “unfinished business” (Ott 1998), Parties agreed in 1998 to clarify and elaborate the rules under the Kyoto Protocol

by the year 2000. Eventually, agreement was only reached in 2001 through the so-called "Bonn Agreement" and the "Marrakesh Accords" (see Sach/Reese 2002; Bail et al. 2002).

The UNFCCC was adopted after intense negotiations that started in early 1991 on the basis of the first report of the IPCC of 1990 (on the UNFCCC see Sands 1992; Bodansky 1993; Ott 1996). It established the very foundation of the regime by defining the principles which guide its development (Article 3 FCCC) and its ultimate objective which is to stabilise atmospheric concentrations of greenhouse gases (GHGs) "at a level that would prevent dangerous anthropogenic interference with the climate system" (Article 2 FCCC).

Moreover, the UNFCCC provides the institutional framework for the further development of the regime. The Conference of the Parties (COP), that usually meets once a year, is the supreme decision-making body assisted by two standing subsidiary bodies, the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI). The COP serves as the meeting of the Parties to the Kyoto Protocol (becoming the COP/MOP) and the subsidiary bodies also serve in their respective functions under the Protocol. Since it has so far been impossible to adopt rules of procedure, all decisions under the Convention need to be made by consensus. The Convention also acknowledges the role of the IPCC in providing scientific advice to the Parties. Scientific and technological advice provided by the IPCC is fed into the international regime through the SBSTA.

The Convention did not contain any concrete obligations to limit or reduce the emissions of GHGs or to implement specific policies and measures to combat climate change. The Kyoto Protocol (KP) for the first time establishes legally binding emission reduction commitments for industrialised countries. These differentiated commitments shall amount to an overall reduction of at least 5% from 1990 levels by 2008-2012 (the 'commitment period'). The commitments cover six GHGs and groups of GHGs: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF_6). The Protocol follows the approach of the UNFCCC by including "sinks" into the equation: Removals and emissions of GHGs from afforestation, reforestation and deforestation are to be accounted for (Art. 3.3 KP). According to Article 3.4 KP, additional sink categories can be included in the accounting later by decisions of the Conference of the Parties serving as the meeting of the Parties (COP/MOP), the supreme decision-making body under the Protocol. The agreements reached in 2001 take into account forest management and agricultural activities (cropland management, grazing land management, and revegetation) as further sink categories (Bail et al. 2002; on the Kyoto Protocol in general see Oberthür/Ott 1999; Grubb et al. 1999).

The Protocol furthermore establishes three innovative "flexible mechanisms" that allow countries to meet their emission obligations by acquiring emission credits from abroad. An emissions trading system may be used by industrialised countries with excess emission allowances to transfer them to other industrialised countries in need of such allowances (Article 17 of the Protocol). Under the so-called 'project-based mechanisms' – 'Joint Implementation' (JI) according to Article 6 and the Clean Development Mechanism (CDM) according to Article 12 of the Protocol – an investor and a host country can generate additional emission reductions by implementing a suitable joint project, with the investor receiving (part of) the resulting emission credits. The investor in both JI and CDM projects would be from an industrialised country. Other industrialised countries would act as hosts of JI projects, whereas CDM projects would be implemented in developing countries. More detailed rules and guidelines on the operation of the Kyoto Mechanisms were passed as part of the further agreements reached in 2001 (Bail et al. 2002).

The Kyoto Protocol also provides for the elaboration of detailed rules on reporting, monitoring and review of information (Articles 5, 7, and 8 KP) and mandates the development of a compliance system to determine and address cases of non-compliance (Article 18). Decisions on both areas were part of the agreement reached in 2002 (Bail et al. 2002). The Convention and the Protocol make use of the same financial mechanism that is operated by the Global Environment Facility (GEF). The provision of additional financial assistance for developing countries has been a central part of the post-Kyoto negotiations. As part of the agreement reached in 2001, three particular funds for assisting developing countries to mitigate and adapt to climate change were established (see FCCC/CP/2001/13/Add.1; Sach/Reese 2002; Bail et al. 2002; see also section 3.3 below).

3.2 Climate Change Mitigation

Mitigation is at the core of the international regime on climate change, as is evident from the objective of the UNFCCC to achieve stabilisation of greenhouse gas concentrations in the atmosphere. Many discussions on the development of international climate policy have therefore been concerned with mitigation. Most prominently, this is exemplified by the negotiations on the legally binding reduction commitments under the Kyoto Protocol. Other cases in point are provided by the discussions on whether and to what extent human-induced sequestration of atmospheric carbon could be credited against the Kyoto targets and to what extent industrialised countries can employ the flexible mechanisms to achieve their targets instead of taking domestic action (see Oberthür/Ott 1999: ch. 11 and 15).

Climate change mitigation is also set to remain a major focus of the international debate in the framework of the climate change regime in the future. The next major milestone in this debate is provided by the start of discussions on targets for a second commitment period post-2012. According to Art. 3.9 of the Kyoto Protocol, the COP/MOP has to initiate consideration of such targets in 2005. Intimately linked to these negotiations on the second commitment period targets are two crucial strategic issues of the development of international climate policy:

- First, the re-integration of the US into global efforts to combat climate change after President Bush in March 2001 decided not to ratify the Kyoto Protocol, declaring that it was "fatally flawed" (see Ott 2001).
- Second, the further development of commitments of developing countries under the Kyoto Protocol. While it has been acknowledged by industrialised country Parties to the international climate change regime that they have to take the lead, it has also been part of the international understanding reached that developing countries will have to step up their efforts once this lead has been firmly established.

The issue of an increased conflict potential resulting from anthropogenic climate change impacts is relevant for these international discussions because it enhances the rationale for taking strengthened action by both industrialised and developing countries to mitigate climate change. Such strengthened action could thus provide a means of preventing increases in conflict potential and actual future conflicts by mitigating against a number of relevant impacts (e.g. migration, water scarcity caused by climate change). Furthermore, it supports the further development and implementation of international and domestic climate policies that possess a particular potential to reduce existing conflict potential. Most importantly, policies that help expand the use of domestic renewable energy sources and promote energy efficiency are set to result in greater independence from foreign energy sources and enhance security of energy supply (for the nexus of climate change and energy supply security, see MacKenzie 1997; European Commission 2000a, part 2).

3.3 Adaptation and Transfer of Resources

Adaptation to the adverse effects of man-made climate change is another cornerstone of international efforts to deal with global warming. Although adaptation has received less attention than climate change mitigation, its importance has been acknowledged in both the UNFCCC and the Kyoto Protocol and is firmly established as a major element of the international climate change regime (see also Müller 2002). For example, Article 4 of the UNFCCC commits:

- All Parties to formulate and implement “measures to facilitate adequate adaptation to climate change” and to co-operate “in preparing for adaptation to the impacts of climate change” (Article 4.1 UNFCCC);
- All Parties to consider what actions are necessary (including actions related to funding or transfer of technology) in order “to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change” (Article 4.8 UNFCCC).
- Industrialised country Parties other than countries in transition to “assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to these adverse effects” (Article 4.4 UNFCCC);
- All Parties to “take full account of the specific needs and special situations of the least developed countries in their actions with regard to funding and transfer of technology” (Article 4.9 UNFCCC).

In addition, Article 4.8 of UNFCCC lists a number of categories of countries that are particularly vulnerable to the adverse effects of climate change. On this basis, specific adaptation activities have been initiated under the UNFCCC following the so-called three-stage approach, as laid down in Decision 11/CP.1. In particular, preparatory adaptation activities in developing countries have received assistance under the financial mechanism of the Convention operated by the GEF. The scope of eligible activities has been extended slowly over the years (Oberthür/Ott 1999: 41-42; 290; UN doc. FCCC/2001/13/Add.1).

Article 10 of the Kyoto Protocol also commits Parties to promote and facilitate adaptation to climate change. The system of providing assistance to developing countries for adaptation was further developed with the adoption of the “Marrakesh Accords” in 2001. In particular, three new relevant funds were established (Bail et al. 2002; Sach/Reese 2002; UN doc. FCCC/2001/13/Add.1):

- An *Adaptation Fund* was established under the Kyoto Protocol to finance concrete adaptation projects and programmes in developing countries. This is to be financed from 2% of the share of proceeds from Clean Development Mechanism (CDM) projects.
- Annex I Party contributions will feed a *Special Climate Change Fund* under the Convention to finance activities that are complementary to those funded by the GEF. In addition to adaptation activities, this fund will also support technology transfer, programmes and measures in GHG emitting sectors, and diversification of economies that would be adversely affected by GHG mitigation.

- A *Least Developed Countries* (LDCs) *Fund* was introduced under the Convention to support a work programme for LDCs to implement the Convention, including the preparation of National Adaptation Programmes of Action (NAPAs).

These three funds will be operated by the GEF and are to complement each other as well as the relevant activities under the normal financial mechanism of the regime operated by the GEF (see Decision 5/CP.7 in UN doc. FCCC/2001/13/Add.1). The GEF was invited by the Parties to the UNFCCC to make the necessary arrangements. The system of funding for adaptation will have to be further elaborated within the GEF, and further guidance may have to be provided by the Parties to the international climate change regime, in the years to come. In general, there is a need to elaborate further guidelines and methodologies for assessing vulnerability and developing adaptation strategies, building on previous efforts (see for example UNFCCC 1999; 2000; STAP 2002; Klein/Downing 2002). A number of relevant activities have been identified and are underway (Pazstor/Pilifosova 2002).

While the issue of adaptation is closely related to funding, the issue of resource transfer also covers general capacity building and assistance for climate change mitigation. The Marrakesh Accords call upon industrialised country Parties in general to provide funding to developing countries for all these purposes through the aforementioned funds, increased GEF replenishment, and bilateral and multilateral channels. Some countries (Canada, EU, Iceland, New Zealand, Norway, and Switzerland) have passed a political declaration, undertaking to provide an annual contribution of 450 million Euros/410 million US dollars by 2005 to developing countries (Sach/Reese 2002). In addition, COP 7 established an Expert Group on Technology Transfer that will provide advice to SBSTA on relevant issues (Decision 4/CP.7 in UN doc. FCCC/2001/13/Add.1).

The debate about climate change and conflict prevention is relevant to the issues of adaptation and transfer of resources under the international climate change regime in several ways. First of all, it provides an additional rationale for supporting action to mitigate climate change in developing countries to help prevent an increase of conflict potential and may indeed lower such conflict potential, in particular by contributing to greater security of energy supply (see above on mitigation). Second, the fact that climate change may lead to a heightened conflict potential lends general support for strengthened efforts to adapt to the impacts of climate change so as to counter this trend as quickly and efficiently as possible.

Furthermore, it may also be possible to define certain priority adaptation (and mitigation) measures that would be particularly promising regarding the prevention of conflicts where climate change impacts are expected to contribute to an increased conflict potential. For example, it might be worth supporting the co-operative management of shared fresh water

resources where climate change is predicted to result in these fresh water resources being diminished. On other occasions, general capacity building measures may represent a valuable contribution to conflict prevention as it enhances the ability of a society to deal effectively with climate change and its impacts without destabilising existing governance and management systems. To enable drawing such conclusions it may be necessary to develop relevant methodologies, definitions and indicators in the ongoing preparatory work regarding vulnerability and adaptation (for the latter see Pazstor/Pilifosova 2002 and OECD 2002: 11). In this respect, the assessment of best practicable adaptation measures and strategies raises new methodological challenges (Klein/Downing 2002). In particular, a stronger emphasis on social factors might be required when elaborating assessments and reporting on vulnerability. Subsequently the elaboration and implementation of adaptation strategies must recognise the specific regional context regarding both immediate and long-term sectoral needs. In general, the debate about climate change and conflict prevention can add a new dimension of consideration when it comes to evaluating, assessing and prioritising available options for GHG mitigation and adaptation.

3.4 Other Areas of Discussion

The above sections on climate change mitigation and adaptation and resources transfer have demonstrated the general relevance of the link between climate change and conflict prevention for the international political process on climate change within the UNFCCC context. However, these section only covered two major threads of the international debate. The UNFCCC process has become increasingly diversified with many parallel discourses being developed simultaneously. It is hardly possible in the context of this paper to explore each and every strain in the discussion. A few references may suffice to indicate that the relevance of the debate about climate change and conflict prevention may well extend beyond the broader issues raised so far.

The discussion about co-ordination of policies and measures has a long history within the UNFCCC and its Kyoto Protocol (see Oberthür/Ott 1999: ch. 10). The discussion about an increased conflict potential resulting from climate change could again bolster the rationale for strengthened co-ordination in this area to increase the effectiveness of international climate policy and possibly any cleavages in the implementation of specific policies. In addition, it could direct our attention to the demand for co-ordination in the area of adaptation policies. Overall, the contribution to a general confidence building resulting from co-ordination of policies and measures could acquire a value of its own.

With respect to the project-based flexible mechanisms (i.e. JI and CDM), rules and guidelines have been agreed upon in 2001. These rules include a preferential treatment of par-

ticular CDM projects in particular (small-scale projects, projects in LDCs; see Sach/Reese 2002; Bail et al. 2002). Similarly, a preferential treatment could in principle be provided for projects that were shown to result in considerable additional benefits regarding conflict prevention. Such "secondary" benefits could for example consist of an enhanced energy supply security or the build-up of significant domestic capacity to mitigate and adapt to climate change (beyond the particular project in question). Relevant projects may increase relevant adaptive capacity in recipient countries (enabling them to deal better with environmental and social impacts of climate change) and thus reduce the conflict potential.

In the area of implementation review, a compliance system under the Kyoto Protocol was agreed upon in 2001. This comprises of an enforcement branch that is responsible for determining compliance with the Kyoto targets in particular, and a facilitative branch that is generally mandated to assist Parties in the implementation of the Protocol (Oberthür/Marr 2002). Thus, the facilitative branch may in principle also become an instrument for addressing issues of implementation related to a growing conflict potential resulting from climate change. For example, it could recommend and thus initiate strengthened adaptation efforts in countries and regions experiencing a worsening scarcity of fresh-water resources as a result of climate change and an increasing conflict potential regarding these resources.

Some of these links between the international process on climate change and the debate about climate change and conflict prevention may appear to be remote as long as no official scientific assessment has been fed into the political process and can provide a firm basis for any such deliberations. In essence, discussions within the international regime on climate change are science-based. The weight which the aforementioned considerations regarding climate change and conflict prevention will acquire in the international political deliberations is therefore heavily dependent upon its scientific foundation. The main source of authoritative scientific knowledge fed into the UNFCCC process is the IPCC (see section 2).

4. Conclusion

The relationship of environmental problems and conflict prevention has been increasingly dealt with in the social science literature. More specifically, evidence is mounting that the adverse effects of climate change can, particularly by interacting with a number of other factors such as scarcity of natural resources, contribute to an increasing potential for conflict. On the other side, effective climate and environmental policies hold the promise to lessen such potential.

As shown above, the issue of conflict prevention has not yet been established as a topic in the international process on climate change. However, the role of climate change in increasing the potential for conflict, and the role of effective climate policy in lessening it, is particularly relevant to two major strains of discussion in international climate policy. First, the rationale for taking preventive action to mitigate climate change appears to be strengthened, as such climate change mitigation also represents a contribution to reducing conflict potential in general. As it generally leads to a decrease in energy demand, it reduces dependence on foreign energy supplies and enhances the security of energy supply. Second, the need to take appropriate adaptation measures in order to respond to any increased conflict potential diligently is highlighted. Furthermore, careful analysis of the impacts of climate change on the potential for conflict may allow identifying and determining regional and substantive priority areas of action so as to reduce the potential for conflict, by implementing adaptation measures as appropriate.

The issue of adaptation is also related to the question of vulnerability of our human system. Vulnerability to climate change refers to the degree to which a system is susceptible to or unable to cope with its adverse effects. The adaptive capacity depends on very different context variables, for example on the access to resources, the skill and knowledge to use them, or the stability and effectiveness of economic, social and cultural institutions. Accordingly, in addition to the analysis of the impacts of climate change on the potential for conflict, the degree of capacity of livelihoods or regions to adapt to respective impacts appears to be relevant for the identification of regional and substantive priority areas of action in the context of conflict prevention.

Both strains of the discussion – mitigation and adaptation - illustrate the relevance of the issue of climate change and conflict prevention for pertinent international political discussions on the future development of climate policy – such as the further strengthening of international commitments to reduce greenhouse gas emissions and the appropriate priorities in financing adaptation activities. Though this relevance is evident, no authoritative international scientific assessment of the issue exists yet. Since the international process on climate change is science-based, an obvious possibility for linking the aspect of climate change and conflict prevention to the UNFCCC process would appear to be through scientific channels. As pointed out above, the Intergovernmental Panel on Climate Change (IPCC) produces the most authoritative international scientific assessments that are regularly fed into the UNFCCC process and constitute its major scientific basis. The IPCC – organised in three working groups dealing with the science of climate change, impacts and adaptation, and mitigation options – generally produces full Assessment Reports covering the causes, effects and mitigation options regarding climate change, Technical Pa-

pers on particular issues based on already existing assessment reports, and Special Reports as assessments on special issues.

The options to introduce the issue of climate change and conflict prevention to the IPCC are as follows: A Technical Paper on the issue of climate change and conflict prevention hardly appears to be possible, since the issue has not yet been addressed in the main assessment reports of the IPCC. Initiating a Special Report requires careful preparation since the IPCC has limited resources to produce them (i.e. only issues considered to be of first priority are usually selected). The issue could also be dealt with in two envisaged Special Reports on the relationship between Climate Change and Sustainable Development as well as on Climate Change and Water. Another option consists in taking the issue of conflict prevention up in the IPCC's regular Assessment Reports. The work of the IPCC Working Group II on the impacts of climate change appears to be most appropriate for addressing the topic since it has already dealt with social impacts in the past. The contents of the Fourth Assessment Report of the IPCC are currently under discussion and the IPCC plenary is scheduled to decide thereon in early 2003. Furthermore, specialised expert workshops co-sponsored by the IPCC have in the past explored particular items of scientific discussion.

In any event, considerable knowledge about the link between climate change and conflict prevention already exists. Sound climate policies can already contribute to conflict prevention. As a result, interested Parties can use this knowledge to define priorities both in international discussions on mitigation and adaptation within the UNFCCC and its Kyoto Protocol and in their domestic implementation.

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