OECD

Adaptation: current and future issues

Scoping Paper

OECD/IEA Project for the
Annex I Expert Group on the UNFCCC

For Discussion

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1. Introduction

Planned adaptation and mitigation are the two key policy responses to climate change impacts and vulnerabilities. However, to date most climate change policy responses at the national and international levels to date have focused on mitigation (Fankhauser et al 1999, Klein et al 2003). There is a lack of theoretical and practical knowledge about adaptation, with far fewer studies of adaptation options compared to mitigation options to climate change. In addition, adaptation science is still very much an emerging field (Klein et al 2003). Nevertheless, there is a growing recognition that adapting to climate change will be a necessary policy response even with a strong and cohesive mitigation strategy at national and international levels.

The purpose of this paper is twofold: to facilitate an exchange of ideas among negotiators from developed and developing countries on where discussions on adaptation might be directed in the near and longer term, as well as to initiate a discussion on possible future work for the AIXG on the topic of adaptation.

This paper has three main sections. Section 2 presents a brief history of adaptation in the context of international climate negotiations. Section 3 discusses adaptation issues in the context of the current negotiations and the possible future work that the AIXG could initiate in this area. Section 4 discusses possible adaptation issues that might arise in the context of future international action (i.e. beyond 2012) and the possible future work in this area.

1.1 What is adaptation?

Neither the Framework Convention nor the Kyoto Protocol contain definitions of adaptation. This might reflect the fact that there is "no common understanding" of what is meant by adaptation (Smithers and Smit 1997) or the range of interpretations of adaptation across a variety of contexts. There is also a wealth of terms related to adaptation, including vulnerability, adverse effects, resilience, sensitivity, adaptative capacity, risk, hazard, coping range etc (see IPCC 2001, Brooks 2003), often adding confusion or blurring the definition and meaning of adaptation.

In the literature, adaptation is referred to in a number of different contexts, both in terms of unmanaged natural/ecological as well as human systems, reflecting both biophysical and social vulnerabilities (Brooks 2003). These dimensions are captured to some extent in the Intergovernmental Panel on Climate Change's (IPCC) definition of adaptation as "adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts" (IPCC TAR 2001, p879). The human and ecological dimensions are also captured in the terms 'autonomous' (natural adjustments) as opposed to 'planned' (conscious or anticipatory intervention) adaptation (Fankhauser et al 1999, p69). Whereas human systems can undergo both anticipatory and reactive adaptation, natural systems are limited to reactive adaptation.

From a more anthropocentric perspective, and relevant in the context of the international negotiations, adaptation is also referred to by the IPCC as "adjustments in practices, processes, or structures [which] can moderate or offset the potential for damage or take advantage of opportunities created by a given change in climate" (IPCC TAR 2001, WGII p6 and 89 as cited in Yamin and Depledge 2003). The general ecological dimensions to adaptation are nevertheless captured in the objective of the Convention - Article 2 refers to the "stabilization of greenhouse gas concentrations in the atmosphere...within a *time-frame sufficient to allow ecosystems to adapt naturally* to climate change..." (emphasis added).

1.2 Current OECD work on adaptation

A discussion on possible future work on adaptation in the context of the AIXG needs to take into account other projects being undertaken elsewhere in the OECD on this topic.

The main piece of work on adaptation at the OECD is being undertaken jointly by the Environment and Development Co-operation Directorates under the project on Development and Climate Change. The project, which commenced in 2002, is overseen by the Working Party on Global and Structural Policies (WPGSP) and the DAC Network on Environment and Development Co-operation (Environet). The overall objective of the project is to provide guidance on how to mainstream responses to climate change within development-cooperation as well as national development policies. The project involves case studies in six developing countries (Nepal, Fiji, Bangladesh, Tanzania, Uruguay and Egypt) in three 'tiers', (i.e. climate change scenarios and key impacts and vulnerabilities in a national context – tier 1; attention to climate concerns in development assistance portfolios and national plans – tier 2; and in-depth thematic or sectoral studies on the opportunities and challenges facing mainstreaming of climate concerns – tier 3). The primary emphasis of these case studies has been on the linkages between adaptation and development within the context of natural resource management, although mitigation issues are also discussed in certain cases.

As of March 2004, all of the integrated case studies have been completed (see references). Work has also commenced on the Final Report for the project scheduled for completion in early 2005.[1] An OECD Global Forum on Sustainable Development (GFSD) on Development and Climate Change is scheduled for November 11-12 2004, with the case studies and synthesis from the project providing key inputs. Future work in 2005-6 will also focus on outreach activities relating to the case studies, including in-country workshops. Future work on adaptation has also been identified along thematic lines to explore both development and OECD specific issues. This work will include assessment of climate/development policy coherence in donor countries; of domestic climate/sectoral policy synergies and conflicts in OECD countries; and of adaptation technologies and technology transfer opportunities.

The OECD is also undertaking a project on the benefits of climate change policies, with a particular emphasis placed on understanding how global benefits (avoided impacts) shift with different levels of mitigation. The framework developed through this project may inform work on adaptation because of the clear interactions between avoiding impacts from mitigation decisions and autonomous and planned adaptations (OECD 2003b). In 2004-5, a series of thematic case studies is planned, which will explore the quantification of benefits from global mitigation policies. The case studies will investigate benefits issues in different systems or sectors that are particularly sensitive to changes in climate, such as polar and alpine ecosystems, coral reefs and other marine ecosystems, agriculture and coastal zones. Valuation will also be treated in each of these cases as well as in a cross-cutting case study that will focus on valuation of non-market climate change impacts. A workshop is planned in 2005 to bring together scientists and economists with climate change policy makers to review conclusions from the case studies.

[1] The OECD paper ENV/EPOC/GSP(2003)21 provides a progress report of current work being undertaken by the OECD on adaptation and proposed future work.

2. A brief history of adaptation in the international climate change negotiations

Negotiations to date on adaptation have struggled with lack of clarity in the Convention and Protocol with respect to adaptation. In addition to problems of definition referred to above, references to adaptation in the Convention and Protocol text are diffuse and varied, with no single vision or objective laid out (Yamin and Depledge 2003). There have been disputes about which Convention article is the relevant basis for action. An annex to this paper highlights relevant text in the Convention and Protocol that refers to adaptation.

2.1 From COP1 to COP9

Adaptation discussions began relatively early in the international negotiations on climate change. COP1 set out three distinct activities relating to adaptation – (I) planning; (II) measures to prepare for adaptation for particularly vulnerable countries identified in Stage I; and (III) measures to facilitate adaptation (Decision 11/CP.1). COP1 also discussed technologies and know how "conducive to mitigating and adapting to climate change (Decision 13/CP.10). Although COP2 discussed issues relating to the preparation of national communications, these discussions did not contain much detail on how Parties would report on vulnerability and assessment. COP3 agreed that Articles 4.8 and 4.9 would be discussed at future negotiations as a discrete agenda item (Decision 3/CP.3), linking discussions on adaptation issues and implementation of response measures to discussions about compensation for negative impacts (i.e. those stemming from mitigation measures). This decision was central in OPEC withdrawing its veto on the adoption of the Kyoto Protocol but also lead to considerable delays in progress in following negotiations on adaptation issues (Yamin and Depledge 2003). COP4 gave additional guidance to the Global Environment Facility (GEF) – the financing mechanism under the Convention - in support for developing countries for implementation of adaptation response measures, in particular vulnerable countries and regions identified in Stage I activities under Decision 11/CP.1.

Discussions at COP6 recognised the limited capacity of LDCs and agreed to examine how National Adaptation Programmes of Actions (NAPAs) could assist in meeting their adaptation needs. The negotiations at Bonn agreed that adaptation would be included in the Special Climate Change Fund (SCCF), along with technology transfer, capacity building and assistance with economic diversification.[2] COP7 laid out initial guidelines for NAPAs in Decision 28/CP.7 and created a separate work programme for LDCs which are most vulnerable to climate change. The Marrakech Accords also clarified that funding for LDC adaptation needs was not specifically tied to preparation of national communications but linked instead to the preparation of National Adaptation Programmes of Action (NAPAs). Decisions at COP7 also led to the establishment of the 3 adaptation Funds – the Special Climate Change Fund (SCCF), the Least Developed Country Fund (LDCF) and the Adaptation Fund. Negotiations on the operationalisation of the SCCF also commenced at COP 7. Adaptation was a prominent theme in the Delhi Ministerial Declaration agreed at COP8, referring to the high priority of adaptation for all countries as a response measure to climate change, the importance of advancing adaptation measures, and exchanging information on adaptation actions. COP8 provided guidance to the GEF on the operationalisation of the LDCF. COP9 in Milan provided further guidance on the operationalisation of the SCCF and LDCF (see below).

[2] Further cementing close links to adverse effects under Articles 4.8 and 4.9 of the Convention.

2.2 Financing – the Adaptation Funds and priorities for funding

Although discussions have commenced on the operationalisation of both the SCCF and LDCF, discussions about the operationalisation as well as the priorities for funding under the Adaptation Fund are expected to commence once the Kyoto Protocol enters into force. Current adaptation financing issues include how to populate funds and identify priorities for funding. Priorities around the direction of adaptation funding include questions such as:

1. in which areas in countries/regions/hotspots should adaptation funding be focused?

2. to what types of investments (capacity building vs adaptation infrastructure) should adaptation funding go?

3. which of the funds should be used for which purpose?

Some decisions were made at COP9 in relation to the direction of funding for adaptation activities, including which sectors should have priority for funding. COP9 requested the GEF to operationalise the new strategic priority on piloting an operational approach to adaptation as soon as possible and report back to the tenth Conference of the Parties information on specific steps taken. COP9 also decided that activities under the Special Climate Change Fund should be "country-driven, cost-effective and integrated into national sustainable development and poverty-reduction strategies", with activities addressing the adverse impacts of climate change having "top priority for funding".

COP9 decided that the implementation of adaptation activities under the SCCF would include activities in the "areas of water resources management, land management, agriculture, health, infrastructure development, fragile ecosystems, including mountainous ecosystems, and integrated coastal management" as well as "monitoring of diseases and vectors affected by climate change, and related forecasting and early warning systems...". COP9 also agreed that capacity building measures under the SCCF would include for "planning, preparedness and management of disasters relating to climate change..." for "droughts and floods in areas prone to extreme weather events."

Decisions on the Least Developed Countries Fund were also made at COP9 in Milan. In particular the COP requested Parties to make completed NAPAs available to the GEF and UNFCCC Secretariat for dissemination to other Parties. COP9 also requested the GEF to support implementation of NAPAs as soon as possible after their completion, and to take into account the following elements when developing operational guidelines for funding the implementation of NAPAs:

1. Country-driven approach that is consistent with national priorities and ensures cost-effectiveness and complementarity with other funding sources;

2. Equitable access to funding by least developed country Parties;

3. Urgency and immediacy of adapting to adverse effects of climate change;

4. Prioritisation of activities.

3. Adaptation in the context of current international negotiations: discussion and possible future work

3.1 Negotiation issues

Yamin and Depledge note that "implementation of the Convention's adaptation provisions has been impeded...by three interlocking factors: lack of agreement about the meaning, scope and timing of adaptation; limited capacity in developing countries to undertake vulnerability assessments and planning and bottlenecks in the availability of funding". They also observe that at no time has there been a single COP agenda item devoted to adaptation issues. Adaptation issues have tended to be discussed as part of the negotiations giving guidance to the GEF or as part of technology agenda items.

A further complication in the negotiations on adaptation relates to a COP3 decision to link discussions on Articles 4.8 and 4.9 in the Convention on adaptation and response measures, including compensation for the impact of the implementation of response measures (see discussion below). This linkage has meant that progress on adaptation issues in the negotiations "has become conditional upon equivalent progress on compensation issues" (Yamin and Depledge 2003). For this reason, in order to achieve some progress on adaptation, the COPs have tended to separate urgent Least Developed Country (LDC) adaptation issues under Article 4.9 from broader issues covered by Article 4.8. This is reflected in the structure of the Marrakech Accords which creates a separate work programme for LDCs under Article 3.14 (Yamin and Depledge).

Despite progress being made on the Adaptation funds in the international negotiations, the nature and structure of the various adaptation funds have also been criticised for the following reasons. Firstly, financial contributions to the Funds are voluntary, and few contributions have been made to date. Secondly, the "incremental cost" and "global benefits" requirements of the GEF are not consistent with the nature of adaptation. While the incremental cost requirement is very difficult to operationalise, the global benefits requirement effectively limits funding only to those adaptation measures that produce global environmental benefits in addition to local benefits (see GEF 2003). However, adaptation is a means to address largely local climate impacts which in turn leads to benefits that are predominately local rather than global. Thirdly, sector-specific adaptations are supported rather than societal adaptation, which could bring more benefits (Klein et al 2003).

Possible future work

An AIXG paper on adaptation might examine questions on how adaptation negotiations under the current framework might proceed, including where discussions on financing might lead in the short term (next year or two). Given that climate funds are small by comparison with Official Development Assistance (ODA) (only a few percent of ODA), questions on how the Funds can be used most effectively could be examined, including how funds could build on other possible financial sources.

3.2 Other issues relevant to current negotiations

Aside from direct negotiation issues, other issues are also relevant to the current negotiations. For example, information exchange and sharing good practice guidance on adaptation, as well as building the necessary institutional frameworks, will play critical roles in implementing adaptation. As noted in the IPCC TAR, "Capacity to adapt to climate change ... will be realised only if the necessary information is available, enterprises and organisations have the institutional and financial capacity to manage change, and there is an appropriate framework in which to operate" (IPCC TAR, p408).

Possible future work

This suggests two possible areas of future work:

1. Examine, as a starting point, which adaptation policies have been put in place across Parties, and which of these are proving effective, as well as what are the specific data and methodological requirements (e.g. risk management and assessment, vulnerability and risk) for assessment of effective adaptation responses. It could build on current and future OECD work with respect to development and climate change.

2. Examine institutional frameworks that have been established in various countries to develop and implement adaptation policies, possibly looking at case studies across a number of sectors. Utilising and enhancing existing institutions that are focused on the implementation of other climate change responses (including mitigation responses but also other climate-relevant policies) may bring synergies with building capacity with adaptation responses. Such analysis could look at the extent to which building capacity for adaptation responses can utilise capacity being built for mitigation responses or other climate-relevant policy actions.

4. Adaptation in the context of future international action: discussion and possible future work

4.1 The role of adaptation in future international action

Recently, governments engaged in negotiations on climate change have started to focus attention on how to design mitigation action in the post 2012 period. In doing so, many possible mitigation options are being discussed, which more or less deviate from the commitments adopted in Kyoto. A similar discussion could take place on adaptation regarding possible options for future action. As is the case for mitigation, any future international action will have to acknowledge the fact that countries will need to step up their efforts towards adaptation over time.

One option could thus include a more strategic approach to adaptation in future negotiations, particularly given that adapting to climate change will be a complementary and necessary policy response alongside mitigation strategies. While the Kyoto Protocol is very much focused on mitigation as the primary policy response, a future climate change framework might put adaptation on a similar footing as mitigation. A more strategic approach to adaptation might also include clearly defining the objective of adaptation in the climate change negotiations, and separating it as an issue from some of the issues that have complicated negotiations on adaptation to date.

A discussion on adaptation in the context of future international action could also examine the specific role of the UNFCCC in adaptation over the longer term. For example, is the role of the UNFCCC mainly to channel and prioritise funding for adaptation or does it have a broader role? If its role is limited to funding issues, how can its role be optimised, given that adaptation funding that is "controlled" by the UNFCCC process is likely to consist only in small amounts of money compared to what will be needed to address adaptation in a comprehensive manner? Is the aim of the UNFCCC to leverage more funding for adaptation? What is the role of a multilateral process in this regard? Are there other multilateral instruments, besides funding, that can be developed (e.g. insurance mechanisms)?

Possible future work

An AIXG paper could focus on the role of adaptation in future international action. The paper could assess various strategic options and would include a discussion on the specific role of the UNFCCC relating to adaptation, as distinct from other international processes. This paper could also include a discussion of the two issues that are discussed below (which could also be discussed in separate papers).

4.2 Adaptation vs Mitigation

There are a number of key differences between adaptation and mitigation as policy responses to address climate change. There are important differences in terms of temporal and spatial scales. The effects of adaptation policies can be felt over the short, medium and long terms whereas the effects of mitigation policies can be felt over the space of a few decades or more (Klein et al 2003). Mitigation measures can involve local action resulting in global climatic benefits (and local co-benefits), whereas adaptation measures typically involve local and regional actions with local and regional, rather than global, benefits (Huq and Grubb 2003).

It is difficult to assess the costs and benefits of adaptation policies whereas mitigation policies and measures can be compared in terms of cost-effectiveness of GHG emission reductions (see further discussion below). In terms of stakeholder participation, everyone is (or eventually will be required to be) involved in adaptation efforts whereas mitigation can involve just a few key sectors. Mitigation attempts to address the physical causes (increased fossil fuel consumption, deforestation) of climate change, whereas both autonomous and planned adaptation deal with the (adverse) effects of climate change.

Until recently there have been different priorities expressed by developed and developing countries in designing and implementing adaptation policy as opposed to mitigation policy. This may reflect the different vulnerabilities across the two groups, as well as the abilities for countries in the two groups to respond to climate change. The IPCC Third Assessment Report (TAR) notes that the ability to adapt to and cope with climate change impacts is a function of a number of factors, including "wealth, technology, information, skills, infrastructure, institutions, equity, empowerment and ability to spread risk" (IPCC TAR 2001; p918). Developing countries have fewer resources to devote to addressing climate change and are typically the most vulnerable to climate change impacts. Thus the priority of developing countries has been on encouraging developed countries to cut emissions (i.e. mitigation) and on securing assistance from developed countries for adaptation measures (Yamin and Depledge 2003).

Even though adaptation and mitigation are two separate approaches to climate change, there is potential for complementarity and synergies when mitigation measures reduce the adverse effects of climate change, or vice versa (Klein et al 2003). Examples include the protection and development of forests which leads to improved land-use and watershed management, both of which are adaptation measures, as well as mitigation through enhanced removals of CO_2. More research to provide guidance on possible mixes of adaptation, mitigation and development policies (including the integration of adaptation and sustainable development strategies) is generally required.

Possible future work

An AIXG paper could investigate in more depth the link between mitigation and adaptation over the longer term.

- The paper could look at whether there is an optimal mix of adaptation and mitigation policy responses, and how this might be influenced by various factors including national circumstances, degree of vulnerability, etc. The IPCC TAR has concluded that striking an appropriate balance between

adaptation and mitigation is not straightforward and will vary significantly from country to country, and region to region. Particular challenges are due to long time horizons; non-linear and irreversible effects; social, economic and geographic differences between affected parties (Klein et al 2003). This work could build on work underway by the OECD on ongoing benefits or avoided impacts of climate policies.

- The paper could also examine the question of synergies between adaptation and mitigation further, including whether such synergies lead to institutional simplicity or complexity given the different stakeholders involved, and whether pursuing synergistic policies actually leads to a net overall benefit when compared with separate adaptation and mitigation responses.

4.3 Monitoring and reporting

At a minimum, enhanced reporting of adaptation measures under national communications, including being more quantitative in terms of measuring effectiveness, will become a greater priority as adaptation measures receive increasing recognition and priority. So far there has been very little reporting on vulnerability and adaptation strategies in the Annex I country national communications to UNFCCC. Most reporting of actions refers to future rather than current programmes and research on adaptation options (Yamin and Depledge 2003).

The effectiveness of adaptation measures will be critical in future responses to climate change. Understanding which measures are good at reducing the impacts of climate change, as well as sharing information on measures that can be used in various circumstances, will be important to assist with effective uptake of adaptation. In this context, monitoring and measuring the effectiveness of adaptation initiatives could prove challenging, as it is relatively difficult to measure the costs and benefits from individual adaptation measures. With mitigation measures, one can assess the greenhouse gas reductions and cost associated with a particular set of policies and measures (PAMs) and at least monitor and compare PAMs in relation to cost-effectiveness. On the other hand, standard approaches to measure cost-effectiveness from adaptation responses do not yet exist. It may also be particularly difficult to measure the cost-effectiveness of adaptation PAMs over time. One reason for this is that adaptation PAMs are likely to begin with relatively small adjustments to pre-existing policies (i.e. in coastal zone management policies) and another reason is that there are often wide uncertainties associated with avoided impact estimates. The benefits of adaptation are also more difficult to express in a single metric, making it difficult to compare individual adaptation options (Klein et al 2003). Thus monitoring the costs and the effectiveness of adaptation measures will typically be more complex than a similar exercise for mitigation measures.

Unless sound and rigorous methodologies for measuring effectiveness of adaptation initiatives can be developed, there is a risk that adaptation becomes an endless demand for funds for projects with little understanding of the effectiveness of these funds at reducing the impacts of climate change.

Possible future work

An AIXG paper on adaptation could examine how the issue of monitoring and measuring adaptation initiatives could proceed, as well as progress on developing methodologies to monitor and measure effectiveness (including cost-effectiveness) of adaptation PAMs.

5. Conclusion and questions for consideration

This paper has provided an overview of the large number of adaptation issues in the context of international negotiations. It has distinguished between the current discussions on adaptation, which are framed by the complex negotiation process of the Climate Convention and the Kyoto Protocol, and possible future discussions, which could potentially open up different approaches and avenues for international action. The paper has also proposed possible future work in this area. The following questions are intended for consideration by delegates:

1. Do you broadly agree with the presentation of adaptation issues? Has the paper scoped the right set of issues? If not, which issues are missing and which might be added?

2. Should adaptation be a priority for future analytical work of the group? If so, what work area would best correspond to the specificity of the AIXG, considering that other groups, including within the OECD, are also working on adaptation?

3. Which specific piece of analytical work would you give priority to? Do you have other proposals?

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Annex – references to adaptation in Convention and Protocol text

United Nations Framework Convention on Climate Change

Article 2 – Objective: "The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to **adapt** naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner."

Article 4.1(b): All Parties shall "Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and measures to facilitate adequate **adaptation** to climate change"

Article 4.1(e): All Parties shall "Cooperate in preparing for **adaptation** to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods"

Article 4.1(f): All Parties shall "Take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or **adapt** to climate change

Article 4.4: "The developed country Parties and other developed Parties included in Annex II shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of **adaptation** to those adverse effects."

Kyoto Protocol

Article 10(b): Each Party shall "Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change and measures to facilitate adequate **adaptation** to climate change."

Article 10(b)(i) - "Such programmes would, *inter alia*, concern the energy, transport and industry sectors as well as agriculture, forestry and waste management. Furthermore, **adaptation** technologies and methods for improving spatial planning would improve **adaptation** to climate change."

Article 10(b)(ii) Party submit information on action under the Protocol, including "...**adaptation** measures..."

Article 12.8: Conference of Parties ensure share of proceeds from certified project activities used "...to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of **adaptation**."