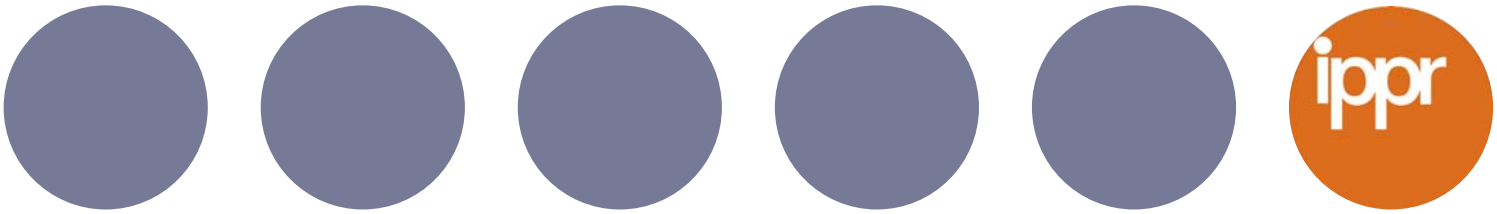

Adaptation to climate change

A paper for the International Climate Change Taskforce

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Common terms and acronyms

- Association of Small Island States (AOSIS)
- Clean Development Mechanism (CDM)
- Conference of Parties (COP)
- Global Environment Facility (GEF)
- Greenhouse Gases (GHG)
- Least Developed Countries (LDC) Fund
- Intergovernmental Panel on Climate Change (IPCC)
- Kyoto Protocol (KP)
- National Adaptation Programme of Action (NAPA)
- Overseas Development Assistance (ODA)
- Special Climate Change Fund (SCCF)
- United Nations Environment Programme (UNEP)
- United Nations Framework Convention on Climate Change (UNFCCC)

Key dates

1992	UN Framework Convention on Climate Change adopted.
1997	COP 3 adopts Kyoto Protocol.
1998	COP 4 Buenos Aires Plan of Action conceptualises adaptation funding following three stages: 1) studies and assessments; 2) detailed planning and project design; 3) actual adaptation projects.
2001	COP7 at Marrakech creates “Marrakech Funds” to finance adaptation efforts.
2001	IPCC Third Assessment Report includes a specific assessment on Impacts, Adaptation and Vulnerability to climate change.
2002	COP 8 at Delhi issues a Ministerial Declaration on Climate Change and Sustainable Development.

About the author

Dr. Saleemul Huq is Director of the Climate Change Programme at the International Institute for Environmental Development, which in 1992 was the first recipient of the Blue Planet Prize for outstanding contributions to environmental policy and action. As one of the leading environmental planners at the national and international level, Dr Huq has worked for numerous international agencies and advised national government planners on global environmental issues. He is an Adviser to UNDP's Capacity 21 Programme where he has helped develop the Agenda 21 Programmes in Mongolia, Bhutan, Gambia and Kazakhstan. Dr. Huq also founded the Bangladesh Centre for Advanced Studies, the major non-government research and policy institute working on environment and development related issues in Bangladesh.

Executive summary

The scale of the common challenge posed by climate change is daunting. The danger posed to developing countries is especially acute: they stand to experience the most serious impacts from climate change and they also have the lowest capacity to adapt to them. Climate change thus threatens to undermine many of the UN's Millennium Development Goals with severe consequences for the world's poorest people.

Adaptation by human societies to climate change has, hitherto, tended to be neglected by policy makers. In part this has been because efforts have rightly been primarily focussed on preventing climate change through reducing greenhouse gas emissions. While the last few conferences of the parties (COPs) of the UNFCCC have paid greater attention to the issue of dealing with the inevitable impacts of climate change, as this paper details, a great deal remains to be achieved in several critical areas.

The issues this paper focuses on include: funding for adaptation policies; research and capacity building; insurance; and linkages between adaptation and development issues. It also explores how this issue might be tackled in future climate change and development negotiations, while making use of the UK's presidencies of the EU and G8 in 2005, which present a major opportunity to give new momentum to this issue. It is critical that the leaders of the G8 accept responsibility for assisting poor countries in adapting to climate change. To further that goal, this paper also recommends that:

1. More resources should be provided to fund adaptation efforts

a) New commitments are needed to guarantee revenue for adaptation
Adequate and predictable revenue streams are essential for building the adaptive capacity of the poorer and most vulnerable countries. Yet three of the funds set up specifically to address adaptation issues and administered under the Global Environment Facility (GEF) – the funding arm of all multilateral environmental agreements – have yet to disburse monies. And the US has not contributed or promised any contribution to the established funds. New and additional funding is necessary, with contributions linked, in part at least, to responsibility for impacts, requiring the operationalisation of the UNFCCC's polluter pays principle. The long-term future of existing adaptation funding bodies also needs to be secured. This can be done by leading industrialised countries making firm, regular and long-term commitments of funds to the already-established "Marrakech Funds" for adaptation.

b) Existing commitments need to be honoured
The EU and other wealthy countries made a "political declaration" at COP7 in Marrakech to provide $450 million a year for adaptation. So far only around $32 million has been provided in these funds. It is essential that the UK and EU should provide the promised funding, not least so that they can retain credibility with developing countries on this issue.

2. Climate insurance schemes should be created to manage climate risk

a) Innovative climate insurance schemes should be piloted
Climate insurance schemes could be based upon existing liability and compensation schemes. Current nuclear leak and oil spill schemes provide instructive examples. They use mandatory insurance, together with contributions from private sector beneficiaries of risky activities, regularly topped up by governments, with further funds provided to absorb the costs of major events.

b) An international climate insurance fund should be developed
The establishment of an international fund to backstop reinsurance schemes or support the creation of national disaster funds could assist in rendering certain climate risks insurable while providing incentives to reduce vulnerability.

3. Adaptation issues should be mainstreamed into development assistance

a) Infrastructure investment should be "climate proofed"
Much of the $50 billion a year given in overseas aid is invested in infrastructure such as roads and bridges with relatively long life spans. Multilateral development funding agencies should be required to take climate change into account when engaged in design and construction. So far, this is only happening sporadically.

b) Climate change needs to be factored into development policy relating to water, agriculture, poverty alleviation, and disaster and coastal zone management
Targets for providing safe drinking water as well as for reducing hunger and poverty are unlikely to be met if the adverse impacts of climate change occur as expected. Policy makers in those development sectors in developing countries should become aware of the implications of climate change for their respective sectors and include associated adaptation measures and policies in their strategies.

4. Capacity should be built so that adaptation resources are effectively directed

a) Further research is urgently necessary so that detailed knowledge on projected impacts and "best practice" policies and technologies can be established.
Greater understanding is needed of what impacts are expected from climate change for different regions and sectors to identify the most vulnerable communities; what livelihood strategies are available to cope with expected climatic risks; and what best practice or area-specific tool kits exist to implement adaptation.

b) Assistance should be provided to expand the capacity of vulnerable countries to take part in institutional negotiations and undertake policy implementation.
The negotiating skills of national representatives taking part in international climate discussions needs to be built up. People working in sectors vulnerable to climate change need to be given sector-specific capacity building on adaptation strategies. There also needs to be capacity building of national policy-makers so that they can make appropriate judgements, including to avoid maladaptive policies. Such training will provide firmer foundations for adaptation policy to be taken forward.

Introduction

'It is the poorest countries in the world that will suffer most from severe weather events, longer and hotter droughts and rising oceans. Yet it is they who have contributed least to the problem. That is why the world's richest nations in the G8 have a responsibility to lead the way: for the strong nations to better help the weak.'

Prime Minister Tony Blair, 14 September 2004.

The scale of the common challenge posed by climate change and the impacts it will bring if unmitigated is daunting. Developing countries stand to experience the most severe impacts from climate change. As the landmark Third Assessment Report of the UN's Intergovernmental Panel on Climate Change (IPCC) concludes:

- The poorest societies, dependent upon primary economic activities, are particularly vulnerable to climate change.
- Climate change will worsen food security, especially in Africa.
- The negative health impacts of short-term weather events such as storms and floods are clear, and there is a "medium to high confidence" that climate change will induce a net increase in the potential transmission of malaria and dengue.
- It is also likely there will be decreased water availability for populations in regions already water-scarce, particularly in the tropics.

It is unsurprising, therefore, that the initial years of negotiations under the United Nations Framework Convention on Climate Change (UNFCCC) leading up to the Kyoto Protocol (KP) in 1997 focused primarily on the problem of reducing the potential impacts of climate change through efforts to reduce the emissions of greenhouse gases (GHGs). The second response option of adaptation (i.e. dealing with the actual impacts of climate change) received relatively little attention in the international negotiations (perhaps rightly so as the initial task was seen to prevent the worst impacts of climate change through mitigation).

However, in the last few conferences of parties (COPs) of the UNFCCC increasing attention to the problem of dealing with some inevitable impacts of climate change through adaptation has been highlighted (e.g. through the creation of the "Marrakech Funds" at COP7 in Marrakech in 2001 and the Delhi Declaration at COP8 in Delhi in 2002). As discussions about the future of the climate change negotiations begin to take place (specially beyond the first commitment period of the Kyoto Protocol) it is important that the issue of adaptation is given much greater prominence in the international climate policy dialogue.

This is important principally for two reasons:

(i) the impacts of human induced climate change are likely to occur in the near rather than far future (indeed there may already be increasing evidence of climatic events which may be linked to human induced climate change). This requires all countries (not just the vulnerable developing countries) to deal with the impacts through planned adaptation and; (ii) the poorer, more vulnerable developing countries, with the least adaptive capacity will require assistance (not just financial but also technical, institutional and other) from the more developed countries (which is an obligation they have accepted under the UNFCCC).

In taking adaptation to climate change into account it will not be possible to simply duplicate the mitigation regimes but will require new thinking both at the level of appropriate roles for international climate change policy (as negotiated under the UNFCCC) as well (and perhaps more importantly) in re-thinking the entire development pathways and strategies of the developing countries and also the (multilateral and bilateral) development funding institutions.

This paper elaborates on the role of funding adaptation; the role of research on adaptation and capacity building; the role of insurance; the linkages between adaptation and development; and how this issue may be dealt with in future climate change (and development) negotiations. The paper also includes an appendix on the role that adaptation has played so far in the climate change negotiations, under both the UNFCCC and the Kyoto Protocol.

1. Adaptation funding

In the initial stages of the United Nations Framework Convention on Climate Change process there was hardly any funding for adaptation to climate change. The Global Environment Facility (GEF), which is the funding arm of all the multilateral environmental agreements, including the UNFCCC, had a major operational window of funding dedicated for climate change activities. Over the last ten years of its existence it has spent over a billion dollars on the climate change operational area but only a tiny fraction (less than 10%) of that has been spent on adaptation. The vast majority of it has gone to support mitigation actions. Part of the reason for that was the lack of clear guidance from the COPs to GEF on how to send funds on adaptation. Earlier guidance was given at COP4 in 1998 in the Buenos Aires Plan of Action, which divided adaptation funding into three stages as follows:

- *Stage one*: for studies and assessments only (this was where most of the adaptation funding went)
- *Stage two*: for more detailed planning and project design (there were only a couple of such projects funded, e.g. in the Pacific and Caribbean countries) and
- *Stage three*: for actual adaptation projects (none were ever funded).

Although the distinction between each of the stages was not always clear cut, it is clear that only a tiny amount of stage one activities ever got any funding.

It was only during the COP6 and COP6bis negotiations in 2000 and 2001 that the issue of funding adaptation was taken more seriously and several new funds were floated for adaptation. These were then formally established at COP7 in Marrakech, Morocco in the Marrakech Accords. They are described briefly below.

In September 2002, the UNFCCC Secretariat prepared a synthesis report reviewing the operation of the Financial Mechanism, created under Article 11. According to the Review of the Financial Mechanism, since its establishment in 1991, the GEF has provided $1.5 billion in grants for climate change activities, of which virtually all was for mitigation. Approximately 90% went to activities in Non-Annex I countries; 10% went to economies in transition. Enabling activities (such as preparing national communications) represented half of the projects, but received 8% of total funding.

There are four operating programmes in the GEF's climate change focal area. Each has to do with mitigation, rather than adaptation (OP 5 -- removing barriers to energy efficiency and energy conservation, OP-6 -- promoting the adoption of renewables, OP-7 -- reducing the costs of low greenhouse emitting energy technologies, OP-11 – supporting the development of sustainable transport).

At COP7 in Marrakech a number of funds were created, including the Special Climate Change Fund (SCCF) and the Least Developed Countries (LDC) Fund, both under the Convention, and the Adaptation Fund, under the Kyoto Protocol. However, neither the SCCF nor the LDC Fund (created in part to address GEF climate change focal area shortcomings), is mandatory nor institutionalized (namely assured on a regular basis over many years). Neither fund is sufficient to address adaptation needs.

Special Climate Change Fund (SCCF)
This fund was set up to cover a number of activities including both adaptation (which is first on the list) as well as other mitigation activities. It is to be filled with voluntary contributions from some donor countries. A group of countries including the EU made a "political Statement" (not a formal commitment) that they would provide funds totalling around 450 million Dollars a year in this fund but starting only from 2005.

The SCCF created under decision 7/CP.7 is to address four categories of activities. However, these activities are limited by reference to other COP decisions.

- adaptation, *in accordance with paragraph 8 of decision 5/CP.7*;
- transfer of technologies, *in accordance with decision 4/CP.7*;
- energy, transport . . .
- activities to assist. . .

Paragraph 8 of decision 5/CP.7 decided that the following adaptation activities will be supported through the SCCF in accordance with decision 7/CP.7, *and/or the Adaptation Fund* in accordance with decision 10/CP.7:

- Starting to implement adaptation activities promptly where sufficient information is available to warrant such activities, inter alia, in the areas of water resources management, land management, agriculture, health, infrastructure development, fragile ecosystems, including mountainous ecosystems, and integrated coastal zone management;
- Improving the monitoring of diseases and vectors affected by climate change, and related forecasting and early-warning systems;
- Supporting capacity building for preventative measures, planning, preparedness and management of disasters relating to climate change, including contingency planning, in particular, for droughts and floods in areas prone to extreme weather events;
- Strengthening national and regional centres and information networks for rapid response to extreme weather events, utilizing information technology as much as possible.

The fact that the COP has used the construction "either/or" confuses the roles of both the SCCF and the Adaptation Fund, raises the issue of whether the SCCF will survive the creation of the Adaptation Fund, and raises issues of complementarity.

At SB-18, the Parties did not make substantial progress in prioritizing among the four categories of activities that could be funded by the SCCF, although "adaptation activities to address the adverse impacts of climate change" were recognized as a "top priority" for funding, and technology transfer and its associated capacity-building activities was recognized as "also essential."[1]

Least Developed Countries (LDC) Fund
COP7 also created a separate and new fund called the Least Developed Country (LDC) Fund which was meant for the LDCs only and was to be used, in the first instance, for each LDCs to prepare a rapid assessment of its own priority adaptation needs. This is to be done through the preparation of a National Adaptation Programme of Action or NAPA and each country has recently received (or will shortly receive) around $200,000 to carry out the NAPA within the next year or so. The NAPAs in turn will produce a set of priority actions for funding and the LDC Fund will then be used to fund such actions (or so it is expected). The LDC Fund is also based on purely voluntary contributions from donor countries. So far it has only received less than $20 million from Canada, UK and Ireland. (Marrakesh Accords, UNFCCC, 2001)

[1] FCCC/SBI/2003/8. The language "adaptation activities to address adverse impacts of climate change" was used deliberately, to separate these activities from those that address the adverse impacts of response measures.

Adaptation Fund (Kyoto Protocol)

The third fund created at COP7 was the Kyoto Protocol Adaptation Fund to support "concrete adaptation projects and programmes in developing country Parties that have become Parties to the Protocol". This fund is to be financed from a share of the clean development mechanism (CDM) projects. In addition Annex I Parties that "intend to ratify the Kyoto protocol" are "invited to provide funding, which will be additional to the share proceeds on clean development mechanism project activities"(Marrakesh Accords, UNFCCC, 2001). Thus it is unlikely that this fund will start functioning before 2008, and the size of the fund will, of course, be totally dependent on the size of the CDM market.

All three of the Marrakech Funds are to be handled through the GEF (but as discrete funds). An important point to note in the negotiating context is that whereas the LDC Fund and SCCF are Convention funds the Adaptation Fund is a Kyoto Protocol Fund – hence the US is party to the former two funds-but not party to the latter. However, in practice since the US has not contributed (or promised any contribution) to any of the funds – that is still a moot point.

Special Pilot Adaptation Fund of the GEF

In July 2004 the GEF Council authorised the creation and operationalization of a new Special Pilot Fund on Adaptation amounting to $50 million to be disbursed over a period of 3 years to support adaptation projects in developing countries (with emphasis on the most vulnerable countries) from the GEF Trust fund. No projects have been supported from this fund to date.

2. Adaptation research and capacity building

The IPCC in its first and second assessments included hardly anything on adaptation to climate change. This reflected the lack of any such research being done in the eighties and early nineties.

However, the third assessment (which came out in 2001) had a chapter on adaptation and was able to raise a number of issues regarding adaptation to climate change. The inclusion and highlighting of adaptation is one of the major outcomes of the IPCC's third assessment. Amongst the notions which the IPCC put forward were:

- *Planned vs. autonomous adaptation*: while many (if not most) adaptation will be done by individuals, groups, communities, companies, etc on their own (autonomous adaptation) there will still be need for planned adaptation at the level of national governments, local governments, large companies, communities, etc also. The latter will need to be supported (especially in the most vulnerable developing countries).
- *Adaptive capacity*: while some developed countries (and communities) may have the capacity to cope and be able to overcome the adverse impacts of climate change (i.e. have high "adaptive capacity") many other countries (and communities) have a much lower "adaptive capacity"(specially in poorer countries and communities). The classic example that is usually cited is the case of the Netherlands and Bangladesh, both of which are low-lying deltaic countries sensitive to inundation due to sea level rise. However, due to their different adaptive capacities the Netherlands has the technological, social and financial capital to build their sea wall higher to cope with the problem whereas Bangladesh does not (irrespective of whether sea walls are the best solution in the case of Bangladesh).
- *General (or generic) adaptive capacity vs. specific adaptive capacity*: This explores the notion that if a country (or community) is well off in terms of wealth, health and other attributes of well being it is likely to have more (or better) adaptive capacity than a country (or community) that is not so well off. Hence it might be argued that the answer to how to enhance adaptive capacity is to just enhance general well being. (IPCC, 2001)

It might be noted in this section that a framework on capacity-building was agreed at COP-7 (2/CP.7), and a work programme on activities relating to education, training and public awareness agreed at COP-8 (11/CP.8). These decisions remain very general in nature, and require funding through the GEF.

Research agenda
The research agenda for adaptation in relation to development for the developing countries is now beginning to get more and more attention amongst researchers, both in the north as well as in the south.

A workshop was held at the Potsdam Institute for Climate Research in Potsdam, Germany in 2001 on " Climate Change, Adaptive Capacity and Development" identified the following main research questions:

- Does investing in specific adaptations or broader development reduce vulnerability to climate change more?
- To what degree do differences in risks of climate change, non-climate stresses and levels of development lead to differences in adaptation requirements across countries and regions?
- How can adaptation assistance be tailored to be appropriate for local needs?

There is also a GEF funded research project on adaptation called Assessment of Impacts of Adaptation to Climate Change being implemented (through UNEP) in 40 developing countries in Africa, Asia and Latin America which is looking at different aspects of adaptation to climate change in each region . It is due to make contributions to the forthcoming fourth assessment report of the IPCC.

Another adaptation research workshop being planned with UNEP and UNFCCC in November in Delhi, India also has highlighted the following research areas:

- *Water, resources and livelihood security*. What livelihood strategies are already available that can cope with expected climatic risks, at least over the next few decades? What is required to implement these strategies? What can be learned from comparing case studies in a structured framework?
- *Targeting adaptation, now*: From NAPAs to action. What is the emerging best practice in implementing adaptation? What is the tool kit, for project-specific action as well as policy barriers? How can adaptive capacity be measured and monitored? What is the baseline?
- *Disasters and climate risk reduction*. The UNFCCC has a mandate to consider insurance as an adaptive mechanism—what are the research issues? How can public/private partnerships be effective? Is there a way out of the moral hazard, perhaps by linking early warning, mitigation and insurance? Do the change in frequency and magnitude of disasters that will happen as a result of climate change justify any current changes in disaster management?
- *Mainstreaming and beyond*. Adaptation is fragmented within the UNFCCC processes and instruments, and historically divided between climate change and development. Yet, adaptive capacity is a general characteristic of peoples, economies and systems. Even with urgent mainstreaming of climate adaptation, in the longer term climate change impacts will continue to be manifest. At some point in the future impacts may be discernible and attributable to accumulated greenhouse gas emissions. If so, then impacts may become contentious issues of liability, rights, equity and international political negotiations. What is the scientific evidence for detecting impacts, particularly on social and economic systems? What are the best mechanisms for delivering adaptation?

Capacity building
The need for capacity building in the developing countries on the issue of adaptation to climate change can be put into the following categories:

- *Negotiating capacity*: This is turn has two elements: (i) building negotiating skills of negotiators and (ii) building in-country understanding and ability to develop negotiating positions based on the country's own interests.
- *Strengthening the most vulnerable communities*: Most countries have done a preliminary vulnerability to climate change assessment for their countries which have indicated which sectors and regions within the countries are most vulnerable. However, these need to be made more specific with respect to identifying the most vulnerable communities and based on their own socio-economic needs help them to be better able to cope with future impacts due to climate change.
- *Sector specific capacity building*: Each of the sectors vulnerable to climate change (e.g. water resource management, costal zone management, agriculture, etc) need to have sector-specific capacity building of the people involved in those sectors about possible adaptations.
- *National policy level capacities*: There are many current policies that instead of reducing vulnerability to climate change in fact may enhance vulnerability (e.g. building houses on floodplains). There needs to be capacity building of policy-makers to be able to make judgements regarding policies (including maladaptive policies).
- *Scientific and research capacity*: In order to build adaptive capacity to deal with climate change there are three main domains of scientific and technical knowledge and capacity that need to be built-up in vulnerable countries. They are (i) the ability to construct credible scenarios of future changes, such as climate change, that would result in exposures of people and the environment to stresses, (ii) the ability to assess vulnerabilities that would arise from the exposures and adaptations to limit or recover from harm, (iii) the ability to effectively communicate information about exposures, vulnerabilities and adaptations to technically trained managers, and their ability to understand and use the information.

Public awareness: the wider public needs to become more aware and knowledgable about the potential impacts of climate change and possible adaptations.

3. Insurance

The idea of an insurance fund (broadly defined) may best be considered along the lines of the original proposal by the Association of Small Island States (AOSIS), or of a fund constituted with contributions from both the public and private sectors to address the impacts of extreme weather events, through a system that imposes charges on categories of private industries (beneficiaries) to fund various adaptation needs. These concepts are explored in depth in a background paper on insurance provided for the UNFCCC's insurance workshops in 2003.

The paper begins with a description of the 1991 AOSIS insurance proposal for a fund to assist small island states and low-lying developing nations for damage resulting from the impacts of climate change, including sea level rise. It then discusses the possibilities that insurance schemes (broadly defined to include private and public schemes) offer for transferring and managing risk from extreme weather events. It discusses the role that collective loss-sharing mechanisms play at the national and international level to address risks from natural disasters, including floods, hurricanes and earthquakes, as well as liability and compensation schemes present in existing international conventions that use mandatory insurance schemes to address pollution damage.

The paper suggests ways in which existing liability and compensation schemes (particularly the oil spill regime, and nuclear liability regimes) use mandatory insurance, together with tiering of contributions from private sector beneficiaries of risky activities, topped up by

additional contributions from national governments as needed, topped up further by governments acting jointly when needed, to absorb the costs resulting from major pollution events. The oil spill liability regime, in particular, presents a model that could be used to form an income stream for adaptation needs.

Insurance under the Convention
At SB-18, there were discussions on insurance-related actions (under Article 4.8). The G-77 and China proposed some draft conclusions related to insurance, although no conclusions emerged from the negotiating session. These included the following:

- explore closer links with relevant UN bodies, intergovernmental organizations and disaster management organizations and the private sector
- develop a work programme for insurance-related activities
- further studies on the impacts of climate-related extreme weather events in developing country Parties and the relationship between insurance and risk reduction
- further studies on the regional and national risks from the impacts of sea level rise
- gather information on insurance penetration and coverage in developing countries Parties
- improve availability of data on the incidence and impacts of extreme weather events in developing country Parties, including the human, economic, and social costs of these events and the need to address gaps in this data
- assess the international experience with international conventions
- promote case studies or pilot projects that would look at combinations of insurance-related tools that might best address the particular combinations of hazards that a particular country might face, including droughts, floods and cyclones
- explore public/private sector partnerships to assist in expanding the availability of insurance
- organize a workshop on micro-insurance
- to explore mechanisms to provide international support for engaging the private insurance sector in the development of alternative risk transfer mechanisms for vulnerable countries
- explore mechanisms to provide reinsurance for public or national insurance schemes, or national and regional disaster funds

4. Adaptation and development assistance

The issue of adaptation to climate change for developing countries in particular is closely tied to their own development in at least two important respects:

Mainstreaming adaptation into development
Many aspects of development (e.g. the Millennium Development Goals) will be at risk due to the adverse impacts of climate change and hence adaptation to climate change will need to be incorporated into development strategies, policies and actions. This will be especially relevant in a number of important development related sectors such as water management, agriculture, poverty reduction, disaster management, coastal zone management, etc. It will be important for policy makers in the developing countries (both at national as well as sectoral levels) of those development sectors to become aware of the implications of climate change for their respective sectors and then to include adaptation measures and policies.

Climate proofing official development assistance
As official development assistance (ODA) from the developed countries (which totals around $50 billion a year in total) is a major source of development investment in many developing countries (in particular in the poorest countries). Much of the investment may be made in infrastructure with relatively long life times (e.g. bridges, roads, dams, etc). Therefore it is important for the development funding agencies (which include both the multilateral

agencies such as the World Bank as well as the bilateral agencies) to ensure that in planning these investments, the potential impacts of climate change have been taken into account and appropriate adaptation measures have been incorporated. Thus, for example, large infrastructure projects, such as dams and roads, which are likely to last for many decades need to take into account the potential future changes in climate in their design and construction.

The implications of the above are that adaptation to climate change (and hence also funding for such adaptation) needs to be a part of the discussions on use of ODA as much as the adaptation funds under the UNFCCC. So far this is not happening (or if it is at a very sporadic rate).

Conclusions and recommendations

General recommendations
It is quite clear that the issue of adaptation to climate change has rapidly gone up the policy agenda both internationally as well as nationally (in most countries). However, there still remains much that needs to be done in terms of both gaining a better understanding of the issues involved (through research and analysis) as well as charting a way forward in the international negotiations as they move forward. One thing is clear; no further progress in the international negotiations can be expected without taking into account the concerns of most of the developing countries (which relate in large part to addressing the issue of adaptation).

Imperative for adaptation
It is increasingly self evident that some impacts of climate change are going to be inevitable in the short to medium term, putting millions at risk. Adaptation to cope with such impacts will be necessary and become more urgent. However, some losses will be irrecoverable (e.g. ecosystems, biodiversity, cultural losses, etc) so the need for enhanced mitigation action is necessary to prevent such irrecoverable losses.

Equity
It is also clear that much of the most severe adverse impacts of climate change will fall on the poorest countries and communities, who have low adaptive capacity as well as poor negotiating capacity. The "polluter pays" principle enshrined in the UNFCCC would make it incumbent on the Annex 1 countries to continue toward building the adaptive capacity of the poorer and most vulnerable countries.

Adaptation, mitigation and sustainable development
The easiest way to adapt (or avoid) the adverse impacts of climate change is of course to reduce the emissions of greenhouse gases (i.e. to mitigate). However, both mitigation and adaptation are needed for countries and communities to cope with the problem of climate change. The actions for mitigation and adaptation to climate change are both best addressed within an overall framework of "sustainable development".

Research and technology
There is much that needs to be learned about adaptation to climate change including what to do and how to fund it. The role of technologies is also important in this respect. The need for appropriate and capable institutions for adapting to climate change is also a necessary area of research and learning.

Funding adaptation
Funding for adaptation needs to be linked to responsibility for the impacts of climate change. The UNFCCC's polluter pays principle needs to be operationalised for appropriate burden sharing (existing liability and compensation schemes, e.g. oil spill and nuclear, may provide useful guidance). Adequate and predictable revenue streams are essential for adaptation funding (with new and additional funds). This can be done by leading industrialised

countries, such as the UK and other European countries, making firm, regular and long-term commitments of funds to the already-established "Marrakech Funds" for adaptation.

In addition to the UNFCCC's "Marrakech Funds" for adaptation there are also opportunities to use the regular climate change funds available through the Global Environment Facility (GEF). However, the current rules of funding adaptation through the GEF (i.e. the rule of only paying the "incremental costs of global benefits") need to be modified to enable more adaptation to be funded (e.g. through recognising the sufficiency of local benefits). This needs to be done through separate and discrete funds allocated for adaptation. The capacity of countries to undertake adaptation activity also needs to be enhanced as well as mainstreaming adaptation into national development (although any external funding for adaptation should be new and additional). Activities for external funding need to be practised on a rational basis (e.g. through prioritising actions with adaptation as will as mitigation benefits).

Some industrialised countries, such as Canada, have set up some (still relatively small) windows for funding adaptation in developing countries through their bilateral aid funding agencies. While these are to be welcomed, they should be seen as contributing to making their bilateral aid more effective, and not as fulfilling their obligations under the UNFCCC.

Insurance
Innovative insurance schemes should be explored and piloted for the management of climate risks. Insurance presents a useful means of harnessing private sector funding for adaptation to climate change. Such public-private partnerships may present useful opportunities to access and leverage capital as well as expertise to address climate related risks. The establishment of an international fund to backstop reinsurance schemes or support the creation of national disaster funds may assist in rendering certain climate risks insurable while providing incentives to reduce vulnerability and enhance resilience (e.g. Turkish catastrophe insurance fund).

Mainstreaming adaptation in development
Developing countries need to realise the potential impacts of climate change and to put in place adaptation measures and policies. The most effective way to do so is by mainstreaming adaptation into development (especially at the sectoral level within countries). This is also needed for the international development funding agencies (both multilateral as well as bilateral).

Recommendations for the UK's presidency of the EU and G8
As the UK has the presidency of both the G8 and the European Union (EU) during 2005, and as Prime Minister Tony Blair has already made it known that he intends two issues to be his main focus, namely climate change and Africa, it presents a major opportunity for Britain (and the EU) to take the lead in achieving action on climate change globally. Some specific actions that could be undertaken would include:

Engaging with developing countries
The EU (under the leadership of the UK) can and should take up its leadership role in moving the international climate change discussions and negotiations forward in a much closer relationship with developing countries. In order for the UK and EU to have greater credibility and sympathy from the developing countries the approach to them cannot be only on the basis of requiring the larger developing countries (e.g. China, India and Brazil) to accept commitments for mitigation of emissions but also to all the other developing countries, including the least developed countries, on the basis of accepting the need for substantial assistance flows to help them with adaptation. So far the UK and EU have been quite niggardly in their actual contributions (as opposed to promised contributions) to the Marrakech Funds.

Recognising the problem and accepting responsibility
Prime Minister Tony Blair in his speech of 14 September 2004 very clearly recognised the scope of the problem of climate change and also accepted the responsibility of the rich countries (i.e. the G8) to assist the poor countries to deal with it. This is not the case for all the G8 countries, and in particular for the richest of the G8 countries, namely the United States of America. Unless the UK and the EU can persuade the US, which remains the largest emitting country (and the richest), to recognise the problem and accept responsibility for its actions then the injustice of the situation will be so stark that no meaningful global action will be possible.

Providing resources for adaptation
The creation of the Marrakech funds at COP7 indicated the willingness of the rich countries to provide financial support to the poor countries for adaptation to climate change. The EU and a few other rich countries made a "political declaration" at the time that they would provide around $450 million a year for these activities. So far only around $32 million has been provided in these funds. The UK and EU have to show their seriousness and provide the promised funding on a committed and regular basis for them to retain any credibility with developing countries.

Ensuring adaptation is mainstreamed into development
As the adverse impacts of climate change in the developing countries will fall mostly on the poorest and most vulnerable, it is they and their governments who need to be made aware of the problem and take necessary actions to adapt. Thus the people and governments of the developing countries need to be the primary actors in adaptation for climate change (as they will be the primary victims of failure to adapt). This will mean that adaptation to climate change will need to be mainstreamed into ongoing and planned development activities in those countries. Nevertheless, since for many of the poorest countries of the world much of the development investments come from rich countries (through bilateral or multilateral aid) it is important that official development assistance provided by the rich countries to the poorer ones also take into account the need to adapt to climate change and thus to mainstream adaptation into their ongoing and future official development assistance.

That will require that all agencies involved in development in the developing countries be made aware of the potential impacts of climate change on their activities, projects, programmes and plans, and develop their own adaptation strategies accordingly. These activities will necessarily take place in national development planning, as well international development negotiations such as at the World Bank and in bilateral negotiations with donor countries.

Appendix

Adaptation in international climate change negotiations
The issue of adaptation to climate change is closely related to the impacts of climate change and hence also to the vulnerability to those impacts. It is mentioned in the Convention text in a number of places as shown below:

Article 2: Objectives.
Adaptation appears in the second paragraph (which is often forgotten) in Article 2 of the Convention, which speaks about the ultimate objective of the Convention itself, as follows (emphasis added):

"The ultimate objective of this Convention … is to achieve…. 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 food production is not threatened and enable economic development to proceed in a sustainable manner." (Art 2, UNFCCC, 1992)

Article 3: Principles
The issue of adverse impacts and the need for adaptation is again mentioned in several places in Article 3 as follows (emphasis added):

" The parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. *Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.*" (Art 3.1.UNFCCC, 1992)

Also:

"The specific needs and special circumstances of developing country Parties, especially those that are *particularly vulnerable to the adverse effects of climate change*, and of those Parties, especially developing country Parties, that would bear a disproportionate or abnormal burden under the Convention, should be given full consideration." (Art 3.2. UNFCCC,1992).

In addition to the principles contained in Articles 3.1 and 3.2 of the UNFCCC, the principles in Article 3.3 are also worthy of mention:

"The Parties should take *precautionary measures* to anticipate, prevent or minimize the causes of climate change and *mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures*, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost. *Such policies and measures should* take into account different socio-economic contexts, be comprehensive, *cover* all relevant sources, sinks, and reservoirs of greenhouse gases *and adaptation*."

Article 3.3 acknowledges the need for Parties to take precautionary measures to anticipate and mitigate the adverse effects of climate change, and stresses that lack of full scientific certainty should not be used as an excuse to postpone these measures.

"Adverse effects" is defined in Convention Article 1 as "changes in the physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare." Precautionary measures taken to "*mitigate*" the "*adverse effects*" of climate change would, for example,

include efforts undertaken to anticipate and lessen the impacts of increased temperature on public health, or agriculture.

Article 3.3 also introduces the concepts of "cost-effectiveness" and "global benefits" with respect to policies and measures used to "deal with" climate change. This vocabulary is consistent with the Global Environment Facility's (GEF's) operating strategy (cost-effectiveness, global benefits, cost), used in financial transfers under Article 4.3 for developing country mitigation efforts. The same language can be applied to adaptation measures that reduce greenhouse gases (because this reduction provides a global benefit), and to adaptation projects that fit under GEF focal areas other than climate change.[2]

Article 4: Commitments
There are number of commitments from Parties with respect to adaptation under this article, as follows (emphasis added):

"All parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall:
….
(b) 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*;
….
(e) *Cooperate in preparing for adaptation to the impacts of climate change*; develop and elaborate appropriate and integrated plans 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;

(f) 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 the 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*;" (Art 4.1, UNFCCC, 1992)

Also:

"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 impacts of climate change in *meeting the costs of adaptation to those adverse impacts*." (Art 4.4. UNFCCC, 1992)

It later elaborates on the description of what constitutes the most vulnerable regions and countries as follows:

" In the implementation of the commitments in the Article, the Parties shall give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and transfer of technology, to meet the specific concerns of the developing country *Parties arising from the adverse effects of climate change…. Especially on:*

a) Small island countries
b) Countries with low lying coastal areas
c) Countries with arid and semi-arid areas, etc…"

(Art 4.8. UNFCCC, 1992)

The convention also specifies the group of the LDCs or least developed countries (the only group to be so specified) as follows:

[2] See A Proposed GEF Approach to Adaptation to Climate Change, (April 23, 2003) GEF/C.21/Inf.10.

" The Parties shall 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." (Art.4.9, UNFCCC, 1992) .
In addition to the Convention commitments under 4.1(b), 4.1(e) and 4.1(f), and under Articles 4.4, 4.8 and 4.9, referenced in the initial paper, there are a number of other articles relevant to adaptation. These include Articles 4.1(d), 4.1(g), 4.1(i), 4.3, 4.5, 5 and 6. Article 12.3 then requires reporting on measures undertaken under Articles 4.3, 4.4 and 4.5.

Under **Article 4.1(d)** all Parties shall

"Promote sustainable management . . . of sinks and reservoirs of all greenhouse gases not covered by the Montreal Protocol, including biomass, forests and oceans, as well as other terrestrial, coastal and marine ecosystems."

Ecosystems are referenced in the definition of "adverse effects." Article 2's objective is to stabilize concentrations within a timeframe that will allow ecosystems to adapt naturally to climate change. Sustainable management of ecosystems is both a mitigation strategy, and an adaptation strategy.

Under **Article 4.1(g)** all Parties commit to

"promote and cooperate in scientific, technological, technical socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies;"

Under **Article 4.1(i)** all Parties agree to

"promote and cooperate in education, training and public awareness related to climate change and encourage the widest possible participation in this process, including that of non-governmental organisations;"

Article 5: Research and systematic observation
This elaborates upon the Article 4.1(g) commitments above. Under Article 5, Parties agree to support the strengthening of scientific and technical research capacities and capabilities in developing countries, and to share data between countries. This is relevant to developing countries' ability to compile and access data, and to model and anticipate climate change impacts.

Article 6: Education, training and public awareness.
This expands upon Article 4.1(i) commitments. Article 6 activities increase developing countries' adaptive capacities by facilitating the incorporation of climate change concerns into individual, private sector and public sector decision-making. At COP-8, a five-year work plan was agreed for Article 6 activities, including work to enhance the understanding of the impacts, adaptation and vulnerability to climate change and their uncertainties among stakeholders.

Adaptation in the Kyoto Protocol
As the Kyoto Protocol was almost exclusively about establishing targets for greenhouse gas emission reduction, and mechanisms for achieving, this it did not deal with the issue of adaptation at all. However in allowing Annex B countries that had undertaken greenhouse gas reductions targets to meet those targets it established a number of trading or flexible mechanisms. One of those mechanisms, called the clean development mechanism or CDM enabled developing countries (who did not have to accept emission reductions targets under the Protocol) to enter into agreements with Annex B countries (who had accepted emission

reduction targets) to meet part of their targets by funding greenhouse emission reduction projects in the developing countries and paying for such investments in exchange for the emissions reduction achieved through those projects (Kyoto Protocol, UNFCCC, 1997).

At COP7 it was agreed to create a new "Adaptation Fund" under the Kyoto Protocol, which would be established from the proceeds of an "Adaptation levy" to be placed on all CDM transactions that were approved by the CDM Board of the UNFCCC (Marrakech Accords, UNFCCC, 2001). This "Adaptation Fund" is described in more detail below.

Adaptation in the Delhi Ministerial Declaration (COP8)
The Delhi Ministerial Declaration on Climate Change and Sustainable Development at COP8 made a number of references to the issue of adaptation as follows (emphasis added):

"*Resolve that*, in order to respond to the challenges faced now and in the future, climate change and its adverse effects should be addressed while meeting the requirements of sustainable development, and therefore call the following:

(c) National sustainable development strategies should *integrate more fully climate change objectives in key areas such as water, energy, health, agriculture and biodiversity*, and build on the outcomes of the World Summit on Sustainable development;

(d) All Parties, taking into account their common but differentiated responsibilities and respective capabilities, and their specific national and regional development priorities, objectives, and circumstances, should continue to advance the implementation of their commitments under the Convention to address climate change *and its adverse effects* in order to achieve sustainable development;

(e) *Adaptation to the adverse effects of climate change is of high priority for all countries*. Developing countries are particularly vulnerable, especially the least developed countries and Small Island developing states. *Adaptation requires urgent attention and action on the part of all countries*. Effective and result-based measures should be supported for the development of approaches at all levels on vulnerability and adaptation, as well as capacity building for the *integration of adaptation concerns into sustainable development strategies*. The measures should include full implementation of existing commitments under the Convention and Marrakech Accords.

(f) Parties should promote informal exchange of information on actions relating to mitigation *and adaptation* to assist Parties to continue to develop effective and appropriate responses to climate change". (Delhi Declaration, COP8, UNFCCC, 2002).

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