

Adaptation: Needs, Financing and Institutions
By Richard J.T. Klein, Sivan Kartha,
Åsa Persson, Paul Watkiss, Frank Ackerman,
Thomas E. Downing, Bo Kjellén and Lisa Schipper
Stockholm Environment Institute

About the 'Breaking the Climate Deadlock' Initiative

'Breaking the Climate Deadlock' is an initiative of former UK Prime Minister Tony Blair and independent not-for-profit organisation, The Climate Group. Its objective is to build decisive political support for a post-2012 international climate change agreement in the lead up to the 2009 UN Climate Change Conference in Copenhagen. Its particular focus is on the political and business leaders from the world's largest economies, particularly the G8 and the major developing countries. The initiative builds on Mr Blair's international leadership and advocacy of climate change action while in office, and The Climate Group's expertise in building climate action programmes amongst business and political communities.

This briefing paper and its companions were commissioned by the Office of Tony Blair and The Climate Group to support the first Breaking the Climate Deadlock Report – 'A Global Deal for Our Low Carbon Future' – launched in Tokyo on June 27th 2008. Written by renowned international experts and widely reviewed, the papers' purpose is to inform the ongoing initiative itself and provide detailed but accessible overviews of the main issues and themes underpinning negotiations towards a comprehensive post-2012 international climate change agreement. They are an important and accessible resource for political and business leaders, climate change professionals, and anyone wanting to understand more fully, the key issues shaping the international climate change debate today.

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For further information see: www.breakingtheclimatedeadlock.com

Executive Summary

- Regardless of the efforts put into mitigation, some impacts of climate change are already unavoidable. Adaptation to climate change has therefore become a key component of domestic climate policy, along with mitigation.
- Adaptation has also become key to the success of global climate policy. Without an agreement on supporting adaptation in developing countries, there will be no agreement on mitigation.
- Strong mitigation efforts make it more likely that adaptation will be effective and affordable. The world cannot rely on adaptation alone: it would eventually lead to a level of climate change to which adaptation is no longer feasible.
- Government action is needed to create an enabling environment for adaptation. This includes removing existing financial, legal, institutional and knowledge barriers to adaptation, and strengthening the capacity of people and organisations to adapt.
- The success of adaptation relies on the success of development, and vice versa. Poverty reduction, good governance, education, environmental protection, health and gender equality all contribute to adaptive capacity.
- Substantially more money is needed to support adaptation in developing countries. Current levels of funding will soon have to be scaled up by two orders of magnitude (from US\$ hundreds of million to US\$ tens of billion per year).
- An agreement on adaptation in Copenhagen in 2009 will need to include concrete steps towards a strengthened knowledge base for adaptation, substantially more funding for developing countries, and enhanced adaptation planning and implementation at the national level.

Recommendations

- Developed countries should accept a transparent, principle-based allocation of responsibility for adaptation funding, resulting in adequate, new and additional money to support adaptation programmes in developing countries.
- Levies on carbon market transactions and auctioning emission permits are two existing mechanisms of generating new and additional funds consistent with the polluter-pays principle. The use of such mechanisms needs to be expanded.
- Developed countries should provide clarity on how official development assistance and various bilateral and multilateral funds for adaptation can complement one another. They should also address concerns that mainstreaming adaptation may not lead to new and additional funding.
- Institutions involved in adaptation need to be streamlined and reflect the reality of adaptation decision-making. Adaptation is not additional or incremental to baseline investments but involves investments in capacity and integration of adaptation measures into ongoing planning and development.
- Underlying drivers of vulnerability to climate change must be addressed as part of overall efforts to build safe and resilient communities. In addition, synergies must be created between adaptation to extreme weather events and implementing the Hyogo Framework for Action.

Adaptation: Needs, Financing and Institutions

This paper explores the interdependent relationship between adaptation and mitigation in the face of current and anticipated climate change and identifies the need for stronger funding for adaptation. It covers:

- Why adaptation is essential
- Types and objectives of adaptation
- Adaptation as a process
- Adaptation's link with development
- The requirement for additional investment
- Global climate policy
- "Mainstreaming" adaptation
- Copenhagen

Introduction

Action on climate change can take the form of mitigation and adaptation. Mitigation concerns all policies and measures aimed at reducing the emission of greenhouse gases such as CO₂, or at capturing them in forests, oceans or underground reservoirs. Adaptation is the term used to describe all activities aimed at preparing for or dealing with the consequences of climate change, be it at the level of individual households, communities and firms, or of entire sectors and countries.

In theory mitigation and adaptation could be regarded as policy substitutes, but in practice it will be impossible to reconcile the conflicting interests of all stakeholders involved, and to account for the differences in temporal and spatial scales between the two strategies. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR4)¹, which was published in late 2007, stated that it is difficult to make informed trade-offs between mitigation and adaptation beyond the local scale, and concluded with high confidence that it is not yet possible to determine whether or not investment in adaptation would buy time for mitigation. This justifies a separate policy effort on adaptation that is not made at the expense of investments in mitigation.

In discussing the policy imperative for adaptation this Briefing Paper therefore does not intend to distract from the urgency of mitigation. Instead, it aims to strengthen the case for adaptation and outlines policy opportunities to support adaptation decision-making. This Briefing Paper also shows that adaptation and development are linked, as should be adaptation and development policy.

Adaptation is essential

It is now beyond reasonable doubt that climate change is happening, that its cause is the rising concentration of greenhouse gases in the atmosphere, and that these greenhouse gases stem primarily from human activity. The IPCC AR4 included observations of the first effects of climate change. It also concluded that even the most stringent mitigation efforts would not avoid further impacts of climate change in the next few decades. This makes adaptation essential, particularly in addressing near-term impacts. Yet mitigation remains crucial as well, for reliance on adaptation alone would lead to a level of climate change to which effective adaptation is no longer possible, or only at very high social, economic and environmental costs. Successful action on climate change therefore needs to include both mitigation and adaptation.

Impacts of climate change will be experienced by many groups of society and across many economic sectors. Impacts will occur as a result of increased water stress, flood risk, food insecurity, biodiversity loss, loss of livelihoods, economic production losses, increased health risks, and other factors discussed in the IPCC AR4. Estimates of the net cost of climate change impacts depend on the rate and magnitude of climate change and on the economic assumptions adopted by the analysts. The IPCC AR4 concluded that:

- For global average temperature increases of 1–3°C above 1990 levels, both costs and benefits can be expected in different places and sectors.
- Low-latitude and Polar Regions are projected to experience net costs even for small increases in temperature.
- For global average temperature increases greater than 2–3°C, it is very likely that all regions will experience either declines in net benefits or increases in net costs.

Global mean damage costs could be 1–5 percent of global gross domestic product (GDP) for 4°C of warming, with developing countries expected to experience larger losses. The larger losses in developing countries are due not only to their geographical location (arid, semi-arid, low-lying coastal areas and flood plains, and small islands), but also to higher social and economic vulnerability. In locations with higher exposure, higher sensitivity and low adaptive capacity to climate change impacts, the net costs will be significantly larger than the global aggregate.

According to the IPCC AR4, at warming levels beyond 4°C some very large impacts become a possibility, especially after the 21st century. More recent scientific evidence suggests that already at lower temperatures non-linear ecological threshold effects and complex feedbacks could cause the climate system to reach “tipping points”, resulting in large-scale abrupt and irreversible changes. For example, the IPCC AR4 concluded with medium confidence that the Greenland ice sheet, and possibly the West Antarctic ice sheet, would melt at a global average temperature rise of 4–6°C. New research² suggests that the Greenland ice sheet may already become unstable at a temperature increase of 2–3°C. Over a time period ranging from centuries to millennia, the melting of the Greenland ice sheet would cause an additional sea-level rise of 4–6 metres or more. Such changes demonstrate that there are limits to adaptation, especially in developing countries.

Adaptation types and objectives

Adaptation options have been described and classified in a number of ways. First, depending on the timing, goal and motive of its implementation, adaptation can be either reactive or anticipatory. Reactive adaptation occurs when impacts of climate change are being noticed, whilst anticipatory adaptation takes place before impacts have occurred. A second distinction is based on the system in which adaptation takes place: the natural system (in which adaptation is by definition reactive) or the human system (in which adaptation can be both reactive and anticipatory). Within the human system a third distinction can be based on whether the adaptation is motivated by private or public interests. Private decision-makers include both individual households and commercial companies, while governments at all levels serve public interests. Exhibit 1 shows examples of adaptation activities for each of the five types of adaptation that have thus been defined.

Exhibit 1

Examples of adaptive responses to climate change for different classes of adaptation

		Anticipatory	Reactive
Human systems	Private	<ul style="list-style-type: none"> — Purchase of insurance — Construction of house on stilts — Redesign of oil rigs 	<ul style="list-style-type: none"> — Changes in farm practices — Changes in insurance premiums — Purchase of air-conditioning
	Public	<ul style="list-style-type: none"> — Early-warning systems — New buildings codes, design standards — Incentives for relocation 	<ul style="list-style-type: none"> — Compensatory payments, subsidies — Enforcement of building codes — Beach nourishment
Natural systems		<ul style="list-style-type: none"> — Changes in length of growing season — Changes in ecosystem composition — Wetland migration 	

Another distinction that is often made for human systems is between planned and autonomous adaptation. Planned adaptation is the result of a deliberate decision that is based on an awareness that conditions have changed or are about to change, and that action is required to return to, maintain or achieve a desired state. This could, for example, mean building sea walls in anticipation of a rise in sea level. In contrast, autonomous adaptation refers to changes that households and firms make as a matter of course in response to changing conditions, irrespective of any broader plan or policy decisions. These changing conditions include market or welfare changes induced by climate change, such as the price of crops and the occurrence of diseases. Examples of autonomous adaptation include changes in farming practices, the purchase of air-conditioning devices, insurance policies taken out by individuals and private companies, and changes in recreational and tourist behaviour.

The extent to which society can rely on autonomous adaptation to reduce the impacts of climate change is an issue of debate. Some studies place considerable faith in market mechanisms and thus in the capacity of humans to adapt without policy intervention. Other studies highlight the constraints on autonomous adaptation, such as limited information, knowledge and access to resources, and emphasise the need for anticipatory, planned adaptation.

[Adaptation is a process](#)

Discussions on adaptation have long been dominated by the assumption that planned adaptation involves a public agency taking responsibility for developing and implementing technology-based measures, based on specific knowledge of future climate conditions. This assumption is incomplete at best. In reality adaptation entails an ongoing process in which private and public stakeholders interact to make behavioural, economic, institutional and technological changes to the way they live, work and manage their business. Perceptions of future climate risks may trigger the adaptation process, but it is also informed by knowledge of past and current vulnerability. An important part of the process is the development of people's and organisations' capacity to adapt.

Adaptation thus entails more than merely the implementation of a particular technology. Analysis of adaptation activities in a number of countries has made it possible to describe planned adaptation as a process that involves four basic, iterative steps:

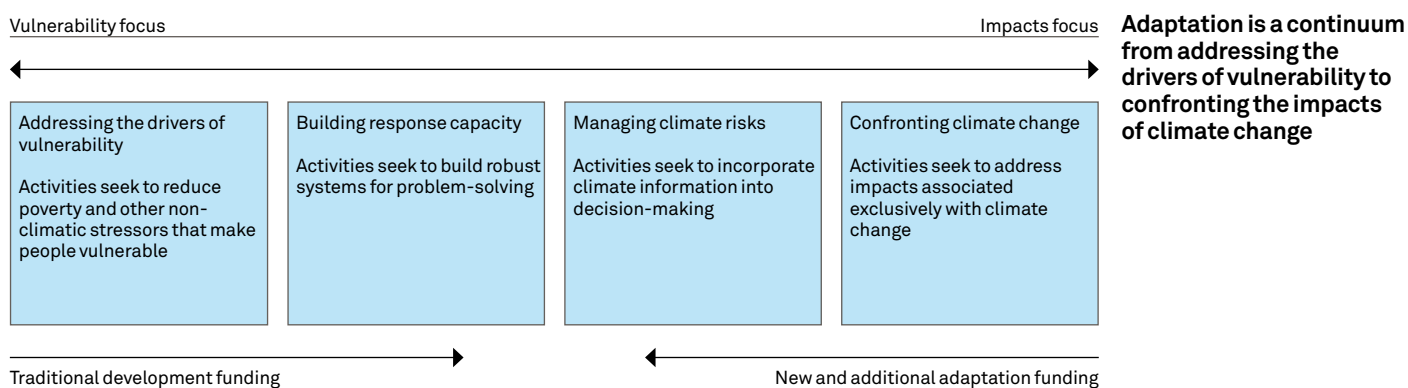
- Information development and awareness raising
- Planning and design
- Implementation
- Monitoring and evaluation

This process can be conceptualised as shown in Exhibit 2. Climate change, in combination with climate variability and other stresses brought about by existing management practices, produces actual or potential impacts. These impacts trigger a policy response, consisting of mitigation and adaptation. Mitigation aims to reduce impacts by directly addressing the cause of climate change, whilst adaptation aims to do so by changing existing management practices. The process of adaptation (as well as mitigation) needs to adhere to agreed policy criteria (e.g. cost-effectiveness) and be consistent with prevailing development objectives. For example, in an area designated for tourism development, sand nourishment could be a more suitable response to beach erosion than building a sea wall. Note that Exhibit 2 represents a simplified process diagram that is presented for illustrative purposes only: it does not capture the multitude of actors involved in decision-making, the uncertainty which these actors face, the other interests they have, or the institutional and political environments in which they operate.

variety, but a more robust and comprehensive adaptation strategy would seek more broadly to improve food security through a set of coordinated measures that include agricultural extension, crop diversification, integrated pest management and rainwater harvesting. In addition, a poor rural household is more likely to use these options if it has a literate family member, if it has access to investment capital through local financial institutions, if it enjoys relatively intact social networks, and if it can hold policymakers accountable. In other words, it takes more than narrow, climate-focused measures to build adaptive capacity.

A recent study by the World Resources Institute, *Weathering the Storm: Options for Framing Adaptation and Development*⁶, confirms this view. It reviewed more than 100 initiatives labelled as adaptation in developing countries and found that in practice there is little difference between these adaptation initiatives and what can be considered good development. The difference lies more in the definition of the problem and the setting of priorities than in the implementation of solutions. The study presents adaptation as a continuum, ranging from more narrowly defined activities aimed specifically at addressing impacts of climate change, to building response capacity and addressing the drivers of vulnerability (see Exhibit 3).

Exhibit 3



Adaptation requires additional investment

Adaptation to climate change will bring with it additional costs for both the public and the private sector. In the past two years a number of organisations have published estimates of these costs. The United Nations Framework Convention on Climate Change (UNFCCC) estimated the additional investment and financial flows needed worldwide to be US\$60–182 billion in 2030. The largest uncertainty in this estimate is in the cost of adapting infrastructure, which may require US\$8–130 billion in 2030, one-third of which would be for developing countries. The UNFCCC also estimated that an additional US\$52–62 billion would be needed for agriculture, water, health, ecosystem protection and coastal-zone protection, most of which would be used in developing countries. In total, US\$28–67 billion in additional investment and financial flows would be needed for adaptation in developing countries only in 2030.

Others arrive at similar estimates. The World Bank concluded that the incremental costs to adapt to projected impacts of climate change in developing countries are likely to be of the order of US\$9–41 billion per year, whilst Oxfam International estimated this number to be over US\$50 billion per year. The United Nations Development Programme (UNDP) has the most pessimistic estimate to date: it suggested that by 2015 financing requirements for adaptation in developing countries could amount to US\$86–109 billion per year.

These estimates are mostly for developing countries as the costs of adaptation in these countries are a factor in global climate policy, as opposed to the costs of adaptation in developed countries. The estimates are at best illustrative, and may not even be accurate to an order of magnitude. The estimates are based on a limited analysis of climate impacts, in limited sectors, and mostly extrapolated from developed countries.

The IPCC AR4 confirmed that the current literature on adaptation costs and benefits is quite limited and fragmented, and that equity considerations (i.e. the distribution of costs and benefits) are hardly addressed. A recent review by the OECD on the same subject found that there is very little quantified information on the costs of adaptation, and most studies are constrained to a few sectors (mostly coasts). In addition, they adopt relatively crude relationships and strong assumptions (e.g. perfect foresight and high levels of autonomous adaptation). There are almost no cross-sector studies that look at cumulative effects, and only a handful of studies that look at the wider macro-economic consequences of impacts or adaptation. Moreover, most of the literature considers adaptation to mean changes in temperature or sea-level rise only; very little attention has been given to more abrupt changes in mean conditions and to changes in the frequency and magnitude of extreme events.

Assessing the costs and, especially, the benefits of adaptation is considerably more complicated than it is for mitigation. Most importantly, in contrast to mitigation the performance of adaptation options cannot be measured and expressed in a single metric (e.g. carbon dioxide (CO₂) or US dollars). This makes it difficult for decision-makers to compare between alternative adaptation options and to consider potential trade-offs. This difficulty, combined with the uncertainties that remain about the impacts of climate change on a local scale, has also weakened the political will to make large-scale investment in adaptation so far. It is the lack of funding that presents the biggest barrier to ramping up adaptation efforts in developing countries, not the inability to provide more precise estimates of adaptation.

[Adaptation in global climate policy](#)

The UNFCCC, which has near-universal membership, provides the basis for concerted international action to mitigate climate change and to adapt to its impacts. Since the UNFCCC's entry into force in 1995 the main focus of climate policy has been on mitigation. This changed with the adoption of the Bali Action Plan in December 2007, which attaches equal importance to mitigation and adaptation.

On the occasion of the 2007 G8 Summit in Heiligendamm, the German G8 Presidency and the Heads of State and/or Government of Brazil, China, India, Mexico and South Africa reaffirmed their commitment to the UNFCCC and to its objective through both mitigation and adaptation in accordance with their common but differentiated responsibilities and respective capabilities. They recognised that adaptation to climate change will be a major challenge for all countries, in particular for developing countries, and agreed that means for adaptation need to be included in a future agreement along with enhanced technology cooperation and financing.

With respect to adaptation, the UNFCCC commits all Parties⁷, among other things, to:

- Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures ... to facilitate adequate adaptation to climate change.
- 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.
- 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 minimising 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.

In addition, the UNFCCC commits⁸ developed countries to 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. This assistance is understood to come in the form of new and additional funding, that is, funding beyond what developed countries are already planning to provide as official development assistance (ODA).

The Conference of the Parties (COP) to the UNFCCC has adopted a number of decisions in response to these commitments. At its first session in 1995 the COP agreed to provide funding for adaptation from the climate change focal area of the Global Environment Facility (GEF) Trust Fund. Relevant activities funded under the GEF Trust Fund include vulnerability and adaptation assessments in the context of National Communications, as well as capacity building. In 2001 the COP requested that support be extended to fourteen adaptation-related activities. It decided that the implementation of these activities should be supported through the GEF and other bilateral and multilateral sources.

The COP then established three additional funds: the Least Developed Countries Fund and the Special Climate Change Fund under the UNFCCC, and the Adaptation Fund under the Kyoto Protocol. The two funds under the UNFCCC are operational and managed by the GEF, as is the Strategic Priority “Piloting an Operational Approach to Adaptation”, which the GEF established under its Trust Fund. The operational GEF funds provide funding to meet the additional costs of adaptation. The remaining costs are to be borne either by the recipient country and/or by other bilateral or multilateral donors. As of March 2008, US\$270 million had been pledged for adaptation under the Least Developed Countries Fund and the Special Climate Change Fund, of which US\$50 million has been allocated.

The Adaptation Fund is not yet operational. As decided by the COP serving as the Meeting of the Parties to the Kyoto Protocol (CMP) in 2007, it will be managed by a special Adaptation Fund Board (AFB). The AFB will develop and decide on specific operational policies and guidelines to be approved by the CMP in Poznan in December 2008. The Adaptation Fund is the first financial instrument under the UNFCCC and its Kyoto Protocol that is not based solely on voluntary contributions from donor countries. It receives a 2 percent share of proceeds from project activities under the Clean Development Mechanism (CDM) and can also receive funds from other sources to fund concrete adaptation projects. The actual amount of money that will be available from the fund depends on how much the CDM is used and on the price of carbon. According to a World Bank estimate it is likely to total US\$100–500 million by 2012.

[Adaptation becomes part of the mainstream](#)

Aware of the growing risks of climate change on all parts of the economy and society, countries are increasingly integrating adaptation into mainstream sectoral and national planning and decision-making. The benefit of this integration effort, often referred to as “mainstreaming”, would be to reduce the sensitivity of development activities to both today’s and tomorrow’s climate, thus ensuring the effectiveness and sustainability of investment. Moreover, mainstreaming adaptation is seen as a way of making more efficient use of financial and human resources than designing, implementing and managing adaptation separately from development planning and ongoing sectoral decision-making.

Mainstreaming can be beneficial to developed and developing countries alike. For example, the European Commission has progressed adaptation through the European Climate Change Programme group on Impacts and Adaptation, under the remit “to integrate adaptation fully into relevant European policy areas, to identify good, cost-effective practice in the development of adaptation policy and to foster learning.” The information from the working group informed the European Commission and led to a Green Paper on adaptation, published in 2007. The Commission is currently preparing a White Paper on adaptation, due for publication in November 2008, which will set out the next steps in the development and implementation of European Commission adaptation policy.

Discussion on mainstreaming is most advanced in the context of ODA, which still contributes a substantial share of income of many developing countries, particularly the least developed countries. In April 2006 the OECD organised a ministerial-level meeting of its Development Assistance Committee (DAC) and its Environment Policy Committee (EPOC). The meeting served to launch a process to work in partnership with developing countries to integrate environmental factors efficiently into national development policies and poverty reduction strategies. The outcomes of the meeting were an agreed Framework for Common Action Around Shared Goals⁹, as well as a Declaration on

Integrating Climate Change Adaptation into Development Co-operation¹⁰. These outcomes are providing an impetus to all development agencies to consider climate change in their operations and thus facilitate mainstreaming. The OECD is currently preparing practical guidance for doing so.

From an operational perspective mainstreaming makes common sense: it is a “no-regrets” approach to making development investments more climate-proof and ensuring they enhance adaptive capacity. The potential for doing so is considerable. The OECD estimated that in Nepal, for example, as much as 50-65 percent of total ODA is directed at activities potentially affected by climate risks. At the same time, more than 60 percent of all ODA from OECD countries could positively contribute towards adaptation and adaptive capacity. This potential is now being recognised by donor agencies. Several of them have started screening their project portfolios for mainstreaming opportunities.

From a policy perspective, however, mainstreaming is the cause of some concern. As a way of reducing transaction costs and improving the effectiveness of aid, mainstreaming creates a dilemma for adaptation financing. Developing countries are concerned that by donors’ seeking to create synergies between adaptation and development investments, funding for adaptation will not be new and additional but in effect will be absorbed into ODA budgets of a fixed size. The concern is fuelled by the fact that only a handful of countries have achieved the target, reaffirmed most recently in Monterrey, of providing 0.7 percent of their gross national income as ODA. A second, related concern is that mainstreaming could divert any new and additional funds for adaptation into more general development activities, which limits the opportunity to evaluate, at least quantitatively, their benefits with respect to climate change specifically. Third, there is concern that donors’ use of ODA to pursue mainstreamed adaptation could impose conditionalities on what should be a country-driven process.

[Adaptation in Copenhagen](#)

The Bali Action Plan, agreed in December 2007, launched a comprehensive process to enable the full, effective and sustained implementation of the UNFCCC through long-term cooperative action, now, up to and beyond 2012, in order to reach an agreed outcome and adopt a decision in Copenhagen in December 2009. The Bali Action Plan attaches equal weight to mitigation and adaptation, and identifies technology and finance as the key mechanism to enable developing countries to respond to climate change. It lists five issues that can enhance action on adaptation:

- International cooperation to support urgent implementation of adaptation actions, including through vulnerability assessments, prioritisation of actions, financial needs assessments, capacity building, and integration of adaptation actions into sectoral and national planning.
- Risk management and risk reduction strategies, including risk sharing and transfer mechanisms such as insurance.
- Disaster reduction strategies and means to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change.
- Economic diversification to build resilience.
- Ways to strengthen the catalytic role of the UNFCCC in encouraging multilateral bodies, the public and private sectors and civil society, building on synergies among activities and processes, as a means to support adaptation in a coherent and integrated manner.

Work is already underway on these five issues, and this needs to continue. However, more efforts are needed if the Bali Action Plan is to lead to success in Copenhagen. In particular, it will be necessary to:

- Agree on ways of providing substantially larger amounts of funding for adaptation in developing countries.
- Focus on national adaptation planning and implementation, building on the knowledge and networks developed to date.
- Begin a process of streamlining international and national institutions so as to enhance the efficiency and effectiveness of adaptation.

Provision of new and additional funding for adaptation

It is clear that existing and expected resources fall short of the estimated costs of adaptation outlined above by roughly two orders of magnitude. Substantially more financial resources are needed. A number of donors are in the process of setting up separate funds that could also support adaptation activities in developing countries, thus complementing or competing with the GEF funds and the Adaptation Fund. The new funds include the Environmental Transformation Fund announced by the United Kingdom, the Cool Earth Partnership by Japan, and the Climate Investment Funds proposed by the United States, United Kingdom and Japan in cooperation with the World Bank. The modalities for funding and the governance structures of the funds are still under discussion, so it is too early to comment on the potential of these funds to fill the funding gap.

However, there has been some early concern about the fact that these funds are donor-driven, that money may be made available as loans instead of grants, and that possible competition between these funds and those under the UNFCCC and the Kyoto Protocol may lead to a decoupling of adaptation and mitigation in the climate negotiations. Such decoupling could undermine the developing countries' position that support for adaptation is a moral imperative for the developed countries, which has to go hand in hand with emission reductions. In addition, it could weaken the carbon market. The carbon market, created by the Kyoto Protocol, has the potential to move huge financial flows to developing countries for mitigation and adaptation. In theory the carbon market could make a future climate agreement self-financing: if emission targets were ambitious the price of carbon would rise significantly, which would increase financial flows to developing countries.

The Adaptation Fund is the first example of the use of market-based options to generate substantial financial resources to address climate change. However, instead of taxing carbon emissions (which would be in line with the polluter-pays principle), it taxes carbon exchanges, which provides a disincentive to investments in developing countries. Substantially more funding for adaptation can be generated by putting a levy on, for example, emission trading in developed countries and on air travel. Regardless of the preferred modalities, adaptation financing needs to evolve into an arrangement in which Parties accept binding commitments to contribute resources towards adaptation. Parties in Bali reiterated the need for such steps, calling for "adequate, predictable and sustainable financial resources". To rely on ad-hoc discretionary contributions is to risk a perennial shortfall in resources.

A principle-based and transparent process for determining national burden-sharing contributions to international adaptation funding is necessary, and there is a legal basis for this. It is a universal ethical principle that it is wrong to harm others (or risk harming them) for one's own gain, and that one owes compensation if one does such harm. Over time this moral principle has become firmly encoded in national case law and legal reasoning with respect to environmental pollution within national boundaries. International law echoes the same principle. The Stockholm Declaration of 1972 declares in Principle 21 (reaffirmed in Principle 2 of the Rio Declaration) that states have "the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction" and reiterates in Principle 22 that "States shall cooperate to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such States to areas beyond their jurisdiction".

National adaptation planning and implementation

Many adaptation activities in developing countries initiated under the UNFCCC have strengthened the information base for adaptation, for example through support for National Communications and regional workshops. The Nairobi work programme on impacts, vulnerability and adaptation aims to improve countries' understanding of climate change impacts and vulnerability, and to increase their ability to make informed decisions on how to adapt successfully. Most least-developed countries have prepared National Adaptation Programmes of Action (NAPAs), in which they identified their urgent and immediate adaptation needs.

While it is crucial that the NAPA process is continued by providing support to the least-developed countries to meet their urgent adaptation needs, it is also important to engage all countries in the development of national adaptation plans. These national plans would aim to set in motion a process for adaptation that is supported by a broad constituency of actors for the public and private sectors. The plans should identify where synergies may arise between adaptation and development at national and local levels. The preparation and implementation of the national adaptation plans need to involve national finance and planning ministries.

The national adaptation plans of developing countries would also specify the delivery mechanisms with which financial support for adaptation can be disbursed and used effectively within the country. Concern among developed countries about the effective delivery of adaptation funds under the UNFCCC has impeded progress on the scaling up of activities under these funds, and is a key challenge to making the Adaptation Fund operational. The concern has triggered some countries to set up their own funds (see above). In specifying delivery mechanisms, developing countries will be keen to avoid what they would see as accepting conditionality on the use of adaptation funds. Guidance from the Conference of the Parties will be required here.

A related issue is that most adaptation activities to date are implemented in the form of stand-alone projects, which are difficult to scale up to the level that will be required to reduce vulnerability to climate change in all communities and economic sectors. Moreover, project-based activities are difficult to mainstream into ongoing planning and development processes. National adaptation plans would therefore take a programmatic, country-driven approach. This means that the capacity to plan for adaptation and identify where synergies with development may arise must be built within the government, at national and local levels.

Streamlining institutions for adaptation

Successful adaptation relies on the existence of an enabling environment that ensures that investments in adaptation lead to the desired result in an effective manner. An enabling environment is provided by a range of well-functioning and complementary domestic and international institutions. Experience with adaptation under the UNFCCC to date shows that institutional responsibilities for adaptation have been unclear and sometimes competing, both at the international level and within countries. It will be necessary to promote national and international support mechanisms to channel financial and technical resources towards the implementation of national adaptation plans.

The setup of institutions within countries is largely the remit of national governments, possibly supported by capacity building and other activities under the UNFCCC and bilateral and multilateral support programmes. National adaptation plans would serve to outline the institutional arrangements for adaptation within countries, which include the private sector and non-governmental organisations. They will also identify opportunities to take advantage from synergies with existing mechanisms, such as the national platforms for disaster risk reduction, and sectoral organisations (e.g. health, agriculture, energy).

The Nairobi work programme on impacts, vulnerability and adaptation has highlighted the many and diverse international organisations that undertake adaptation activities in developing countries. Some organisations concentrate on the development and dissemination of relevant knowledge (e.g. the World Meteorological Organisation), others focus on assisting in planning and implementation on the national scale (e.g. the World Bank, the World Health Organisation and the Food and Agricultural Organisation of the United Nations), and again others on adaptation at the local level (primarily non-governmental organisations such as Practical Action). Most of these activities have been initiated without direct involvement of the UNFCCC, and without financial support from the UNFCCC funds.

As adaptation in developing countries is being scaled up, there is an increasing need to ensure that activities of various organisations are complementary rather than duplicative. Given its mandate, the UNFCCC has no role to play in the actual implementation of adaptation activities outlined in NAPAs or national adaptation plans. This is where country-ownership is key, and where other organisations with specific knowledge and experience, including bilateral and multilateral donors, need to be involved. At the same

time, however, synergies with activities carried out under other international conventions (e.g. Convention on Biological Diversity, and the United Nations Convention on Combating Desertification) as well as the Hyogo Framework for Action 2005-2015 (on building the resilience of nations and communities to disasters) need to be created. The complexity of the many institutions involved in adaptation may require the establishment of an international adaptation body to oversee and coordinate the effective implementation of adaptation activities in all parts of the world.

Rather than implementing adaptation activities, the UNFCCC and its Conference of the Parties have a triple role in facilitating the process of adaptation:

- Creating mechanisms for capacity building, data and information sharing, and technology transfer
- Raising funding for adaptation and deciding on priorities, eligibility and disbursement policies
- Setting targets for adaptation

The latter role would be new, as to date no such targets have been agreed. Setting measurable, reportable and verifiable targets for adaptation would ensure that all countries implement activities to reduce their vulnerability to climate change in line with their capacities and priorities. In an agreement on adaptation this would need to be matched with measurable, reportable and verifiable targets for providing financial support for adaptation in developing countries.

Further Reading

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Glossary of Terms

AFB:	Adaptation Fund Board
AR4:	Fourth Assessment Report of the IPCC (qv)
CDM:	Clean Development Mechanism
CMP:	COP serving as the Meeting of the Parties to the Kyoto Protocol
CO₂:	Carbon Dioxide
COP:	Conference of the Parties
DAC:	Development Assistance Committee of the OECD (qv)
EPOC:	Environment Policy Committee of the OECD (qv)
GEF:	Global Environment Facility
IPCC:	Intergovernmental Panel on Climate Change
MDGs:	Millennium Development Goals
NAPA:	National Adaptation Programme of Action
ODA:	Official Development Assistance
OECD:	Organisation for Economic Cooperation and Development
UNFCCC:	United Nations Framework Convention on Climate Change

Endnotes

- ¹ IPCC, 2007: Summary for policymakers. In: *Climate Change 2007: Impacts, Adaptation and Vulnerability*, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson (eds), Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, United Kingdom, 7–22.
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- ⁶ McGray, H., A. Hammill and R. Bradley, 2007: *Weathering the Storm: Options for Framing Adaptation and Development*. World Resources Institute, Washington, DC, United States.
- ⁷ UN Framework Convention on Climate Change, Article 4.1
- ⁸ UN Framework Convention on Climate Change, Article 4.4
- ⁹ Available here: <http://www.oecd.org/dataoecd/44/27/36427017.pdf>
- ¹⁰ Available here: <http://www.oecd.org/dataoecd/44/29/36426943.pdf>

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