

An IIED Briefing

How we are set to cope with the impacts

Hannah Reid and Saleemul Huq, IIED

Climate change is now very much with us, and for the poorest of the poor the implications are particularly daunting. These often remote or marginalised communities are so burdened they will struggle to meet the coming challenges. Adaptation – learning to cope with rising temperature and other effects of climate change – is a difficult but essential task for these vulnerable millions. This briefing paper defines climate change adaptation and shows why it matters, who needs to adapt most, and what shape adaptation must take across a range of scales and sectors.

What is adaptation and why does it matter?

Within the science community, there is now broad consensus on the reality of human-induced climate change. The expert panel of scientists who make up the Intergovernmental Panel on Climate Change (IPCC) conclude, in their Fourth Assessment, that it is 90 to 99 per cent likely that the rise in global atmospheric temperature since the mid-19th century has been caused by human activity. The report predicts that the average global temperature may rise by about 3 degrees Celsius by the end of the 21st century, while sea level could rise by as much as 59 centimetres. Some projections point to summer sea ice in the Arctic disappearing completely by the year 2100. Heatwaves and periods of heavy rainfall are “very likely” to become more frequent, but tropical cyclones, though they may become more intense, could be less frequent.

There is now clear scientific evidence that climate change is real. But what can we do about it? In essence, there are two types of response. The first, mitigation, involves reducing emissions of greenhouse gases to slow or stop the process of climate change. The second, adaptation, is learning to cope with the temperature increases, floods and higher sea levels associated with climate change. (See the box on the back page for a range of concepts and terms associated with adaptation.)

The spotlight is now on adaptation for two reasons. First, people are realising that some climate change impacts are inevitable. Even if emissions of all greenhouse gases were to stop immediately, average temperatures would continue to rise for some time because of lags in the Earth’s natural processes. As a result, adaptation and mitigation are not

alternative strategies but rather, complementary ones: both need to be pursued together. Secondly, while scientists are clear on the need to reduce greenhouse gas emissions to stop global warming, action on the ground by politicians, businesses and individuals has been slow. Inadequate mitigation therefore makes the need to adapt to climate change impacts all the more pressing.

Who needs to adapt most?

Climate change is a global problem, so all countries must work to reduce their greenhouse gas emissions and learn how to cope with the impacts of climate change. Developing countries, however, have relatively small greenhouse gas emissions, so mitigation is less important for them. Adaptation is more relevant for poorer nations because of their relative vulnerability to the impacts of climate change, which stems partly from geographic location in areas such as drought-prone sub-Saharan Africa or flood-prone Bangladesh. These countries’ adaptive capacity is also lower than that of developed countries because of their limited financial resources, skills and technologies and high levels of poverty. Reliance on climate-sensitive sectors such as agriculture and fishing is also high.

The IPCC recognises the entire continent of Africa to be one of the most vulnerable to climatic variability and change because of multiple stresses, such as poverty, and its low adaptive capacity. Of Asia, the IPCC says that coasts, in particular the crowded mega-delta regions of South, East and Southeast Asia, will be at greatest risk from flooding from the sea and, in some delta regions, from rivers. The panel also cites small islands in both the tropics and higher latitudes as especially vulnerable to

the effects of climate change, sea level rise and extreme events. Least Developed Countries (LDCs) are also identified by the UN Framework Convention on Climate Change (UNFCCC) as among the most at risk from climate change, and as such receive support to identify their most urgent adaptation needs through National Adaptation Programmes of Action (NAPAs).

How is adaptation shaping up?

International strategies

Developed countries that are party to the UNFCCC are required to help countries most at risk from the effects of climate change meet the costs of adaptation. A fully conceived, integrated and functioning regime for adaptation, however, has yet to emerge. Progress has been made on identifying vulnerable countries and regions and adaptation options, and there has been some capacity building to prepare for adaptation, but few adaptation measures are in place. In part this is due to limited funds. The costs of adaptation are likely to be high, running at several billion dollars a year for developing countries alone.

Adaptation funding

Several financial mechanisms to support adaptation exist under the UNFCCC and the Kyoto Protocol, particularly in developing countries. The following four funds contain a total of over US\$310 million to date:

1. The Least Developed Countries Fund has already supported the development of National Adaptation Programmes of Action (NAPAs) and will likely assist the Least Developed Countries (LDCs) to implement their NAPA projects. It is based on voluntary contributions from wealthy countries.
2. The Special Climate Change Fund is for all developing countries and covers adaptation and other activities. It is also based on voluntary contributions.
3. The Adaptation Fund is meant to support “concrete adaptation” activities. It is based on private sector replenishment through the 2 per cent levy on Clean Development Mechanism projects (which channel carbon-cutting energy investments financed by companies in developed countries into developing countries), plus voluntary contributions.
4. The Strategic Priority on Adaptation contains US\$50 million from the Global Environment Facility’s own trust funds to support pilot adaptation activities.

A number of bilateral funding agencies in countries including Canada, Germany, the Netherlands, Japan, the United Kingdom and the United States have allocated funding for adaptation activities, including research and some pilot projects. To date, bilateral donors have provided around US\$110 million for over 50 adaptation projects in 29 countries.

Adaptation to climate change needs to be mainstreamed into development policy and practice at international and regional levels. For example, meeting the Millennium Development Goals will become even more difficult as climate change bites. Ensuring that adaptation is a part of international agreements is also important. For example, the ecosystem approach advocated in the Convention on Biological Diversity in many ways demonstrates good adaptation practice. Investment projects from bilateral or multilateral institutions and the private sector need scrutinising and modifying to ensure they are both “climate proof” and “climate friendly”.

Towards climate-screened investment

Climate change is not high on the agenda of most international donor organisations and governments. The International Monetary Fund and World Trade Organization, for instance, give it short shrift in their projects. As much as 50 to 65 per cent of development aid in Nepal was given to climate-sensitive sectors.

Clearly, international donor agencies need to assess the extent to which their investment portfolios in developing countries might be at risk from the effects of climate change, and take steps to reduce that risk. Several bilateral and multilateral development agencies and NGOs recognise this and are starting to take an interest. At least six donor agencies have screened their existing projects to assess how they rate in factoring in climate risk and addressing vulnerability to that context, and to identify opportunities to incorporate climate change explicitly into future projects.

National strategies

Climate risks need to be integrated into national development projects and strategies. In most developing countries this will require greater institutional capacity. With a few exceptions, most national policymakers are largely unaware of potential impacts of climate change in different sectors. As we have seen, the LDCs are currently preparing NAPAs, which alongside other national strategies and plans could help bring knowledge on climate change impacts and adaptation into national policy and planning processes.

While mainstreaming climate change risks into development policy (such as Poverty Reduction Strategy Processes) and practice is needed, this demands a more strategic approach. Ensuring a country can adapt well to climate change goes well beyond the need to ensure that individual projects are “climate proof”. Vulnerability can be reduced or increased by the choice of development path, and each country needs its own plans and institutions to ensure adaptation is both mainstreamed into development and factored in at a strategic planning level – both of which demand funding.

Local strategies

Because the poor will suffer most from many adverse climate change impacts, adaptation at the local level is essential. Climate change models at the local (and often national) level

are not very accurate. But a community that is vulnerable to current climate variability is likely to be vulnerable to future climate change, so it is not always necessary to wait for more accurate local forecasts to start building adaptive capacity. Strengthening community institutions to help them provide social safety nets and develop new coping mechanisms is a key way forward.

Adaptation in different sectors

Many developing countries have a good core of professional planners and managers operating in key sectors, but they are usually unaware of the potential impacts of climate change on their respective sector. Climate risk assessment needs to be incorporated into development activities by all of these professionals.

Agriculture and food security

This sector is at great risk from climate change in most developing countries. The IPCC states that in many African countries and regions, agricultural production, including access to food, is projected to be severely compromised by climate variability and change. Adaptation activities include using drought-resistant crops, introducing new farming techniques and diversifying income sources. India and Mali, for instance, are known for their strong agricultural professionals, and integrating climate change concerns into policy and planning is quite advanced in both, but in other countries less progress has been made.

Water resources

The IPCC states that in Africa by 2020, “between 75 and 250 million people are projected to be exposed to an increase of water stress due to climate change”. The amount of knowledge on climate change impacts varies according to region, with more in South Asia than in Africa. For example, Bangladesh is renowned for the quality and strength of its water resource managers. Professionals involved in planning and managing for irrigation, flood management and drinking water provision need to incorporate climate change risk management into their regular practices for designing water structures and measures.

Coastal zone management

This is an important sector in South Asia (Bangladesh and India in particular) as well as in the Gambia, Senegal and Tanzania in Africa. Planning for sea-level rise and vulnerability to storms and cyclones are both important. Coastal cities such as Alexandria in Egypt, and Banjul in the Gambia, will be particularly vulnerable.

Disaster management

Climate-related disasters such as floods, cyclones and droughts are recurring problems for developing countries. In most countries, institutions and plans to deal with early warning, relief, rehabilitation and recovery exist. Some are quite successful (such as the cyclone warning system in Bangladesh), but many are inefficient and unlikely to be able to cope with future disasters exacerbated by climate change. Strengthening national and local capacity in disaster risk reduction and disaster management by working with existing structures (such as the Comprehensive Disaster Mitigation Programme in Bangladesh) is essential.

Community-based adaptation: Cavite City, the Philippines

As a coastal town, Cavite City is very vulnerable to tropical cyclones, drought and sea level rise. Current climate-related problems include coastal erosion, siltation and sedimentation, storm surges and urban flooding, saltwater intrusion into water resources and degradation of water quality. Poor people, especially fishers and shellfish farmers, are affected most. Some autonomous adaptation has already occurred, including:

- Accommodating sea level rise by building houses on stilts
- Strengthening the physical structure of houses
- Moving to safer places during calamities
- Placing sandbags along the shorelines
- Borrowing money from relatives or acquiring high-interest loans from money lenders
- Engaging in alternative income-generating activities locally or in other areas
- Changing occupation.

Such strategies, however, are inadequate and not effectively integrated into local development plans. The government has also instigated adaptation activities, including relief assistance, resettlement and shoreline protection. These have reduced the vulnerability of coastal households, but are inadequate and costly. Adaptation strategies proposed by local people are mostly non-structural measures such as policy and institutional reforms regarding coastal zone management, property rights, micro-finance/insurance schemes disaster risk management, fisheries/aquatic resource management and community-based adaptation. Local capacity development was also deemed important, as was improving knowledge management.

Health

The potential impacts of climate change on human health are huge but poorly understood. Christian Aid estimates that 182 million people in sub-Saharan Africa will die of climate change related diseases before the end of the century – yet health professionals have little understanding of what health impacts to expect, and how to cope with them.

ADAPTATION TERMS AND CONCEPTS

Adaptation to climate change: Actions to reduce the vulnerability of a system (such as a city) or population (such as a coastal village) to the negative impacts of anticipated human-induced climate change. Adaptation to climate variability involves taking action to reduce vulnerability to short-term climate shocks. Often adaptation to climate variability will also result in adaptation to climate change. Adaptation activities can be of different types, from the purely technological (such as sea defence construction), through behavioural (such as shifts in choice of food or recreation), managerial (such as changes in farming methods) and policy (such as planning regulations).

Adaptive capacity: Inherent capacity of a system or population to cope with climate impacts or climate change. This can include financial, technological, knowledge or institutional capacity. The poor often have lower adaptive capacities. **General adaptive capacity** is dependent on the state of development of a country, system or community, and is boosted along with any progress in development. **Specific adaptive capacity** is a function of a country, system or community's awareness and knowledge of climate change impacts, as well as its coping capability.

Adaptation deficit: Lack of adaptive capacity to deal with climate variability and climate change. A useful starting point in addressing adaptation can be to tackle the adaptation deficit before embarking on new adaptation activities.

Autonomous versus planned adaptation: Autonomous adaptation occurs without any specific planning. Planned adaptation occurs in anticipation of potential climate change.

Climate change risk: Additional risk to investments (such as buildings and infrastructure) and actions from potential climate change impacts.

Climate-proofing: Making additional investment to reduce or eliminate climate change risks. This is often the same as adaptation to climate change.

Limits to adaptation: Adaptation can considerably reduce the adverse impacts of climate change but cannot eliminate them. Hence there are limits to adaptation. Some places may also become permanently beyond adaptation, such as coastal areas inundated by sea level rise.

Maladaptation: Action or investment that enhances vulnerability to climate change impacts rather than reducing them. Removing maladaptations is another good starting point in addressing adaptation.

References

Christian Aid (2006) *The Climate of Poverty: Facts, fears and hope*. Christian Aid, London.
www.christianaid.org.uk/indepth/605caweek/caw06final.pdf

DFID. Key Sheets on Climate Change and Poverty. DFID, London.
www.dfid.gov.uk/pubs/files/climatechange/keysheetsindex.asp

Faustino, R. (2007) Mainstreaming Adaptation Towards Integrated Coastal Management: The Case of Cavite City, Philippines. Presentation by Ramon Faustino Jr, Assistant Director, Conrado Benitez Institute for Sustainability, Philippines, at the Community Based Adaptation Workshop, Dhaka, 24-27 February

IPCC (2007) *Climate Change 2007: Impacts, Adaptation and Vulnerability. Summary for Policymakers*. Working Group II Contribution to the IPCC Fourth Assessment Report.

Klein, R. J. T., S. E. H. Eriksen, L. O. Næss, A. Hammill, T. M. Tanner, C. Robledo and K. L. O'Brien (2007) Portfolio screening to support the mainstreaming of adaptation to climate change into development assistance. *Climatic Change* (forthcoming).

National Adaptation Programmes of Action submitted to the UNFCCC to date.
http://unfccc.int/national_reports/napa/items/2719.php

OECD (2003) Special Issue on Climate Change. *Climate Change Policies: Recent development and long term issues*. OECD Papers 4 (2). OECD, Paris.

Red Cross and Red Crescent Climate Centre, Netherlands (2004) *Preparedness for Climate Change: A study to assess the future impact of climatic changes upon the frequency and severity of disasters and the implications for humanitarian response and preparedness*.
www.climatecentre.org/downloads/File/reports/preparedness_climate_change.pdf

Second International Workshop on Community Based Adaptation (CBA) to Climate Change, Dhaka, Bangladesh, 24-28 February 2007.
See reports on www.bcas.net/2nd-cba/index.html

Sperling, F. *Poverty and Climate Change: Reducing the Vulnerability of the Poor through Adaptation*. African Development Bank, ADB, DFID, EC, DGIS, BMZ, OECD, UNDP, UNEP, World Bank.
www.oecd.org/dataoecd/60/27/2502872.pdf