

# Adaptation and cooperation

Britta Heine and Lorenz Petersen

**Adaptation to climate change has become an important issue, both at international climate policy level and at the level of practical implementation on the ground.**

Adaptation focuses on reducing (poor people's) vulnerability and thereby preventing both displacement and conflicts over scarce resources. Developing countries are especially vulnerable to the consequences of climate change, particularly where their livelihoods are directly dependent on climate and weather conditions. Poverty itself is a major cause of vulnerability to the consequences of climate change. A lack of capacity (technical, human and financial) makes it harder to adapt to changing conditions and to mitigate the risks. In other words, climate change will first and foremost intensify pre-existing problems in developing countries, which will generally have difficulties in coping with and adapting to these additional challenges.

Climate change adaptation means re-examining and, if necessary, modifying our policies, programmes, investments and, ultimately, behaviours in the light of our knowledge about climate change and its impacts. This may mean coping with changing risks but it may equally mean capitalising on positive impacts of climate change.

It is important to distinguish between non-climate drivers, such as government policies or population growth, and actual climate drivers. Climate drivers can be processes with slow-onset changes such as sea-level rise, build-up of salt in agricultural land, desertification and growing water scarcity. Climate events are sudden dramatic hazards such as monsoon flooding, storms and outburst floods from glacial lakes. All contribute to increasing the number of vulnerable people living on marginal land exposed to climate change. While climate processes – being long-term by nature – need to be addressed by long-term adaptation strategies, climate events require measures of disaster risk management. In combination,

the application of adaptation strategies and the implementation of successful disaster risk management will lead to less vulnerability.

## Adaptation strategies

Adaptation calls for the collective efforts of various actors, working on different levels and across sectoral boundaries. Every adaptation strategy involves three main steps. The first step is to gain a clear picture of the anticipated climate impacts in order to gauge the vulnerability of societies and ecosystems. In contrast to disaster risk management, this extends beyond an appraisal of the immediate hazards and vulnerability; it also encompasses an assessment of future trends or the possible range of anticipated climate changes.

The second step is to compare climate impacts with vulnerabilities in order to derive possible adaptation measures. Establishing financial and economic costs by carrying out cost-benefit analyses helps to identify priority measures. The third and final step in this sequence is to determine the governance aspects. Who should most usefully tackle which area, with which risk management intervention? By following this sequence it is possible to develop local, national or regional adaptation strategies.

These steps have been applied within existing projects and programmes of German development cooperation focusing on climate change adaptation and disaster risk management. In view of the dimensions of the problem, however, international development cooperation can only contribute a part of the necessary resources for adaptation measures. Hence, supporting local governments in formulating adaptation strategies and priority setting is an important task for development cooperation.

## Disaster risk management in Mozambique

The core aim of disaster risk management is to reduce the risk of disaster for societies living in regions threatened by natural hazards (risk management) and to prepare them to cope if disaster strikes (preparedness). In Mozambique, German development cooperation has successfully implemented a community-based programme which exemplifies the important role of disaster risk management for successful adaptation to climate events.

Mozambique is one of the poorest countries in the world. The watershed of the Búzi River in Sofala province is affected by very severe floods and neighbouring communities are also regularly hit by flooding and cyclones. Flooding in 2000 affected some 4.5 million people and claimed the lives of 800. According to reports from the IPCC, a further increase in heavy rainfall events and more intensive and widespread droughts in Mozambique are very likely.

In 2001 – one year after the flood – GTZ initiated a rural development programme with a disaster risk management component.<sup>1</sup> A participatory risk analysis identified one-third of the district's inhabitants as particularly vulnerable to extreme natural events. The most risk-prone areas have since been mapped in detail, along with areas of higher ground which could be used for emergency evacuation purposes. On the basis of the risk analysis, local Disaster Management Committees were established in nine communities and trained with the help of experts from Costa Rica and Honduras. Villagers and volunteers also established a local early warning system based on relatively simple resources. Readings of daily rainfall and river water levels are taken at seven measuring stations; these trigger early warnings when necessary. The local Disaster Management Committees receive these warnings, mainly through Radio Comunitarió do Búzi (in



### Mainstreaming adaptation in Indonesia

Adaptation is a cross-cutting task, requiring the coordinated efforts of different actors within and also beyond the state. Adaptation needs to build on and be supported by activities by relevant ministries (e.g. environment, finance and planning) and those responsible for identifying budgetary priorities as well as specialised agencies such as geological and meteorological services and institutions for disaster prevention. National Strategies can help provide a framework for coordinating adaptation activities, enabling informed decision-making, mobilising national and international

support and developing appropriate institutional structures for adaptation.

Indonesia faces increased vulnerability to the effects of climate change, especially rising sea levels, changes in precipitation and extreme weather events. Climate projections indicate that the mean wet-season rainfall will increase across most of Indonesia while the length of the dry season is expected to increase, bringing increased risk of floods during the rainy season and drought in the dry season. This will have a particular impact on water resources, agriculture and forestry, health and infrastructure.

Dr Sutardi of Indonesia's Ministry of Public Works and Executive Secretary of Indonesia Water Partnership<sup>2</sup> explains that "most people have not yet integrated the issue of climate change into their everyday life. They still feel there was just a bit 'too much rain' during the rainy season or 'too little' in the dry months." However, adaptation to climate change is now a major concern of the Indonesian government. The Ministry of the Environment has initiated the development of a national strategic approach to adaptation planning. Challenges faced include the availability and dissemination of relevant information and planning tools, awareness of the issue among decision-makers, and

Portuguese), and then inform the neighbourhood – in the local dialect, Ndaou – and organise transport and evacuation. Translation into the local dialect has been an important factor for the success of the project.

Furthermore, a syllabus and lesson plans were developed at four project schools to raise awareness among children and young people about the impacts of climate change and to familiarise them with the theme of disaster risk management at an early age. Both themes have been integrated into local curricula.

As a result of these activities, villagers and local government representatives, teachers and schoolchildren have been sensitised to the issues, and disaster risk management measures for climate change adaptation have been integrated into the district's development plan. The robust disaster risk management system now makes it possible to deliver an early warning of flood events and the system has already proven its efficiency. During the rainy seasons of 2005 and 2007, extreme flooding struck the area once again but most of the inhabitants escaped and survived. In the meantime, the system has been further calibrated and refined.

The success of the project is ascribed to its high level of participation of and ownership by the people

of the Búzi River. Moisés Vicente Benessene, Director of the National Institute of Meteorology, describes it as a "people-centred early warning system", based on local knowledge, customs and cultural values. As local leaders, doctors and teachers have all volunteered to serve in local Disaster Management Committees, taking on responsibility has become highly respected in the communities. Some challenges remain, however, such as keeping the system running and constantly maintaining people's awareness of climate risks and the use of disaster preparedness.

The experiences of Búzi have been shared with other districts, where plans are now also in hand to establish local disaster risk management mechanisms. The people of Búzi have shown that climate-driven disasters and threats can be effectively met by concerted, decentralised community action and self-organisation at low cost.

"We realised that many lives could be saved with better capacity and structure for disaster management at all levels in the areas of prevention, preparation and response to such climate disasters."

Moisés Vicente Benessene, Director of the National Institute of Meteorology

the involvement of line ministries and local-level administrations that are key to implementing adaptation.

GTZ is working on a project to help enhance the capacity of policymakers to mainstream climate change issues into development planning. It provides assistance in assessing vulnerability to and the economic

making while awareness-raising requires there to be more aggregated knowledge. Improving institutional capacities for coordination is of particular importance at all levels.

### Migration as an adaptive response

At some point a region may become no longer capable of sustaining

circumstances are likely to increase poor people's vulnerability. National (and regional) adaptation strategies should therefore incorporate migration as an adaptation option – recognising, for instance, that people often live and keep their assets in more than one place. In this respect, development cooperation can help improve local government's capacity



Floods in Mutarara district, Mozambique, 2007.

EC/EC-HO/François Gocemans

impacts of climate risks as well as prioritising adaptation options in the water sector. The second focus is on cooperation between different institutions concerning adaptation. The assessment of impacts, vulnerabilities and adaptation options should lead to increased awareness and informed decision-making in water resource management and beyond. The integration of measures into development and financial planning should contribute to the sustainable management of public resources. And, finally, systematic priority setting should improve the efficiency of measures that reduce vulnerability to climate change.

Throughout the project, the importance of providing relevant information at different levels and to different stakeholders has become evident. In the water sector, detailed technical information is necessary to inform decision-

livelihoods. People will be forced to migrate to areas that present better opportunities. Generally, the international adaptation community tends to regard migration as an 'adaptation failure'. However, migration is (and has been for a long time) an adaptive response to climate stress in many areas.

Temporary migration, for example, in times of climate stress can help top up a family's income (from paid work elsewhere) and reduce the drain on local resources. In Botswana, for instance, many of the urban poor rely on livestock and farmland in rural home areas for food and income reserves. Yet, as non-residents in their home area, they are not entitled to drought relief and risk heavy losses without compensation in the event of failure of the rains.<sup>3</sup>

Policies attempting to limit migration while disregarding causes and

to address migration as an adaptation option and accommodate migration rather than attempting to limit it.

*Britta Heine (Britta.heine@gtz.de) works with the Climate Protection Programme for Developing Countries at GTZ head office in Eschborn, Germany (www.gtz.de/en). Lorenz Petersen (Lorenz.Petersen@gtz.de) is the Head of the Climate Protection Programme. For further information see www.gtz.de/climate.*

*See also: GTZ (2008): Climate Change and Security. Challenges for German Development Cooperation. Copies can be obtained electronically or as hard copies by writing to climate@gtz.de*

1. On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ)

2. www.inawater.com/

3. Tacoli, Cecilia (2007): 'Migration and adaptation to climate change', *Sustainable Development Opinion*, International Institute for Environment and Development www.iied.org/pubs/pdfs/17020IIED.pdf