## Box 3.3 Community-based disaster preparedness

Matasse is a rural community of some 2,000 people threatened by flooding from the nearby Save River. Last year, the Mozambique Red Cross (CVM) undertook a pilot project there in community-based disaster preparedness (CBDP) with support from the Danish Red Cross.

CVM emphasizes the importance of respecting local tradition and involving community members in data collection, risk mapping and planning, if such projects are to succeed. So, after making contact with the district authorities and local Red Cross committee, the team approached Matasse's headmen to explain the purpose of the proposed project. Community meetings followed to describe the project and recruit volunteers.

The community volunteers were then trained to analyse potential hazards and identify ways of preparing the community to save lives and secure livelihoods. Volunteer training also included first aid and methods of community education in HIV/AIDS and land-mine awareness.

This training was soon put to use in drawing up a history of disasters and a seasonal calendar of the area. The earliest disaster in the collective memory was flooding in 1939, followed by a pattern of drought and flood up to the present, including floods in 1999 and 2000. The disaster history also recorded how people coped in past disasters. The seasonal calendar indicated periods in the year when the population was most vulnerable to poverty and health risks.

The Red Cross team then led a transect walk with community members – literally walking in a straight line across the area at risk, visually identifying its physical features. On the basis of this, they mapped existing resources, infrastructure and possible risks and hazards, plotting details with a GPS (satellite-based global positioning system). Risk maps were then created using GIS (geographic information system) technology introduced by the Danish team members. The maps covered residential and farming areas and identified those most at risk from flooding, as well as the best places of refuge.

Community involvement in the project helped to identify a series of objectives relevant to the real situation in Matasse and the priorities of its population: planning of mitigation activities; recruitment and training of new volunteers; improvement of wells; participation in rescue training; and distribution of radios to improve early warning.

Priority mitigation activities include planting trees to halt erosion near the riverbank, and constructing a multi-purpose community hall in a secure location to serve as a store for pre-positioned relief stocks and household goods in the event of disaster. The hall would also serve as a community meeting centre.

Conscious that one organization or community alone cannot bear the burden of disaster preparedness, CVM is mobilizing support from other agencies for these activities. As a result, CARE is cooperating in the improvement of wells, the International Federation is helping with rescue training, and FEWSNET (Famine Early Warning System Network) is providing radios to Red Cross volunteers. ■

Conversely, a rapid changeover of staff risks reinventing the wheel. One failure during the 2001 floods was the inability to set up data collection and management mechanisms that would allow coordinators to make informed decisions on the allocation of resources. Non-governmental organizations (NGOs) and UN agencies were critical of the emergency team hired by the UN secretariat in Mozambique to staff its emergency coordination unit, which did not have enough knowledge of the 2000 operations. UNICEF's Caldwell said: "The database failed because too much information was being collected and it was too late. And the form for collecting information in assessments was changed without consultation." Some observers argue that the informal exchange of information during regular coordination meetings in the 2000 floods worked better than the more complicated data management system attempted by the UN in 2001.

Improved disaster preparedness requires drawing on a larger pool of people. Both floods showed how quickly local and provincial Mozambican officials moved to participate in rescue and relief, especially in organizing accommodation centres. Much could be done to improve their training. And more could be done through local mobilization. For example, while the INGC may be strong at national level, it lacks effective representation at provincial and local levels. Although it may not be practical to employ full-time staff at lower levels, existing civil servants could be given emergency responsibilities, additional training and even small pay top-ups when, for example, the president declares a state of emergency.

At the community level, the Mozambique Red Cross showed that people are prepared to volunteer and is committed to training volunteers for future disasters. "It is an investment that pays off," says CVM's Texeira. "During the 2001 floods in the Zambezi valley, I went to visit Sena district and found there a group of volunteers trained in the drought of 1992-93 who were working in the relief effort." Their training is simple and includes instruction in how to erect tents, organize a camp, register displaced people, assess needs, chlorinate water, build latrines, as well as carrying out first aid and boat rescues. The advantage of such broad community-based disaster preparedness training is that it can be applied to a range of different disasters (see Box 3.3).

## Mitigation measures

There is not scope within this chapter to examine the full range of structural and non-structural means of disaster mitigation in Mozambique – for example, an analysis of the effects of land use and river basin management on flooding. However, several mitigation measures currently being implemented in the region are worth mentioning.

During 2000, road embankments were seen to trap water and extend the duration of floods in the Limpopo valley. As a result, more gaps and bridges are now being built into the embankments to allow flood waters to pass underneath.

## Box 3.4 New homes and livelihoods reduce disaster risk

Luisa Fabião Macie has three grandchildren, but she's not sure of her age. One day, the secretary of her neighbourhood in the Incomati valley went round warning people that floods were on the way. Luisa was in the middle of packing up her belongings when the swirling flood took her by surprise and her packed belongings with it.

With her two children, Luisa spent two days in a tree. On the third day, a helicopter came to their rescue. "I'm not sure how I went inside the helicopter," said Luisa. "It all happened so fast, then suddenly I was inside and so were my children."

The floods which swept through the valley left thousands like Luisa homeless – often with only the clothes they wore when the torrent forced them to flee. They spent long months in temporary accommodation centres. Slowly, resettlement projects began to rehouse them. Every household made homeless is, in principle, eligible for a new home safe from the danger of floods. NGOs have helped establish these new rural residential neighbourhoods. So far, with floods still fresh in the memory, local officials have found no resistance to relocation.

Luisa now lives in Taninga, a resettlement area established last year above the Incomati valley, three kilometres from her old home. When the British NGO ActionAid began its resettlement project, Luisa qualified for a new house, one of hundreds now lined up in neat rows. Each house features cane walls, a wooden door, a corrugated zinc roof, and two windows complete with mosquito nets and shutters.

A new house was not the only change. Luisa now works in a project funded by ActionAid to introduce a new variety of sweet potato – one with orange flesh, indicating a high content of vitamin A. The NGO pays a group of women to cultivate the plants, and when enough are ready, they are distributed to small farmers in the surrounding area. Luisa has also branched out into trade. She uses the money earned from growing sweet potato to carry out small-scale trading in household items, such as sugar and salt.

This kind of resettlement, as well as ensuring families recover quickly from their ordeal, reduces the risks posed by future disasters. The new homes are not only more flood-resistant, but their mosquito nets protect inhabitants from malaria. And, crucially, investing in the livelihoods of the new community ensures that they remain in a safer area, rather than returning to the dangers of their old homes and land. Reducing the risks posed by flooding means not just building stronger houses, but also building stronger livelihoods, so that the most vulnerable can start to save money and protect themselves from future shocks. ■

Investment in flood-proofing vital public infrastructure such as health posts, schools and government offices pays off. Well-constructed clinics survived the floods with little damage, suggesting that present design standards for some government buildings are already adequate. Making a flood-proof community strong-house, in which to store valuable possessions, would also encourage more people to evacuate before flood waters carry them off.

Some NGOs are providing building materials to enable those who lost their homes to rebuild in a more flood-resistant way. In resettled communities such as Taninga, this structural mitigation is combined with non-structural initiatives such as reinvigorating small-scale trading and farming (see Box 3.4). Well-planned recovery can thereby create a virtuous spiral, which reduces the risks posed by future disasters.

Another non-structural mitigation measure, practised in neighbouring South Africa, is to create artificial small floods every few years by controlled releases of water from dams upstream. These minor floods serve two purposes: first, to flush out from river beds, banks and basins the silt, undergrowth and dead trees which otherwise obstruct the flow of a major flood and make it worse. Secondly, such controlled floods would encourage people to move their homes further away from the edges of river banks and create a greater, more continuous awareness among vulnerable communities of the dangers of flooding.

## Rhetoric/reality gap

The first step to improved disaster preparedness is better data, particularly on rainfall and river levels, and improved computer models to analyse that data. This would allow earlier and more accurate warnings. There is substantial donor rhetoric about improving warnings, but donors proved exceedingly reluctant to come up with the money. Of the money the Mozambique government requested simply to replace river and rain gauges destroyed by 2000's floods, donors promised just 15 per cent. It took more than a year to negotiate money for their replacement. This was despite the fact that in May 2000, donors pledged US$ 470 million in recovery and reconstruction aid. Other key works, such as repairing dykes before the next rainy season, were not possible because of the slow release of donor funds.

Once the disaster was over, donor agencies again pursued their own, rather than Mozambique's, priorities. So more money than Mozambique requested was offered in support of private farmers and for water and sanitation, while flood warnings and repairs of public buildings like town halls were not funded because they did not meet donor priorities. In some cases, it took months of negotiation to convince a donor to move away from priorities set at headquarters level, even when their own office in Mozambique admitted the need to change. While donors mouthed the rhetoric of "local empowerment" and "risk reduction", in reality Mozambique's ability to set disaster reduction priorities lost out.

Where donors do invest in disaster preparedness, the lack of coordination with the Mozambique government, or even with each other, has led to too many training seminars for already overworked civil servants. And with many civil servants forced to

take extra jobs in order to earn enough money to feed their families, it is not clear how much more can be demanded of them. So, although Mozambique has a serious skills shortage, the answer is not simply for aid agencies to run ever more training sessions which leave officials too little time to do their actual jobs.

Following 2001's floods, risk reduction did climb up the agenda somewhat. Finland, Germany, Ireland, Japan, the Netherlands, Russia and the United States supported disaster preparedness activities through the INGC and other institutions. However, the main donor to the INGC is Italy, whose pledge at the 2000 Rome conference was still tied up by bureaucracy in February 2002. "We need to see greater donor flexibility in using rehabilitation money to improve preparedness," argues Eva von Oelreich, head of the disaster preparedness department of the International Federation.

## Risk reduction undermined

Ultimately, the obstacle to most forms of disaster preparedness and mitigation in Mozambique is the acute lack of financial resources. Even keeping the early warning chain operational needs money to pay and train flood warning monitors, and to provide key coordinators with basic resources like bicycles, radio batteries and, possibly, mobile phones. Not large amounts of money, but it would mean an increase in government spending at a time when structural adjustment tightly caps the budget.

Mozambique's poverty reduction strategy paper (PARPA – Plano de Acção para a Redução da Pobreza Absoluta 2001-2005), led by the World Bank and the International Monetary Fund (IMF), keeps tight control on government spending. It calls for a cut, in real terms, in spending on "priority areas" for poverty reduction, from 19.4 per cent of gross domestic product in 2001 to 17 per cent in 2005. Faced with having to slash social spending, the Mozambique government has made the difficult decision to invest more in health while making cuts in education over the short term. In 2002, education spending is being cut by an incredible 12 per cent. No provision, for example, is made to train replacements for the nearly 900 teachers a year who may die of AIDS.

Under such severe spending limits, investment in comprehensive disaster preparedness and mitigation has lost out. The PARPA has a section on "Reducing vulnerability to natural disaster" but this simply says that natural disasters must be treated as a "risk factor" in forecasts of economic growth. It calls for the promotion of "a contingency plan for natural disasters" and for strengthening the capacity of the national meteorological institute. But no money is allocated for this. The plan calls for the establishment of a "flood warning management office", to be included in the category of "management of water resources". Yet spending in this category is to be

cut by a staggering 90 per cent to just one-tenth of its 2001 level, with the money instead diverted to urban water supply and sanitation.

Although the PARPA contains all the right words about reducing vulnerability, the limits on state spending which it imposes have effectively forced Mozambique to choose between investing either in disaster reduction initiatives such as flood management, or in more developmental initiatives, such as better health care nationwide, and water and sanitation in urban areas. Not having the money to invest in all these initiatives, Mozambique opted for more immediate gains for the sick and the urban poor. Yet, this state of affairs contradicts the World Bank's own purported aims, as Swedish development analyst Ian Christoplos points out: "The PARPA reduces the government's scope for spending on disaster risk reduction, despite the fact that the World Bank is preaching internationally that 'security' – including security from natural hazards – is one of the three pillars of poverty alleviation."

## Africans rescued Africans

Several compelling lessons about disaster preparedness emerge from Mozambique's two years of record floods:

- **Early warning needs trust.** Predicting the weather correctly is only half the battle. Many Mozambicans did not believe the warnings. To maintain the early warning chain from high-tech meteorology to low-tech reaction means involving trusted community members, such as teachers, in the warning process. Red Cross experience shows that disaster awareness and trust can be improved by involving the community in data collection, risk mapping and disaster planning.
- **Evacuate quicker.** Many left it too late to flee the floods, for fear of their possessions being looted or their livestock being killed. More lives could be saved by investing in flood-proof strong-houses and cattle pens, where possessions could be stored, and animals moved, in advance. Marking previous flood levels, evacuation routes and safe havens would help increase public disaster awareness and save lives.

  **Agency preparedness pays off.** Following predictions of heavy rain, Mozambique's relief agencies organized a major flood simulation exercise before disaster struck – ensuring they had experience in working together. They retrained volunteers and, with UN agencies, pre-positioned essential relief supplies. They concluded that contracting local companies to provide emergency supplies would discourage the corruption associated with stockpiling aid in warehouses. However, closer collaboration and planning are needed between the government and its emergency services, Red Cross, UN and NGOs to resolve procedures well before disaster strikes.

  **Coordination works when Mozambicans lead.** During 2000's floods, Mozambique's foreign minister led the response. And a joint UN/government

logistics centre situated within his disaster management office ensured that all civilian and military relief assets – whether foreign or domestic – were efficiently tasked. In 2001, government coordination was managed at a provincial level and proved less effective than in 2000. Building the government's capacity to coordinate disaster relief assets – at a provincial as well as central level – is a key disaster preparedness initiative.

**Africans rescued Africans.** During the rescue phases of both floods, around 53,000 Mozambicans were saved from drowning. Two-thirds of all those saved – 34,000 people – were rescued not by international teams but by Mozambique's own military and Red Cross. Counting the support of air forces from South Africa and Malawi, 96 per cent of all those saved were saved by regional assets. While international aid was crucial in supplying relief aid to survivors in resettlement centres, it arrived too late to play a major role in the rescue phase.

**Training volunteers works.** None of the above disaster preparedness measures have a chance of working unless the right people are trained for the job. During Mozambique's floods, Red Cross volunteers, trained in disaster response as long as a decade earlier, still remembered their skills and put them to use. Investment in training local people will pay off – they will be there for the next disaster, while many international relief staff will not.

**Gap between donor rhetoric and reality.** Donors mouth the language of risk reduction, but their words are not matched by the money needed to make it a reality. The IMF- and World Bank-led poverty reduction strategy, while promoting the idea of flood management, has, by limiting state spending, effectively forced Mozambique to choose between rural or urban risk reduction. Yet, until donors prioritize nationwide risk reduction as a key component of poverty reduction, disasters will continue to inflict loss of life, shatter livelihoods and undermine development.

Mozambique's response to two years of record floods was better than any outside agency believed possible. Many lessons were learned. However, the country's extreme poverty, combined with the unwillingness of donors to match risk reduction rhetoric with money and policy changes, make it very difficult for Mozambique to convert hard-won experience into more effective disaster preparedness.

*Frances Christie and Joseph Hanlon, journalists and authors of* Mozambique and the Great Flood of 2000 *(James Currey, Oxford, 2001) are the principal contributors to this chapter.*

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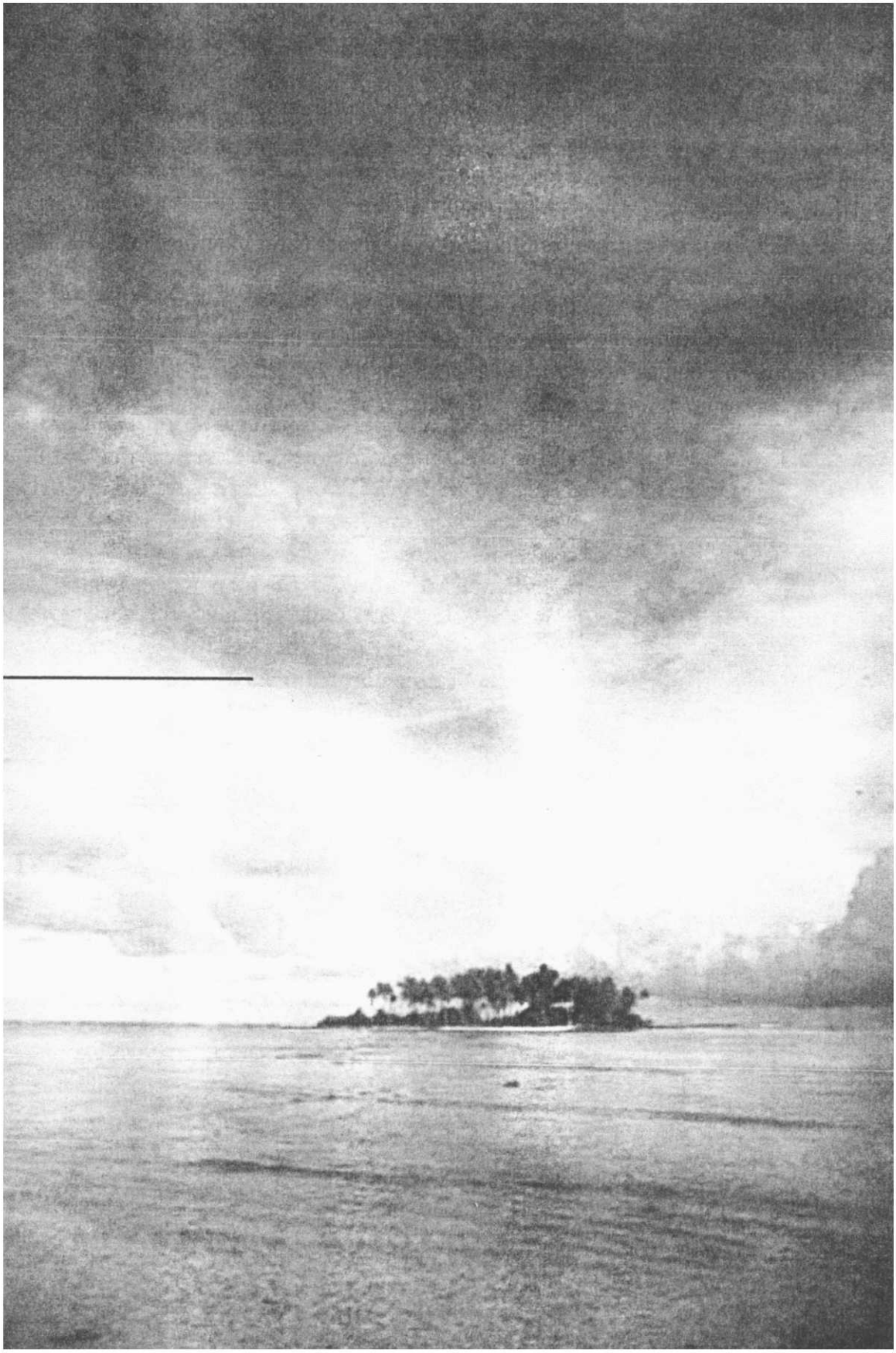

## Section One

## Focus on reducing risk