Disasters

"Poverty… plays a big role in keeping people vulnerable to disasters. And in the same fashion, disasters keep the poor in poverty by consistently wiping out the few resources they have."

World Bank, 2000

Development wasted: the great Mozambique flood disaster[69]

As rescue helicopters flew them to the safety of high ground, survivors of Mozambique's devastating floods of February 2000 looked out over the huge inland sea which covered once-prime farming land. Villages lay covered by silt and vegetation, a train track disappeared either side of an elevated bridge, and cattle waded knee-deep in water or huddled on tiny islands. After landing in Chibuto, a slightly elevated town spared the worst of the floods, the displaced people were taken to camps run by aid agencies. There, a fuel shortage in the town meant that two large water tanks at the main camp sat unfilled and just two toilets served 3,500 people. But longer-term problems loomed large.

A third of the country's crops had been destroyed; in some areas the loss was total. Roads and railway lines were wiped out, entire villages had disappeared, and hundreds of thousands of people were made homeless. But perhaps, more than damage to infrastructure, it was the long-term damage to livelihoods that was most devastating. Estimates put the figure close to 350,000 lost jobs, undermining, through the impact on households, the livelihoods of up to 1.5 million people.[70]

Years of development work in Mozambique, a country still recovering from years of war, were washed away by these floods. The worst in living memory, they followed unusually heavy rains over southern Africa and tropical storms that accompanied cyclones Connie and Eline. The Mozambique Government estimated that £65.5 million would be needed for reconstruction, including for water and sanitation, food aid, medicine and healthcare, shelter and housing, seeds and tools.

In Britain, other European nations and the US, millions of pounds are invested in reducing the risks associated with floods, earthquakes and droughts. Yet very little of international aid budgets gets spent on helping poor communities to do the same. To illustrate this, six months before the Mozambique flood disaster, the Government appealed to the international community for US$2.7 million to prepare for the impending crisis. It received less than half this amount. After the floods came, Mozambique received US$100 million in emergency assistance and a further US$450 million was pledged for rehabilitation.[71]

Living on the floodplain of the River Incomati

"I was first alerted to the danger by my son who had heard an urgent warning over the local radio station. But I refused to move, saying "Why should I go? I have been living here since 1937. This is the place where I was born. I'm not leaving!" So when the waters came in the middle of that night I was forced to flee my house and take refuge in a tree, where I was stranded with nothing to eat for four days. There were also many poisonous snakes in the tree as they had also climbed to escape the water. I saw many dead animals floating past. Eventually I was saved by helicopter and taken to a rescue centre."

"There was no food; we tried to make platforms in the trees for the children to sit on. Some people died, and some of the children fell into the water, only to be swept away. The adults could not swim after them – they had to sit and watch them float away." [72]

Disaster risk reduction

"Extreme climate events such as floods, strong winds, droughts and tidal waves" are the main threats to Africa from climate change according to the IPCC. Many African communities are already suffering from the effects of drought and increasingly unpredictable weather patterns.[73]

Enabling vulnerable communities to reduce the risks from climate-related disasters is crucial to positive development, a point not lost to African countries. Mozambique's Action Plan for the Reduction of Absolute Poverty 2001–2005 states: "*Natural disasters… constitute an obstacle to a definitive break with certain degrees and patterns of poverty. Therefore, measures aimed at managing these risks are of the utmost importance."* The environment action plan of the New Partnership for Africa's Development (NEPAD) observes, "*Natural disasters…cause considerable human suffering and economic damage in the continent."* And, governments agreed at the World Conference on Disaster Reduction in January 2005 that "*Disasters in Africa pose a major obstacle to the African continent's efforts to achieve sustainable development."*[74]

Reducing vulnerability to today's climate through disaster risk reduction is an excellent method of building adaptive capacity for the future uncertainties of global warming.

The ecology of disaster reduction

The 2001 *World Disasters Report* identified four themes key to helping countries recover from disasters:[75]

1. Investing in sustainable livelihoods increases the speed of recovery and reduces vulnerability of the poor to disasters. People's livelihoods are as important as physical defences.

2. Plugging the spending leaks by maximising local procurement ensures that post-disaster resources re-circulate within the local economy, rather than leaking out of it, and helps boost longer-term recovery.

3. Diversified local economies are best that maximise employment and respect economic, social and environmental priorities, and are more disaster resilient than agricultural or industrial monocultures.

4. The impacts of globalisation, in terms of trade and financial flows, as well as climate change, are draining the resources needed to deal with disasters from the least developed countries.

A lot can be learnt from the experience of places highly vulnerable to climate-driven disasters such as low-lying, small, island states. Understanding of how to reduce the impact of disasters is particularly advanced in the South Pacific region.[76] Research identified several factors as enhancing community ability to recover from 'natural' disasters. They include strong, extended family structures, strong local government, and building on traditional approaches to housing and farming. Economic diversity and financial mechanisms to spread losses were also vital (for example, insurance, disaster funds, community trust funds). A dynamic civil society is important along with good transport, communications, sanitation, good education and health services, coupled with disaster preparedness and emergency services.

Conversely the loss of such social and economic fabric hampers post-disaster recovery. A narrow economic base, over exploitation of natural resources, and loss of diversity provide the weakest foundations for recovery.[77]

In Africa, particular risk-reduction measures would include participatory vulnerability assessment, rainwater harvesting, grain banks, designing and improving evacuation routes and sites, famine and flood early warning systems, protecting community buildings in flood-prone areas, and community disaster preparedness training. Such measures prove highly effective in saving lives and livelihoods in vulnerable regions around the world. Importantly, many risk-reduction measures are low cost and are relatively simple to implement.

Plugging the leaks

Ensuring that post-disaster resources re-circulate within the local economy, rather than leaking out of it.

'Leaks' from the local economy	'Plugs' to stop the leaks
Aid staff use foreign-owned hotels and services	Ensure staff localise spending on services
Payments to foreign consultants and contractors	Support local NGOs and businesses
Purchase of foreign reconstruction materials and agricultural/medical inputs	Localise purchase of recovery materials and inputs
Crop and business losses	Introduce disaster insurance against crop and business losses
Profiteering and corruption	Work with governments, NGOs and communities to stop corruption
Economic markets lost to competitors during economic recovery	Provide small enterprises with flexible credit during recovery period
Long-term development aid redirected to disaster response	Ensure fresh funds for disaster recovery
Long-term commodity-price decline	Commodity-price support for primary commodity-dependent regions
Higher risk-related returns expected on investment	Ensure 'investment measures' are not undermined
Post-disaster flight of capital	Introduce controls in high-risk areas to prevent destabilising capital flight
Costs of flying aid in rather than procuring locally	Establish targets for local procurement
Local initiative and ownership of recovery undermined by donor-driven aid	Rebuild social economy through community-designed reconstruction

(Source: World Disasters Report 2001)

The best approach to reducing disaster risks in Africa is a systematic one, which becomes mainstreamed into relief and development planning. This protects programmes from being undermined by future hazards, and ensures that projects do not inadvertently increase vulnerability. As the UK's Department for International Development (DFID) observes: "Effective integration of disaster risk reduction into development will help transform 'vicious spirals' of failed development, risk accumulation and disaster losses into 'virtuous spirals' of development, risk reduction and effective disaster response. Gains include a wide range of positive impacts on progress towards MDG."[78]

Yet despite the clear rationale, donor organisations tend to approach disaster risk reduction on an ad-hoc basis, normally as a reaction to a major disaster, rather than systematically integrating it into their development planning and programming. This was the conclusion of extensive research on donor policy towards risk reduction.[79] Much progress needs to be made in donor organisations in terms of understanding, owning and prioritising risk reduction as an integral component of all activities within Africa.

The finding was confirmed by DFID in its recently commissioned study on the links between risk reduction, poverty and development.[80] "Disaster risk reduction has not so far received serious attention as a facet of development, despite the increasing seriousness of disaster impact." A core recommendation of DFID's study is that donors should "…establish and implement time-bound strategies for incorporating the reduction of risk from disasters as a central concern of development policy and programming as well as of humanitarian work, and for promoting and supporting a risk reduction agenda amongst their various development partners globally".[81]

Thousands of lives could be saved each year and economic losses prevented in Africa if more emphasis was placed on this issue. For example, in Mozambique a well co-ordinated community-based early warning system was put in place after the devastating floods in 2000. When another flood occurred a year later, the impact was significantly reduced. Disaster risk reduction can also be highly cost-effective. It has been estimated that for every $1 spent on preparing for disaster, a further $7 is saved in the cost of recovering from it.

There is a now a clear political mandate to invest in disaster risk reduction in Africa. At the World Summit on Sustainable Development (WSSD) in 2002, all governments agreed to "Provide financial and technical assistance to strengthen the capacities of African countries… including at the local level, for effective disaster management, including observation and early warning systems, assessments, prevention, preparedness, response and recovery."[82]

Low-cost ways to reduce vulnerability: disaster-resistant housing[83]

Floods are a normal part of life in much of Bangladesh, and typhoons in the Philippines. Various traditional housing techniques have been formulated to cope with this situation. ITDG worked with communities regularly affected by monsoon floods to develop a design for a flood-resistant house. It used available low-cost materials and local skills, and built on local skills and knowledge. The approach could readily be applied in other countries affected by floods and storms, like Mozambique.

Success depends on collaboration between local masons and carpenters and any outside experts. In Bangladesh, an improved attic to be used as living and storage space during times of floods resulted from contributions from the community on how to improve the housing design.

Poorer people cannot afford more water-resistant materials like corrugated metal, and have to suffice with thatched roofs, walls of woven grass or palm and bamboo. But, innovative methods can be applied, building on local traditional methods. Weaving, and joining bamboo and timber to form joists, results in a building that can withstand typhoon-force winds through its very flexibility, better than a rigid building of modern materials. Where the floodwater level is not normally too far above normal water level, houses can be built on raised earthen platforms.

Planting water-resistant plants and trees such as bamboo and banana next to homesteads helps to protect the houses from erosion. Food, household items and crops are stored on a platform in the main living room. An added benefit is that the structure using woven walls can be designed to be dismantled in the event of a severe flood forecast, and moved for re-erection on a new site or restoration after floodwaters subside.

It is not necessary to wait years for more research on climate change before investing in disaster risk reduction. Governments have agreed on the need for action, and tools and methods for protecting communities from disasters are well developed. Now they need to be employed immediately in African countries and communities on a much greater scale.

Lessons learnt from the Tsunami: coastal management to reduce the impact of hazardous climatic events

High death toll directly related to coastal 'development' for fisheries and tourism

Damage to Africa from the waves from the tsunami of 26 December 2004 was minimal compared to Asia, but there was a serious local impact in Puntland State, Somalia where the village of Hafun was devastated, many other villages damaged, over 1,000 homes destroyed and 2,400 fishing boats smashed, plus freshwater wells and reservoirs made unusable.[84]

Also, the tsunami was the result of an earthquake, not global warming, but the lessons about managing disasters apply to a warming world. Analysis of the places worst hit in Asia show that in many cases they had been developed for fish farming and tourism. In both cases, development required the destruction of the natural vegetation, and often resulted in the destruction of inshore coral reefs through over fishing or intensive use of motorised fishing vessels.

Tropical mangroves are amongst the world's most important ecosystems, providing a variety of goods and services to coastal communities and protecting inland areas from violent storms and tidal waves. They stabilise sediments, reduce shoreline and riverbank erosion, regulate flooding, and recycle nutrients. Mangroves provide a nursery area for three quarters of the commercial fish species that spend part of their life cycle in the mangrove swamps. Each acre of mangrove forest destroyed results in an estimated 300kg loss in marine harvest.

Despite these multiple benefits, shrimp farming in southeast Asia that displaces the mangroves has been encouraged, aided by World Bank loans, for the sake of earning foreign currency. The industry is eating away more than half of the world's mangroves. In Indonesia, at the time the tsunami struck, logging companies were busy axing mangroves in the Aceh provincefor exports to Malaysia and Singapore. The tourism boom in the Asia-Pacific region coincided with the growth in shrimp cultivation. What is being projected as an indicator of spectacular economic growth hides the enormous environmental, and ultimately human and economic costs that these countries have suffered.

Mangroves and coral reefs protect against storms and tsunamis

Myanmar and the Maldives suffered very much less from the impact of the tsunami because the tourism industry had so far not spread to the virgin mangroves and coral reefs surrounding the coastline. The large coral reef surrounding the islands of Maldives absorbed much of the tidal fury thereby restricting the human loss to a little over 100 dead. Mangroves help to protect offshore coral reefs by filtering out the silt flowing seawards from the land.[85]

The epicentre of the tsunami was close to Simeulue Island, in Indonesia. The death toll on this particular island was significantly low simply because the inhabitants had the traditional knowledge that a tsunami invariably happened after an earthquake and fled to higher ground in time. They also attribute minimal damage of their island and minimal loss of life to the protective belt of mangroves that surrounds their island and has not yet been destroyed.

Mangrove and coral reef restoration: cost-effective disaster prevention

The challenge, therefore, for developing countries is to learn from the time-tested approaches that have been perfected by the local communities. Fisherfolk have the expertise to be the primary managers of the health of the coastline and rehabilitate fisheries. When given the opportunity, they manage the shoreline, mangroves and coastal fishing zones – the source of most of the aquatic diversity and health of the oceans. The massive tsunami aid effort must work with such fisherfolk and support their organisations and use their expertise to ensure the restoration of their livelihoods, re-equipping them for sustainable artisanal fishing, and, in the long-term, rehabilitating the coastline and marine fisheries to protect them from future storms and floods likely to occur as a result of climate change.

The government of Kerala state, observing that the tsunami left less destruction in Indian regions protected by mangroves than barren and exposed beaches, has already started a project for insulating coasts with mangroves.