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Introduction

Building the capacity to bounce back

The face of disasters is changing. Soaring urban populations, environmental degradation, poverty and disease are compounding seasonal hazards such as droughts and floods to create situations of chronic adversity. Old ways of coping are proving inadequate. But equally, people at risk are finding new ways to respond on their own initiative.

Aid organizations must keep up. We need new approaches that boost people's resilience to the full spectrum of physical, social and economic adversities they face. By resilience, I mean people's ability to cope with crisis and bounce back stronger than before. If we fail to shift from short-term relief to longer-term support for communities in danger, we risk wasting our money and undermining the resilience we seek to enhance.

Top-down interventions may prove less effective than many assume. Following last December's devastating earthquake in Bam, 34 search-and-rescue teams from 27 countries flew to the city and saved 22 lives. Meanwhile, local Red Crescent teams pulled 157 people alive from the rubble, using far fewer 'sniffer' dogs. Investing in local response capacities saves lives and money.

However, 'natural' disasters are not the biggest killers. In sub-Saharan Africa last year, 2.2 million people died from HIV/AIDS, while 25 million live with the infection. Disease, drought, malnutrition, poor healthcare and poverty have together created a complex catastrophe, demanding a more integrated response than simply food aid or drugs.

Meanwhile, the unplanned acceleration of urban areas is concentrating new risks. Diseases from filthy water and sanitation kill over 2 million people a year – many of them slum children. So why have national governments and aid organizations barely addressed the issue?

The developed world faces new threats, too. Five degrees more summer heat than usual triggered a disaster that shamed modern, wealthy societies across Europe in 2003. Up to 35,000 elderly and vulnerable people suffered silent, lonely deaths, abandoned by state welfare systems in retreat.

Europe was caught off guard. Humanitarian organizations are more prepared for sudden-impact, high-profile disasters. But as the nature of disaster changes, we must change too. Instead of imposing definitions and solutions on people we consider vulnerable, we should ask them what they define as a disaster. How are they adapting to the new risks facing them?

The answers can be surprising – and inspiring. In Swaziland, HIV/AIDS and drought are conspiring to leave many perpetually hungry. But Chief Masilela informs us that his community wants irrigation and seeds – not food aid – so they can grow crops, craft their own recovery and retain their dignity. His government, meanwhile, is expanding access to life-lengthening drugs and recruiting 10,000 women as 'surrogate parents' for thousands of AIDS orphans.

Across the Indian Ocean in Mumbai, one woman we report on has rented out her comfortable apartment and moved into a shack beneath a bridge, at risk of flooding and fire. That way, she can pay for her daughter's education. She's decided the family's longterm resilience depends on investing in her daughter rather than living somewhere safer.

To the south, the low caste women of Andhra Pradesh have rediscovered indigenous, hardy seeds to help farmers recover from debt and despair as their cash crops – recommended by experts in distant capitals – wither in the drought.

The capacity for resilience in the face of adversity shines through all this year's stories. People continually adapt to crisis, coming up with creative solutions. They prioritise livelihoods and household assets rather than the quick fix. Supporting resilience means more than delivering relief or mitigating individual hazards. Local knowledge, skills, determination, livelihoods, cooperation, access to resources and representation are all vital factors enabling people to bounce back from disaster. This implies a paradigm shift in how we approach aid. We must focus on the priorities and capacities of those we seek to help.

Mapping vulnerabilities and meeting needs is no longer enough. The idea is not new – it's been enshrined in *The Code of Conduct for the International Red Cross and Red Crescent Movement and NGOs in Disaster Relief* for the past 10 years. So why do humanitarian organizations still fail to assess – let alone harness – the capacities of those at risk?

Three things need to happen. First, we must understand what enables people to cope with, recover from and adapt to the risks they face. Second, we must build our responses on the community's own priorities, knowledge and resources. Third, we must scale up community responses, by creating new coalitions with governments and advocating changes in policy and practice at all levels.

If we focus only on needs and vulnerabilities, we remain locked in the logic of repetitive responses that fail to nurture the capacities for resilience contained deep within every community. We have talked about building capacity and resilience for decades. It is now time to turn rhetoric into reality: to dispel the myth of the helpless victim and the infallible humanitarian, and to put disaster-affected people and their abilities at the centre of our work.

Markku Niskala
Secretary General

Section One

Focus on community resilience

Chapter 1

From risk to resilience – helping communities cope with crisis

International media tend to portray disaster-affected communities as helpless – saved only by outside aid. Yet beyond the headlines, survivors from Bam to New York have saved people with their bare hands, salvaged what was left and counselled each other. When all seems lost, the capacity of people to pull together and not give up is amazing and humbling.

In the last two decades, ‘resilience’ has become the buzzword to describe the capacity to survive, adapt and bounce back from crisis. Development aid has shifted towards people-centred approaches based on local capacities. What about the disaster community?

There is little analysis of how people survive disasters, and even less programming that builds on their coping strategies. This report advocates putting *resilience*, rather than just need or vulnerability, at the heart of the aid debate.

Rural development and famine studies of the 1970s and 1980s shifted their analysis from what people lacked towards what actions they took to survive crisis, what their priorities were and how to build on what was already there. In the field of disasters, most emphasis has remained on assessing needs, hazards and vulnerabilities – at the expense of analysing the strengths, skills and resources available within communities.

Despite best intentions, identifying what is missing in a crisis (needs, vulnerabilities) is more tempting and perhaps better rationalises the intervention than identifying what is already in place (capacities). But why hasn't disaster management been able to reorient itself over the last 20 years, despite rhetoric and policies to the contrary? The question now is: what is needed for that kind of shift to take place and what are the best examples of building on the strengths of disaster-affected communities?

The emphasis on identifying and building strengths represents a paradigm shift in approaching risk. In development, the sustainable livelihoods (SL) approach is an important framework that analyses the potential, competence and capacities – rather than weaknesses and needs – of communities. SL recognises a range of assets or ‘capitals’ as essential to sustain a livelihood: natural, financial, human, social and physical.

In the SL approach, disasters – including the capacity to resist their impact and bounce back – are part of a wider development framework. This is a significant change from the traditional risk reduction approach, which starts with hazards and risks, then looks for linkages with development.

Natural capital (water, land, forests, minerals) is essential for survival. Environmental degradation can increase the impact of floods and landslides, while equally, disasters such as wildfires, droughts and floods can cause serious damage to forests, farmland and livestock. Small-scale measures to increase environmental resilience include social forestry, fish-farming, drought-resistant crops and rainwater harvesting.

Financial assets (savings, income, credit) undoubtedly increase people's resilience to disasters and speed of recovery. Aid organisations are experimenting with post-disaster micro-finance, cash aid and income generation projects, instead of simply distributing relief items. However, cash alone doesn't protect people if the risks are not understood. Rich and poor alike suffered in the Bam earthquake. Rather than funding and implementing recovery projects themselves, many aid organisations now ensure affected villagers can access government compensation or soft loans to help them rebuild their homes and lives after disaster.

Human capital (knowledge, skills, health, education, physical ability) determine an individual's resilience more than any other asset. In Africa, HIV/AIDS is devastating human capital, by killing infected people and denying their children an education. However, programmes that improve knowledge of HIV/AIDS can prevent the disease's spread. In India, local knowledge of indigenous, hardy seeds has helped farmers recover from the loss of cash crops devastated by drought and pests. In Europe last summer, heatwaves killed up to 35,000 people. Yet basic knowledge – such as wrapping up in damp cloths or drinking enough cold water – could greatly boost resilience during heatwaves.

Social capital (reciprocity, affiliations, trust) includes networks that provide informal safety nets during difficult times and help people access resources urgently needed after disaster, such as credit or labour. The most resilient communities are those which work together towards a common aim. Groups of similar class, ethnicity, livelihood or wealth are more likely to cooperate in building resilience than divided communities. Creating community consensus is as valuable as building physical infrastructure. Elderly people in close social contact with their friends and neighbours are more likely to survive heatwaves, as their vulnerability is recognized earlier, while those people 'invisible' to society – often in cities – suffer most.

Physical capital comprises adequate shelter, buildings, water and sanitation, tools, transport, energy and communications. 'Lifeline' infrastructure in at-risk areas, such as hospitals, offices, emergency headquarters, schools and cyclone shelters, must be disaster-proof – serving both a protective and symbolic function.

Understanding how communities work is vital for strengthening capacities to cope. Often, communities are as rife with interest, power and division as any market, corporation or government. Power relations and inequalities must be understood. In southern Africa, for example, the impacts of HIV/AIDS are aggravated by people neglecting or abusing their own family members.

Sometimes it takes the wider 'community' of outsiders to break down barriers to change which keep communities vulnerable. Outside organisations can be *catalysts* for creating resilience by building awareness and consensus for action. However, programmes that do not aim to enhance social status may reinforce the position of those already in power.

Enhancing local resilience to risks is a responsibility for all aid actors. If we cannot understand these capacities and build on them, we perpetuate the idea that 'we know best' and that only 'risk' matters. We thereby ignore the most important resource for managing disasters: people's own strategies to cope and adapt. Six conclusions can be drawn:

- Systematic assessment of what enables people to cope with, recover from and adapt to risks and adversities – at household and community level – is badly needed.
- Strengthening social capital should be the key objective of disaster interventions, whether in relief, recovery or risk reduction – rather than a by-product.
- People-centred approaches to development provide models that can improve humanitarian aid and disaster risk management.
- New institutional strategies and cross-sectoral coalitions are required to boost the resilience of local livelihoods in the face of multi-dimensional risks.
- Good governance is essential to create the environment in which more resilient communities can thrive.
- Scaling up strategies based on the aspirations and capacities of people at risk remains the greatest challenge.

BOX

Tuti islanders fight floods together

Tuti is a highly flood-prone island on the River Nile in Sudan's capital, Khartoum. Around 15,000 residents live on the 8km² island, including farmers, businessmen and government employees. Residents have a strong sense of community identity and independence.

Repeated floods have engulfed parts of the island over the years. To protect themselves, islanders elevate the walls and entrances to their homes. They plaster external walls to make them waterproof. They join forces to shore up the riverbanks with sand bags and tree saplings.

When the flood season approaches, local leaders set up a flood control committee in charge of contingency planning, coordinating emergency operations and providing material assistance. Sub-committees deal with aid disbursement, communications, coordination, food supplies, health and finance. Volunteers run all these committees.

As river levels rise, the flood committee coordinates 24-hour river patrols. Residents heap up sandbags along the shore. Youth teams distribute hoes, shovels and sackcloth for sandbags to the most vulnerable areas. When the Nile threatens to break through the defences, river patrol volunteers use drums and the mosque's megaphone to warn the population. If parts of the island flood, local Red Crescent volunteers organise search and rescue, provide first aid, conduct disease surveillance and distribute drinking water.

Those with flooded homes seek shelter with family members on higher ground. Others seek refuge in the mosque and primary school. Homes and public buildings are often rebuilt through collective action.

Using inventive, well-organised coping mechanisms, the people of Tuti have managed to withstand the major floods in Sudan's recent history without suffering major casualties – and with a minimum of external assistance.

Principal contributor was Yasemin Aysan, independent analyst of humanitarian and development issues, with additional contributions from Terry Cannon, co-author of At Risk: Natural hazards, people's vulnerability and disasters, and Jonathan Walter, editor of the World Disasters Report. The box was contributed by Bruno Haghebaert, Senior Officer, ProVention Consortium Secretariat.

Section One

Focus on community resilience

Chapter 2

Heatwaves: the developed world's hidden disaster

During August 2003, between 22,000 and 35,000 people died due to a heatwave across Europe. Economic losses totalled over US\$ 13 billion. Why were authorities and communities so poorly prepared? What can be done to support those most at risk?

Europe is not alone. Heatwaves kill more people in the United States than hurricanes, tornadoes, earthquakes and floods combined. Yet heatwaves are not a typical natural hazard, inflicting instantly recognisable damage. Few people are aware of the dangers. Heatwaves trigger silent disasters, which explains why most governments fail to raise the alarm in time. Those who suffer are the elderly and marginalized.

Heatwaves have been missing from disaster and public health policies, despite mounting death tolls. Why? Studies of human perceptions of risk reveal that sudden, high profile disasters such as earthquakes evoke greater dread than road accidents, despite evidence that more people die in road accidents than earthquakes. The higher the 'dread factor', the more people want action to reduce those risks. Yet this can divert limited resources towards reducing perceived, but infrequent, risks rather than addressing more urgent social problems. The challenge for health professionals and disaster specialists is to raise public awareness of the potential harm caused by extreme temperatures.

Summer 2003 was Europe's hottest for at least 500 years. The average temperature was 3.5 degrees Celsius above normal. Swiss scientists estimate that summer temperatures in Europe will be around 4.6 degrees higher by 2100. The World Meteorological Organization believes that, in the US alone, annual heat-related deaths could more than double by 2020.

However, projected increases in temperature *variability* may prove more damaging than a simple rise in average temperatures. Sudden variations can be more deadly than sustained heat, as the human body needs time to acclimatise. In extreme heat, the body cools itself by circulating blood to the skin and perspiring. The heart works harder, putting it and other vital organs at risk. The cooling-off period after sunset usually allows the body to recuperate. But at the height of Europe's heatwave, night temperatures didn't drop below 30 degrees – setting in motion the catastrophe.

Heatwaves are primarily an urban disaster – cities can be 5-6 degrees warmer than rural areas. In summer 2003, death rates in Paris were 130 per cent higher than in summer 2002, compared to a 20 per cent rise in rural regions. Planting grass roofs on industrial buildings is one idea. But deaths from heatwaves are more a function of social exclusion than of climate change or physical structures. During Chicago's 1995 heatwave, one poor neighbourhood, full of violence and abandoned buildings, had a death rate 10 times more than that of a similar area nearby with a more active street life, which drew people out of their homes and made them more visible.

The elderly in urban areas are worst affected. They may already suffer from cardio-vascular disease – which heatwaves exacerbate. They are often out of sight and less able to call for help. In France, 70 per cent of heatwave deaths last year were among the over-75s. The UN estimates that globally, the number of older persons (60 years or over) will triple to almost two billion by 2050. Europe – home to the world's largest aged population – is particularly threatened, as more, worse heatwaves are predicted. In France in 2003, two thirds of heatwave victims died in hospitals, private health care institutions and retirement homes. In Chicago in 1995, most died alone, locked in their apartments, forgotten by family, friends and neighbours. Both disasters signified a catastrophic failure in the care and treatment of the elderly.

The 2003 death toll caused public uproar in France. Journalists criticised the national habit of taking holidays *en masse* during August, which left public services poorly equipped to deal with disaster. Health professionals argued that the problem was an under-funded, understaffed elderly care system in crisis, combined with a national habit of shutting senior citizens out of sight and mind. Less people died in southern European countries, mainly because the elderly there are more integrated into daily family life. The marginalization and poverty of the elderly are the root causes of disaster – extreme temperatures are simply the natural trigger.

Government officials rarely react well to heatwaves. Chicago's Mayor said that 1995's heatwave was blown out of proportion. France's health minister claimed the 2003 heatwave was "well managed by the health ministry". But a parliamentary commission concluded that poor political management had contributed to the disaster. Throughout central Europe, state welfare systems have traditionally provided social and medical protection. But as economies stagnate and the proportion of ageing non-taxpayers increases, these systems become increasingly unsustainable.

Specialists agree that preparedness plans should involve multiple partners, including city managers, public health and social services workers, and emergency medical officers. But practical preparedness must be complemented by a fundamental change in attitudes towards the elderly.

Individuals can take measures to protect themselves, such as arranging a time to phone a friend each day, wrapping up in cold wet towels, avoiding exercise and drinking enough liquids. However, where elderly people are too weak or poorly informed to prepare, the community (e.g. family, friends, public health authorities, elderly-care professionals) must intervene to ensure their safety.

Early warning is essential, and heatwaves can be predicted three days in advance. The US city of Philadelphia saved 117 people during heatwaves from 1995 to 1998, by:

- Using mass media to encourage friends and neighbours to visit elderly people daily.
- Activating a telephone hotline to provide information and counselling.
- Organising visits by health authorities to people requiring attention.
- Informing care homes of a high-risk heat situation.
- Increasing fire department and hospital emergency staffing.
- Implementing daytime outreach services to homeless people.

When heatwaves become human-made disasters, it is time for the world's richest countries to reconsider their policies and values. As governments struggle to balance shrinking health

budgets with rising costs for elderly care, the politics of ageing are becoming a global concern. The heatwave of 2003 highlighted what happens when the problem is ignored.

BOX

Heat waves: facts at a glance

Deaths from Europe's 2003 heat wave (heatstroke and excess mortality):

	WHO	EPI
France:	14,802	14,802
Germany:	-	7,000
Spain	59*	4,230
Italy:	3,134	4,175
Portugal:	2,106	1,316
England and Wales:	2,045	2,045
Netherlands:	-	1,400
Belgium	-	150
<i>Totals:</i>	<i>22,146</i>	<i>35,118</i>

**According to WHO, more than 6,000 excess deaths were informally reported during the heat wave in Spain, but only 59 were accepted as being caused by the heat wave.*

Sources: World Health Organization, 2004; Earth Policy Institute, 2003

Jean Milligan, a freelance writer specializing in humanitarian and development issues, was the major contributor to this chapter. The box is contributed by Jonathan Walter, editor of the World Disasters Report.

Section One

Focus on community resilience

Chapter 3

Harnessing Local Capacities in rural India

Between 1994 and 2003, disasters – both 'natural' and technological – claimed 68,671 Indian lives, affected an average of 68 million people every year, and cost US\$1.9 billion annually in direct economic damage. This toll is worse than for the previous decade, so the task of supporting the resilience of Indian communities to disasters has never been more urgent. Resilience means the capacity to mitigate, prepare for, respond to and recover from the impacts of disaster – in a way which leaves communities stronger than before. This chapter presents three case studies illustrating ways of enhancing community resilience.

Our first study, which focuses on Samiapalli village in the disaster-prone state of Orissa, reveals how prioritising risk reduction before disaster strikes pays dividends in the future. During the 1990s, with the help of a local NGO, villagers embarked on a long process of development, one element of which was to construct disaster-proof homes. When the supercyclone of October 1999 struck the village, these houses saved both lives and livelihoods, while tens of thousands of people in weaker homes perished around them.

Our second study highlights the plight of subsistence farmers in the drought-stricken, semi-arid Zaheerabad region of Andhra Pradesh. Since at least the mid-1990s, the area has been suffering an ongoing disaster of chronic food insecurity, driven by drought and the failure of pest-prone cash crops such as wheat, rice and cotton. An estimated 4,000 to 5,000 debt-ridden farmers have committed suicide in the past 6 years. However, inspired by a local development agency, some of the state's poorest and most marginalized communities have rediscovered traditional, drought-proof seeds and farming techniques in a bid for self-sufficiency. This initiative has now spread to 65 villages.

Our third study describes how, following the devastating earthquake of 2001, villagers from Patanka in Gujarat state rebuilt their homes stronger than before, with the help of a partnership of local and international aid organisations. Farmers, left unemployed by three years of intense drought, retrained as masons and helped build earthquake-resistant houses for every family in the village. Building on the success of this initiative, villagers were able to access government funds to create a new rainwater-harvesting system to improve both their health and crop yields.

While each case study is unique, some common obstacles, principles and success factors emerge. The role of aid organisations is that of *catalyst* for a community-led process of self-transformation from vulnerability to resilience. Some villagers proved hostile to change and had to be won over through a process of consensus-building. The ideas, resources and motivation to increase resilience to disaster are often there within the community, but lie hidden or unrecognised. The challenge for aid organisations is to create the right environment within which these local resources can flourish. That may mean helping improve the confidence and status of more marginalized groups. Or connecting villagers with the financial and technical resources needed to help realise their plans.

A balance had to be struck between building on existing knowledge and finding acceptance for the benefits of new ideas and practices. Low levels of literacy and lack of exposure to alternative practices made this harder. Many of the villagers with most initiative had already left their communities to seek a better life elsewhere.

Within every community there were conflicting perspectives – particularly around the tension between today's immediate needs (enough to eat, saving money) and longer-term issues of protection from risk (clean water, safer homes). Reaching consensus over joint community action often took many months. Having achieved agreement, meeting the rising expectations of villagers (and their neighbours) then became a major challenge.

Meanwhile, to have any impact, individual projects must be linked to wider processes of creating resilience and reducing risk. In this respect, successful, locally-led initiatives are more likely to be replicated elsewhere than top-down projects imposed and funded by external agencies.

But first of all, any organisation arriving from 'outside' must recognise that their presence may destabilise the existing balance of power in the community. Including the powerful – so as not to alienate them – while boosting the capacities of those less powerful, is a delicate balancing act. So finding the right entry-point is essential – an approach which builds community-wide trust and meets the real needs of those at risk. Whatever that entry-point is – whether improving water and sanitation or building disaster-proof homes – long-term success seems to depend on including the entire village community in the process. This can be challenging, if the community is divided along ethnic or caste lines.

Similarly, the process of enhancing resilience cannot limit itself to one particular hazard. Each community we analyse is prone to a range of different natural hazards – as well as the chronic risks of disease, food insecurity and poverty. A multi-dimensional approach, which strengthens livelihoods and skills as much as it strengthens physical infrastructure, is essential.

For this reason, the only sustainable way to boost resilience is to integrate disaster risk reduction within the wider development process. Such an approach mirrors the outlook of vulnerable people, who are often more concerned about reducing chronic, long-term risks like poverty or ill health, than they are about mitigating one-off disasters. This approach also entails working in cooperation with local government wherever possible. Sometimes, initiatives started at a local level are so good that the government will pick them up and apply them elsewhere.

Ten principles are common to the success of the case studies we present:

1. Find the right entry point into the community.
2. Create community consensus.
3. Build on local skills and knowledge.
4. Empower women.
5. Facilitate rather than fund – external agencies as catalysts.
6. Provide tangible results to establish authority for future projects.
7. Strengthen local livelihoods.
8. Find ways of replicating resilience beyond single communities.
9. Software as important as hardware.

10. Integrate risk reduction with development.

Above all, our case studies illustrate that success is based on a people-centred approach, building on existing knowledge and resourcefulness, and upgrading the skills and status of those at risk, so they can cope with and recover from the full range of hazards which confront them.

BOX

Scaling up disaster resilience beyond the community

Building disaster resilience at community level is only a start. The challenge is to scale up micro-level initiatives to the point where the policies and practices of government are influenced. Following 1999's supercyclone in Orissa, CASA (an Indian NGO) realised that development work could prove futile without appropriate disaster mitigation. So they set up a centre to train villagers and local NGOs in disaster awareness, formation of disaster mitigation task forces (DMTFs), capacity building, income generation, mitigation measures, advocacy and gathering data.

Newly trained participants return to their villages to set up DMTFs, which in turn train villagers in disaster preparedness and response. The DMTFs create a disaster fund, with community contributions, to purchase emergency stores and equipment. And they ensure that cyclone shelters constructed by CASA are well maintained and used throughout the year.

In 2002-03, CASA's centre trained 380 participants covering 70 villages. Commitment to the DMTFs is strong. During 2003's floods, task force members played a key role in sandbagging embankments, rescuing stranded people, administering first aid and managing cyclone shelters.

Building on success in Orissa, CASA has promoted DMTFs in 110 villages in neighbouring West Bengal. And DMTFs now form an important part of community-based disaster management initiatives implemented by the United Nations Development Programme in 1,603 villages across Orissa. According to a recent assessment: "The [UNDP] project has been successful in putting disaster preparedness on the agenda of local government."

Principal contributors to this chapter and box were Mary Todd and Tom Palakudiyil. Todd was formerly responsible for disaster mitigation and preparedness in Christian Aid's emergencies team. She now works as an independent consultant on disaster risk reduction and management. Tom Palakudiyil is Christian Aid's regional manager for south Asia, managing programmes in Bangladesh, India and Sri Lanka.

Section One

Focus on community resilience

Chapter 4

Bam sends warning to reduce future earthquake risks

It took just twelve seconds, at dawn on 26 December 2003, to annihilate a city. Of the 120,000 inhabitants of Bam, between 30,000 and 40,000 were killed. Another 30,000 were injured. Practically all the survivors were left homeless, as 85 percent of the city's buildings collapsed. Economic damage totalled US\$ 1.5 billion. How did the survivors of Bam cope and what lessons can be drawn?

Several factors combined to crush the city. The earthquake was Iran's shallowest ever, creating enormous impact. It hit on a Friday morning, when most people were asleep. Traditional mud brick buildings crumbled, suffocating those inside. Bam's municipal offices, hospitals, schools and central bank – all under 30 years old – were badly damaged or destroyed. Rich and poor alike suffered. Some buildings survived – including the Iranian Red Crescent's youth centre and all of Bam's mosques.

Earthquakes cannot be predicted, although some fled for their lives after three small tremors that preceded the disaster. However, the existence of an active fault next to Bam was well-known and shown on the maps. Why was nothing done to protect the city – at least its hospitals? Since the mud brick citadel had been standing for 2,000 years, many thought disaster would never strike. Yet between 143,000-178,000 Iranians have died in 19 major earthquakes since 1909.

Building well costs more, but spending money is no guarantee of safety. Many of Bam's luxury buildings lie in ruins. Although Iran adopted a seismic building code in 1989, legislation is often not applied. To house a soaring population, Iran has been gripped by a lucrative building boom. Sources claim that inspectors, sent to certify new buildings as conforming to earthquake norms, are often paid off by developers without conducting a thorough inspection. Iran's building code holds engineers responsible, but prosecutions of individuals are almost non-existent. There are no laws against negligent municipalities which fail to retrofit infrastructure. Iran's highly centralized government has the capability to enforce building codes, fight corruption and spread disaster awareness. So why weren't more measures taken to reduce the risk?

Two hours after the quake, the first Iranian Red Crescent (IRCS) teams arrived. The army followed. Around 10,000 seriously injured people were evacuated. Iranian authorities launched an appeal for international aid and waived visa requirements for foreign aid workers – unprecedented decisions. But while 34 international search and rescue teams flew in and found 22 people alive, local Red Crescent teams saved 157 lives with just 10 sniffer dogs. Neighbours saved hundreds more. In total, 1,800 aid workers arrived from 44 countries. Some things went wrong. Thousands of victims were too hastily buried. Competition between the army and Red Crescent flared. The director for disaster response lacked sufficient authority.

The IRCS divided Bam into 13 sectors, each 'sponsored' by an Iranian province, which would send Red Crescent members, officials, medical staff, engineers and imams to take control and

offer practical relief. Local 'notables' or 'white beards' helped organise the community. The sponsorship system attracted considerable aid, but had its disadvantages too: problems with coordination, inequality of aid between sectors, and the rotation of Bam's 13 sectors between Iran's 28 provinces, which hampered 'municipal memory'.

The government estimates that 25,000 people will need long-term psychological support. The IRCS dispatched 85 trained psychosocial volunteers the day after the quake. They play with the children and listen to the women, giving them basic toiletries and simple advice. Social links (between families, friends and neighbours) are particularly strong: by late January, 90 per cent of the 1,850 children orphaned by the disaster had been taken in by extended families. The Red Crescent and NGOs are providing women with sewing-machines, material and bread-baking ovens, to help them recover their self-esteem and livelihoods.

The US\$ 1 billion reconstruction task is daunting. Irrigation systems have been seriously damaged, jeopardising valuable date and citrus fruit plantations. Only the rebuilding of the citadel can resurrect tourism. The surrounding countryside has been seriously affected, as the city was its main market and provided jobs for 250 villages. Within a month, aid organisations started providing locals with 'cash for work' or cash vouchers, rather than relief items – helping stimulate the local economy. In May 2004, the World Bank proposed a US\$ 300 million loan for reconstruction, of which US\$ 42 million is earmarked for economic recovery.

Will Bam rise again more resilient than before? Involving local people will be crucial. In March, consultations entitled “The Bam we want” began with affected communities, local NGOs and the private sector. Two key areas are being addressed: training in sound building practices and promoting public awareness of disasters. The World Bank will target US\$ 140 million of its loan at rebuilding homes and offices "with improved standards and less vulnerability to future earthquakes" – plus US\$ 15 million to retrofit essential infrastructure. The IRCS, through its provincial branches, provides young Iranians in almost every school and university with courses in disaster awareness and preparedness. The programme has already reached three million Iranians – their aim now is to train one person per family.

Bam will probably be rebuilt, as promised by President Khatami, "stronger than before". The money is there – in 2003, Iran's GDP was US\$ 135 billion. But according to Tehran's earthquake institute, there are 24 large Iranian cities exposed to “immediate” or “important” risk. A major quake in Tehran could kill 700,000 people. Key measures at national level to reduce disaster risk include: reinforcing existing public infrastructure; reforming the construction industry; implementing a disaster insurance scheme; and strengthening Iran's national disaster management system.

Much can be achieved at local level too. The knowledge, expertise and resources exist to make Iran more earthquake-safe. But the sense of urgency needed to overturn 'development as usual' has been missing. Key measures to build community resilience include:

- Invest in the public's awareness of disaster risks and mitigation options.
- Promote community values of safety and responsibility among local construction companies and political leaders.
- Engage traditional neighbourhood networks in disaster preparedness and mitigation.
- Invest in local search and rescue.
- Strengthen local disaster preparedness and response within at-risk neighbourhoods.
- Support local livelihoods.
- Develop long-term partnerships between domestic and international aid agencies.

BOX

Iranian sniffer dogs save more lives

In 1990, during Iran's deadly Gilan earthquake, foreign search and rescue dog teams caused problems, as dogs are considered impure in Islam. But 13 years later, in Bam, Iranian Red Crescent (IRCS) teams were at work with sniffer dogs less than five hours after disaster struck, and hardly anyone objected. They saved around 157 lives – seven times the number saved by international teams.

Between Gilan and Bam came a remarkable change in attitudes, started by chance: “In 2000, one of our chairpersons donated us eight German shepherd dogs”, recalls the IRCS's Farshid Towfighi. “We immediately thought it would be an excellent opportunity to reinforce our own capacity in search and rescue operations. In a country that is as vulnerable to disasters as Iran, this makes much more sense than relying on outside help.”

The German Red Cross was asked to train the Iranian teams over two years. In parallel, the IRCS advocated the idea with the Supreme Islamic Council, which declared that working with dogs was acceptable in the interests of saving human lives. From then on, the Red Crescent's president stood alongside a sniffer dog when attending public events.

“We now have 20 teams and would like to further strengthen our capacity in the future”, says Towfighi. A six-day search and rescue mission from Europe to Iran (six people with five dogs) costs at least US\$ 50,000. The same amount provides a two-year training programme for three Iranian dogs and their handlers. They can intervene hours rather than days after a disaster. And they are in the country to stay.

Iolanda Jaquement, an independent journalist presently based in Jakarta, Indonesia was principal contributor to this chapter. The Box is contributed by Iolanda Jaquement and Gert Venghaus, the German Red Cross's head of international disaster relief.

Section One

Focus on community resilience

Chapter 5

Building community resilience to disaster in the Philippines

Landslides across southern Philippines in December 2003 killed 200 people and left thousands homeless, reigniting the disaster prevention debate. From 1971 to 2000, 'natural' disasters killed 34,000 Filipinos. From 1990 to 2000, 35 million people were severely affected by natural disasters. Can community-based disaster preparedness (CBDP) help strengthen the resilience of Filipinos to natural hazards? What are CBDP's pitfalls and advantages?

Disaster data fail to capture the full extent of damage inflicted by smaller, recurrent hazards such as typhoons, which strike once a month during the storm season. Typhoons bring high winds and heavy rainfall, which destroy crops, livestock and property, eroding soils and littering farmland with silt and stones. Farmers and agricultural labourers suffer most. Flood debris must be cleared before replanting. And the change in cropping seasons can lead to further damage from floods, droughts or pests. Demand for agricultural labour drops as small farmers economise. Typhoon damage discourages farmers from investing in improving their plantations.

Recurrent disasters frequently destroy poor quality housing, cause outbreaks of disease and create shortages of food and medicine, driving up prices. Many people can't afford to invest in recovery, as income-earning opportunities are scarce following disaster. Disaster impacts aggravate pre-existing poverty, creating a downward spiral of vulnerability, arresting development.

Since 1994, the Philippines Red Cross (PNRC) has shifted from disaster response to community disaster preparedness. Projects identify villages prone to typhoons, then train volunteers in disaster preparedness (DP). Village officials and DP trainees are encouraged to produce disaster action plans, which lead to small mitigation measures such as: mangrove and tree planting, seawall and river dike construction, clearing irrigation channels, sand-bagging sections of rivers, and building evacuation centres. Initiatives are planned with the participation of community members and local government units (LGUs). LGUs help meet the costs or technical requirements.

While, physical mitigation measures help protect lives and property, the PNRC sees the main value of CBDP in the *process* by which it is implemented. Concrete project outputs have symbolic value, illustrating the achievements of villagers. Participating in CBDP increases local knowledge and skills. Implementing projects raises awareness of what can be done locally. And CBDP helps consolidate links between communities, the Red Cross and government officials. Reactions have been positive. In Leyte, one volunteer described how the training helped him become “convinced of the power that individual DP volunteers and community members have” to change their situation.

However, there are difficulties associated with CBDP:

- *Projects focus on short-term outputs, rather than long-term outcomes*, due to funding constraints and pressure to provide quick evidence of project success.

- *CBDP can be a burden*, requiring participants to sacrifice time, energy and other job opportunities.
- *Several factors compromise sustainability*. Some volunteers migrate in search of employment within months of their DP training. Others forget their training if it isn't applied.
- *Mitigation structures don't adequately address livelihoods*. The hazard-based approach fails to focus on factors underlying vulnerability – leading to 'event-centric' mitigation.
- *CBDP can be disempowering, by raising expectations without increasing local capacity to address root causes of vulnerability*. Participants may be steered away from linking DP to bigger, politically contentious issues that drive vulnerability. Politicians may use CBDP to avoid responsibility for reducing vulnerability.

Clearer assessments of the factors creating vulnerability (and resilience) to disaster could lead to better interventions and advocacy. Filipinos are vulnerable to disasters for three reasons. First, their livelihoods are vulnerable, due to shortage of jobs, low wages, declining natural resources, decreasing profitability of rice farming and inequitable tenancy arrangements. Second, patterns of natural resource use are changing, as urban development and commercial quarrying and logging degrade the environment. Third, people are poor and marginalized, making it difficult for them to access resources such as development loans or land.

Equally important is understanding how local people cope with and recover from disaster, and how different groups have different needs and capacities. During crises, many households eat cheaper home-grown produce such as bananas and root crops, rather than more valuable rice and fish. They call on family and friends for financial support or help finding work. They diversify their livelihoods – sometimes finding work abroad. They get involved in local cooperatives which offer low-cost goods, savings schemes and loans for micro-enterprise – as well as affordable credit in times of crisis.

For CBDP initiatives to have an impact on reducing vulnerability, they must be positioned within wider development planning. However, the divide between disaster management and development is very real for donors, NGOs and government agencies. For example, the donor to a PNRC project in Benguet province prematurely cut back support, after concluding that the project's income-generation elements were not sufficiently focused on disaster mitigation. However, local participants considered these initiatives valid because they addressed wider aspects of vulnerability. Unfortunately, funding for livelihoods-based initiatives in a CBDP context remains scarce – due to the relatively high expense of livelihoods projects compared to DP and because donors want to maintain the disaster/development divide.

The challenge for humanitarian organisations is to avoid imposing on communities a pre-conceived agenda of physical mitigation measures, to be completed within donor-driven timelines. Only a careful analysis of both the hazards *and* the social, political and economic reasons underlying resilience and vulnerability can provide the basis for framing the right interventions. Such an analysis will raise far more problems (and expectations) than any single organisation can solve. So humanitarian organisations must cooperate with other agents, from local to international levels, with expertise in different sectors.

CBDP does not provide a complete solution, but it can play an important role in enabling local communities to protect themselves from disaster. Some recommendations for humanitarian actors:

- Analyse the root causes of vulnerability to disaster.

- Understand the strengths of local livelihoods and capacities.
- Listen to community perspectives and priorities.
- Include other actors to share the burden of risk reduction.
- Advocate around issues that the community itself cannot tackle.
- Advocate the integration of risk reduction into development planning.

BOX

Integrating disaster resilience and development

The Philippines' government has combined disaster reduction with livelihood-centred objectives in a community-based forestry programme on a site in Southern Leyte, selected as a 'hotspot' for illegal logging. Participants formed a local 'people's organisation' and were allocated individual parcels of (government controlled) land of up to five hectares. For each plot, 80 per cent was planted with designated seedling trees and the remaining 20 per cent set aside for growing cash crops or vegetables.

Once the trees have fully matured, participants may fell them – with 70 per cent of the proceeds going to the people's organisation and 30 per cent to the government. Of this 30 per cent, half is to be invested in expanding the programme into new areas. The people's organisation is expected to patrol the area to deter illegal logging.

Working through local organisations provides a network of participants and monitoring. A local NGO has organised the community and given technical training, with the government's help, in preventing soil erosion through 'alley farming' techniques and establishing hedgerows and terraces. Organic farming methods and health service provision have also been included. Project elements designed to prevent soil erosion also lessen the likelihood of landslides in upland regions. Other forms of DP have been incorporated, such as regulating the flow of water in irrigation canals to alleviate flooding, introducing drought-resistant upland rice varieties, and establishing firebreaks lined with fire resistant trees. Such risk reduction measures are more likely to be sustained as they are integrated into a broader developmental approach.

The principal contributor to this chapter and the box was Katrina Allen, a research associate in the sociology department at the University of Leicester, UK. The chapter draws primarily on research carried out during 1998-2002. The project was funded by the International Federation and supported by the PNRC and the Flood Hazard Research Centre, Middlesex University, UK.

Section One

Focus on community resilience

Chapter 6

AIDS: Communities pulling out of downward spiral

Across southern Africa, HIV/AIDS is combining with food insecurity, poverty, worsening health care, dirty water and sanitation, uncontrolled urbanization and common disease to create an unprecedented disaster that conventional intervention can no longer contain.

When farmers fall ill, wives leave the fields to nurse them. Fewer hands mean fewer crops and coupled with drought may bring famine. With the land producing little, the widows fall into debt. When they are gone, the eldest child takes over. Many of southern Africa's four million AIDS orphans are in 'child-headed households', where neither tomorrow's meal nor education is certain. Agricultural skills are being lost. Schools exclude those who cannot afford fees, exercise books or uniforms. While one generation dies of AIDS, another is denied a future.

During previous emergencies, households coped by seeking paid casual work, reducing daily meals, sending children to wealthier relatives, or selling livestock. But the time spent looking after HIV/AIDS patients means that carers cannot find alternative jobs. And relatives are equally affected.

Scarcity of labour leaves more people dependent on fewer breadwinners. Zimbabwe will lose a fifth of its workforce by 2005. Among HIV-affected households, the burden of care reduces crop-yields by 60 per cent. Women are infected at twice the rate of men. Yet they form over two thirds of the agricultural labour force. They nurse the sick and, with husbands gone, face debt and the dilemma of feeding or educating their youngsters.

Aid policy is lagging behind. Prompt international action in 2002-03 postponed famine for 14 million people. But hunger was symptomatic of a more complex crisis that food aid alone cannot address. With over 70 per cent of Africa's population dependent on agriculture for their livelihood, HIV/AIDS threatens unprecedented social calamity. Efforts to prevent new infections have not made a major impact. Where HIV prevalence is highest, life expectancy will drop below 20 years by 2020.

HIV/AIDS increases vulnerability to diseases like measles, malaria and TB, now spreading rapidly. Yet government investment in healthcare is under US\$ 50 per person per year – making it almost impossible to vaccinate children and meet the increasing demand for care and prevention. Poor healthcare structures hamper the delivery of anti-retroviral drugs that could prolong lives by 20 years. Without a new aid paradigm, the destitution of whole communities is inevitable.

Long-term, people-centred support is vital. Removing the stigma surrounding HIV/AIDS is a first step. But surveys in Swaziland show risk-taking continues despite widespread information campaigns. Chief Masilela of Evusweni village has found success elsewhere. He persuaded elders to reserve land to feed orphans and advocated communal farming on idle land. Rather than providing food, humanitarian aid should help the community help itself, he

said. Outside support for irrigation would end farmers' dependence on erratic rains, while safe drinking water could reduce the spread of deadly cholera and diarrhoea.

Masilela knows his community's needs. If Evusweni is to recover, he and his neighbours will be central to the solution. It's a simple premise often forgotten. However, evaluations criticised international aid organisations for not fully understanding the communities where they worked during 2002-03. Targeting food aid at specific families undermined the cohesion of rural communities, which traditionally share resources during hardship.

Vertical, sector-specific aid programming must end. Reducing hunger, strengthening livelihoods, spreading awareness, dispelling stigma and changing behaviour are equally vital tools. Three issues must be addressed: stop accelerating poverty; reduce new HIV infections; and, reduce vulnerability to disease and disasters.

Creating the right aid programmes means carrying out multi-sectoral vulnerability and capacity assessments, backed by donors committed to holistic programming. Delivering this requires a comprehensive package, implemented by a consortium of partners. The Swaziland Red Cross has teamed with food security specialists, universities and the government to combine home-based care, improved farming through irrigation, and income generation through poultry breeding and vegetable gardening.

Africa's disasters were once characterized by television images of skeletal refugees and fly-eyed, wasting children. But today's disaster is silent. Most of those dying stay at home. Out of sight and out of mind of an indifferent world, millions are dying. Within a decade, Swaziland will lose half its working-age population.

There are some rays of hope. Red Cross volunteers provide home care – they nurse, cook, clean, listen and counsel those infected and affected. They bring food, hygiene parcels and medicine. They provide health education and keep watch for deadly diseases such as TB, which half those living with HIV/AIDS develop. Home care is linked to food distribution and water and sanitation programmes. Most people, lacking latrines, defecate in the bush. When it rains, the faeces are washed into the rivers, from which people drink. So the Red Cross is feeding streams into filtration tanks and piping clean water into clinics and homes. But aid organisations cannot cope alone. Only governments have the capacity to match needs at a national level.

HIV/AIDS has exposed the weak link between relief and development. The humanitarian intervention during 2002-03 to provide millions of people with food was hailed as successful pre-emptive action. Yet it only deferred death. Worse, it sent the wrong signal that 'disaster' was averted – when last year, AIDS killed at least 2.2 million people in sub-Saharan Africa. The pandemic exposes the futility of temporary solutions for complex problems. Stopping at food aid is not enough.

Only a developmental approach, with a detailed understanding of local needs and capacities, can ensure that interventions are effective and sustainable. To achieve this, international aid organisations must cooperate together and with community groups, local NGOs, municipalities and governments.

A multi-dimensional response is needed, combining support for local livelihoods, agricultural irrigation and production, urban food security, education, clean water and sanitation – as well

as disease prevention and care. Above all, success will be built on the courage, skills and resilience of those who wake up to the disease every day of their lives.

BOX

Swaziland's response to HIV/AIDS

Swaziland aims to put 4,000 to 4,500 people into antiretroviral treatment by the end of 2004 and 10,000 to 13,000 by the end of 2005. That will represent almost 50 per cent of those who are eligible – a much higher ratio than most other countries. The National Emergency Response Council on HIV/AIDS (NERCHA) has devised a computer system to track drug adherence and its side-effects, available to physicians to follow patients' progress confidentially.

NERCHA is proposing to establish a cadre of 10,000 women to act as guardians for the country's orphans. These are women with families of their own, who will also feed and support orphans. NERCHA is asking donors that each woman be paid around US\$ 40 a month for this work, subject to careful monitoring.

Tens of thousands of children are currently out of school, often because they cannot afford the obligatory fees. NERCHA, UNICEF and WFP have collaborated with local chiefs to provide communities with an education grant, to be used as they see fit (e.g. on school fees for orphans, teachers' wages, materials or refurbishing classrooms). Children are now returning in large numbers. WFP feeds them two meals a day, while school gardens are planted to give the children agricultural experience and enhance their diet. NERCHA is overseeing the construction of social centres to serve as a focal point for community and orphan activity.

Source: Stephen Lewis, UN Secretary-General's Special Envoy for HIV/AIDS in Africa, 31 March 2004

John Sparrow, the International Federation's regional information delegate in east Asia and formerly based in southern Africa, was principal contributor to this chapter. The box is an excerpt from a press briefing delivered by Stephen Lewis, UN Secretary-General's Special Envoy for HIV/AIDS in Africa.

Section One

Focus on community resilience

Chapter 7

Surviving in the slums

While the growth of mega-cities and mega-risks like earthquakes capture headlines, far more lives in urban areas are lost to everyday disasters caused by dirty drinking water and sanitation. If organisations want to enhance the resilience of slum dwellers, they must understand how risk and coping in the city have become urbanised.

Rapid, unplanned urbanisation is altering the nature and magnitude of environmental risks, sometimes creating new risks. Urbanisation renders customary coping mechanisms less effective, but also provides new ways of coping. This chapter draws on research in Mumbai, India, which examined the relationship between community coping and livelihood strategies for slum dwellers.

Nearly half the world lives in urban areas, and numbers are accelerating. Over the next two decades, 90 per cent of population growth in developing countries will be urban. Municipalities can't keep up. In Mumbai, 60 per cent of the city's 23 million inhabitants occupy 6 per cent of its total area – an average density of 2,000 people per hectare. In some slums, 50 families share a single toilet.

Uncontrolled urban growth exacerbates hazards and vulnerability. The land where slum dwellers settle is often dangerous – steep slopes, flood plains, railway lines, industrial zones. As building spreads, rainwater cannot soak away. Monsoon floodwaters that remain a few days in well-serviced districts can stay for a month in slums.

Garbage and sewage are left out, since the municipality cannot or will not remove it. Diseases from dirty water and sanitation kill 2.2 million people a year worldwide – many of them slum children. Death rates in central Mumbai during the 1990s were three times higher than in well-to-do districts. As slums and factories often share the same space, floods carry a hazardous mixture of chemicals, sewage, garbage and debris. The density of weak structures means even minor earth tremors or fires can rapidly spread destruction.

Slum dwellers' livelihoods are bound to the marketplace. Food, water and fuel have to be bought, rather than being found or produced locally. Poor families lack secure storage space, so they may be unable to access vital supplies during crisis. Urban dwellers have fewer livelihood assets than many rural inhabitants, who can often access some cash, subsistence farming, livestock, communal exchange, savings and family land.

The change from rural, communal livelihoods to a market-based strategy reduces scope for social cohesion as livelihoods are less linked. Many urban dwellers depend on a single income source. If the market drops, companies go bankrupt, or the breadwinner falls ill, people can lose their entire livelihood strategy.

The house, as a place to earn a living and maintain a healthy lifestyle, is vital to slum dwellers. One Mumbai woman raised the floor of her one-room house above flood level,

despite the enormous expense, because her income depended on beading fabric at home and she had to work throughout the monsoon. Her neighbour, however, worked outside the home, so raising her floor was not so necessary. The way slum dwellers boost their resilience depends on how they perceive their risks.

Urban governance can be an agent of disaster. Slum dwellers rely on *access* to resources and governance is about who controls that access. However, the interests of the poor are often not considered. In Mumbai, 92 per cent of inhabitants squat in informal settlements. Their 'illegal' status means they cannot raise loans, call the police, vote, or send their children to schools or clinics. Often they cannot claim services such as refuse collection or clean water and sanitation.

Municipalities perpetuate risk by failing to impose high construction standards. In Mumbai, building codes only specify earthquake standards for government buildings. The illegality of slum housing puts householders off home improvements. If authorities see improvements, they can evict the occupants and rent out the dwellings to others willing to pay for the protection. So not only is the municipality unable or unwilling to mitigate risks for informal settlers, it actually *incapacitates* them from adapting themselves.

Many slum dwellers become pessimistic, due to the magnitude of risk and lack of municipal response. Most are resigned to ill health and premature death. Slum communities are less cohesive than rural villages, as people focus on individual livelihoods. So, even if they have a latent capacity to enhance their resilience, a lack of social cohesion prevents that from happening. There are exceptions – the potters of Kumbharwadi slum, whose shared livelihood motivated them to cooperate (see Box).

Experience from other slums suggests community cohesion can be created. The Orangi Project in Karachi, Pakistan harnessed the resources of the urban poor to build a low-cost sewer system. Within 10 years, infant mortality there fell from 130 to 37 per 1,000 live births. While households can protect themselves in localised ways, wider resilience depends on how they relate to the municipality. 'External' organisations must help improve the relationship between authorities and slum dwellers.

The Slum Sanitation Programme in Greater Mumbai created a partnership to provide better facilities. The World Bank sponsored the physical infrastructure. Community-based organisations (CBOs) took responsibility for ownership, administration and management. The municipality boosted the CBOs' management skills and helped develop the project design, payment scheme and management strategy.

The toilets are administered by CBOs on a fee basis. Any funds left over from repairs and upkeep are re-invested into local projects of the community's choosing. A similar approach was adopted with the Slum Adoption Scheme, which tackles garbage collection.

These cases show that while poor governance shifts power to manage risk out of households, good governance can put it back. Crucial to the projects' success was the catalytic role of external agencies in facilitating joint ownership between the municipality and end-users. Implications for organisations and municipalities seeking to support resilience in slums include:

1. Understand what urban dwellers perceive as disasters and how they cope.

2. Explore barriers that constrain people from coping.
3. Link resilience-supporting measures to income generation.
4. Improve relations between municipalities and slum dwellers.

BOX

Building resilience around a shared livelihood

Kumbharwadi is a Mumbai slum where Gujarati potters have lived for over a century. These artisans have nurtured a sense of social cohesion, rooted in their shared livelihoods, as a way of increasing their resilience to risk.

The potters have five kilns between them, which they have jointly protected with tin roofs. This means they can continue working during the rainy season – albeit at a reduced rate. The families have agreed on a bond of trust to store their wares for trading during the heaviest rains, when production suffers most – thereby reducing the risk to their livelihoods during that time.

To further protect themselves from the precariousness of their situation, a 'chit fund' and rotating loan have been set up between families (without any external support), accessed by households in times of trouble. The families collect an extra 5 rupees per month from each household to pay for cleaning the gutters, safeguarding their health.

The success factor behind their resilience is not that they are wealthier than other families. In fact, wealthier neighbourhoods are far less proactive in mitigating the risks they face. For Kumbharwadi's potters, risk mitigation has become an integral part of their livelihoods, because:

- hazard mitigation measures were identified as the optimal use of resources to protect and enhance their livelihoods
- they have the social cohesion required to make it happen – based on their shared source of livelihood

Jennifer Rowell, urban technical adviser at CARE International (UK), was principal contributor to this chapter and the Box

Section Two

Focus on community resilience

Chapter 8

Disaster data: key trends and statistics

Over the past decade, the number of 'natural' and technological disasters has risen. From 1994 to 1998, reported disasters averaged 428 per year – from 1999 to 2003, this figure shot up by two-thirds to an average 707 disasters each year. The biggest rise was in countries of low human development, which suffered an increase of 142 per cent. Transport accidents registered the biggest rise, climbing 75 per cent during the second half of the decade. However, our tables only account for accidents where at least 10 people were killed or 100 affected by a single incident.

Both hydro-meteorological and geophysical disasters have become more common, becoming respectively 68 per cent and 62 per cent more frequent over the decade. This reflects longer-term trends. However, weather-related disasters still outnumber geophysical disasters by nine to one over the past decade. Among natural disasters, floods are the most reported events in Africa, Asia and Europe, while windstorms are most frequent in the Americas and Oceania.

Last year's death toll of nearly 77,000 was triple the total for 2002 – with countries of medium and high development hit hardest. Disasters cost around 31,000 lives in Europe last year – mainly due to the August heat wave. This figure was eight times higher than the average annual death toll from disasters in Europe for the previous nine years. The earthquake which devastated the Iranian city of Bam claimed at least 26,000 lives. Deaths in countries of low human development (LHD) last year fell to their lowest level for nine years. However, over the decade, more than half of those killed by natural disasters lived in LHD countries.

Drought and famine have proved the deadliest disaster of the decade worldwide, accounting for at least 275,000 deaths since 1994 – nearly half the total for all natural disasters. Over the past 10 years, drought and famine claimed over 1,000 lives per reported disaster, earthquakes killed an average of 370 people per disaster, while extreme temperatures claimed over 300 lives per disaster.

Despite the increased number of disasters, average annual death tolls have dropped from over 75,000 per year (1994-1998) to 59,000 per year (1999-2003). However, over the same period, the numbers affected continued to climb. For the first five years of the decade, an average of 213 million people were affected. The second half of the decade saw this figure rise by over 40 per cent to an average of 303 million per year.

The reason less people are dying from hydro-meteorological disasters, in particular, may be partly explained by better satellite forecasting and early warning systems. Equally, systematic disaster preparedness at community level has helped reduce death tolls. The fact that more people are being affected by disasters reflects a combination of factors: rising numbers of reported disasters; rapid population increase in poorer parts of the world; and rapid, unplanned development (particularly in urban areas).

Impacts vary enormously according to the level of human development achieved in the country where disaster strikes. Over the past decade, disasters in countries of high human development (HHD) killed an average of 44 people per event, while disasters in countries of low human development (LHD) killed an average of 300 people each.

However, disasters in HHD countries inflicted an average of US\$ 318 million worth of damage per event – over 11 times higher than the US\$ 28 million recorded per disaster in LHD countries. However, the statistics fail to capture the far more devastating impact which disasters have on GDP in poorer countries.

Turning to aid flows, official development assistance (ODA) from members of the Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development grew significantly to US\$ 58.3 billion in 2002 – a gross increase of 11.3 per cent compared to 2001. Canada, France, Greece, Ireland and Italy increased their contributions by more than 30 per cent. The biggest individual increases came from France (up US\$ 1.28 billion) and the United States (up US\$ 1.86 billion).

Among the five biggest donors, aid from the US has grown significantly since 1997. Meanwhile, contributions from the UK over the past decade have steadily increased to match levels given by France and Germany, whose aid has declined since the mid-1990s. Japan was the world's largest donor of ODA until 2000, after when levels fell below US donations.

Expressed as a percentage of donor countries' gross national income (GNI), only five countries (Denmark, Norway, Sweden, The Netherlands and Luxembourg) exceeded the UN's 0.7 per cent target. Compared to 2001, the proportion of aid as a percentage of their GNI increased for Australia, Belgium, Canada, Finland, France, Greece, Ireland, Italy, Norway, Portugal, Sweden and the US.

Meanwhile emergency/distress relief (not including relief provided by multilateral institutions and NGOs) grew from US\$ 3.3 billion in 2001 to US\$ 3.9 billion in 2002 – an increase of 18 per cent. As in previous years, the US were the biggest donor of emergency/distress relief, accounting for 36 per cent of all donations. However, DAC rules allow donors to define spending on refugees hosted in donor countries as part of their emergency/distress relief (this amounted to 25 per cent of the total in 2001).

Calculating the full amount spent on humanitarian relief is notoriously difficult, as different donors account for their relief contributions in different ways. The total of US\$ 3.9 billion for emergency relief quoted above does not present the full picture. Independent reports suggest that global humanitarian assistance totals at least \$10 billion a year. During 2001, this broke down as follows:

- OECD DAC donors' humanitarian aid (not including expenditure on refugees hosted in donor countries): US\$ 4.2 billion;
- OECD DAC donors' spending on post-conflict peace activities: US\$ 4 billion;
- Humanitarian assistance from non-DAC donors (especially Saudi Arabia and South Korea): US\$ 500 million;
- Voluntary contributions from the public via NGOs: US\$ 700 million-US\$ 1.5 billion; and,
- Multilateral humanitarian aid (via NGOs, UN, International Organisations) not captured by DAC statistics: US\$ 400 million.

BOX

EM-DAT: a specialized disaster database

Tables on disasters and their human impacts over the last decade were drawn from EMDAT and documented by the Centre for Research on the Epidemiology of Disasters (CRED). Established in 1973 as a non-profit institution, CRED is based at the School of Public Health of the Catholic University of Louvain in Belgium. Although CRED's main focus is on public health, the centre also studies the socio-economic and long-term effects of large-scale disasters.

Since 1988, CRED has maintained EMDAT, a worldwide database on disasters. It contains essential core data on the occurrence and effects of over 14,000 disasters in the world from 1900 to the present. The database is compiled from various sources, including UN agencies, NGOs, insurance companies, research institutes and press agencies. The entries are constantly reviewed for redundancies, inconsistencies and the completion of missing data.

CRED consolidates and updates data on a daily and three-monthly basis. Revisions are entered annually at the end of the calendar year. Priority is given to data from UN agencies, followed by OFDA, governments and the International Federation. This priority is not a reflection of the quality or value of the data but the recognition that most reporting sources do not cover all disasters or have political limitations that may affect the figures.

The database's main objective is to assist humanitarian action at both national and international levels. It aims to rationalise decision-making for disaster preparedness, as well as providing an objective basis for vulnerability assessment and priority setting.

This analysis was contributed by Jonathan Walter, editor of the World Disasters Report, and by CRED team members Philippe Hoyois, senior research fellow; Regina Below, EM-DAT disaster database manager; and Debarati Guha-Sapir, director.