

Feeling the **heat**



The human cost
of poor preparation
for disasters



Foreword



Responding to emergencies in the world's poorest countries is a major part of what Islamic Relief does. We were established in response to famine in Sudan in 1984, and international disaster relief has been a constant feature of our work ever since.

At times of crisis our primary concern remains as it was 28 years ago – to save and rebuild lives in the aftermath. In famine or flood, hurricane or cyclone, earthquake or tsunami, we aim to give people effective assistance in their hour of need and help them get back on their feet as soon as possible.

Increasingly, however, we are also turning our attention to what can be done to protect people before a major emergency occurs. It is the poorest and most marginalised who are particularly vulnerable when disaster strikes. If we can reduce their vulnerability – by building flood-resistant housing, for example, or establishing grain banks that people can fall back on when drought wipes out their crops – then more lives can be saved and more livelihoods protected.

This report (researched in association with nef, the new economics foundation) shows the positive difference we are beginning to make in this area, in what is known as 'disaster risk reduction' (DRR). It highlights how village disaster committees and earthworks to raise people's houses have reduced the impact of seasonal flooding in north-western Bangladesh. It shows how irrigated vegetable growing and microfinance loans for small businesses are helping former pastoralists to build new livelihoods in north-eastern Kenya that are less vulnerable to drought.

We also present evidence from these projects that being better prepared can save money as well as lives. We want to show that it can be less costly for aid budgets to adopt protective measures than to pick up the pieces after disaster strikes.

With the global economy stagnant and much of Europe in recession, the international community might be expected to recognise and invest in the cost-effectiveness of disaster risk reduction. What our research shows, however, is that while climate-related natural disasters are becoming more frequent and severe, the overall support from donor countries for DRR projects (1% of development aid) is woefully inadequate.

As climate change bites, DRR deserves more attention, more research and more hard cash. Those least responsible for man made global warming are bearing the brunt of its consequences. It is with this in mind that we have made DRR one of four focus areas for Islamic Relief's 2011–2015 Global Strategy.

DRR should chime with our human consciousness – indeed this is not the first time humanity has taken it up. Many thousands of years ago the Prophet Joseph – in Arabic Yusuf, peace be upon him – taught disaster risk reduction by storing grains for seven years in preparation for the long famine he foresaw. His success saved not only the people of Egypt but those in neighbouring countries.

We owe it to the world's poorest people to take decisive action to help them prepare for the worst, rather than standing by and hoping for the best.

Dr Mohamed Ashmawey

Chief Executive, Islamic Relief Worldwide

Executive summary

As climate change bites, natural disasters such as floods, drought and tropical storms are becoming more frequent and severe. The people paying the heaviest price are the world's poorest communities, particularly in Sub-Saharan Africa and South Asia.

With the global economy stagnating, the international community can ill afford to throw ever-increasing amounts of emergency aid at the countries affected by these disasters. And poor communities can ill afford an approach that is content simply to pick up the pieces after disaster strikes, regardless of the cost in human lives and livelihoods.

Islamic Relief believes that what the poor really need is proper protection against disaster – programmes that strengthen their resilience and ensure they are better equipped to withstand climatic extremes. Our growing experience of 'disaster risk reduction' (DRR) projects is that they offer huge potential to save lives and save money. What our research reveals, however, is that the resources allocated to such projects are woefully inadequate.

A disastrous climate

A growing number of studies suggest that climate change is affecting the magnitude and frequency of extreme weather events. The past decade has seen record-breaking rainfall events in many countries including the US, Australia, Pakistan, Japan, Germany, the UK and South Korea. A tenth of the world's land area now experiences extremely hot summers, compared to only 0.1-0.2% between 1951 and 1980. By the end of the century, the number of category 4 and 5 cyclones is expected to double, with perhaps a fifth more rainfall. Poor communities suffer most in severe weather because they are most likely to live in modest dwellings that can be swept away in cyclones or seasonal flooding, and least likely to have savings or assets to sell – or any kind of 'Plan B' – when drought takes hold.

Preparation saves lives and money

Emergency relief saves lives and assists recovery, but too often it treats the symptoms of the profound problems poor communities face without addressing the root causes.

Islamic Relief believes the answer lies in disaster risk reduction (DRR) projects – initiatives such as cereal banks and microdams to conserve food and water in drought-affected areas, or storm shelters and raised housing to prepare for cyclones and floods.

When Cyclone Sidr hit Bangladesh in 2007, millions of Bangladeshis were already in newly built shelters or had been evacuated from coastal areas. The subsequent death toll was around 4,000, compared to the 140,000 that died in a cyclone of similar intensity in 1991. When Mozambique asked for a paltry \$2.7 million in 2002 to help prepare for floods, donors only handed over half that amount. In the floods that followed, the international community spent \$550 million on emergency relief and reconstruction.

Islamic Relief's positive experience of DRR is captured in this report, researched in association with nef (the new economics foundation). The report features:

- Former pastoralists in north-eastern Kenya spared from child malnutrition in the country's worst drought for half a century through an irrigated agriculture project – at barely half the cost of emergency food aid
- Flood-plagued families in north-western Bangladesh protected from harm and flood damage in the worst seasonal flooding to hit their district for 24 years – thanks to earthworks to raise some of their land
- Microdams in Mali and comprehensive village reconstruction work in Pakistan that have reduced people's vulnerability to drought and floods respectively.



Facts and figures

- ▶ **The number of climate-related disasters increased by an average of 4.1% a year from 1980 to 2010**
- ▶ **In 2011 alone such disasters killed 27,000 people and cost \$380 billion in economic losses. Their financial cost is doubling every 12 years**
- ▶ **The richest countries suffer the highest incidence of natural disasters, but only account for 7% of the death toll. Sixty-nine people died in the San Francisco earthquake of 1989, compared to 316,000 in a quake of similar intensity in Haiti in 2010**
- ▶ **By 2015 it is estimated that climate-related disasters could affect 375 million people – 43% more than in 2010**
- ▶ **A dollar of DRR spending can deliver \$15 worth of reduced disaster damage, according to US government research**
- ▶ **In 2010 the world spent 23 times as much on emergency relief for the ten developing countries hit hardest by disasters as it spent on disaster prevention and preparedness**
- ▶ **The five countries worst affected by this year's Sahel food crisis received just 12 pence for DRR in every £100 of aid received between 2005 and 2010**
- ▶ **It costs £400 for Islamic Relief to protect a family in the Gaibanda district of Bangladesh from floods for five years by raising their land, less than the £440 in emergency aid the same family would need in just one month if they lost everything in a major flood**

A world underprepared

In 2005 the UN General Assembly unanimously agreed the Hyogo Framework for Action (HFA), and 168 countries put their names to a ground-breaking ten-year commitment to DRR.

But unlike the UN's Framework Convention on Climate Change, the HFA is not binding and its targets are not obligatory. DRR has remained the poor relation in the humanitarian aid family – largely unrecognised and woefully under resourced.

New research by Islamic Relief reveals that:

- In 2010 the world spent 23 times as much on emergency relief for the ten developing countries hit hardest by disasters as it spent on disaster prevention and preparedness (DPP)
- The five countries worst affected by this year's drought in the Sahel received a tiny 12 pence for DPP in every £100 of aid received between 2005 and 2010
- In the same period even the ten developing countries adjudged to be facing the most extreme risk in relation to climate change received only 86 pence for DPP in every £100 of aid – less than 1% of the total.

International donors promised to provide 'new and additional resources' for climate mitigation and adaptation approaching \$30 billion for the period 2010-12. In 2010 \$22,907.9 million of climate finance was provided, representing 15% of that year's \$128.49 billion Overseas Development Assistance (ODA). But if the climate funding is deducted from the total, ODA actually dropped – by 11.85%.

Funding is being reallocated under different budget heads and cut at the same time. Development Assistance is falling, overall aid spending is also faltering, and DRR is failing to keep pace with the increasing frequency and severity of climate-related disasters.

Better prepared to fight floods

In the Gaibanda district of Bangladesh Islamic Relief compiled a cost benefit analysis to assess the impact of one of its biggest successes so far – the construction of a raised earth platform or ‘plinth’ in South Kabilpur that saved 21 families from the area’s worst floods in a quarter of a century in June 2012.

We found that the benefits and savings from the project over five years – what the community saves by protecting homes, trees and livestock from flooding and what Islamic Relief saves on emergency aid – will add up to over £30,000. This represents a benefit of £18 for every £5 spent, a benefit-to-cost ratio of 3.6 to 1.

Construction and maintenance costs for the plinth will amount to £8,400 over five years – less than the £9,200 it would cost for just one month of emergency relief if these 21 families lost everything in a major flood and turned to Islamic Relief for aid.

Better prepared to fight famine

In 2011 Mandera county was the area hardest hit by Kenya’s worst drought for over half a century. Hundreds of thousands of livestock died, and tens of thousands of children were brought to the brink of starvation by severe malnutrition.

While most of Mandera was clinging to life in the unrelenting heat, some families came through the drought relatively unscathed. They were able to do so thanks to microcredit loans for small business start-ups and an irrigated agriculture project for former pastoralists along the river Daua, both supported by Islamic Relief.

Each of the 900 farmers participating in the irrigation project initially receives free seeds and diesel to pump water from the Daua and cultivate an acre of cereals, fruit, vegetables and fodder crops. As the farmers become established they form co-operatives and pay for their own seeds and fuel.

In Shantoley village the net monthly income on an acre of onions is 46,700 KES – three times the best that a farmer could hope for in a month as a daily wage labourer. The benefits of the project can also be measured by what is saved on emergency aid. It costs 2,550 KES per month (around £19) to provide a farmer with enough seeds and diesel to irrigate and cultivate an acre of land. This is little more than half the 4,500 KES per month (£33.70) it costs to provide food aid to a family affected by drought.

Recommendations

WE BELIEVE THE UNITED NATIONS SHOULD

- Work with governments, the World Bank and the Green Climate Fund to establish a global contingency fund for DRR, giving priority to countries most at risk of disaster
- In the run-up to 2015, when the Hyogo Framework Agreement (HFA) comes to an end, continue to press UN members to make fresh commitments to DRR through a new agreement that is binding for all signatories
- Require member states to develop detailed DRR plans that deliver the Secretary-General’s vision: a halving of fatalities, economic losses and numbers of people affected by disasters by 2030
- Ensure that UN agencies fully understand the local context, supporting and building on best practice and improving the effectiveness of project delivery
- Invest in promoting integrated risk management and improving research and knowledge sharing – among the weakest areas of current DRR activity.

WE BELIEVE ALL DONOR GOVERNMENTS SHOULD

- Reject aid cuts and meet commitments to allocating 0.7% of GDP to development aid, ensuring the level of investment needed to protect the poorest against the rising tide of climate-induced disasters
- Radically change the balance of aid spending so that DRR is a mainstream component of all major aid programmes and development projects are ‘climate smart’
- Provide senior political leadership to support the UN in establishing a global contingency fund and a binding successor to the Hyogo Framework Agreement

- Make detailed plans to deliver a halving of fatalities, economic losses and numbers of people affected by disasters by 2030
 - Keep their promises to provide 'new and additional' resources for climate adaptation, rather than playing aid and adaptation budgets off against each other
 - Take clear and decisive action to meet carbon emissions commitments, to stop the catastrophe of future climate-induced disasters
 - Improve coordination between donors and the integration of DRR and other climate adaptation projects, both of which are sorely lacking.
- and dare to fundraise for resilience, not just emergencies
 - Ensure the success of DRR projects by working closely with communities as well as local, regional, provincial and national authorities
 - Ensure that priority is given to protecting the most vulnerable groups in society – marginalised women and ethnic minorities, children, the elderly and people with disabilities.

WE BELIEVE THAT GOVERNMENTS OF COUNTRIES AT RISK FROM DISASTER SHOULD

- Implement the guidelines contained in the Hyogo Framework as a matter of urgency – by giving senior political leadership to DRR, ensuring that government departments coordinate effectively, establishing a central DRR fund, and providing adequate funding to local authorities and other implementing bodies
- Spend development funding wisely to reduce risks, fulfilling commitments under the Hyogo Framework to tackle the root causes of vulnerability to disaster (including unequal land tenure, urban migration, extreme poverty and weak building codes)
- Draw on the expertise of UN agencies, the World Bank, aid agencies and other governments at the forefront of DRR strategy to create a comprehensive plan of action
- Consult, empower and work closely with poor communities, so that they play a full part in identifying, designing and developing DRR projects.

WE BELIEVE THAT INTERNATIONAL AND LOCAL AID AGENCIES SHOULD

- Press donors to prioritise DRR and ensure that there are bold targets and concrete international funding commitments in place when the Hyogo Framework Agreement and the Millennium Development Goals expire
- Radically change the balance of spending so that DRR is a mainstream component of all major aid programmes
- Educate the public about why funding disaster resilience is just as important as sending funds for disaster relief

Introduction

'We need to give poor communities a fighting chance against climate change by investing in things like drought-resistant crops, rebuilding flood-prone houses on higher ground and preserving food and seeds for when disaster strikes. If we do that we will not only save lives but save a lot of money on emergency aid'

Syed Shahnawaz Ali, Head of Integration, Climate Change and Disaster Resilience, Islamic Relief Bangladesh

"It was a dark night, past 11 o'clock. All of us were asleep and suddenly I heard my husband shouting to warn us that we were being flooded... We woke everybody up and we got out as quickly as we could. I was crying because I didn't know what would happen to my children."

Monoara Begum, 45, is describing the events of June 28 2012, when her home in Kabilpur in the Gaibanda district of north-western Bangladesh was inundated by flood water. When she got out of bed the water was already up to her knees, and neighbours ran to help salvage what they could.

This was not just any flood, but the worst Gaibanda has experienced for a quarter of a century. Three days of heavy rain upstream in Assam turned the Jamuna river into a menacing, swirling torrent. Three people died and thousands were made homeless.

Gaibanda is just one of many places in the developing world that have reported their worst weather conditions for a generation in recent years, or even the worst in living memory. Most prominent among them have been Pakistan (2010), East Africa (2011) and the Sahel region of West Africa (2012).

Severe malnutrition

In 2010 Pakistan was hit by the worst floods in its history, killing 2,000 people and making 11 million homeless. In 2011 East Africa suffered its worst drought for over half a century, causing severe malnutrition for millions and killing tens of thousands of people.

This year the biggest cause for concern has been West Africa, where a record-breaking drought has decimated crops and livestock and left 18 million people hungry.

What is striking about each of these three major crises is the cyclical nature of the underlying threat they reveal – and the deadly impact of climate change they demonstrate. For every one-off major emergency like the Indian Ocean tsunami of 2004, there are many more instances of recurrent climate-related crises affecting particular parts of the world, year in and year out. In 2011 alone 27,000 people died in natural disasters, at a cost of \$380 billion in economic losses, according to the reinsurer Munich Re.¹

East Africa has experienced three major drought emergencies in the past decade – in 2000–01, 2005–06 and 2010–11. The province of Sindh in southern Pakistan was hit again by major flooding in 2011, affecting for a second time the thousands of people still living in temporary shelters after the previous year's floods. The Sahel has been grappling with its second major drought in three years, with a million children at risk of starvation this time.

Disaster relief is not enough

Disaster relief is not the answer for Monoara Begum, however swiftly and effectively it is delivered. Emergency aid may save her life in the event of a flood but it won't bring back her livelihood, or equip her to deal any better with the next round of flooding – which will surely come.

What is really needed, unless or until rising carbon emissions are brought under control, is projects that ensure Monoara and millions like her are better prepared to withstand what a warming world is throwing at them – projects that reduce their vulnerability to drought, flooding and tropical storms.

In the aid world this kind of work is variously known as 'disaster risk reduction' (DRR), 'disaster preparedness', or 'resilience building'. Whatever we call it Islamic Relief believes it is sufficiently important to have made it a key part of its global strategy for 2011–15.

‘Experts predict that climate-related disasters could affect 375 million people every year by 2015, up from 263 million in 2010’

Lord (Paddy) Ashdown,
Humanitarian Emergency Response Review,
March 2011

Under the first of our four corporate aims, ‘Protecting life and dignity’, we pledge to:

- Help communities at risk to prepare for disasters, so that when they occur their devastating impact is reduced
- Prioritise disaster risk reduction at a local and national level among vulnerable populations in several countries.

The race we’re not winning

This report explains why Islamic Relief thinks DRR and building resilience should increasingly be at the heart of everything we do. It examines the scientific evidence that disasters are increasing in intensity and impact, largely because of climate change, and makes the case for DRR as an investment that saves lives and money.

But even though donors have uttered words of commitment to DRR funding, most have failed to keep their promises (with a few notable exceptions). And the poorest countries, those hit hardest by disasters, have received the least.

As the economic and human costs of disasters rise, the world seems increasingly unequal to the challenge. Lord Ashdown’s landmark review of the UK’s humanitarian response, published in 2011, found that by 2015 climate-related disasters could affect 375 million people every year – up from 263 million in 2010. “We are caught in a race between the growing size of the humanitarian challenge, and our ability to cope; between humanity and catastrophe,” his review concluded. “And, at present, this is not a race we are winning.”²

This report shows that there are practical alternatives that work: people do not have to die in disasters. Increasing numbers of studies show the efficacy and cost-effectiveness of resilience programmes. Islamic Relief’s own work provides inspiring examples, and this report features DRR projects from countries affected by the major emergencies described above – Kenya in East Africa, Mali in West Africa and Pakistan. It also focuses strongly on Bangladesh, the world’s most disaster-prone nation and the country in the forefront of disaster risk reduction globally.



A changing climate, a changing landscape

In two decades of seemingly relentless drought, Mumina Adan has seen the landscape and her way of life change beyond recognition.

Her family used to be pastoralists, roaming the vast open spaces of north-eastern Kenya and western Somalia in search of the best pasture for their hundreds of livestock. Now almost all the 75-year-old grandmother’s animals are gone, and she has settled in one place for the first time in her life.

Her future hopes lie not in livestock but in irrigated agriculture – her son Ishmail is growing onions, tomatoes and other cash crops on three acres of land irrigated by the Dava river, supported by Islamic Relief.

“When I was young there used to be plenty of grass for our animals,” she says. “But as population and drought have increased, the amount of pasture has diminished.

“We gave up the pastoralist way of life because of drought. Down the years I have lost most of my livestock to drought.

“Now more and more people are moving to urban areas. Some of them are reliant on handouts from aid agencies and the government.

“Clan conflict is increasing because there are fewer resources. I can’t predict what the future will bring – God only knows.”



Monoara Begum and
her granddaughter Asmina

The scale of these projects is relatively small but their potential is huge. Not only can they save lives and protect livelihoods but they can also end up saving money on costly disaster relief – as our figures show.

It is a matter for concern, therefore, that disaster risk reduction is attracting so little support from the international donor community. Our research shows that it is very much the poor relation in the humanitarian aid family – largely unrecognised and woefully under resourced. We conclude this report with a number of recommendations for urgent action.

A real and present danger

Returning to Monoara Begum in flood-hit north-western Bangladesh, she considers herself fortunate this time. She and her neighbours were able to dismantle the walls and roof of her flooded home and rebuild it on higher ground – thanks to a raised platform or ‘plinth’ of compacted earth provided as a temporary flood refuge by aid agencies.

The raised plinth in her village has capacity for around 50 families to relocate their homes temporarily during seasonal flooding. It is equipped with latrines and a tubewell installed by Islamic Relief. Out of the monsoon season it operates as a marketplace, and the presence of traders all year round ensures that it does not become neglected or overgrown and is instantly available when the floods come.

Fighting back

If anyone illustrates the importance of DRR it is Monoara Begum herself. Last June’s floods were the eighth time in her life that she has been flooded out of her home. For her, climate change is not merely a spectre that will haunt her in the distant future if she does not reduce her carbon footprint. It is a real and present danger, a relentless foe that is wearing her down and making her ever poorer and more vulnerable.

“Before I had animals, I had land that could be cultivated, I had fruit trees,” she says. “I grew vegetables and fed my

family. Now I have lost it all because of river bank erosion and flooding. No trees, no land and no animals.”

Her best hope of fighting back against climate change is to be better prepared when the next flood comes along, and she is helping her whole community to achieve this – as secretary of their new village disaster committee, one of many set up with support from Islamic Relief.

“I feel very good about doing this because I don’t have any money, so I want to help people in any other way I can,” she says. “We have learned from Islamic Relief about what each family can do to prepare ourselves for flooding.

“We store rice and firewood and fuel, and we have portable stoves that we can take with us if we have to move. These things help us to cope better with the floods.”

A disastrous climate

‘Climate change has become a major issue in Kenya. In the past it was very easy to predict the weather patterns and we knew when it was going to rain. More recently we’ve experienced very severe droughts. When drought comes it wipes out people’s animals and they have nothing to depend on’

Stephen Omware, Livelihoods Coordinator,
Islamic Relief Kenya

In richer countries most aspects of daily existence rely heavily on burning fossil fuels to produce energy, releasing carbon dioxide (CO₂) – the most prevalent manmade greenhouse gas – into the atmosphere. Scientists warn of ‘dangerous’ or ‘runaway’ climate change, predicting catastrophic future consequences if increasing carbon emissions are not brought under control.

In developing nations, however, the climate catastrophe has already begun. In the searing heat of sub-Saharan Africa and the lowlands and coastal areas of Asia, drought and floods are increasing in frequency and severity as climate change bites. The World Health Organisation has said that climate change is already responsible for an additional 150,000 deaths each year.³

As the global temperature gauge creeps ever higher and climate-related disasters intensify, it is the poorest and most vulnerable people who are suffering most. They are the ones most likely to live in modest dwellings in areas prone to cyclones or seasonal flooding – makeshift homes that can be swept away in an instant. They are the ones least likely to have savings, or assets to sell, or any kind of ‘Plan B’ when severe drought takes hold and crops and livestock are wiped out.

While richer nations experience the highest incidence of natural disasters, 85% of deaths occur in lower-middle-income and low-income nations and only 7% in the highest income band⁴ The 1989 San Francisco earthquake, which measured 6.9 on the Richter scale, killed 63 people. Twenty-one years later an earthquake of similar intensity in Haiti, measuring 7.0, claimed 316,000 lives.⁵

A warming world

As concentrations of greenhouse gases in the earth’s atmosphere rise, they increasingly prevent heat from escaping into space. This has the effect of slowly warming the earth. The polar ice caps are melting, sea levels are rising and weather patterns are being profoundly affected.

These changes can affect poor communities directly (as with the droughts in East Africa and the Sahel) or indirectly (as with the record-breaking drought in the United States in 2012, which is pushing up staple food prices and so will push more people below the poverty line around the world).

According to leading climate scientist James Hansen, based at NASA’s Goddard Institute for Space Studies, the situation is so serious that we are on the cusp of losing the climatic conditions in which civilisation emerged.⁶

The financial cost of climate-related disasters is doubling every 12 years according to the United Nations Environment Programme,⁷ and reached \$380 billion in 2011.⁸

Dangerous climate change

There is no universal definition of what constitutes ‘dangerous’ climate change. This is partly because what’s ‘dangerous’ for a South Pacific islander or a Bangladeshi char dweller may be inconsequential for someone living in the temperate hills of northern Europe. The most commonly agreed threshold, however, is that we need to restrict temperature increases to no more than 2°C above levels in the late 19th century – about 1.2°C above today’s global average surface temperature.

The European Union adopted a 2°C target in 2005, followed by the United Nations Framework Convention on Climate Change Conference (UNFCCC) four years later.⁹ At climate negotiations in Mexico in 2010, governments from around the world added their endorsement.¹⁰

Superimposed over more gradual and general climatic changes, we are seeing a shift in the frequency and intensity



What happens if we cross the 2°C temperature threshold?

According to the Committee on Stabilization Targets for Atmospheric Greenhouse Gas Concentrations,¹¹ the consequences of a 2°C increase in temperatures could be:

- ▶ Growing water shortages for up to 4 billion people
- ▶ Millions at risk of hunger as agriculture ceases to be viable in some parts of the world
- ▶ 40–60 million more people exposed to malaria in Africa
- ▶ Less likelihood of being able to prevent further warming, and an acceleration of sea level rises
- ▶ The melting of the Greenland ice sheet and the collapse of the Amazon rainforest

of extreme weather-related hazards. Very heavy rainfall, heat waves and droughts are all on the increase. More severe cyclones are anticipated too. But is climate change really to blame?

The Intergovernmental Panel on Climate Change (IPCC) does not deal in certainties, preferring instead to speak of ‘high confidence’ that climate change is making storms, tropical cyclones and heavy rainfall more frequent and intense. Climate change is too variable and too complex for us to be absolutely certain.

For the World Meteorological Organisation, however, what is happening in the world around us bears out the IPCC’s views. “While a longer time range is required to establish whether an individual event is attributable to climate change,” it says, “the sequence of current [extreme] events matches IPCC projections of more frequent and more intense extreme weather events due to global warming.”¹²

A growing number of studies now suggest that climate change has already affected the magnitude and frequency of some extreme weather events. Our table of record-breaking weather events (page 15) shows how devastating these can be, with 70,000 people killed by the European heatwave of 2003 and tens of thousands dying in the Somalian famine of 2011.

Hot, hotter, hottest

Hot days and heat waves are on the increase. A tenth of the world’s land area now experiences extremely hot summers, compared to only 0.1–0.2% between 1951 and 1980.¹³

Between 1880 and 2005, the length of summer heat waves in western Europe nearly doubled, while the frequency of hot days almost tripled.¹⁴ Meanwhile, the number of record-breaking hot days being recorded in the United States and Australia has doubled.

In some richer countries people joke about climate change, relishing the prospect of sunnier holidays or cultivating tropical fruits in the garden. But for the 18 million people



afflicted by hunger in the Sahel in 2012 because of drought, rising temperatures and scarce rainfall are no laughing matter.

Heat stress is already a leading cause of deaths from natural phenomena.¹⁵ Temperatures that exceed 35°C for any extended period of time can be fatal, as the human body is unable to maintain its core temperature.¹⁶

Relentless rain

With heat often comes more rain because a warmer atmosphere can hold more moisture.

The past decade has seen a number of record-breaking rainfall events – including the devastating floods that affected 18 million people and drove 11 million from their homes in Pakistan in 2010.¹⁷ For flood-prone countries more rainfall means more floods – and a greater risk that lives will be lost and homes destroyed. Poor communities often experience increased rates of infectious disease after flood events. After the 2005 floods in Mumbai, for example, the prevalence of leptospirosis increased eight-fold. In Dhaka, Bangladesh, severe flooding in 1998 was linked to an increased incidence of diarrhoea.

Stormy weather

For countries such as Vietnam, Bangladesh and the Philippines, the predicted increase in the frequency and intensity of storms – particularly tropical cyclones – is especially alarming. Cyclones can cause horrific loss of life and widespread destruction.

The cyclone that hit the Chittagong area of Bangladesh in 1991 and Cyclone Nargis in Myanmar in 2008 each killed nearly 140,000 people. Large areas of Bangladesh have yet to recover from the country's last major cyclone, Aila, whose three-metre storm surge contaminated farm land with salt water and devastated agriculture. Six years after Hurricane Mitch hit Honduras, killing 6,000 people and leaving a fifth of the population homeless, the country's GDP was estimated

Bereaved and dispossessed by Cyclone Aila

“It was a Monday and there was very heavy rain that morning,” says 30-year-old Jamila Khatun (above, left). “Our houses were flooding and I got into a boat with my son, but a huge wave hit the boat and made it capsize.

“I was swimming, swimming, swimming as hard as I could with my son in my arms but my legs were tangled in my clothes and I was dragged under. When I bobbed back to the surface my son slipped from my grasp.

“All night I was crying, and in the morning my husband went out and looked for him. He found him dead, with blood flowing from his nose and mouth. It was a massive shock.”

Little Shajib Hossain barely stood a chance in the three-metre storm surge that hit the village of Golkhali in the wake of Cyclone Aila in 2009. He was one of four in the village that died that day, and the community is still a long way from recovery.

Vegetation and farm animals are scarce, the muddy landscape contaminated by salt from the storm surge that makes it almost impossible to earn a living from farming. Jamila's husband, Amjad (above, right), makes a pittance as a carpenter by collecting goalpata wood to use in boat building and repairs.

“I lost my home, I lost my son, I lost all my things,” he says. “We had to live on a boat for eight days. We ended up living on an embankment for a year. Through Islamic Relief I got some work and through this I got some money to build a new house.”

still to be 6% lower than it would have been if the hurricane had not struck.¹⁸

Recent research indicates that the intensity of Atlantic hurricanes has increased in recent years,¹⁹ while the 2011 *Global Assessment Report on Disaster Risk Reduction* says that category 4 and 5 cyclones – the most intense and potentially damaging – are on the increase.²⁰

The maximum wind speed of tropical cyclones is predicted to rise in the future, by up to 11%.²¹ By the end of the century, the number of category 4 and 5 cyclones is expected to double, with perhaps a fifth more rainfall.²²

Some governments have made progress in protecting their people against cyclones – not least Bangladesh. But twice as many people are now living in the path of cyclones as lived in cyclone-prone areas 40 years ago. Population growth and the poverty that drives people to live in vulnerable coastal areas and in the flimsy shantytowns of megacities like Mumbai and Manila have left many more people in the line of fire.

In some parts of the world fewer people are dying in tropical storms – particularly in east Asia, the Pacific, sub-Saharan Africa and Europe. But in south Asia, Latin America and the Caribbean, mortality is rising.

Is it climate change?

Scientists have tended to put forward only the cautious position that the extreme events we see are consistent with projections of greenhouse warming, and are likely to increase in frequency.

More recently, however, there has been greater confidence in stating that a single weather event can be linked to climate change.²³ One recent study exploring the intense heat wave that caused raging wildfires around Moscow in 2010 concluded with a probability of 80% that the record-breaking temperatures reached “would not have occurred” without large-scale climate warming, most of which has been attributed to rising greenhouse gas emissions.²⁴

The parched earth

The increase in droughts is an area in which scientists are increasingly certain that climate change is responsible.²⁵ Very dry areas across the globe have doubled in size since the 1970s.²⁶ A long-term drying trend has been observed since the 1950s in Africa, east and south Asia, eastern Australia, southern Europe, northern South America, most of Alaska and western Canada.²⁷

A recent study examining last year’s record-breaking drought in East Africa attributed the prolonged dry conditions to the warming of the Indian and Pacific Oceans.²⁸ Continued ocean warming is expected to contribute to even more frequent East African droughts in the future. A drought that affected central India in 2008 has also been linked to manmade climate change.²⁹

Droughts can stunt the growth of malnourished children and lead to permanent adverse effects.³⁰ Even temporary malnourishment can permanently stunt growth and lower cognitive abilities, with long-term effects on lifetime earnings. Children who were malnourished during Zimbabwe’s drought of 1982–1984 were subsequently found to have a 7% deficit in lifetime earnings compared to their healthier counterparts.³¹

Trends in climate-related disasters

The numbers of reported natural disasters and people affected have been increasing since the 1970s. One analysis of the leading natural disaster dataset in 2011 found that the increased number of disasters is chiefly driven by a steep rise in reported floods in all regions, with increasing storms in Africa and the Americas another significant factor.³²

When weather-related disasters are analysed separately, the average rate of increase is 4.1% per year in the 30-year period from 1980.³³

In terms of material losses, the cost of natural disasters has risen 15-fold since the 1950s, from \$38 billion in 1950–1959 (1998 values) to \$652 billion in 1990–1999.³⁴ Costs have

‘The current all-dominating financial crisis is diverting attention from the realisation that internationally coordinated climate protection is on the brink of collapse’

Dr Torsten Jeworrek, Munich Re's Reinsurance CEO

Record-breaking meteorological events in the past decade³⁵

Year	Region	Meteorological record-breaking event	Impact, cost
2000	Western Europe	Worst autumn on record in England and Wales since 1766	£1.3 billion
2002	Central Europe	Highest daily rainfall record in Germany since 1901	Flooding of Prague and Dresden, \$15 billion
2003	Europe	Hottest summer in 500 years	Death toll exceeding 70,000
2004	South Atlantic	First hurricane in the region since 1970	Three deaths, \$425 million damage
2005	North Atlantic	Highest number of tropical storms, hurricanes and category 5 hurricanes since 1970	Inc. Hurricane Katrina, costliest natural disaster in US history with 1,836 deaths
2007	Middle East	Strongest tropical cyclone in the Arabian sea since 1970	Biggest natural disaster in the history of Oman
	Western Europe	Wettest May-July period in England and Wales since records began in 1766	Major flooding causing £3 billion worth of damage
	Southern Europe	Hottest summer in Greece since 1891	Devastating wildfires
2010	Russia	Hottest summer in the west of the country since 1500	500 wildfires around Moscow, grain harvest losses of 30%
	Pakistan	Record-breaking monsoon rains and worst flooding in the country's history	2,000 deaths, \$12 billion in costs
	Australia	Highest December rainfall in the east since 1900	Brisbane flooding in January 2011, costing 23 lives and an estimated \$2.6 billion
2011	United States	Wettest January–October period on record since 1880	Severe floods when Hurricane Irene hit
	United States	Most extreme July heat and drought in Oklahoma and Texas since 1880	Wildfires affecting 3 million acres, preliminary impacts of \$6–8 billion
	Western Europe	Hottest and driest spring in France since 1880	French grain harvest down by 12%
	East Africa	Worst drought for 60 years, causing severe food shortages and malnutrition across Djibouti, Ethiopia, Kenya and Somalia	13 million people dependent on food aid to survive; tens of thousands of deaths in Somalia
	Japan	72-hour rainfall record in the Nara prefecture	73 deaths, 20 missing and severe damage at time of initial reporting
	Republic of Korea	Wettest summer on record since 1908	Flooding in Seoul, 49 deaths, 77 missing, 125,000 affected (initial reporting)



A life dismantled by relentless drought

“I remember in my youth, we didn’t have frequent droughts,” says 47-year-old Olow Omar Gedi. “We would only have a severe drought every five or six years. But now, when we expect rain, what we get is drought. Drought has become a fact of life.

“I used to have 40 camels, 50 goats and 50 cows but then there was a severe drought and I was left with seven camels, 20 goats and 30 cows. Later there was another drought that killed all my remaining cows and camels.”

Seven years ago Olow and his family decided to give up the pastoralist life and settle in Farray, a dispersed community of 300 families some 30km west of Mandera in Kenya’s arid north east. But the settlement has no water source, and its residents are dependent on water trucked in from outside and food aid distributed by the UN’s World Food Programme.

“It’s not a good thing to be dependent on food aid all your life,” says the father of six. “The distribution isn’t regular, and it’s too little for a family like mine. So we have to collect firewood to sell it and supplement our income.

“We can’t predict these things but I reckon the future will be disastrous. The land is barren and our livestock numbers have dwindled, so the only hope we have is to find new ways to earn some money. Life for my children will be extremely difficult.”

increased dramatically both for weather-related and non-weather-related disasters.³⁶

In 2010 the top ten disasters ranked by economic losses came to \$93.27 billion.³⁷ In 2011 the cost of all disasters amounted to \$380 billion.³⁸ According to the reinsurer Munich Re, global average economic disaster losses have risen by 200% over the past 25 years.³⁹

“Ex-post financing is unsustainable,” says Clarence Wong, chief economist at Swiss Re Asia. “Investing in disaster risk management is the only way to reduce the burden on public budgets and build the foundation for more sustainable risk financing arrangements.”⁴⁰

And things are set to get worse. More and more people are moving to the vast and vulnerable slums of major cities, and more are being exposed to the risks of floods, cyclones and unsafe buildings.⁴¹ According to one study, a repeat of the 2005 Mumbai floods in the city in 2015 could cause 80% higher losses and affect 20% more people.⁴²

The impact of small disasters

Smaller disasters (sometimes referred to as extensive disasters) are often excluded from large global datasets. These disasters refer to repeated or persistent hazards of low or moderate intensity that are usually of a highly localised nature – like the intense flooding that affected the Gaibanda district of Bangladesh in June 2012, referred to elsewhere in this report.

For every cataclysmic event like the Indian Ocean tsunami of 2004 or the Pakistan floods of 2010, there are many smaller-scale climate-related disasters such as flash floods, storms, fires, landslides and mudslides.

Several analyses have found that there is a rising trend in these extensive disasters. The 2011 *Global Assessment Report* identifies that the number of small disasters reported is increasing, and says the numbers of people, houses, schools and health facilities affected are also growing.

Preparation saves lives and money

'If decision making was based on a realistic assessment of social and economic costs and benefits, disaster risk management should have a similar public policy importance to controlling inflation or resolving armed conflict'

UN Office for Disaster Risk Reduction⁴³

Emergency relief unquestionably saves lives and assists recovery, but too often it treats the symptoms of the profound problems poor communities face without addressing the root causes.

How can we help people to break free from a savage cycle of successive droughts that gradually wears them down until all their assets are gone and food aid is their only hope? How can we equip people to protect their homes against severe flooding that may affect them year after year, and spare them having to start all over again each time disaster strikes?

These are the kind of questions addressed by disaster risk reduction (DRR) projects, initiatives that enable poor communities threatened by natural disasters to prepare for the worst rather than just hoping for the best.

A growing body of evidence suggests that DRR saves lives and money. It helps people to better withstand the onslaught of disasters such as earthquakes and cyclones, droughts and floods. It can reduce both the financial costs that victims of disaster bear and the costs that aid agencies and governments incur in providing emergency aid. It can make vulnerable communities more resilient over time, freeing them from the downward spiral that a succession of disasters can create.

Defining disaster risk reduction

This report highlights some of the existing evidence for the positive benefits of DRR, and introduces examples and insights from Islamic Relief's burgeoning DRR activities in Kenya, Mali, Pakistan and Bangladesh.

Why does a bridge collapse? The immediate cause may be a mudslide precipitated by an extreme rainfall event, perhaps

brought on by climate change. Poor bridge design and construction may play a part.

But the underlying cause may be something less obvious. Perhaps hillside deforestation contributing to increased sediment flows, for example. The deforestation may have been caused by a desperately poor community with no choice but to chop down trees, or by logging concessions that encourage tree cutting but not planting.⁴⁴

This kind of questioning can help identify and address the underlying causes of a disaster, allowing a preventive strategy to be put in place.

Disaster risk reduction (DRR) means ensuring better preparation for adverse events and improving the management of land and the environment.⁴⁵ It is therefore a form of climate change adaptation – the term used to describe making adjustments to natural or human systems in order to minimise or control harm or exploit opportunities associated with climate change.⁴⁶

DRR has the potential to be the first line of defence against climate change for poor communities, an essential part of adaptation.⁴⁷

Prevention is better than cure

When Mozambique asked for a paltry \$2.7 million in 2002 to help prepare for floods, donors only handed over half that amount. In the floods that followed, the international community spent \$100 million on emergency relief – plus another \$450 million to rebuild after the worst was over.⁴⁸

The World Bank and the Asian Development Bank said in the wake of the worst floods in Pakistan's history that an investment of only \$27 million in DRR could greatly reduce losses from future disasters⁴⁹ – this after the damage caused by the 2010 floods had topped \$10 billion.

These are examples of what might have been; opportunities missed to implement DRR before the onset of disaster. But

‘Before, I could never think of living in a room made of cement. It was Islamic Relief that heard the voice of the poor’

Asghar Ali, labourer in Basti Manghar Wala, Punjab, flooded Pakistani village rebuilt by Islamic Relief

there are also compelling examples of DRR delivering real benefits. Spurred on by its chastening experience a decade ago, Mozambique now commits more than half of its disaster risk management budget to DRR projects.⁵⁰

Success stories

During the 2001 earthquake in Bhuj, India, most government buildings that conformed to construction codes suffered only limited damage, whereas those that contravened the codes collapsed. When Cyclone Sidr hit Bangladesh in 2007, millions of Bangladeshis were already in special shelters or had been evacuated from coastal areas. The subsequent death toll was around 4,000, compared to the 140,000 that died in a cyclone of similar intensity in 1991.⁵¹

An important new study commissioned by the UK’s Department for International Development⁵² says that building resilience among communities is easily the most cost-effective intervention for drought-affected areas, when compared with an early or late humanitarian response to drought as it develops. Assuming a high-magnitude drought every five years (a conservative assumption for both countries), the study estimates that in Kenya a late humanitarian response would cost nearly \$21 billion more than resilience-building activities over two decades. In southern Ethiopia, the savings would be \$3.1 billion. For just these two countries, then, donors would stand to save \$24.1 billion over 20 years if they invested in resilience.

“For every \$1 spent on resilience measures... the net cost over 20 years is converted to a net benefit of over \$1 billion,” the study says. Its conclusion is that there is “a very strong case” for investing in resilience.

Not included in these calculations are wider development gains and the contribution to GDP growth that comes with flourishing communities – or, indeed, the savings in lives and health among people and livestock protected from drought.

A cost benefit analysis of DRR in the Red Sea Hills of Sudan looked at the efficacy of terracing farm land and building earth

dams and embankments to strengthen agriculture. It found that these projects not only helped farmers to diversify their income, but also reduced the cost of responding to future disasters by a significant margin.⁵³ New analysis of the relative costs and benefits of Islamic Relief DRR projects is also strikingly positive (see ‘Cost-effective DRR in action’, page 19).

For every DRR success story that makes the headlines, there are likely to be others that don’t. DRR is what’s behind the stories that don’t happen – the deaths that don’t occur, the buildings that continue to stand, the children who carry on going to school.

Attracting investment

Much more analysis of DRR projects needs to be done. It can be difficult to persuade major aid donors of the benefits without extensive research evidence.

Longer-term projects may be particularly challenging to ‘sell’, as the benefits they deliver may take decades to materialise in a measurable way. As DRR experts Charlotte Benson and John Twigg point out: “In the absence of concrete information on net economic and social benefits and faced with limited budgetary resources, many policy makers have been reluctant to commit significant funds for risk reduction, although happy to continue pumping considerable funds into high profile, post-disaster response.”⁵⁴

Effective DRR depends on applying limited funds strategically and wisely, in close consultation with communities themselves. Bangladesh, for example, has succeeded in reducing deaths from cyclones by spending modest sums on shelters, developing accurate weather forecasts, issuing warnings that people heed, and ensuring careful evaluation. All this costs less than building large-scale embankments that are likely to be less effective.

Softer, social DRR measures – such as the village disaster committees and community workshops favoured by Islamic Relief in Bangladesh – can be just as worthwhile and as effective as major structural investment.



Children play safely, out of reach of seasonal flooding, on land raised by Islamic Relief at South Kabilpur

Cost-effective DRR in action through Islamic Relief

Mandera, Kenya, experienced its worst drought for over half a century last year, but farmers growing vegetables, fruit and cereals – supported by Islamic Relief – were able to feed their families in these testing conditions and avoid child malnutrition.

Gaibanda, Bangladesh, was hit by its worst floods for 25 years in June 2012 but a raised ‘plinth’ constructed by Islamic Relief – a giant flat-topped earth mound on which vulnerable families from the flood plain were able to rebuild their houses on higher ground – protected a small village community from harm.

Quite apart from the incalculable value of not suffering the trauma of severe drought or floods yet again, these projects deliver tangible financial benefits to the families involved – and are more cost-effective for Islamic Relief than providing emergency aid would be.

Cheaper than drought relief

Islamic Relief Kenya reports that it costs 2,550 KES per month (around £19) to provide a farmer and his family with the seeds and diesel needed to irrigate and cultivate an acre of land along the Daua river. This is little more than half the 4,500 KES per month (£33.70) it costs to provide food aid to a family of six affected by drought – and that’s before emergency water and medical needs are taken into account.

In terms purely of monthly maintenance costs (excluding Islamic Relief’s initial investment in diesel pumps and tractor hire when establishing a new project), it is cheaper to provide a family with the means to thrive without food aid than it is to deliver food aid to a struggling family that has succumbed to drought and malnutrition. And as farmers become

established they will buy their own seeds and fuel through co-operative bulk buying, enabling them to become increasingly self-sufficient so that support can be transferred to new families joining the project.

Saving livestock and livelihoods

Construction and subsequent maintenance costs for the raised plinth built in South Kabilpur in April 2012 will amount to 1.1m BDT over five years – around £8,400. But over the same period Islamic Relief Bangladesh calculates that the project will generate 2.8m BDT worth of benefit for the 21 families living on the plinth – around £21,100. This calculation is based on what they will save through avoiding flood damage to their homes, trees and vegetable gardens, and through not needing to replace drowned livestock or sell others to make ends meet.

Strikingly, the project’s total cost over five years is less than the 1.2m BDT (around £9,200) it would cost for a month of emergency relief if these 21 families lost everything in a major flood and turned to Islamic Relief for all their needs: temporary shelter, food, drinking water, medicines, emergency toilets and other supplies.

Together the community benefits and the humanitarian aid savings point to a cost/benefit ratio of 1:3.6 – or £18 of benefits and savings for every £5 spent.

Positive examples from other agencies

Improving Nepal's defences

Like all countries on faultlines, Nepal is always at risk of earthquakes. Recent estimates of a worst-case scenario predict that a major quake, 8 or higher on the Richter scale and with an epicentre 200 miles from Kathmandu, is likely to result in 100,000 deaths, 300,000 injuries and the destruction of 60% of buildings in the Kathmandu Valley.

Because of political instability and the lack of a legislative parliament, plans for a national disaster management agency are on hold. But programmes supported by the UK's Department for International Development (DFID) in Nepal are building the resilience of 4 million people by:

- Strengthening policy and institutional support through the training of 600 government workers in risk management and response
- Rebuilding 162 schools in earthquake-prone areas and introducing community preparedness in 200 villages
- Carrying out seismic assessments of 50 hospitals and planning retrofitting for ten major hospitals
- Training 4,000 volunteers in emergency response, search and rescue and first aid.

The UK is also supporting UNDP's work to strengthen land use policy and building codes.⁵⁵

Protecting livelihoods in the Congo

In 1998 the Office of US Foreign Disaster Assistance (OFDA) implemented a flood mitigation and watershed management project in Kinshasa, the Congolese capital.⁵⁶ It was to become a project whose results would serve as a basis for designing urban DRR activities in several countries.

Torrential rains had flooded the homes and businesses of 10,000 commune residents, with an estimated 3,000 cubic metres of sand and mud causing widespread damage. An additional 90,000 residents were indirectly affected through the disruption of transport and livelihoods.

Each dollar invested by the OFDA in DRR in 1998 was seen to result in savings of at least \$45.58 during the following rainy season (in 1999). Since then further savings have accrued, multiplying the initial benefit several times over.

Around 100,000 project beneficiaries were spared economic losses amounting to \$71.06 each through an OFDA investment of just \$1.56 per person. The project also contributed to a 90% drop in cholera cases.

A world underprepared

'We are caught in a race between the growing size of the humanitarian challenge, and our ability to cope; between humanity and catastrophe. And, at present, this is not a race we are winning'

Lord Ashdown, *Humanitarian Emergency Response Review*, 2011

Disaster risk reduction (DRR) should be an idea whose time has come. It ought to make sense to invest in projects that have the potential not only to save lives but also to save money from cash-strapped aid budgets.

According to Islamic Relief's research, however, only a tiny proportion of aid goes to DRR. In 2010 the world spent 23 times as much on emergency relief for the ten countries hit hardest by disasters as it spent on disaster prevention and preparedness (DPP).

Despite warm words of commitment from donor governments and the signing of international agreements, DRR funding is still only a trickle in an ocean of need.

Nowhere is the lack of investment more stark than in West Africa – a region where 18 million people have been affected by severe drought this year. Most of the countries worst affected by the drought received only 12 pence for DRR in every £100 of aid spending over the five years to 2010.

The Hyogo Framework for Action

Three weeks after the Indian Ocean tsunami swept 230,000 people to their deaths in December 2004, the UN General Assembly unanimously agreed the Hyogo Framework for Action (HFA). It was a significant moment: 168 countries putting their names to a ground-breaking ten-year commitment to disaster risk reduction.

If the delegates needed any reminder of the urgency of the need, they were left in no doubt by the television images of people, homes, cars and trees being carried away by the

tsunami. Not signing the Hyogo agreement would have been unthinkable.

At the Rio+20 summit in 2012, governments were urged to 'accelerate implementation' of the Hyogo Framework. It was noted that since the first Earth Summit in 1992, the world had seen 1.3 million deaths, 4.4 billion people affected and \$2 trillion in economic losses because of disasters.

"We call for disaster risk reduction and building of resilience to disasters to be addressed with a renewed sense of urgency," says *The Future We Want*, the concluding declaration from Rio+20.

According to Islamic Relief's research, however, the concrete commitments of governments have failed to live up to their pledges.

What's the target?

Unlike the UN's Framework Convention on Climate Change, the Hyogo Framework for Action is not binding and its targets are not obligatory. In most of the literature on DRR, there is little mention of overarching funding targets for donors.

The UN Office for Disaster Risk Reduction (UNISDR) monitors a variety of targets for all HFA signatory countries; donors and recipients alike. These include allocating 1% of national development budgets to DRR, along with 10% of humanitarian aid financing and 10% of reconstruction and recovery funds.⁵⁷

Many are making progress. Australia, the European Commission and the UK are putting resilience at the centre of their aid efforts. Colombia, Indonesia and other at-risk countries are developing strong DRR programmes. We have certainly moved forward from when only 0.1% of humanitarian aid was spent on DRR, at the beginning of this decade.⁵⁸

But judging from the DRR funding received by some of the world's most vulnerable countries so far – or rather the lack of it – risk reduction and prevention are still the Cinderellas of the aid world.



Living in limbo

“We’ve been flooded out of our home three times – in 1988, in Cyclone Sidr and then in Cyclone Aila. We had cattle, we had goats and some ducks but we lost them all. We lost our livelihood and our house was completely destroyed.”

Cyclone Aila was three years ago but for 65-year-old Mayna Bibi the suffering goes on. She wipes away a tear with her sari as she remembers her daughter Rohima and granddaughter Lotifa, both of whom drowned in the cyclone’s tidal surge.

Life was a struggle in Golkhali village even before the cyclone, she says, but Aila made matters worse. Her sons have no hope of a livelihood from farming because their land is now too salty to cultivate. They scrape a living through fishing, or venture across the river to forage for whatever they can find in the Sundarbans – a vast mangrove forest.

Potentially there are rich pickings in the Sundarbans – wood for fuel and for house and boat building; forest fruit and honey; the pale crab larvae that scurry and burrow in the muddy waters of the forest floor.

For Mayna’s sons Abir and Ismail, however, a visit to what they call the jungle is fraught with danger. First, they risk the wrath of the local police, assigned to patrol the river to ensure that the forest’s resources are not over-exploited. In the forest itself some villagers have been attacked and killed by tigers, and others kidnapped for ransom.

What Golkhali really needs is what Islamic Relief aims to bring to the area when it starts disaster risk reduction projects here in late 2012 – new income-generating projects and the means to protect people’s homes against future floods.

Weak funding

In 2010 385 natural disasters killed more than 297,000 people across the globe, damaged the lives of 217 million others, and caused \$123.9 billion in damage. According to figures from the Organisation for Economic Cooperation and Development (OECD), however, DRR accounted for a mere 4.2% of all humanitarian aid.

What this means is that more than 95% of humanitarian finance is spent on responding to disasters after the fact, rather than helping to prevent them in the first place or protect those likely to be affected.⁵⁹ That’s despite research from the US Government that says that \$1 of risk reduction spending can result in as much as a \$15 decrease in disaster damage.⁶⁰

Financing of disaster risk is “still underdeveloped” according to the UN Secretary General, reporting on the International Strategy for Disaster Reduction in 2012.⁶¹ Or, as the UNISDR’s *Global Assessment Report* for 2011 put it rather more bluntly: “The political and economic imperative to invest in disaster risk management remains weak.”

But how weak? The first major attempt to quantify the amount of risk reduction funding provided by countries on the OECD’s Development Assistance Committee (DAC) was completed in early 2012 by Development Initiatives, an independent research centre on humanitarian issues. Its months-long investigation revealed that funding is even weaker than previously thought: just 1% of all development aid.

Moreover, of the 40 top recipients of humanitarian aid, four countries alone accounted for three quarters of all DRR spending. Development Initiatives found that funding was not necessarily allocated to the countries that needed it most.⁶²

‘The decision to invest in DRR is clearly not technical or administrative – it is fundamentally political’

UN International Strategy for Disaster Reduction,
Global Assessment Report on Risk Reduction

Countries hardest hit by natural disasters and their risk reduction funding 2010

Country	Disaster	No. of people	DPP* funding in 2009 (\$ m)	DPP* funding in 2010 (\$ m)	Total humanitarian pledges, commitments and contributions in 2010 (\$ m)
		killed			
Haiti	Earthquake	222,570	48.04	33.29	3,591.84
Haiti	Cholera	6,908	48.04	33.29	3,591.84
Pakistan	Floods	1,985	3.69	5.62	3,166.37
Burkina Faso	Meningitis	841	0.77	4.48	41.70
Philippines	Dengue epidemic	737	51.96	15.23	33.44
		affected			
Pakistan	Floods	20.36 million	3.69	5.62	3,166.37
Somalia	Drought	4 million	2.16	3.86	501.10
India	Floods/Cyclone Aila	3.27 million	20.72	258.30	11.60
Colombia	Floods/landslides	2.79 million	14.48	0.56	75.56
			DPP % of ODA: 0.89%	DPP % of ODA: 1.5%	\$ 7,421.61 million

*DPP: Disaster prevention and preparedness

Note: Humanitarian figures include responses to all emergencies in those countries, including natural disasters, conflict and other emergencies. Uncommitted pledges are excluded.

Sources: EM-DAT, the OFDA/CRED international disaster database (www.emdat.be); UNOCHA/FTS (www.fts.unocha.org); OECD DAC

Countries at ‘extreme risk’ of climate change and their DRR funding 2005–10

Country	Net Official Development Assistance (ODA) (\$ m)	Total humanitarian aid (\$ m)	Disaster prevention and preparedness (\$ m)	DPP % of ODA
Haiti	7,384	2,371.30	107.04	1.5%
Bangladesh	13,831	951.54	263.99	1.9%
Sierra Leone	2,149.85	85.19	3.58	0.17%
Zimbabwe	2,855.09	1,078.78	5.99	0.21%
Madagascar	3,250.49	120.21	53.30	1.6%
Cambodia	3,889.12	64.08	6.96	0.18%
Mozambique	11,007.53	155.34	31.44	0.29%
D.R. Congo	13,192.73	2,183.20	11.03	0.08%
Malawi	4,436.39	57.54	9.95	0.22%
Philippines	5,067.41	379.73	85.37	1.7%
	\$ 67,063.61 million	\$ 7,446.91 million	\$ 578.65 million	0.86%

Sources: Maplecroft 2012; OECD DAC



Delivering on Hyogo commitments

So far 133 countries have reported to the UNISDR on their progress against the Hyogo Framework. The question of financing has proved most troublesome. Less than one in five could describe the percentage of their national budgets assigned to disaster risk management – despite countries like India and Vietnam having passed legislation to allocate financial resources.⁶³

Less than half of countries said they budgeted explicitly for disaster risk reduction within post-disaster recovery programmes, and only 26 out of a total of 133 reporting countries had allocated DRR budgets to local government, where most hands-on disaster management occurs.

Three-quarters of the African countries said they simply did not have enough funds – including those that had allocated some funds to DRR.⁶⁴

Small change for the poor

Islamic Relief carried out its own research into three groups of countries:

- Those at the top of the list of developing nations hit by natural disasters in 2010
- The ten countries predicted to be most at risk from climate change in the next three decades
- The five countries most at risk of famine in the 2012 Sahel food crisis.

We analysed figures on donor commitments from OECD Development Assistance Committee (DAC) members, excluding support for climate-specific funds and for development projects that include an element of risk reduction or climate adaptation.

In all three cases, our findings show that not only is DRR funding low but in some years – most notably in parts of West Africa – it is simply non-existent.

From drought to prosperity

Until seven years ago 50-year-old Abdi Tifow Bare was a pastoralist with hundreds of animals. But most were wiped out by drought. The profound impact of climate change persuaded him to try his hand at growing vegetables and cereals instead, selling his last seven camels to buy some land in Hareri – 50km west of the north-east Kenyan town of Mandera.

“Islamic Relief helped with bush clearing and with tractors for ploughing and they provided pump sets for irrigation,” he explains. “They also provided seeds, fuel and training workshops for the farmers. They have done a lot of work here.”

An acre of onions can generate around 50,000 KES in net profit in three months, Abdi says, giving him a monthly income that is four times what a farm labourer on a monthly wage would earn.

The success of this project shows that disaster risk reduction works. Islamic Relief has helped Abdi to make a secure income through a project that costs a fraction of what it would cost to provide him with emergency and food aid and water in the event of drought.

“We used to rely a lot on the milk from our animals but when there was a drought they didn’t produce much milk and our children became malnourished. With last year’s drought we were much better prepared because we had a good harvest and we stored fodder for our livestock.”

This is an even greater cause for concern when we consider that aid fell for the first time in years in 2011, a victim of global recession. Hardest hit were the group of least developed countries, with a fall in net bilateral aid of 8.9%. Greece, Italy, France, Ireland, Spain, Portugal and Japan all reduced their aid, some of them dramatically.⁶⁵

Failing disaster-hit countries

The Centre for Research on the Epidemiology of Disasters (CRED) amasses data from disasters worldwide – numbers of people killed and adversely affected, economic costs. Many recent disasters have been in the industrialised world, including Hurricane Katrina, the deadly drought of the US mid-west, fires in Spain and heatwaves in Russia. Most disaster victims, however, are in the developing world.

Our table, 'Countries hardest hit by natural disasters and their risk reduction funding 2010' (page 23), shows the biggest disasters, first in terms of people killed and then by numbers affected. It was a year in which overall DRR funding rose dramatically – especially in the case of India, for which commitments came to \$258.3 million.

It is striking, however, that even for these countries hardest hit by disaster – where the argument for action and for funding should be strongest – DPP came to no more than 1.5% of total aid. Instead governments sent 23 times as much in disaster relief.

Failing climate-threatened countries

If governments can't be expected to anticipate which country will be hit hardest by natural disasters in any given year, what about the countries we know will face the worst? We took the ten nations forecast to be most at risk from climate change over the next 30 years, ranked by UK risk analysts Maplecroft, to see whether funding was helping these vulnerable 'hot spots' to prepare for the worst.⁶⁶

Even allowing for the huge rise in DRR funding for Haiti and Bangladesh in 2009 and 2010, we found that these ten countries together received an even smaller proportion of aid for DPP than the overall average for the five years to 2010 – just 0.86% compared to 1%.⁶⁷ Not even a penny in the pound of aid budgets.

Failing the hungry in West Africa

It is in the Sahel, in West Africa, that we found the most disturbing results. This is a region where millions have been brought to the brink of starvation this year, their livestock dying and children going without meals.⁶⁸

Yet these countries have received only \$22.65 million in DPP aid over five years.⁶⁹ This is a part of the world that has experienced drought for thousands of years, and an intensive cycle of drought since just before 1970, according to the Joint Institute for the Study of the Atmosphere and Ocean (JISAO),

For some countries, in some of the years we reviewed, there was no funding for DPP at all. From 2005 to 2010 disaster risk reduction amounted to only 0.12% of all aid – less than for any of the other countries we examined, and far less than the 1% overall percentage identified by Development Initiatives.

The Sahel is experiencing today what the rest of us are warned to expect in the future: temperature rises approaching the acknowledged danger threshold. In eastern Chad, northern Mali and Mauritania, temperatures are in the band between 1.5°C and 2°C above levels in the late 19th century – close to the limits beyond which, says the IPCC, it is not safe to pass.

The warming of the south Atlantic and Indian Ocean, says the JISAO, has led to the repeated failure of rains over an extended period of persistent drought since around 1970. A new report by the UN Environment Programme and others identifies 19 'climate hotspots' like the Sahel, where temperature changes have already been particularly severe.⁷⁰

With 18 million people at risk of starvation in early 2012, the UN appealed urgently for \$1.65 billion for the nine countries

DRR funding for the five countries worst affected by the 2012 Sahel crisis

Country	No. of people at risk	DPP 2005–2010	UN appeal June 2012	DPP over five years as % of 2012 emergency appeal target
Burkina Faso	2.95m	\$5.59m	\$126.06m (\$43/person): 51% met	4.43%
Chad	5.48m	\$0.64m	\$572.06m (\$104/person): 59% met	0.11%
Mali	5.06m	\$0.64m	\$214m (\$31/person): 46% met	0.3%
Mauritania	848,500	\$0.00121m	\$94.23m (\$111/person): 36% met	0.0013%
Niger	6.4m	\$15.78m	\$489m (\$70.46/person): 50% met	3.23%
	20.74m	DPP as a % of ODA: 0.12%	\$1,495.35m	1.5%

Sources: UNOCHA consolidated appeals 2012 (<http://fts.unocha.org>); OECD DAC

of the Sahel. The component of this appeal for the five countries at which we have looked was \$1.5 billion.

If the appeal were to be fully funded, the cost to donors would dwarf the amount spent on DRR in these countries over the past five years. As a percentage of total aid to these countries for 2005–2010, DRR came to just 0.12%.

Fiddling the figures

International donors promised to provide ‘new and additional resources’ for climate mitigation and adaptation approaching \$30 billion for the period 2010–12.⁷¹

Unfortunately, as the OECD notes, no one spelled out exactly what was meant by ‘new and additional resources’. Would the extra funding include loans and insurance, or projects already in the pipeline? Should an entire project have to tackle climate change to qualify?

Judging from the 2010 figures, some of this ‘new’ funding has come at the expense of existing aid flows, including DRR.

In 2010 \$22,907.9 million of climate finance was provided, representing 15% of total ODA. This was the first year in

which the OECD collected separate data on climate funding, so if the funding was truly additional we would expect ODA spending to have been substantially higher than in 2009.

ODA did indeed rise over 2009 levels, to \$128.49 billion. But if climate funding is deducted, ODA actually dropped – by 11.85%. What we are witnessing is a donors’ shell game, in which funding is being reallocated under different budget heads and cut at the same time.

Losing the 2°C battle

What’s more, the original targets for spending on climate change mitigation and adaptation look like they will need to be revised upwards. They were predicated on keeping temperature rises below 2°C – a threshold that now looks likely to be breached. The UN Environment Programme’s 2010 *Emissions Gap Report* predicts that temperatures might rise as much as 2.5°C or even 5°C.⁷²

This means that the UNFCCC estimate that \$171 billion of adaptation funding will be needed each year (up to \$67 billion of this in the developing world) might no longer be enough.⁷³ The World Bank has more than doubled its estimate of what is required for adaptation alone, to \$70–100 billion.



Flooded village, Gaibanda, Bangladesh

‘Since 2002, the US has spent \$11.2 billion on humanitarian aid in the Horn of Africa – chasing the problem after the fact. We need to reverse the equation from reaction to prevention’

Rajiv Shah, US Agency for International Development

Dangerously exposed

All of this leaves the world’s poorest countries dangerously exposed to the worst consequences of climate change, with pitifully few resources to support them. Development Assistance is falling, overall aid spending is faltering, and DRR is failing to keep pace with the increasing frequency and severity of climate-related disasters.



Sandstorm, north-east Kenya

Estimated annual climate adaptation costs in developing countries

	Year assessed	\$ billions	Timeframe
World Bank	2006	\$9–41	present
Stern	2006	\$4–37	present
Oxfam	2007	\$>50	present
UNDP	2007	\$86–109	2015
UNFCCC	2007	\$28–67	2030
World Bank	2010	\$70–100	2010–2050

Sources: World Bank, 2006, 2010; Stern, 2007; Oxfam International, 2007; UNFCCC, 2007; Watkins, 2007, cited in IPCC, ‘Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation’, special report of the Intergovernmental Panel on Climate Change, Cambridge University Press, 2012, p 412.



Riverbank erosion, Gaibanda, Bangladesh

Better prepared to fight floods

Islamic Relief in Bangladesh

'This rainy season many people in Kabilpur have experienced the worst flood of their lives. But because of Islamic Relief's work in this area they were much more prepared'

Niger Dilnihar, Programme Officer, Islamic Relief Bangladesh

Bangladesh is at the top of a league table it would rather not be associated with. This low-lying nation has been rated the most vulnerable in the world to the negative consequences of climate change, and one of the most vulnerable to natural disasters.⁷⁴ The entire country is an extensive delta formed by the Ganges, Brahmaputra and Meghna rivers. Its history is a catalogue of widespread monsoon flooding, earthquakes and devastating tropical cyclones.

To the south is the Bay of Bengal, where rising sea levels are blighting coastal areas with a combination of water-logging and salt contamination that is crippling agriculture and making ground water undrinkable. To the north are the mighty Himalayas, where the melting of the mountain glaciers threatens more intense flooding in the shorter term and widespread drought as the century advances.

Islamic Relief operates in 12 of the 64 districts of Bangladesh. Its priority areas are determined by a 'vulnerability matrix' that weighs up poverty levels and the extent of vulnerability to floods, cyclones and tidal surges.

Islands of vulnerability

One such priority area is Gaibanda, 300km to the north west of Dhaka and home to over 2.1 million people. It's a district plagued by monsoon floods, river bank erosion and unseasonal cold snaps. The moods and movements of the local rivers can make or break the livelihoods of the most marginalised – those who live in the char lands, outside the embankments that offer a measure of flood protection to only 40% of the district.

Chars are islands of silt and sand deposited by the river. They may be permanent enough to sustain whole

communities for years in the fertile flood plain but can also be so transitory that they are inundated and rendered uninhabitable in a single rainy season. Many who live in the char lands have been displaced several times by flooding or by bank erosion that causes the land beneath their houses to collapse into the river.

"Bangladesh is dependent on agriculture, so in the harvest season people have work but out of season they have none," says Niger Dilnihar, Islamic Relief's Programme Officer in Gaibanda. "People want to stay outside the embankments because it means they can plant and cultivate for themselves. It's a huge risk but they stay there because they don't have any other option."

In this most disaster-prone of countries, the issue of food security hinges so much on the capricious climate that food production and disaster policy come under a single government department – the Ministry for Food and Disaster Management. The ministry and aid agencies such as Islamic Relief work closely together to develop local Risk Reduction Action Plans across the country.

Village disaster management committees

"Islamic Relief is working with a local aid agency, the SKS Foundation, to improve the resilience of communities vulnerable to bank erosion and flooding," says Niger. "We've established village disaster management committees to bring together volunteers chosen by their own communities to formulate, implement and evaluate village disaster risk reduction and contingency plans. These committees work with us to raise awareness of disaster risk and take practical steps to protect vulnerable people.

"The work we've done has included road repairs, bridge building and the construction of earth plinths to raise people's houses and provide community shelters, toilets and tubewells that are beyond the reach of seasonal floods. We also have an education programme in local schools to teach children about environmental hazards and how to respond to them."



Safe from floods – and snakes

Asma Begum (above, right), 25, has lost her home five times to river bank erosion or flooding. But her house was left untouched when Gaibanda was hit by its worst floods for 24 years in 2012 – thanks to Islamic Relief’s plinth raising programme.

So far Islamic Relief has helped over 180 vulnerable families in Gaibanda to raise the level of their houses to protect them against flooding. Asma’s family is one of 21 in South Kabilpur who dismantled their homes in the flood plain in early 2012 and rebuilt them seven feet higher on top of a huge, newly constructed earth platform or ‘plinth’. In April they moved in – just two months before the floods came.

“I have suffered a lot because of river bank erosion and flooding,” says Asma. “I’ve been through so much pain because you get established on one char, you build your house, you plant your seeds, and then you lose everything. This year we’ve had a big flood like 1988 but we’ve suffered very little. I can easily look after my family, my daughter and our livestock.”

The community built the plinth. Islamic Relief provided 250 million cubic feet of earth and installed two tubewells for the community plus a latrine for every family.

Impressive attention to detail

The steep banks of the plinth are equipped with ramps so that the elderly and disabled can get to and from the paddy fields and the river. They’re also planted with grass to feed livestock and prevent erosion.

At the top of the banks are jika saplings – trees that are resilient in wet conditions and can provide both an effective windbreak and a supply of wood for house building and repairs.

Each home has a vegetable garden, and some of the houses already have plants loaded with large pumpkins growing extensively over their roofs.

Asma and her husband, Mohamed Abdu Rajak, lost all their livestock in previous floods. Now they have started again with four goats and 30 chickens – all of which survived the June floods on top of the new plinth. Abdu is scraping a living from fishing in the nearby Jamuna river until the flood waters subside enough for him to plant their fields again.

When that time comes the family will be ready – thanks to the flood survival kit Asma keeps in her home. It contains a variety of rice and vegetable seeds among more than a dozen useful items. There’s a length of rope to tie belongings together and secure them to a raft; dried food, matches and a fuel-efficient portable stove; oral rehydration salts and water purification tablets; dysentery medicine and chewable vitamin C tablets; and a bar of carbolic soap to ward off snakes (which hate the smell).

Sharing the benefits

South Kabilpur has elected Asma as secretary of its village disaster committee. “They thought I would be able to communicate easily with people and get the message across about preparing for floods,” she says. “My life has changed so much because I have become a woman leader in this community and people listen to what I have to say.”

The plinth has proved its value to other families living nearby. The original 21 invited 15 others to take refuge there when the floods came. “If Islamic Relief hadn’t raised our houses we would have lost some animals and many other assets,” says Asma. “We were very happy and proud to be able to help other people too.”



Mobilising the mosque

The role of the mosque can be important in DRR. Loud hailers or speakers used for the call to prayer can serve as an early warning system when flooding is imminent, or issue evacuation instructions in earthquake-prone areas. The khutba discussion at Friday prayers can provide a platform to raise awareness of disaster risk and inspire action.

“In khutba we have discussed preparing for floods,” says 85-year-old Taju Mia, the imam in South Kabilpur where Islamic Relief works. “We talked about what precautions people can take – like having some dry food stock in their houses, some firewood, some candles and fuel. During the recent floods so many people were better prepared because they had these things in their houses as a precaution.

“I’ve experienced an awful lot of floods in my lifetime. The most devastating were in 1988 and the latest floods were comparable to those. But because of plinth raising and other activities involving Islamic Relief, people have suffered very little this time.”

Islamic Relief compiled a cost benefit analysis to assess the impact of one of its biggest successes in Gaibanda so far – the construction of a plinth in South Kabilpur that saved 21 families from the area’s worst floods in a quarter of a century in June 2012 (see ‘Safe from floods – and snakes’, page 29). We found that the benefits and savings from the project over five years – what the community saves by protecting homes, trees and livestock from flooding and what Islamic Relief saves on emergency aid – will add up to over £30,000. This represents a benefit of £18 for every £5 spent, a benefit-to-cost ratio of 3.6 to 1 (see ‘Costs and benefits’ table, page 31).

Women play a crucial role in communities like South Kabilpur. They are actively involved in village disaster committees, and serve as what Niger calls ‘first responders’ – the first line of defence for their own families in the event of flooding. Each ensures that her home is equipped with its own flood survival kit – a large basket stored on a high shelf that contains everything needed to fight back when disaster strikes.

But the participation of the whole community is important too. “One of the great things about this project is that the community themselves contribute so much,” says Niger. “They contribute their labour and also some money. They don’t just expect help from someone outside.”

National and local policy development

As well as being involved in implementing DRR projects, Islamic Relief is playing a prominent role in formulating local and national DRR policy, supporting the strengthening of government institutions, and improving local DRR financing. It is doing so as part of a number of alliances and partnerships.

“At the local level, working with union disaster management committees, or UDMCs, has been a very successful experience for us,” says Syed Shahnawaz Ali of Islamic Relief Bangladesh (IRB). “These committees are mandated by the Government of Bangladesh to deliver risk reduction and adaptation programmes at the local level. They are

Costs and benefits (in BDT) of plinth raising for 21 families in South Kabilpur, Phuljhuri sub-district, Gaibanda (2012)

Construction and maintenance costs		Community benefits over five years*		Emergency aid savings†	
Islamic Relief contribution (earthworks, 2 tubewells, 21 latrines)	675,949	21 homes undamaged	1,000,000	Temporary shelter	315,000
Community contribution (labour and additional materials)	228,826	Livestock saved from death or forced sale	1,150,000	Food	378,000
5-year maintenance costs	200,000	Trees and home gardens saved from flood damage	125,000	Water for drinking, sanitation, hygiene	226,800
		Disease treatment costs saved	60,000	Medicines and water purification	25,200
		Employment during construction	235,000	Emergency toilets and tubewell	125,000
		Other community benefits	210,000	Other	145,000
Total	1,104,775 (£8,396)		2,780,000 (£21,128)		1,215,000 (£9,234)

Cost/benefit ratio = 1:3.6 (£18 of benefits and savings for every £5 spent)

*Based on calculations from average flood damage and losses, eg 90% of houses and 70% of trees damaged, 100% of home gardens destroyed, 4% of livestock killed and 60% subjected to forced sale

†Based on 30-day relief operation for 21 families in a major flood. Calculations assume flooding every year and one major flood every five years

playing a fundamental role not only in project delivery but also in increasing community involvement and ownership to build resilience.”

Each UDMC has full responsibility for designing and implementing its own resilience plan. IRB is working particularly closely with three UDMCs in Gaibanda, and in only six months these committees have secured almost 20m BDT (£160,000) in funding from local government and the local community.

IRB has also forged close links with village development committees and sub-district disaster management committees to ensure that the voice of disaster-affected communities is heard by local and national government bodies.

At the national level IRB is a member of NARRI – the National Alliance for Risk Reduction and Response Initiatives. Through this alliance it has been working closely with the Government of Bangladesh, playing a leading role in developing national disaster management policy and flood early warning guidelines.

Scratching the surface

This work in South Kabilpur and other chars is an inspiring example of the benefits that DRR can bring. But it is only scratching the surface of what is needed in Gaibanda to tackle disaster risk, let alone the whole of Bangladesh. “We can only support a few people because of a shortage of funds,” says Niger. “If we want to help a lot more vulnerable people, we will need a lot more support.”



Children face a brighter future



Qari Abid and family live more securely in a brick-built house

Living with dignity and respect in Pakistan

It's a cliché of aid experts that the poorest of the poor are hit hardest when disasters strike – but it's true nonetheless. The poorer a community, the more likely they are to be living in very basic housing and to have few savings and other resources to fall back on when disaster strikes.

In the devastating floods of July and August 2010, Pakistan's poorest certainly paid a heavy price. Just under 2,000 people and 450,000 livestock died, and 11 million people were flooded out of their homes. Many depended on aid agencies for many months for temporary shelter, food and medical aid.

When the flood water subsided people returned to their villages to find houses destroyed, workshops buried in mud, livestock and poultry gone, crops drowned in the fields. The cost of the damage was put at \$12 billion – the equivalent of 40% of Pakistan's entire government budget.

Discrimination and desperation

Communities don't come much poorer than Basti Manghar Wala, in the Muzaffargarh district of Punjab province. Most of its people are from a caste of shoemakers, most are landless, and almost all have been discriminated against because of their low status. Already impoverished people in this small hamlet were left in a desperate situation by the floods.

"We were left with nothing," recalls Safia, 20, daughter of a day labourer in Basti Manghar Wala. "It was nothing but piles of earth all around," says another villager, Asghar Ali.

Islamic Relief distributed food and other emergency aid to many people affected. But we also stayed with them as they returned home. We worked closely with them to help them rebuild their lives.

Our aim was to rebuild each village community in its entirety. That meant providing not only new houses but also good drainage and clean water facilities, new schools and health clinics, and the means to start farming again. We wanted to revive the local economy, putting it on a sustainable footing, and to make the whole community better prepared for future flooding.

A dream come true

Sarwa Mai, who lives in Basti Manghar Wala, is one of those who has benefited. "There are countless things that illiterate women like me cannot calculate," she says. "We never thought of paved streets and lined drains, so it was like a dream – a dream which Islamic Relief has made true for us."

In seven villages, including Basti Manghar Wala, Islamic Relief has:

- Built 862 houses to international humanitarian standards (each house has its own latrine and is flood and earthquake resistant)
- Provided poultry, livestock, seeds and training to enable families to earn a living again, as well as to eat more nutritiously
- Supported small business and provided training for 400 villagers in skills ranging from sewing and embroidery to plumbing and welding
- Rebuilt and paved roads, adding drainage. Previously, roads were muddy and often impassable, even when the villages were not flooded



- **Constructed cement irrigation channels to control water loss**
- **Dug new wells, testing the water to ensure that it is safe for drinking**
- **Provided health services to nearly 25,000 patients, including treatment for malnutrition.**

Involving the whole community

This ‘integrated village development’ approach involves the whole community from the outset. We encourage volunteers from the villages to form a water committee and other coordinating groups, for example, and train villagers to rebuild their own homes. We have also trained 120 volunteers in DRR, first aid, and search and rescue so that people know what to do in the event of future disasters.

Between March 2011 and June 2012, Islamic Relief helped a thousand families in seven villages to rebuild their lives, at a cost of €2.6 million. This is part of a wider €22 million reconstruction programme in Pakistan, where our work has helped set the standard for Islamic Relief’s best practice in DRR.

“We have never been taken seriously by the nearby villages but now they give respect to us,” Mazhar, chairman of the local community organisation, told us. “Now we know how to get our rights,” says Riad, its general secretary. “We have become equals and we are living with dignity.”

Islamic Relief has plans to start new DRR projects in November in the south-western districts of Khulna and Satkhira, where many villages have yet to recover from Cyclone Aila three years ago. Saline intrusion from the Bay of Bengal is a huge problem here, poisoning drinking water and destroying the livelihoods of hundreds of thousands of farmers.

Many people have abandoned the area already, uprooting their families to try their luck up country. But Syed Shahnawaz Ali, Head of Integration, Climate Change and Disaster Resilience for Islamic Relief’s DRR projects, is determined to help those left behind.

“These people have been living here for centuries and they have been through big challenges in the past and bounced back,” he says. “There’s no reason why they shouldn’t do so again. Our job is to come here and help them do it – with community awareness initiatives, with salt-tolerant crops and trees, and with new income-generating activities like fish farms, crab production and making reed mats.”

Better prepared to fight famine

Islamic Relief in Kenya

'My message to the international community is that we should not just wait for disasters to happen. If we act now we might save millions of lives, and disaster mitigation is a lot cheaper than recovery and reconstruction'

Mukhtar Wardere, Livelihoods and Microcredit Officer,
Islamic Relief Kenya

Mandera county is home to over a million people but it is so remote that it does not even get a mention in Kenya's Lonely Planet Guide. Nestled in the country's north eastern corner, close to the borders with Ethiopia to the north and Somalia to the east, it's a world away from the safari lodges and beaches of the tourist trail.

In 2011 this dry, dusty place was the area hardest hit by Kenya's worst drought for over half a century. Almost every last vestige of green was bleached from the savannah as successive rains failed and the thermometer nudged 40°C. Hundreds of thousands of livestock died, and tens of thousands of children were brought to the brink of starvation by severe malnutrition.

Barely noticed

The drought prompted Islamic Relief and other aid agencies to switch to emergency mode, sending life-saving food aid and water trucks to remote villages to prevent mass migration and keep hope alive. The operation was a remarkably successful one, although barely noticed internationally as the eyes of the world focused on drought turning to famine in neighbouring Somalia.

While most of Mandera was clinging to life in the unrelenting heat, however, some farmers came through the drought relatively unscathed. They were able to do so thanks to an Islamic Relief irrigated agriculture project along the river Daa, which forms Kenya's north-eastern border with Ethiopia.

"I normally irrigate early in the morning and in the evening," says 35-year-old Ishmail Mohamed, tending a crop of onions that is almost ready to harvest near his home village

of Shantoley. "At those times the sun isn't so hot and there isn't much evaporation, so I have to use less fuel."

Ishmail used to be a pastoralist, an itinerant livestock farmer roaming over a vast area to find pasture for his 50 cows and 100 goats. Now he is proud to call himself an agropastoralist: his main focus is growing crops, with just a handful of animals to provide milk for his children.

"I used to grow just maize and beans but now I have diversified and added cash crops including capsicum, onions, tomatoes, pawpaws and kale," he says. "Onions are our best crop – there's high demand and we get a good price. We normally sell to wholesalers and traders who transport them to Nairobi."

Pastoralists make up 80% of the population in north-eastern Kenya but their old way of life is dying as successive droughts, environmental degradation and population pressures take their toll. Many pastoralists have now settled in villages in order to register for the food aid on which some have become dependent. The landscape is so dry and parched that it can neither sustain large numbers of animals nor support rain-fed agriculture.

For Ishmail, however, the changing climate is no longer such a formidable opponent. His new livelihood means he is better prepared for the onslaught of drought.

Immense potential

"There's not enough rain to keep livestock any more," he explains. "In the future I intend to reduce my numbers of livestock further and concentrate on growing crops. I will just keep the animals I need for milk for the children."

Ishmail and his wife, Nuria Ahmed, have seven children aged between one and 12. In 2010 four of their children were found to be acutely malnourished and were enrolled in Islamic Relief's therapeutic feeding programme. In 2011, however – with the Daa irrigation programme more established and Ishmail's farm thriving – all seven children remained healthy through a record-breaking drought.



Ishmail Mohamed harvesting cowpeas

The switch to agropastoralism is a big deal for these families because it is a step away from their cultural heritage. But Islamic Relief's project has succeeded in creating a series of demonstration farms along the Daa, where pioneer farmers persuade their neighbours and friends that this is the way to go.

"Our plan is to expand this initiative so that we are able to put more land under irrigated agriculture," says Stephen Omware, Islamic Relief Kenya's Livelihoods Coordinator. "The potential of agriculture here is immense, and only about 10% of that potential has been exploited. There is scope for people not only to feed themselves but to feed the whole of Mandera and supply neighbouring counties that are suffering because of climate change."

Traditional techniques

The expanding project currently works through 90 groups of ten farmers in ten villages, spread across three districts. Each farmer starts by cultivating an acre of land, although some have taken on more. Each group of ten farmers shares a diesel-fuelled irrigation pump provided by Islamic Relief, which also helps with the hire of tractors to break up compacted soil and clear it for planting.

The farmers get free seeds and fuel in the first year to persuade them to join the programme, and then buy these inputs themselves in subsequent years. They are encouraged to form cooperatives to pool resources and benefit from bulk buying. As each group of farmers becomes self-sufficient, Islamic Relief is freed up to support more families.

Traditional, low-input farming techniques are encouraged – it's cheaper than using chemicals. Neem is used as a natural pesticide and farmyard manure as fertiliser. Soil fertility is maintained through crop rotation and companion planting. In Ishmail's three-metre-high field of maize, for example, cowpeas are entwined around the sturdy stalks of the main crop. The companion crop of cowpeas is leguminous – it can transfer nitrogen from the air to the soil to replenish nutrients consumed by the maize.

The price of survival

For the cost of dinner for four at a restaurant in the industrialised world – £85 (\$137) – a pastoralist in north-east Kenya could be given the tools to fortify himself and his family for one year against the worst effects of drought.

Resilience projects are costly, but significantly less costly in the long term than providing emergency relief, or even responding to the first early warnings of drought. The boxes of food aid being loaded into the cargo planes may look good for the cameras, but they are not the best guarantee of people's long-term survival.

The authors of *The Economics of Early Response and Disaster Resilience: Lessons from Kenya and Ethiopia*⁷⁵ found that the cost of resilience would have to approach \$200 per capita per year for ten years before it came close to the cost of humanitarian response. In other words, disaster risk reduction is affordable – and much more cost effective than emergency relief.

In Ethiopia, the authors found, when the costs of building resilience are offset against the benefits, the benefit to cost ratio is 2.8:1. "In other words," they write, "for every \$1 spent on resilience, \$2.80 of benefits (avoided aid and animal losses, development benefits) are gained."

Reaping and sharing the benefits

In Shantoley an acre of onions takes three months to cultivate and typically sells for around 200,000 KES. Inputs cost 60,000 KES, so the net income is 140,000 KES per month – three times the best that Ishmail could hope for as a daily wage labourer in this area.

The benefits of the project can also be measured by what is saved on emergency aid. It costs 2,550 KES per month (around £19) to provide a farmer like Ishmail with enough seeds and diesel to irrigate and cultivate an acre of land. This is little more than half the 4,500 KES per month (£33.70) it costs to provide food aid to a family of six affected by drought.



Reservoirs of hope in Mali

“Climate change worries me a lot,” says Kadia Samake (above), a mother of six from Ouelesebougou village in southern Mali. “This year the harvest was very bad.”

For communities in the drought-plagued Sahel region of West Africa, life is a constant struggle for survival. This year has been harder than most, with 18 million people hit by food and water shortages and a million children at risk of starvation. Successive harvests have been decimated by a lack of rainfall, leaving family grain stores empty and forcing people to sell their livestock.

Until recently Kadia’s only survival strategy was to chop branches from the trees to make charcoal. Each morning she walked three miles with her youngest child on her back and her tools in her hand to an area outside her village that is dotted with trees. Each afternoon she returned to the village with a pile of firewood to burn for charcoal production. Kadia’s income from selling charcoal was just about enough to make ends meet, but charcoal production is not an occupation she would have chosen willingly. “We know that cutting trees is not good for the environment,” she explains. “But if we don’t cut trees it will be very difficult for us to survive.”

Better alternative

Now Kadia’s community have a better alternative, thanks to two microdams provided by Islamic Relief.

The shortage of food in villages like Ouelesebougou is mainly due to a chronic shortage of water for growing crops. All the rainfall in this dry area of southern Mali falls in just three months of the year. For the rest of the year water is so scarce that it has to be rationed carefully.

According to Osman Fila Mahamud, the government-appointed village chief, 300 people make a living directly from the ten small farms here in Shantoley. The benefits also spread widely through the community, he says, because farmers in this overwhelmingly Muslim area honour their religious obligation to share what they have with those less fortunate.

His point is confirmed by 45-year-old Habiba Hussain, whose family is one of Shantoley’s poorest. “We’ve been living here for 15 years and for all that time we’ve never had any livestock,” she says. “Feeding the kids with no regular income is quite a challenge. We depend so much on the generosity of other people in the community. The more they produce, the more they share with us.”

Co-operative marketing

In another village where Islamic Relief operates, farmers enthuse about the benefits of working together as a co-operative. “In Hareri we have 20 groups of ten farmers, so we all joined together as a co-op that is registered with the ministry,” says Abdi Tifow Bare. “Every farmer gives a proportion of his crops to the co-op for marketing. We are encouraging more people to join who are not group members so that we can get more funding overall.”

As well as being involved with the co-operative, Abdi serves as chairman of the group of ten farmers that he has been part of since it all began. “We have small monthly contributions for maintenance of pump sets and helping any members of the group who need it. We also give to our neighbours when they need us to.”

There is a determination to stay in Mandera despite the changing climate, voiced by farmers’ committee member Deka Koriow, 38. “Our ancestral roots are here and we’ve been here for generations,” she says. “We do not know anywhere else. It should be possible to support us here without moving us from our ancestral lands.”

The next problem these farmers want to tackle is seasonal



With their Islamic Relief microdams, the Mana cluster of villages in which Ouelesebougou is located can capture and store rain in reservoirs, enabling them to grow around 50 hectares of rice, vegetables and other crops even in the face of drought and the unpredictable variations in rainfall in the Sahel. It's a simple but compelling example of building community resilience; of DRR in action.

Kadia is looking forward to harvesting her first vegetables. She can also spend more time with her family because she does not have to walk a mile to fetch water from the neighbourhood well or spend most of her day collecting firewood in the bush.

Banking on sisal

While most of the land around the microdams is being used to grow food crops, there are also plans to grow fodder for animals and sisal – a hardy plant with a wide variety of uses. Fibre extracted from its leaves can be used to make baskets, bags and mats, and its long poles are suitable for house construction. It is ideal for fencing off gardens and farm land and thus helping to avoid conflict between farmers and pastoralists – a common, recurring problem in the Sahel. The dried remnants from the extraction process can be used as animal feed or a nutritious mulch that protects against soil erosion and enriches the soil as it decomposes.

As with all the best DRR projects, the local community have been at the heart of planning and building the microdam at Ouelesebougou. It was the villagers themselves that identified a water project to support agricultural production as their biggest priority, and they did nearly all the work to build the dam. Now they are reaping the benefits and are fully motivated and technically prepared to ensure the dam is well maintained.

Islamic Relief hopes to repeat this approach in the north of Mali, where it rains for less than two months of the year. Microdams have the potential to be a great way to control drought across the Sahel – and consequently to reduce its negative impact on food security, education, community stability, conflicts and health.

This Malian success story echoes Islamic Relief's positive experience of constructing haffirs – large rain water catchment reservoirs – in two villages in Sudan's North Kordofan region in 2007 and 2009. Between them the haffirs in El Moulleh and Um Eleja collect 40,000 cubic metres of rain water and provide a year-round water supply to 15,000 people and their livestock. Here, too, there are vegetable gardens, and plenty of water for drinking and cooking.

Huge potential

As well as plentiful water for agriculture and domestic use, microdams and reservoirs can bring a number of other benefits to poor communities. Some of the water captured can be channelled into smaller wells, providing more community water points. Seasonal floods – a big problem when the annual rains are sudden and heavy – can be controlled by the use of floodgates. And compared to boreholes, there is relatively little need for repairs and maintenance and no danger of depleting the water table.

“We work closely with poor communities throughout West Africa,” says Elias Fon, Islamic Relief's desk officer for the region. “From our experience I am convinced that sisal cultivation and microdams and reservoirs have huge potential to transform food security and lift millions of people out of poverty.”



Open for business

Hawa Osman, 50, feared for the future after her husband died and all her family's livestock perished in successive droughts. But her son Abdi was enrolled in Islamic Relief's orphan sponsorship programme, and in 2009 she was given a loan of 35,000 KES to start a small business selling bananas and mangoes.

Today that business is thriving, and Hawa has been elected chair of the management committee for microfinance loans in Mandera. "My life has changed completely," she says. "My older children never went to school but now the younger ones have had an education. Abdi is at secondary school now and his ambition is to become a doctor.

"I am a housewife and I am also a breadwinner – open for business seven days a week. I don't rest for a single day, and the future is very bright for me and my business. We used to put our money in our pillows and now we have a proper savings account where we can save."

Despite her success, she recognises that climate change is a challenge that the whole community needs to tackle together. "Climate change is real, and it's here, and it's affecting my business. When there's a severe drought there's a shortage of food and the price goes up and sales go down, so drought affects business people as well as farmers. The difference is that the impact on me is not as great."

flooding. The Daua flows from the Ethiopian highlands and it floods each year, even in a drought. "Flooding is a big challenge," says Ishmail Mohamed. "We need to build a concrete channel so that even in the floods there is land we can farm, further from the river."

One challenge, many solutions

There is no 'one size fits all' solution to the challenges posed by climate change. Only 15% of Mandera County's population live close enough to the Daua to potentially benefit from irrigation, and Islamic Relief is supporting a variety of other livelihoods through interest-free loans.

We've never had anybody default on a loan. The Ministry of Trade runs a microfinance programme but it's very bureaucratic, it's restricted to those who can provide loan guarantees and the interest is too high for the poorest to afford."

In three years Islamic Relief has made loans of 20,000-60,000 KES to 450 beneficiaries. Seventy per cent of the recipients are mothers whose children have outgrown the Islamic Relief orphan sponsorship programme, which began in 1993. The loans support five classes of small businesses:

- Shops and other retail enterprises
- Animal husbandry and livestock products
- Artisan crafts
- Donkey cart operators
- Cross-border traders.

"We have some beneficiaries who were pastoralists and have trained to do things like tailoring, welding and tanning," says Hareda Abdi, vice-chair of Islamic Relief's microfinance management committee. "They are very successful now compared to before."

Hareda is a beneficiary of the programme herself, having set up a small grocery business that she has since expanded to sell kitchen utensils. "My life now, compared to what it was, is something you can't imagine," she says. "I was in darkness, and now I'm an independent woman."

Recommendations

We are losing the race: disasters are increasing in frequency and severity, and outstripping our ability to respond. Urgent action is needed to put disaster risk reduction and community resilience at the heart of all aid programmes.

WE BELIEVE THE UNITED NATIONS SHOULD

- Work with governments, the World Bank and the Green Climate Fund to establish a global contingency fund for DRR, giving priority to countries most at risk of disaster
- In the run-up to 2015, when the Hyogo Framework Agreement (HFA) comes to an end, continue to press UN members to make fresh commitments to DRR through a new agreement that is binding for all signatories
- Require member states to develop detailed DRR plans that deliver the Secretary-General's vision: a halving of fatalities, economic losses and numbers of people affected by disasters by 2030
- Ensure that UN agencies fully understand the local context, supporting and building on best practice and improving the effectiveness of project delivery
- Invest in promoting integrated risk management and improving research and knowledge sharing – among the weakest areas of current DRR activity.

WE BELIEVE ALL DONOR GOVERNMENTS SHOULD

- Reject aid cuts and meet commitments to allocating 0.7% of GDP to development aid, ensuring the level of investment needed to protect the poorest against the rising tide of climate-induced disasters
- Radically change the balance of aid spending so that DRR is a mainstream component of all major aid programmes and development projects are 'climate smart'
- Provide senior political leadership to support the UN in establishing a global contingency fund and a binding successor to the Hyogo Framework Agreement
- Make detailed plans to deliver a halving of fatalities, economic losses and numbers of people affected by disasters by 2030
- Keep their promises to provide 'new and additional' resources for climate adaptation, rather than playing aid and adaptation budgets off against each other
- Take clear and decisive action to meet carbon emissions commitments, to stop the catastrophe of future climate-

induced disasters

- Improve coordination between donors and the integration of DRR and other climate adaptation projects, both of which are sorely lacking.

WE BELIEVE THAT GOVERNMENTS OF COUNTRIES AT RISK FROM DISASTER SHOULD

- Implement the guidelines contained in the Hyogo Framework as a matter of urgency – by giving senior political leadership to DRR, ensuring that government departments coordinate effectively, establishing a central DRR fund, and providing adequate funding to local authorities and other implementing bodies
- Spend development funding wisely to reduce risks, fulfilling commitments under the Hyogo Framework to tackle the root causes of vulnerability to disaster (including unequal land tenure, urban migration, extreme poverty and weak building codes)
- Draw on the expertise of UN agencies, the World Bank, aid agencies and other governments at the forefront of DRR strategy to create a comprehensive plan of action
- Consult, empower and work closely with poor communities, so that they play a full part in identifying, designing and developing DRR projects.

WE BELIEVE THAT INTERNATIONAL AND LOCAL AID AGENCIES SHOULD

- Press donors to prioritise DRR and ensure that there are bold targets and concrete international funding commitments in place when the Hyogo Framework Agreement and the Millennium Development Goals expire
- Radically change the balance of spending so that DRR is a mainstream component of all major aid programmes
- Educate the public about why funding disaster resilience is just as important as sending funds for disaster relief – and dare to fundraise for resilience, not just emergencies
- Ensure the success of DRR projects by working closely with communities as well as local, regional, provincial and national authorities
- Ensure that priority is given to protecting the most vulnerable groups in society – marginalised women and ethnic minorities, children, the elderly and people with disabilities.

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