

This key sheet is part of a series aimed at DFID staff and development partners examining the impact of climate change on poverty, and exploring tools for adaptation to climate change.

This key sheet draws on experience in disaster management and social protection to explore ways of reducing the impacts of climate change on the poor. It aims to guide the reader through the key issues of:

- Natural disasters and climate change;
- Disaster management and climate variability;
- Disaster management and climate change; and
- Frameworks for the integration of climate risk responses.

Lastly, this sheet advises on the way forward in using disaster management as part of adaptation to climate change.

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Adaptation to climate change: Making development disaster-proof

Climate change increases the urgency of integrating risk management into development interventions.

Climate change will increase the poor's vulnerability and make pro-poor growth more difficult. The poor's range of response options to climate variability is known as their adaptive capacity. The poor's 'adaptive capacity' is supported by macro-level policy and institutions and mechanisms and should be reflected in developing planning.

Ensuring that planning processes integrate climate risks will require 'risk identification', i.e. bringing together and effectively disseminating information on vulnerability and hazards. It will also require a range of risk reduction and risk spreading options (see Figure 1).

Natural disasters and climate change

Natural disasters can result from either slow onset (e.g. drought) or rapid onset hazards (e.g. earthquakes, cyclones) when combined with highly vulnerable populations. Disasters have traditionally been seen as events that affect a large population but they are in fact any shock that has an impact on communities so that their capacity to cope is overwhelmed. This can include climatic variability, earthquakes, HIV/AIDS, seasonal volatility in prices,



Paul Lowe, Panos

Figure 1



inflation, and war and conflict, either on a large scale or in localised areas.

- *'Out of the 40 worst catastrophes between 1970 and 2001, all but two have been in developing countries, and almost half were climate-related.'*

(Swiss Reinsurance, Sigma No. 1/2002)

Natural disasters related to existing climate variability frequently occur in the poorest countries and the poor are usually the hardest hit. In responding to the potential increase in natural disasters due to climate change, lessons can be learned from coping with existing climate variability. Climate change may result in more frequent or severe disasters and climatic shocks than experienced to date, so this provides further grounds for integrating risk management into development practices, and for considering strategically how to integrate long-term climatic change into risk management.

Average temperatures are rising and dramatic and variable changes to extreme events are occurring due to climate change. It is not possible to predict the future frequency or timings of extreme events but there is consensus

that the risk of drought, flooding, and cyclone damage is increasing and will continue to do so. Temperature increases will also cause sea levels to rise, increasing the risk of coastal flooding, and El Niño weather patterns are predicted to become more common across most of the Pacific. It is estimated that by 2080 climate change and current social trends will lead to a ten-fold increase in the number of people affected by flooding across rural areas, cities, and coastlines.

Increasing vulnerability

Current trends including globalisation, the spread of AIDS, environmental degradation, and increasing urbanisation are all contributing to an increase in vulnerability of populations within developing countries.

- By 2010 there are expected to be more than 500 cities with more than 1 million inhabitants. The situation will be made worse in developing countries with overcrowded conditions and low quality infrastructure and services.
- Natural protection is being eroded with the gradual loss of coastal protection, in the form of mangrove forests, and flood protection, in the form of wetlands, as these are drained and developed.

The financial impact

The frequency and severity of natural disasters, exacerbated by rising GHG atmospheric concentrations and increasingly vulnerable populations, have immediate impacts on the poor. Following the 2000 floods in Mozambique the real annual growth rate fell by 7%, 700 people were killed, 150,000 homes were washed away, and numerous livelihoods were affected.

As seen in Mozambique, disasters are devastating for developing country economies and recovery is slow. The immediate effect on growth in developing countries is typically 20 times worse than in industrial countries subject to similar natural disasters. For instance, the losses in Honduras and Nicaragua from Hurricane Mitch totalled more than the combined GDP of both countries, putting development back 20 years. Asia is also badly affected, suffering 45% of the recorded economic losses due to disasters between 1985 and 1999. This results in not only a loss of infrastructure and industry but also a loss of development opportunities as funds are diverted into relief and rehabilitation.

Setting back poverty reduction

Shocks can worsen existing poverty or push people into poverty by affecting their livelihoods, health, and opportunities. The costs of coping with a shock (such as an extreme weather event) and the subsequent costs of recovery can wipe out any gains that may have been made through poverty reduction programmes or pro-poor economic growth.

During climatic shocks, poor households may lose lives, property, and other assets (trees, farm equipment, livestock). Following climatic shocks, there may be reduced food security or increased health problems, with children particularly susceptible to waterborne diarrhoeal diseases. Poor households are the least able to recover and rebuild livelihoods, and may be forced to sell remaining assets, migrate, take children out of school, or go into debt. Female-headed households in developing countries are amongst those most asset-poor and have been found to be among those most affected by natural disasters.

This is explored in more detail in the following key sheets:

- Key sheet 02 The impact of climate change on pro-poor growth;
- Key sheet 03 The impact of climate change on the vulnerability of the poor; and
- Key sheet 04 The impact of climate change on the health of the poor.

Acting for today

'While we cannot do away with natural hazards, we can eliminate those that we cause, minimize those we exacerbate, and reduce our vulnerability to most.' (Abramovitz, 2001)

Disasters and the impacts of climatic shocks expose underlying vulnerability and lack of capacity. Hurricane Lenny in 1999 exposed the inadequacies of sea defences and the considerable vulnerability of the road network in the state of Dominica. The lack of preparedness stemmed from a perception that the island is exposed and there is little that can be done. Yet the opposite is true: experience from disaster management and social protection is showing that lives, livelihoods, and economies can be protected through effective risk assessment and risk reduction at the individual, household, community, NGO, government, and private sector levels.

Lives, livelihoods, and economies can be protected through effective risk reduction

Disaster management has developed and matured over the years to focus its efforts on prevention and preparedness for disasters (Box 1). Disaster management now embraces an approach that integrates risk identification, risk reduction, and risk transfer. Social protection is also a developing risk reduction approach that focuses on reducing vulnerability to shocks in order to reduce impacts and prevent a slide into greater poverty.

Box 1

Reversing the CNN effect

The media images that follow a natural disaster are often said to create a 'CNN effect', where the sight of human suffering releases large amounts of aid, perhaps not available prior to the crisis. While disaster response and rehabilitation is essential to save lives and livelihoods, the past 20 years have seen the recognition of the role of risk reduction and preparedness. On average, US\$1 invested in mitigation can save US\$7 in disaster recovery costs (Abramovitz, 2001). As Kofi Annan stated, 'While we cannot stop the forces of nature, we can and must prevent them from turning into major social and economic disasters' (UNSG, 1998).

Risk reduction

There is a vast resource of experience in identifying risks and implementing risk reduction to reduce overall vulnerability and promote community resilience.

a) Knowing the risks

Risk identification is the first step towards disaster-proofing development and includes assessment of both the hazard (shock or stress) and vulnerabilities and capacities.

A network of NGOs in the Philippines found that simply through the process of undertaking a vulnerability assessment, communities became more aware of their risks and how they could address them.

b) A range of options

Risk reduction activities are diverse and some will be more appropriate in different contexts and according to the identified risks. Within both disaster management and social

protection, risk management strategies use measures in three areas:

- To prevent shocks that have a negative impact on the poor;
- To reduce the impact of such shocks; and
- To support affected people to cope with the shock and recover.

In all cases, risk reduction must be part of reducing general poverty that is at the root of people's vulnerability. This will involve taking into account the full range of shocks and stresses, and supporting social inclusion and empowerment of the poor.

Experience in the area of risk reduction includes:

Community preparedness

Over 7,000 deaths were reported in Honduras as a result of Hurricane Mitch. However, La Masica stands out from surrounding communities, as there were no reported fatalities. This outcome has been directly attributed to a community emergency preparedness programme that began six months before the disaster. The programme involved the establishment of networks of local organisations taking part in activities such as risk mapping, vulnerability assessments across different social and gender groups, and setting up an early warning system. After Mitch, efforts were focused on rehabilitation of water, health, and education facilities and households, as well as roads, bridges, and drainage, all as part of an initiative to reduce vulnerability and increase resilience to a future event.

Enhancing natural resilience

Following the 1998 floods in southern and central China, the government formally recognised the role of deforestation in worsening the damage. The state council has prohibited further land reclamation within the basin's floodplain and stepped up efforts to reforest the watershed – the forests have been estimated to be 10 times more valuable as flood defences than for logging.

Microcredit

Building on existing microcredit schemes for the poor may provide a useful means of insuring the livelihood assets of the poor from natural disaster risk. Typically microcredit helps to diversify household livelihoods away from a

dependence on male agricultural labour. Microfinance can reduce a household's risk by involving women, spreading activities throughout the year, and investing in more portable assets, which can either be moved when disaster strikes or sold to ease immediate needs. Research on the Grameen and Proshika microcredit schemes in Bangladesh suggests that they achieve exactly that.

Safety nets

As well as practical relief following disasters (food aid, health services), carefully designed safety nets are needed to ensure poor households can rebuild productive livelihoods and are not trapped in a cycle of vulnerability. These need to build on existing public programmes and individual coping strategies.

Climatic shocks are part of the full range of shocks and stresses that the poor are exposed to



Jim Holmes, Panos

Acting for tomorrow

Many developing countries are not coping with current climate extremes. Yet climate change may result in even more frequent or severe disasters and climatic shocks than have been experienced to date.

Embracing climate change challenges

Risk reduction that does not account for climate change can lead to mal-adaptation, as in Bangladesh, where poorly maintained flood

defences that were designed for a certain level of floods became counter-productive, trapping floodwaters and prolonging floods during the 1999 disaster. In the same way, social protection measures that do not take account of climatic shocks and climatic variability are based on only part of the picture. Climatic shocks must not be seen as a single issue but be understood to be part of the full range of shocks and stresses that the poor are exposed to. The integration of climate change into risk management practices is currently underway in Bangladesh under a DFID-funded programme (Box 2).

Climatic shocks can set back developing countries' economies and slow down pro-poor economic growth

Box 2

Taking account of longer-term predictions

The government in Bangladesh, supported by DFID and UNDP, is starting the process of integrating long-term climate risks into disaster management. Climate and water resources projections will provide critical information for mapping vulnerable areas and communities. The Ministry of Disaster Relief and Management will then work with local government, communities and NGOs to develop long-term coping strategies to supplement short-term disaster relief efforts. For vulnerable households this may mean diversifying crops or moving out of agriculture altogether, while for communities it may mean better natural resources management to provide natural protection and climate-sensitive land use planning to minimise future risks.

Risk reduction for sustaining poverty reduction

Significant climatic shocks can set back developing countries' economies, wipe out development gains, and slow down the achievement of pro-poor growth. Each sector has a role to play in reducing risks to potential shocks, including those resulting from climatic variability.

As illustrated with the experience of 'acting for today', there are a range of risk reduction activities and social protection measures that can be scaled up to reduce the vulnerability of the poor. These should be integrated into key planning strategies, such as poverty reduction

Box 3

Integrating risk reduction into PRSPs

Mozambique published its Poverty Reduction Strategy Paper (PRSP) in April 2001, and within it recognised the impact of natural disasters on poverty, following the devastating floods of 2000 and 2001. The PRSP requires formulation of a contingency plan for natural disasters and increased capacity for predicting extreme events. But taking a magnifying glass to the PRSP reveals that risk reduction is not addressed in all the sectors, with noticeable gaps in the infrastructure and health sectors. The World Bank's staff assessment suggests that greater appreciation of the risks of natural disasters to each sector is warranted, and in the light of the severe impacts of extreme events, a priority for social protection should be retained. By contrast, the Bangladesh interim Poverty Reduction Strategy Paper (i-PRSP) has effectively included risk reduction in each sector after involvement of the civil society groups that pressed for this approach.

strategy processes (Box 3), taking a participatory approach to enable civil society to engage in and reinforce risk reduction measures.

Donor policies can also reflect a risk reduction stance. The Inter-American Development Bank (IDB) is currently developing a series of checklists to ensure that disaster risks are accounted for in all their policies and programmes.

Climate change and risk reduction

Climate change increases the urgency of disaster-proofing development. It also forces us to look at the longer-term and take strategic action to reduce underlying vulnerabilities. Reducing vulnerability to climate change needs to take into account all the factors that increase risks for the poor and developing countries, and be integrated into poverty reduction rather than addressed as a separate issue. National Vulnerability and Adaptation Assessments and National Adaptation Programmes for Action (NAPAs) can be used as tools to drive this agenda (Box 4).

Climate change increases the urgency of disaster-proofing development

Box 4

National Adaptation Programmes for Action (NAPA)

The NAPA process in each country involves key ministries, NGOs, researchers, businesses and communities pulling together what is known about risks and vulnerability and, for the first time, coming up with priorities for building adaptive capacity. In addition to conventional disaster management measures, NAPAs also offer the chance to identify more long-term sustainable adaptation options such as climate-sensitive land-use planning and sustainable livelihoods options.

The following key sheets examine further issues of adaptation:

- Key Sheet 05 Responding to the risks of climate change: Are different approaches to poverty eradication necessary?
- Key sheet 07 Adaptation to climate change: The right information can help the poor to cope.
- Key sheet 08 Adaptation to climate change: Can insurance reduce the vulnerability of the poor?
- Key sheet 09 Taking initial steps towards adaptation.

The country-level response

There are a number of opportunities for the international community to stimulate better integration of climate change and risk reduction into development programmes and policies:

- **Use vulnerability assessments** and a growing understanding of all hazards (including climatic) to understand and address the current and changing vulnerability context of poor communities;
- **Build on and scale-up experience of good practice developed in risk reduction approaches** to disaster management and social protection and promote understanding between these areas of expertise;

- **Take opportunities to rebuild more resilient livelihoods in the aftermath of disasters;**
- **Ensure risk reduction is strategically integrated within each sector** so that general vulnerabilities are reduced and specific hazards are addressed. This will require integration of risk reduction into key planning processes, ensuring that an enabling environment, in terms of governance, is created;
- **Ensure that wider economic and social policies provide opportunities** for the poor and do not inadvertently increase the poor's vulnerability to climate change;
- **Support empowerment of the poor** to demand services that will help them manage their risks; and
- **Use climate change as an opportunity to scale up risk reduction** and identify the processes by which the risk reduction agenda can be driven forward, for example, through NAPAs.

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Further reading

Living with Risk: A global review of disaster reduction initiatives:

<http://www.unisdr.org/unisdr>

ProVention Consortium:

Risk reduction partnership:

<http://www.proventionconsortium.org/>

Contact details

DFID Public Enquiry Point

Tel: 0845 300 4100

(local call rate from within the UK)

Tel: + 44 (0) 1355 84 3132

(from outside the UK)

Fax: + 44 (0) 1355 84 3632

Email: enquiry@dfid.gov.uk

Website: <http://www.dfid.gov.uk/>

Global and Local Environment Team, Policy Division, DFID

Tel: + 44 (0) 20 7023 0934

Fax: + 44 (0) 20 7023 0074

Email: s-pieri@dfid.gov.uk

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