

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 considers the initial steps that developing countries can take in response to the strategic challenge of climate change.

The key sheet guides the reader through the issues of:

- Implications for development;
- Steps towards adaptation in arid, humid, and coastal regions and islands;
- National Action Programmes for Adaptation; and
- International finance for adaptation.

09

Taking initial steps towards adaptation

Climate change is a risk to development. Adaptation to climate change must be integrated into development policy.

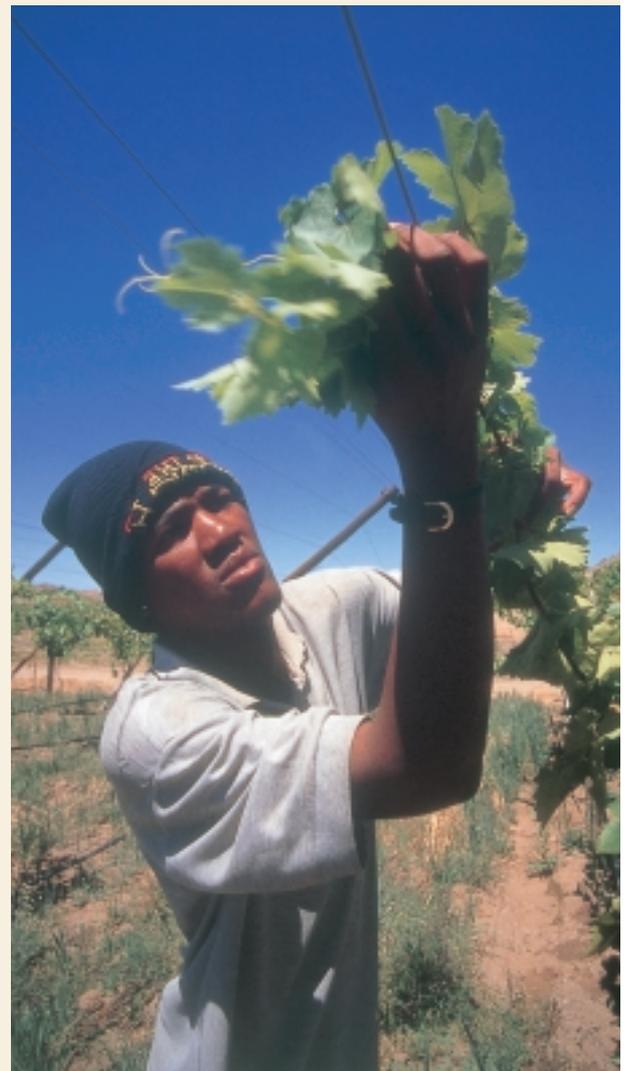
Many developing countries are already taking action to adapt to climate change, beginning with an analysis of their vulnerability. Vulnerability to climate variability has significant implications for the achievement of the Millennium Development Goals. Development must be based on understanding existing and future vulnerabilities to climate risk if it is to be resilient to the risks of climate change.

Further analysis of the implications of climate change for development is provided in the following key sheets:

- Key sheet 01 Climate change deepens poverty and challenges poverty reduction strategies;
- 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;
- Key sheet 04 The impact of climate change on the health of the poor;
- Key sheet 10 Climate change in Africa;
- Key sheet 11 Climate change in Asia; and
- Key sheet 12 Climate change in Latin America.

Implications for development

Climate variability and climate change put development at risk. Development partners



need to assess how they can address these risks. Failing to do this will have a high opportunity cost.

In some cases climate change adds urgency to current activities to improve policies and institutional mechanisms that impact on the poor. In other instances there may be a case for changes in planning or institutional reform to take account of climate risks, or for building additional capacity into infrastructure investment. Whatever the response, it should be an integral part of development planning. This involves three main steps:

1. Understanding the vulnerabilities and capacities of the poor. Understanding the impacts of climate variability on the poor requires an understanding of their vulnerability to all external shocks and trends and their coping strategies.

Vulnerability analysis can be strengthened by understanding climate hazards better. Work is already underway in Southern and East Africa and the Sahel on seasonal forecasting to enable communities to cope with current climate variability (more information on seasonal forecasting is provided in key sheet 07 Adapting to climate change: The right information can help the poor to cope). Similar approaches would be valuable in other parts of Africa and other regions.

In addition, further work is required to assess longer term climate risks (up to 20 years). Until recently the predictions provided by the available Global Climate Models (GCMs) have been on too coarse a scale and too long term to have much relevance to developing country policy makers. For precisely these reasons DFID has supported the UK Hadley Centre to develop a finer resolution, medium timeframe (20 years) model for use by developing countries (see Box 1).

2. Reducing the vulnerability of the poor. Based on an understanding of vulnerability, support can be given to supporting poor people's coping capacity for future shocks. This means governments sharing the burden of climate risks and taking specific actions to reduce the vulnerability of the poor.

3. Integrating climate risks into development planning. Responding to climate variability requires development agencies and governments to work on the development of strategic planning systems, which take account of current and projected climate patterns. There are opportunities to achieve this through Poverty Reduction Strategy Processes (PRSP) in

the least developed and highly indebted countries, and similar sectoral planning processes elsewhere.

Further analysis of the integration of adaptation in development is provided in the following key sheet:

- Key sheet 05 Responding to the risks of climate change: Are different approaches to poverty eradication necessary?

Box 1

Regional Predictive Modelling – 'PRECIS'

The PRECIS is a portable version of the Hadley Centre's Regional Climate Model with a resolution of around 50 km². It is freely available and can be run on a cheap, easily available personal computer. Researchers can run climate scenarios and make their own predictions of national patterns of climate changes, to assess local vulnerabilities and impacts. This allows horizon scanning to identify future term climate risks, such as sea level rise, and changes in temperature and precipitation, to feed into predicted changes in flood or drought frequency and storm severity.

National communications and action programmes

Developing countries are documenting their key vulnerabilities and adaptation priorities in National Communications, in keeping with their obligations under the UN Framework Convention for Climate Change (UNFCCC). The least developed countries are developing National Action Programmes for Adaptation (NAPAs).

NAPAs were initiated by the UNFCCC Conference of the Parties in January 2002 in Decision 28/CP.7. This decision recognised that the least developed countries do not have the capacity to prepare national communications in the foreseeable future, or to convey their urgent and immediate needs in respect of their vulnerability and adaptation to the adverse effects of climate change. In order to help prioritise adaptation activities, the Global

Table 1

Climate change risks and adaptation priorities identified in National Communications and NAPAs (National Action Programmes for Adaptation)*

Arid and semi-arid	Humid	Coastal and islands
Problems		
<ul style="list-style-type: none"> • Water scarcity • Faster desertification • Lower productivity of natural resources • Food security • Rural livelihoods and pastoral economies • Health 	<ul style="list-style-type: none"> • Storm damage and flash flooding risks to settlements, public and productive infrastructure and human life • Agricultural productivity • Hydroelectric capacity • Health 	<ul style="list-style-type: none"> • Flood and storm risks to coastal settlements, public infrastructure and human life • Loss of agricultural land • Salt water intrusion in aquifers and rivers • Water scarcity • Food security • Damage to fisheries and marine resources
Priorities		
<ul style="list-style-type: none"> • Improved crop, grassland and livestock management • Research and dissemination of improved crop varieties and breeds • Community grain storage for food distribution • Weather-related insurance 	<ul style="list-style-type: none"> • Change to dam and infrastructure specifications • Storm and flood resilient building codes • River defences • Watershed management • Restricting development in high risk (flood, mudslides) zones 	<ul style="list-style-type: none"> • Coastal defences: hard defences – groynes, revetments, embankments; soft defences – mangroves, coral reefs, wetland conservation • Relocation of settlements, roads and other infrastructure • Integrated coastal zone management • Desalination plants

* Based on a review of NAPAs and National Communications carried out by Environmental Resources Management Ltd

Figure 1

Integrating adaptation priorities into development

1. Development of National Action Programmes for Adaptation, based on existing climate variability and predicted impacts of climate change e.g. using PRECIS (see Box 1)

2. Review PRSP or other strategic programmes to identify and assess the vulnerability of development strategies and targets.

3. Analyse and discount costs and benefits

4. Identify and cost potential adaptation options, e.g. fine tuning (designs, policies, institutions) or new projects and change of policy direction.

Environment Facility (GEF) is therefore providing funds (US\$200,000 per country) to support NAPA development.

Both National Communications and NAPAs have been prepared with a focus on the vulnerabilities of the poor. National Communications, regional assessments, and NAPAs for Mongolia, Maldives, Yemen, Pacific and Caribbean Small Island States, Ethiopia, Malawi, The Gambia, Mozambique, Bhutan and Nepal indicate that the best of these have been developed from the perspective of a sustainable livelihoods approach. The priorities focus on the likely impact of the climate on people's lives, instead of solely focusing on physical and natural changes.

Experience with NAPAs demonstrates the importance of:

- Bringing together a sufficiently high profile and multi-sectoral team;
- Ensuring that the process is led by a ministry with a broad remit, such as the Ministry of Planning or Finance; and
- Ensuring that the NAPA process is linked to national development strategies from the start.

The results of the NAPA or National Communications then need to be integrated into mainstream development plans (see Figure 1).

The experience of the UK and other countries where detailed adaptation studies have been carried out suggests that many additional adaptation measures to mitigate climate risks will be relatively low cost. Lower cost examples include improving building standards to reduce the vulnerability of housing, wetland or mangrove restoration, integrated coastal zone management, livelihood diversification, and insurance. In some cases high cost preventive projects (particularly infrastructure) will be required and additional financing will need to be sought.

An analysis of the priorities identified in National Communications and NAPAs is given in Table 1. Adaptation priorities tend to vary according to whether states are predominantly arid or semi-arid, humid, or coastal/island states. Adaptation options for coastal communities are likely to be the most costly.



DFID

Steps towards adaptation in arid and semi-arid regions

Initial NAPAs and national communications for arid and semi-arid regions (e.g. Mongolia, Tanzania, Namibia and Burkina Faso) indicate that addressing climate risks will reinforce the direction of current development interventions.

Despite the overlap between poverty and climate, an early review of the first round of Poverty Reduction Strategy Papers (PRSPs) by the World Bank¹ showed that environment and

¹ Morrow, D. 2001 PRSPs and Sustainable Development. World Bank: Washington DC.

Box 2

Integrating adaptation priorities in arid and semi-arid states

Mongolia is highly dependent on pastoralism and already suffers from climate variability, particularly severe winters and summer droughts. Mongolia's national communication to UNFCCC (2000) recognised that global climate change has increased this threat, and highlighted the need to integrate adaptation into development. Climate risks have therefore been addressed in Mongolia's poverty reduction programme, including activities to intensify land policy reform, community management of pastureland, natural resources management and the use of 'green zones'.

The PRSP of Tajikistan (2002) proposes the development of a national strategy for sustainable natural resource use and environmental protection. A significant part of this will focus on measures – such as watershed management and afforestation – to reduce the risk of natural disasters.

natural resource management issues were not well covered, and climate risks were scarcely mentioned. The only apparent exception was Burkina Faso, where the initial PRSP addressed soil and water conservation priorities.

However, there is now evidence in some countries that natural disasters and climate variability risks are being reflected in development priorities. For instance in Mongolia and Tajikistan, climate change is recognised as a serious risk to rural poverty reduction, and measures to reduce vulnerability are being addressed in national programmes accordingly (Box 2).

Steps towards adaptation in humid regions

In largely humid states, many of the adaptation priorities identified in NAPAs and National Communications also provide a stronger imperative for current development interventions (see Table 1).

However, some engineering design and building specification changes will also be required (e.g. increasing dam capacity and the design of bridges, roads and buildings to withstand extreme climate events).

Box 3

Integrating climate change into the development of Bangladesh

Recognising that Bangladesh faces extreme climate variability, the Government of Bangladesh, supported by DFID and UNDP, is leading the field in integrating climate risk management into national planning.

Over the next three years a new Climate Cell in the Ministry of Environment will work closely with other Ministries, NGOs and communities to raise awareness of climate change issues and how to cope with them. Tools will be developed to help these agencies to take climate change into account and increase their capacity to cope, in areas ranging from disaster management, to infrastructure and land use planning, to agricultural research.

This pro-active approach will point to win-win solutions that combine risk management and sustainable livelihoods. These might include climate-proof housing, improved crop varieties, and better management of natural resources for climate protection, for example.

Steps towards adaptation in coastal areas and islands

Island states and states that are largely coastal have made significant progress in putting their adaptation priorities into action. Extreme events and sea level rise could significantly impair their governments ability to earn foreign exchange, repay debts and deliver poverty-reducing development.

Caribbean and Pacific states in particular, have taken action to understand the vulnerabilities and capacities of the poor, and then integrate

Box 4

Taking steps towards adaptation in coastal and island states

Caribbean Risk Management Network

States of the Caribbean region, and Belize, Guyana and Surinam have developed a risk management network, with UNDP support. The initiative will increase local capacity to integrate risk management into development strategies and programmes. Although the network is designed to promote regional cooperation in the insular Caribbean region, the focus is on building capacity at local national levels, to complement regional initiatives such as CPACC and CDERA that are addressing risk management.

Mainstreaming Adaptation to Climate Change Project in Caribbean Small Island States and Coastal Zones

This World Bank-financed project will create an enabling environment for integrating adaptation by building local capacity to collect and analyse data for vulnerability and risk assessment, and formulate adaptation priorities. Adaptive measures are expected to focus on the water, health, and fisheries sectors, and food security, but will also include upgrading infrastructure technical standards to make it more climate-proof. An important element of the strategy is improved access to information in order to raise public awareness.

adaptive measures into development policy. Box 4 describes significant progress made across the Caribbean in assessing risk and taking specific adaptive measures. The example of Kiribati in the Pacific illustrates how development is being modified to take account of climate risk (see Box 5).

National Communications of island states or those with vulnerable coastlines (e.g. Bahamas, Barbados, Colombia, Cambodia, Guyana, and Guinea) make far more mention of larger-scale infrastructural adaptation needs in comparison to inland (arid or humid) states. They have the added concerns of:

- Flood damage to private property (mainly housing and tourism infrastructure);
- Flood damage to public services (roads, fuel storage and distribution networks,

telecommunications, emergency services, desalination plants and sanitation);

- Permanent inundation of productive land;
- Saline intrusion in aquifers and rivers, leading to reduction in freshwater availability; and
- Loss of fisheries and marine resources.

Some coastal and island states have also stressed the need for more effective disaster management programmes. A particular example is Cambodia, where disaster management priorities are being integrated into the national priorities emerging from the PRSP (see Box 6).

International finance for adaptation

Where adaptation to climate change requires investment, international sources of finance can be sought, in particular:

- **GEF Support for Pilot Adaptation Measures.** In response to requests at COP7 and COP8, GEF has adopted a new strategic priority 'Piloting an Operational Approach to

Box 5

Adaptation in Kiribati

In Kiribati an extensive Vulnerability and Adaptation Study (1999-2000) indicated that by 2050, in the absence of adaptation measures, the island's increasing vulnerability to climate events could be costing US\$8-US\$16 million in damages each year. This reflects Kiribati's population intensity and concentration of coastal development along a vulnerable shoreline.

An innovative strategy by the Government of Kiribati involves a two year, economy-wide assessment of adaptation interventions to agree national vision for adaptation, and identify the changes in economic policies and budgetary allocations required to adapt to increasing storm severity and sea-level rise. A second phase will begin once adaptation benchmark indicators are agreed as the basis for donors to provide incremental 'top-up' grant financing to public expenditures. The programme is overseen by an Adaptation Working Group, chaired by the Secretary to the Cabinet, and managed by the Ministry of Finance and Economic Planning.

Box 6

Integration of climate risks into the PRSP in Cambodia

Cambodia's National Communication (2002) identified potential drought and flood-related impacts on agriculture, forestry, human health and the coastal zone. Both drought and floods have caused significant damage to Cambodia, and are a regular occurrence. The flood of 2000 caused damage estimated at approximately US\$145 million. As a result, Cambodia has prioritised specific coastal zone and disaster management measures, and additional sectoral adaptations.

These priorities have been effectively integrated into Cambodia's PRSP (2003) which includes a significant component devoted to disaster risk management. A National Committee for Disaster Management has been established. In addition a comprehensive, long-term flood management and mitigation strategy has been developed, based on the identification of the communities and assets that are at risk, and the incorporation of climate forecasting to determine risk.

Adaptation' for the next three years, with an allocation of US\$50 million;

- **GEF's New Strategic Approach to Capacity Building.** GEF has recently allocated US\$50-60 million to give greater support to capacity building needs that enable responses to climate change, ranging from vulnerability and adaptation assessments to public awareness initiatives;
- **Support for National Communications** for non-Annex I Parties. GEF has recently allocated US\$58.5 million to the preparation of a second round of National Communications, drawing on the revised guidelines for national communications adopted in November 2003. Each country can request up to US\$405,000 for their National Communication;
- **UNFCCC Least Developed Countries Fund.** Almost US\$9.7 million has been raised for these funds, and a further US\$6.4 million has been pledged largely for the implementation of NAPAs. DFID will continue to press for guidance on the use of the LDCF to be

further refined to focus on activities that integrate climate change into development planning; and

- **UNFCCC Special Climate Change Fund.** This newer fund (agreed at COP9) focuses specifically on activities that integrate climate change issues into development planning.

Lessons for country programmes

The examples of steps being taken by developing countries to adapt to climate change provided in this key sheet, indicate the types of support DFID can provide to developing country governments. DFID programmes can support the process of integrating climate adaptation priorities and managing climate risks by:

- Understanding how climate variability impacts on vulnerability levels;
- Coordinating with other UK departments (DEFRA, FCO, the MOD's Hadley Centre) involved in filling gaps in climate predictions and disseminating the results;
- Using these predictions together with vulnerability assessments to assist in the inclusion of climate risks and the assessment of adaptation options in PRSPs or other national processes, as recently seen in relation to disaster management in Bangladesh; and
- Influencing other organisations, particularly multilateral agencies, to ensure that climate risks are addressed in the poorest and most vulnerable countries.

Further details are provided in:

- Key sheet 05 Responding to the risks of climate change: Are different approaches to poverty eradication necessary?
- Key sheet 06 Adaptation to climate change: Making development disaster proof;
- Key sheet 07 Adaptation to climate change: The right information can help the poor to cope; and
- Key sheet 08 Adaptation to climate change: Can insurance reduce the vulnerability of the poor?

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