

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 examines the impact of climate change on pro-poor growth for developing countries and the Millennium Development Goals. The reader will be guided through the key issues of:

- The link between economic growth and poverty reduction;
- The impact of climate change on pro-poor growth; and
- Actions to build flexibility into economic policy.

Lastly, this keysheet advises on how economic policy and management can respond to climate change through the mainstreaming of four adaptive policies.

## 02

# The impact of climate change on pro poor growth

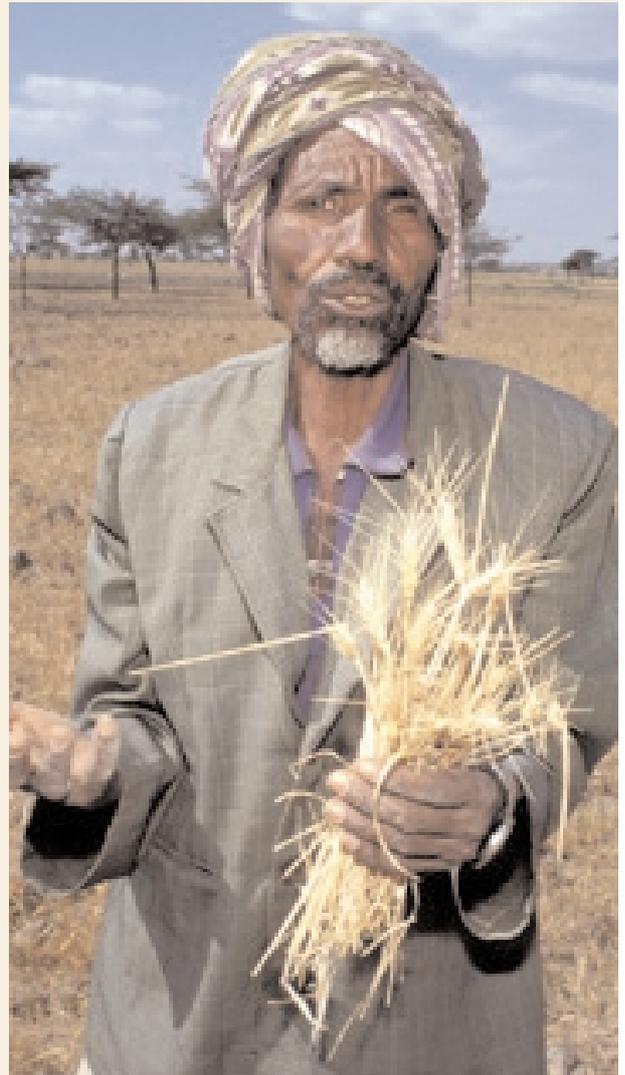
Climate change has the potential to exacerbate inequality and thwart economic growth.

Climate variability today already has direct and indirect impacts on pro-poor growth of developing countries. Increasing frequency and intensity of some weather-related extremes, and gradual changes in the average temperature will exacerbate these impacts. In order to increase adaptive capacity to meet these challenges, development agencies need to continue to support developing countries in the principles of good economic policy. This will require processes to integrate climate issues into economic planning and the budget process.

## Economic growth and poverty reduction

It is widely understood that economic growth is a necessary, but not sufficient, condition for poverty eradication. Growth is needed to generate the livelihood opportunities poor people need to lift themselves out of poverty and to provide the means to finance important services, such as health and education, which are key to achieving the Millennium Development Goals.

Evidence, however, indicates that the pattern or 'quality' of economic growth is just as important in eradicating poverty as the absolute level of that growth<sup>1</sup>. Growth is most pro-poor when it occurs in areas of the economy that provide opportunities for increased employment and



David Dahmen, Panos

<sup>1</sup> Hammer, L., Healey, J. and Naschold, F. Will Growth Halve Poverty by 2015? ODI Poverty Briefing 8.

Box 1

## Impacts: Agriculture and natural resources

In the short term, extreme events are more likely to have an adverse effect on agricultural production than climatic trends. Gradual changes in temperature and the timing and levels of rainfall will reduce yields in some areas and enhance yields in others, depending on initial conditions. In the most affected countries, cropping patterns may have to change to respond to changing climatic conditions. For example:

- A temperature increase of 2°C would dramatically reduce the total area available for growing robusta coffee in Uganda, and restrict it to higher altitude areas; and
- Models of farm incomes in India suggest that a 2-3.5°C increase in temperature would result in a decline in farm net revenues by between 9% and 25%.

higher returns to the assets of the poor. The sectoral origins of growth are therefore important, with agriculture being particularly significant. Despite rapid urbanisation, about three-quarters of the world's absolute poor (those living on less than US\$1 per day) continue to live in rural areas, their livelihoods heavily dependent upon agriculture and natural resources.

## Climate change will make pro-poor growth more difficult

The extent and pattern of growth is the outcome of the interaction of a country's initial conditions, their institutions, their policy choices, the external shocks or stimuli they receive, and no small measure of luck<sup>2</sup>.

Changing temperatures, altered rainfall patterns and increased frequency of severe weather events, such as droughts or floods, will vary from region to region and locality to locality. However, it is likely that climate change – including increased climatic variability in the short term – complicates and will likely worsen

the picture of the conditions and events that influence the rate and pattern of growth in many poor countries. Some of the mechanisms through which this is likely to occur are summarised in Figure 1 and detailed in boxes throughout the text.

Judging the likely extent of this impact is difficult. However, in general terms we can, with reasonable confidence, conclude the following.

Firstly, that climatic variability already affects short-term economic growth in many countries. Events such as drought or flood severely disrupt economies and it can take years before the impact of that shock fades, allowing the economy to return to its previous growth path.

Secondly, longer-term, more gradual trends in climate may have sustained downward impacts on economic growth and may affect potential sources of growth.

Without integration of these risks into development planning, critical sectors such as agriculture and industries based on natural resources may suffer and be less able to contribute to broad-based growth and sustainable livelihoods.

The exact nature and scale of these implications will depend on several factors, including:

- The structure of the economy affected. Economies heavily dependent on climate and weather-sensitive sectors for their growth are likely to be most affected. The implications of climate change for agriculture are particularly important, as agriculture's development is recognised as critical to the success of pro-poor economic growth;
- The actual impact on important resources (such as water);
- The longer-term implications of disruption to existing growth paths through, for example, damage to infrastructure;
- The effect of disrupted government revenues, which may inhibit a government's ability to finance important services and functions that support growth, such as education;
- The stress on government finances resulting from an increased demand for disaster relief expenditures; and
- The success of risk reduction efforts implemented in response to the anticipated or experienced change.

<sup>2</sup> World Bank 2001 World Development Report 2000/2001.

## The country-level response

Climatic change is just one aspect of the external events and changes to which economies and societies must adapt. Governments can, however, attempt to increase the resilience of their growth strategies to the impacts of increasing climate variability and climate change. Unfortunately there is, as yet, little experience of best practice of adaptation to climate change on which to draw, but experience of more general adaptive economic policies offers some pointers.

Maintain the principles of good economic policy that assist adjustment to exogenous factors such as climate shocks. Governments can best do this by:

- Maintaining a policy environment conducive to changing market trends. Governments should allow prices to reflect the changing availability of resources and avoid economic instruments – such as guaranteed prices or quotas – which may distort rational decision-making at a time when change is needed;
- Avoiding mechanistic responses that impose direct or indirect subsidies to protect the status quo, and result in increasingly large and unsustainable fiscal burdens;
- Including contingencies for climatic variability within budget planning processes;

### Box 2

#### Impacts: Human health

Analysis shows that countries with the weakest health and education levels are less likely to achieve sustained growth. Climate change risk increases in the incidence of several serious diseases, such as malaria, dengue, yellow fever and air-borne infectious diseases such as polio. Increased flooding will also increase the risks from water-borne infectious diseases. For example:

- Countries with intensive malaria grew by 1.3% less per person per year between 1965-1990, and a 10% reduction in malaria is associated with a 0.3% increase in economic growth.

### Box 3

#### Impacts: Water resources

Water contributes directly to economic growth through the success of both rain-fed, and, in the longer-run, irrigated agriculture, through hydropower (which is a major source of electricity in many developing countries), and through water-intensive manufacturing industries. Water-intensive industries are often labour-intensive, for example textiles industries. Disrupted supplies can therefore affect productivity and employment in a range of sectors either directly, or through the availability of power. An excess of water can also affect productive sectors, for example:

- Rainfall in the wet season in Pakistan could increase by between 5% and 50% by 2070, with a doubling in the frequency of high intensity rainfall events. These changes may have significant economic effects owing to the vulnerability of cotton, Pakistan's main cash crop, to flooding in its early stages of growth.
- Encouraging individuals to move away from geographical areas or sectors most affected by climate change; and
- Removing restrictions that confine the poor to increasingly unsustainable livelihoods or marginal areas.

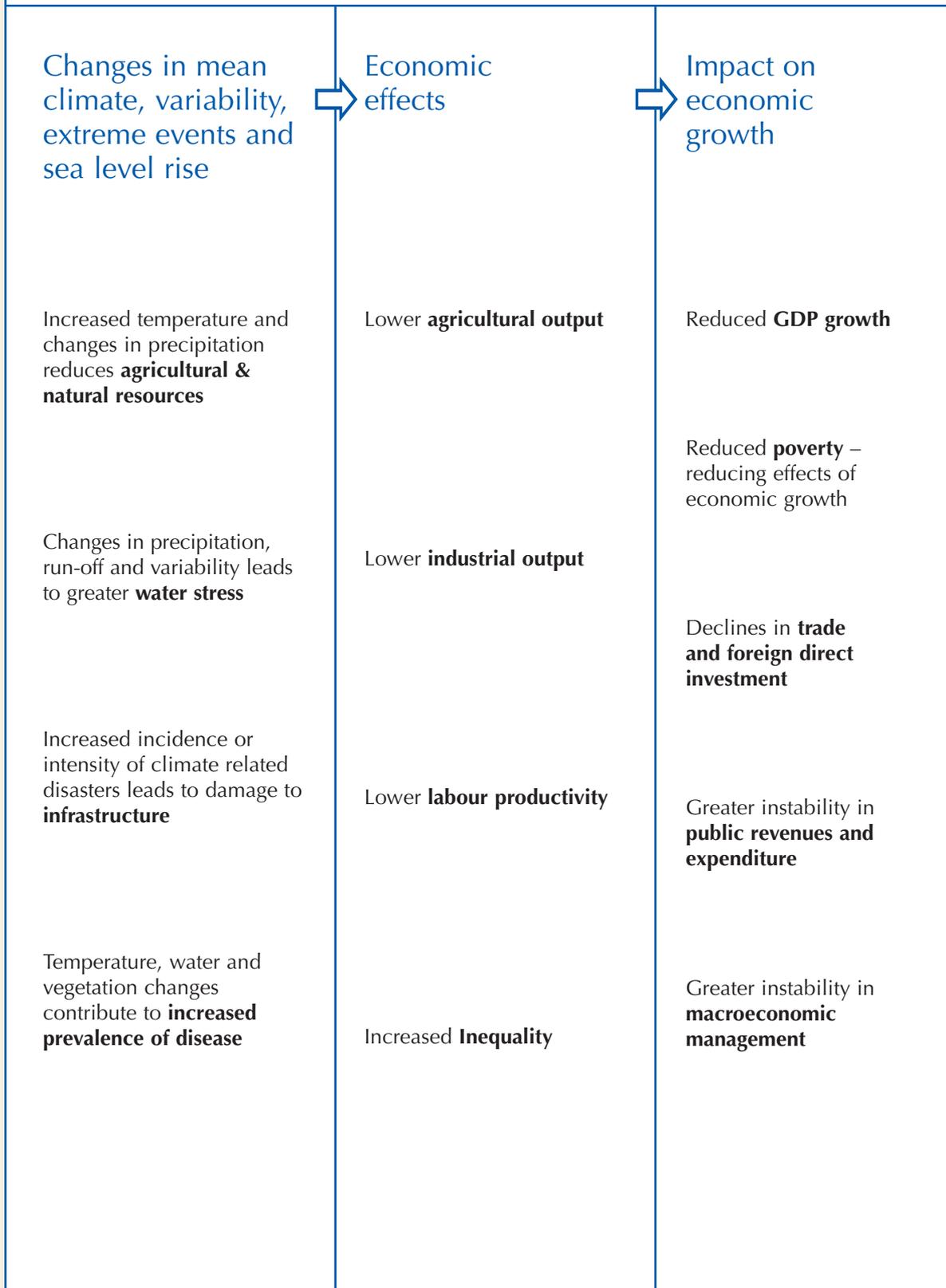
Support technological development and the provision of information in sectors that will allow individuals and markets to adapt to, or mitigate the impact of climate change. These could include new varieties of crops, or adoption of more water-conserving technologies by industry. Governments have a role in disseminating information on forecast climatic events, and forecast impacts on natural resources, water resources and disease.

Support governments to assert the risks of climate change and their economic implications in their agreements with international financial institutions (IFIs). Equally, IFIs and development agencies that engage in policy dialogue with governments should accept the requirement to mainstream climate change into macroeconomic policies and targets, in order to develop sustainable pro-poor growth.

Drought or flood severely disrupt economies and can take years before the impact fades

Figure 1

## Impact of climate change on poverty and the Millennium Development Goals



#### Box 4

### Impacts: Infrastructure

Increased damage to infrastructure, in both urban and rural areas, will result from an increasing frequency and intensity of extreme climatic events. Storm surges in coastal areas pose great risks for growth in coastal zone-orientated economies (such as Egypt and Thailand), where a large percentage of productive capacity lies less than 1m above sea level. Based on past experience, loss of infrastructure will carry macroeconomic implications, setting back economic development by years. For example:

- 1998's Hurricane Mitch affected more than 25% of households and caused an estimated 7% drop in agricultural output in Honduras. In the absence of the hurricane, predicted GDP growth would have lifted half a million people out of poverty over the next twenty years; due to the hurricane, GDP growth has been retarded and the numbers of people living in poverty are growing.

Provide some measure of the scale of the impact of climate change on pro-poor growth, particularly in relation to medium-term policy-making and macroeconomic management. Sophisticated analyses are unlikely to produce definitive results, yet there is scope for the development and use of simpler models that may help to raise awareness of the links between climatic variability and change and basic macroeconomic variables.

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

- 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 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;
- Key sheet 08 Adaptation to climate change: Can insurance reduce the vulnerability of the poor? and
- Key sheet 09 Taking initial steps towards adaptation.



## Further reading

Benson, C., and Clay, E. 1998 The impact of drought on sub-Saharan African economies; a preliminary examination. Technical Paper No. 401, World Bank, Washington DC.

Killick, T. 1994 The Flexible Economy. Routledge.

Kumar, K.S., and Parikh, J. 1998 Climate change impacts on Indian agriculture: the Ricardian approach In Dinar et al (Eds.) Measuring the Impacts of Climate Change on Indian Agriculture. World Bank Technical Paper No. 402. Washington, DC: World Bank.

Ravallion, M. 2000 Growth and Poverty: Making Sense of the Current Debate. World Bank, Washington, D.C.

WHO 2001 Macroeconomics and Health: Investing in Health for Economic Development.

## 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](mailto: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](mailto:s-pieri@dfid.gov.uk)

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