Adapting to climate change

This key sheet is part of a series of awareness raising tools developed by Irish Aid to accompany its Environment Policy for Sustainable Development.

www.irishaid.gov.ie

Irish Aid
Department of Foreign Affairs
An Roinn Gnóthaí Eachtracha

1. Introduction

Key strategies for implementing Irish Aid's Environment Policy for Sustainable Development are:

i) mainstreaming, where the environment is recognised as a critical part of sustainable development and is taken into account in all policies, programmes, activities and funding decisions; and

ii) partnership, where Irish Aid works with national governments, multilateral organisations, international agencies and civil society organisations to contribute to sustainable development.

The first step in environment mainstreaming is to understand how the environment is linked to the development challenge or sector you are responsible for. In this key sheet, we explain why adapting to climate change is crucial, and suggest sources of additional information. More detailed guidelines on mainstreaming environment and adaptation to climate change will be produced at a later date.

Adaptation to climate change matters to development because:

> Climate change is a reality and people all over the world will have to adapt to some of its inevitable impacts.

> Poor communities and least developed countries will be affected most by the impacts of climate change.

> Climate change could reverse decades of investment in development and make it harder to meet the Millennium Development Goals.

> Supporting "climate proof" and "low carbon" development pathways now will both help prevent climate change and help people adapt to its impacts.

Tree planting to stabilise dunes in Mauritania.

2. Why should we adapt to climate change?

2.1 What are the potential consequences of climate change?

The Intergovernmental Panel on Climate Change (IPCC), an expert panel of scientists, concludes that it is 90-99 per cent likely that the rise in global air temperature since the mid-1900s has been caused by human activity.[1] Fossil fuel use, for instance, generates greenhouse gases that contribute to this warming trend.

Average global temperatures are predicted to rise by about 3°C by the end of the century, and although this might seem a small increase, its impact could be serious. Sea level could rise by as much as 59 centimetres over that period, and some projections indicate the complete disappearance of summer sea ice in the Arctic by the year 2100. Heat-waves and periods of heavy rainfall are likely to become more frequent. The IPCC states that in Africa agricultural production, including access to food is projected to be severly compromised by climate variability and change.

Climate change is increasingly recognised as a developmental issue as well as an environmental one. Initially it was linked only to reducing greenhouse gases — primarily an energy and land use issue. Now, it is widely recognised that with some impacts unavoidable over the next decade or two, the first to suffer will be poor people in poor countries. So the need to adapt to climate change (see below), and in particular to help the poorest do so, is becoming a key issue, closely linked to poverty reduction and the Millennium Development Goals (MDGs).

2.2 How can we adapt to climate change?

There are two types of responses to the threat of climate change. The first, mitigation, involves reducing emissions of greenhouse gases as a way of slowing or stopping climate change (see Climate Change and Poverty Reduction key sheet). The second, adaptation, is learning to cope with temperature increases, floods and the higher sea level associated with climate change.

Adaptive responses can be technological (such as sea defence construction), behavioural (such as altered food and recreational choices), managerial (such as altered farm practices) or policy-based (such as planning regulations).

Adaptation is important for two reasons. First, some climate change impacts are inevitable. Even if emissions of all greenhouse gases were to stop immediately, due to lags in the earth's natural processes, average temperatures would continue to rise for some time. Secondly, although scientists have made clear the urgency of reducing greenhouse gas emissions, politicians, businesses and individuals have been slow to translate this advice into action. Inadequate mitigation therefore means that adapting to the effects of climate change is crucial.

3. How does adaptation relate to poverty?

3.1 The poorest countries are most affected

Compared with industrialised countries, most developing nations have small greenhouse gas emissions, making mitigation a less urgent priority. Adaptation is very important in poor countries because they are more vulnerable to the impacts of climate change.

Broadly speaking, there are two reasons for this vulnerability. One is low adaptive capacity — high levels of poverty, and a relative lack of the financial capability, institutional strength, skills, infrastructure, technology and other elements needed to cope with the effects of climatic shifts. The other is geographic location: large numbers of poor people live in areas such as drought-prone sub-Saharan Africa or flood-prone Bangladesh. Reliance on climate-sensitive sectors such as agriculture and fishing is also high in developing countries.

The IPCC recognises Africa as a whole to be "one of the most vulnerable continents to climate variability and change because of multiple stresses and low adaptive capacity". In Asia, "coastal areas, especially heavily-populated mega-delta regions in South, East and Southeast Asia, will be at greatest risk due to increased flooding from the sea and, in some mega-deltas, flooding from the rivers". The IPCC also states that "small islands, whether located in the tropics or higher latitudes, have characteristics which make them especially vulnerable to the effects of climate change, sea level rise and extreme events".[2]

1 IPCC (2007)

2 IPCC (2007)

3.2 What techniques can poor countries use to adapt to climate change?

In agriculture-dependent communities, using drought-resistant crops, introducing new farming techniques and diversifying income sources can help. India and Mali are known for the strength of their agricultural professionals, and integrating climate change concerns into policy and planning is quite advanced. But in other countries, less progress has been made.

Coastal zone management is an important sector in South Asia (India and Bangladesh in particular) as well as in Tanzania, the Gambia and Senegal in Africa. The Tanzanian coast, for instance, is vulnerable to problems such as pollution, erosion and the unsustainable exploitation of fisheries, so integrated coastal zone management (ICZM) is vital there. Planning for sea-level rise and vulnerability to storms and cyclones are both important. Coastal cities such as Alexandria in Egypt, and Banjul in The Gambia, will be particularly vulnerable.

Climate-related disasters such as floods, cyclones and droughts are recurring problems for developing countries. In most countries, institutions and plans to deal with early warning, relief, rehabilitation and recovery exist. Some are quite successful (such as the cyclone early warning system in Bangladesh), but many are inefficient and unlikely to be able to cope with future disasters exacerbated by climate change.[3] Strengthening national and local capacity in disaster risk reduction and disaster management by working with existing structures such as the Comprehensive Disaster Mitigation Programme in Bangladesh is essential. In Mozambique, the natural disaster programme is also looking at incorporating climate change adaptation in its disaster risk reduction strategy.

Health professionals must start planning for climate change impacts. Increases in Malaria have been predicted for several countries, and incidences of waterborne diseases are expected to become more frequent.

↘ Box 1 Community-based adaptation in Cavite City[4]

Cavite City, a conurbation on the coast of the Philippines, is highly vulnerable to tropical cyclones, drought and sea-level rise. Current climate-related problems include coastal erosion, siltation and sedimentation, storm surges and urban flooding, saltwater intrusion into water resources and degradation of water quality. Poor people, especially fishers and shellfish growers, are affected most. Some have already acted on adaptation by:

> Accommodating sea-level rise by building houses on stilts
> Strengthening the physical structure of houses
> Moving to safer places during disasters
> Placing sandbags along the shorelines
> Borrowing money from relatives or acquiring usurious loans from moneylenders
> Engaging in alternative income-generating activities locally or in other areas
> Changing occupation.

Such strategies, however, are inadequate and not effectively integrated into existing local development plans. The government has also instigated adaptation activities, including relief assistance, resettlement and shoreline protection. These have reduced the vulnerability of coastal households, but these measures too are inadequate and they are also costly.

Adaptation strategies proposed by local people are mostly non-structural measures such as policy and institutional reforms regarding coastal zone management, property rights, micro-finance/insurance schemes disaster risk management, fisheries/aquatic resource management and community-based adaptation.

Communities feel that local capacity development is important, as is improving knowledge management.

3 Red Cross and Red Crescent Climate Centre, the Netherlands (2004)
4 Faustino, R. (2007)

4. Climate change and international goals

Climate change will make meeting the Millennium Development Goals (MDGs) even more difficult (see Box 2).

↘ Box 2 How climate change will impede meeting the Millennium Development Goals[4]

Eradicate extreme poverty and hunger (MDG 1)
Poor people are generally the most vulnerable to climate change. They are also more dependent on ecosystem services and products for their livelihoods. Any effect that climate change has on natural systems therefore threatens the livelihoods, food intake and health of poor people.

Climate-induced changes to crop yields will dramatically affect many poor people's livelihoods. Climate change-induced changes in infrastructure and labour productivity are also expected to alter the path and rate of economic growth. This will increase poverty by reducing income opportunities. Poor people are particularly vulnerable to extreme weather events.

Achieve universal primary education (MDG 2)
Natural disasters and drought may require children to help more with household tasks, leaving less time for schooling. Malnourishment and disease also impair learning and can be related to climate change. Weather-related disasters threaten school buildings in many poor countries. Education becomes a low priority following the loss of a home or the need to migrate following a flood, storm or drought.

Promote gender equality and empower women (MDG 3)
Climate change is expected to exacerbate current gender inequalities. Women are usually responsible for fetching water, fodder, firewood and sometimes food in poor households. They therefore bear disproportionate hardship when provision of these vital necessities becomes difficult. In times of extreme stress, men often migrate, leaving women and girls behind to cope with heavier domestic and work burdens.

Health related issues (MDGs 4, 5 and 6)
Direct effects of climate change include higher levels of mortality and illness associated with heat waves, particularly among the elderly and the urban poor. Extreme weather events will also cause more death and injury. Women and children are particularly vulnerable to extreme weather events.

The indirect effects of climate change on health are more significant. Climate change may increase the prevalence and distribution of vector-borne diseases such as malaria and dengue fever. Vulnerability to water, food, or infectious diseases such as cholera and dysentery is also likely to increase. Children and pregnant women are particularly susceptible to vector and waterborne diseases. Climate change will reduce the quantity and quality of drinking water, which is a prerequisite for good health. Malnutrition, an important cause of ill health among children, could also be exacerbated due to declining natural resource productivity and food insecurity.

Ensure environmental sustainability (Goal 7)
Global warming is likely to shift ecosystem boundaries. This may mean that some protected areas no longer protect the species they were designed to conserve. Extinction rates may increase, and for many species, climate change poses a greater survival threat than the destruction of their natural habitat. Shifts in reproductive cycles and growing seasons could also occur. Coral reefs have already shown devastating losses as a result of increased water temperatures. Degradation of biodiversity will reduce the availability of many traditional medicines. This will affect poor and rural people who depend on natural resources for medicine as well as income and food. Water supplies are expected to drastically decrease in many arid and semi-arid regions. Slum dwellers will be particularly vulnerable to climate change.

Global partnerships (Goal 8)
The benefits of investment in development could soon be entirely absorbed by dealing with the costs of weather related disasters. Many poor countries depend on tourism, but climate change could destroy the beaches, reefs and coastal infrastructure on which this depends. Climate change will also severely affect the agricultural sector. All these factors will affect gross domestic product, national debt, the state of public finances, and investment in development in poor countries.

5 Reid, H. and M. Alam (2005)

But strategies to tackle climate change could learn from approaches used to meet the MDGs and other international agreements. For example, the ecosystem approach advocated in the Convention on Biological Diversity (CBD) could provide a useful tool for integrating biodiversity, livelihood and climate change concerns (see Box 3).

↘ Box 3 The ecosystem approach

The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. It is based on the application of appropriate scientific methodologies focused on levels of biological organization which encompass the essential processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems. The ecosystem approach is the primary framework for action under the Convention on Biological Diversity.

Another potentially useful approach is the Hyogo Framework for Action.[6] A blueprint for disaster risk reduction, the Framework aims to reduce the loss of lives and of the social, economic and environmental assets of communities and countries by 2015 by providing guiding principles, priorities and practical means for action. Climate change adaptation will also be part of environmental mainstreaming into development plans and poverty reduction strategies.

5. Mainstreaming adaptation in development

Adaptation to climate change needs to be mainstreamed into development policy and practice at national, international and regional levels.[7] Particular attention needs to be paid to supporting community-based approaches to adaptation. Building on the considerable body of knowledge already possessed by poor people is essential. In the Yamuna River area of Rajasthan, India, for instance, a number of poor communities have revived traditional rainwater harvesting methods in the form of johads — small semicircular dams — and helped recharge groundwater and virtually drought-proof their villages.[8]

Climate change forecasts at the local level are poor but they are, in any case, not a prerequisite to building local adaptive capacity: communities that are already vulnerable to climate variability, such as those near coasts or in arid areas, are likely to be vulnerable to future climate change. That said, there is a need for more and better quality climate information in Africa, to facilitate better planning.

5.1 Action within countries

> Many developing countries have a good core of professional planners and managers operating in key sectors. But they are usually unaware of the potential impacts of climate change on their sector. Climate risk assessment — studies to determine how robust infrastructure, services and other elements of development will be in the face of climate change — needs to be incorporated into development activities by all these professionals. For example, professionals involved in planning and managing for irrigation, flood management and drinking water provision need to factor climate change risk management into their regular practices for designing water structures and measures.

> Vulnerability to climate change can be reduced or increased by the choice of development path. For example, national investment in large-scale agricultural programmes may be misplaced if more droughts and flash floods are expected. Small-scale drought resistant agriculture might be more sustainable in the long term.

> Each country needs its own plans and institutions to ensure adaptation is both mainstreamed into development activities (such as integrated water resources management) and considered at a strategic planning level (for example, planning for increased malaria incidence in the health sector). The LDCs are currently preparing National Adaptation Plans of Action (NAPAs), which alongside other national strategies and plans should help link knowledge on climate change impacts and adaptation into national policy and planning processes.

> Incorporating climate change risks into national development activities at both project and strategic levels requires greater institutional capacity in most developing countries. Hence Irish Aid is supporting capacity development for decision makers in developing countries through the UN Institute for Training and Research's Climate Change Capacity Development programme (C3D).

6 UN International Strategy for Disaster Reduction
7 UN International Strategy for Disaster Reduction
8 European Union
9 Tarun Bharat Sangh

A young sorghum seed struggles to grow in parched earth, Affole, Mauritania. Successive droughts and the attractions of settled life have reduced the number of nomadic herders in the country to about 250,000.

5.2 Bilateral processes

> Investment projects from bilateral or multilateral institutions and the private sector need scrutinising and modifying to ensure they are both "climate proof" and "climate friendly" (see Box 4).

> Donor agencies have an important role to play in supporting local processes that enable poor people to better cope with climate change impacts. Participatory processes and a holistic approach incorporating all aspects of sustainable development are needed.

> There is also a need for capacity development in donor agencies and with partners.

↘ Box 4 "Climate-screening" investment portfolios

The risks of not addressing climate change need to be factored into donors' investments. The recent *Stern Review*[10] on the economics of climate change clearly demonstrates the cost-effectiveness of reducing greenhouse gas emissions early on as a means of preventing globally catastrophic impacts in the long term. In the shorter term, investing in adaptation to reduce, but not eliminate, upcoming impacts and associated costs is also important.

The reality, however, is that climate change has traditionally received scant attention from international donor organizations and governments. International organisations such as the International Monetary Fund and World Trade Organization give little consideration to climate change in their projects. For example, a WB, OECD , IADB study suggests that 20%-40% of all ODA is subject to climate risk. Clearly, international donor agencies need to assess the extent to which their investment portfolios in developing countries might be at risk due to climate change and take steps to reduce that risk.

Several bilateral and multilateral development agencies and NGOs recognise this and are starting to take an interest.[11] At least six development agencies have screened their project portfolios, both to ascertain the extent to which existing development projects consider climate risks or address vulnerability to climate variability and change, and to identify opportunities for incorporating climate change explicitly into future projects.

10 Stern (2006)
11 Klein, R. J. T. *et al.* (2007)
12 Raworth, K. (2007)

5.3 International action

> Developed countries that signed up to the UNFCCC are required to help more vulnerable countries with costs of adaptation; (see Box 5).

> Vulnerability to climate change is explicitly linked to poverty. Developed countries therefore need to fulfil all the agreements made in the past, such as the agreement the international community made in Monterrey to spend 0.7 per cent of gross national product on development cooperation, the Paris Agenda, where countries pledged to make improvements and increase harmonisation and integration with the policies of partner countries, and other agreements on good governance, women's rights and children's rights to help foster growth and fight poverty. Action on curbing loss of income from trade barriers, debt relief, provision of untied aid, investment and a commitment from wealthy nations to curb consumption is also needed.

↘ Box 5 Funds for adaptation

Several financial mechanisms exist under the UNFCCC and the Kyoto Protocol to support adaptation activities, particularly in developing countries. The following four funds contain a total of US$310.22 million so far, although the costs of adaptation for developing countries alone are likely to be several billion dollars each year:[12]

1. The Least Developed Countries Fund supports the development of National Adaptation Plans of Action (NAPAs), and will probably assist the LDCs to implement their NAPA projects. The fund comes from voluntary contributions from wealthy countries (such as Ireland through Irish Aid and the Department of the Environment, Heritage and Local Government).

2. The Special Climate Change Fund is for all developing countries and covers adaptation and other activities; it is also based on voluntary contributions.

3. The Adaptation Fund is meant to support "concrete adaptation" activities. It is based on private sector replenishment though the 2 per cent levy on Clean Development Mechanism projects (which channel carbon-cutting energy investments financed by rich-country companies to developing countries), plus voluntary contributions.

4. The Strategic Priority on Adaptation fund contains US$50 million from the Global Environment Facility's trust funds to support pilot adaptation activities.

In addition to these funds, several bilateral funding agencies, including those from Canada, Germany, the Netherlands, Japan, the United Kingdom and the United States, have allocated funding for adaptation activities that include research and pilot projects. Bilateral donors have provided around $110 million for over 50 adaptation projects in 29 countries.

Fulani villagers carry water back to the village past some goats in the early morning, Dembel Jumpora, Guinea Bissau.

Printed on Era Silk recycled paper,
made from 50% genuine recovered paper waste
and 50% virgin fibre from well-managed forests.

References and Resources

ADB, DFID, EC, DGIS, BMZ, OECD, UNDP, UNEP, World Bank. Poverty and Climate Change: Reducing the Vulnerability of the Poor through Adaptation: A Report by ten international development funding agencies providing links between climate change and development actions and policies. See www.oecd.org/dataoecd/60/27/2502872.pdf

Alam, M. and L. Murray (2005) Facing up to climate change in South Asia. Gatekeeper 118. IIED, London. See www.iied.org/NR/agbioliv/gatekeepers/index.html

Convention on Biological Diversity. See information on the Ecosystem Approach at www.cbd.int/programmes/cross-cutting/ecosystem/default.shtml

DFID Key Sheets on Climate Change and Poverty. See www.dfid.gov.uk/pubs/files/climatechange/keysheetsindex.asp

European Union. See the EU action plan on climate change in the context of development cooperation at http://europa.eu.int/comm/development/body/theme/environment/index.htm.

Faustino, R. (2007) Mainstreaming Adaptation Towards Integrated Coastal Management: The vase of Cavite City, Philippines. Presentation by Ramon Faustino Jr. Assistant Director, Conrado Benitez Institute for Sustainability, Philippines at the Community Based Adaptation Workshop, Dhaka, 24-27 February.

Huq, S., H. Reid and L. Murray (2006) Climate change and development links. Gatekeeper 123. IIED, London. See www.iied.org/NR/agbioliv/gatekeepers/index.html

IPCC (2007) Climate Change 2007: Impacts, Adaptation and Vulnerability: Summary for policymakers. Working Group II Contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report.

Klein, R. J. T. et al. (2007) Portfolio screening to support the mainstreaming of adaptation to climate change into development assistance. Climatic Change (forthcoming).

Orindi, V. A., and L. Murray (2005) Adapting to climate change in East Africa: A strategic approach. Gatekeeper 117. IIED, London. See www.iied.org/NR/agbioliv/gatekeepers/index.html

Raworth, K. (2007) Adapting to Climate Change: What's needed in poor countries, and who should pay? Oxfam Briefing Paper 104. Oxfam International.

Red Cross and Red Crescent Climate Centre, the Netherlands (2004) Preparedness for Climate Change: A study to assess the future impact of climatic changes upon the frequency and severity of disasters and the implications for humanitarian response and preparedness. See www.climatecentre.org/downloads/File/reports/preparedness_climate_change.pdf

Reid, H. and M. Alam (2005) Millennium development goals. Tiempo: A Bulletin on Climate and Development 54: 18-22.

Stern, Nicholas (2006) Stern Review on the Economics of Climate Change. HM Treasury, London. See www.sternreview.org.uk.

Tarun Bharat Sangh. See information on its work with the Yamuna River villages to revive their own traditions of water harvesting at www.tarunbharatsangh.org.

UNFCCC. NAPAs submitted to the UNFCCC to date are available at http://unfccc.int/national_reports/napa/items/2719.php

UN International Strategy for Disaster Reduction. See a downloadable version of the Hyogo Framework at

www.unisdr.org/eng/hfa/hfa.htm.

Useful websites

- → Intergovernmental Panel on Climate Change (IPCC) **www.ipcc.ch**
- → Tiempo **www.tiempocyberclimate.org/portal/bulletin.htm**
- → The UN Framework Convention on Climate Change and the Kyoto Protocol **http://unfccc.int**
- → UN International Strategy for Disaster Reduction **www.unisdr.org**

All photography: Panos