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Pro-Poor Climate Adaptation

Norwegian development cooperation and climate change adaptation: An assessment of issues, strategies and potential entry points

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Sammendrag: Rapporten gjennomgår koblinger mellom norsk bistand og klimaendringer, med fokus på tilpasning. Rapporten diskuterer sentrale teoretiske begreper og pågående aktiviteter innen klimatilpasning, og hvilken relevans dette har for norsk bistandspolitikk og strategier for utviklingssamarbeid. Målet med studien er å kartlegge viktige innsatsområder for norsk bistand i forhold til klimatilpasning. Følgende områder er identifisert: viktige *faktorer* som påvirker sårbarhet og tilpasning; *strategiske innfallsporter* eller områder hvor disse faktorene kan bli adressert (gjennom utviklingssamarbeid generelt og norsk bistand spesielt); og *operasjonelle innfallsporter*, som omfatter instrumenter, mekanismer og verktøy hvor tilpasning til klimaendringer kan integreres for å fremme klimatilpasning.

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Executive Summary

1. This report reviews linkages between Norwegian development cooperation and climate change, with a focus on adaptation. It discusses key concepts, ongoing efforts and their relevance to Norwegian policies and strategies. The main purpose is to distinguish key interventions and focal areas for Norwegian development cooperation in the area of adaptation to climate change. We identify the following: key *factors* that affect vulnerability and adaptation; *strategic entry points* or areas through which these factors can be addressed (through development cooperation in general, and Norwegian development cooperation in particular); and *operational entry points*, including instruments, mechanisms and tools, through which such efforts to support adaptation to climate change can be integrated.

2. There is now little doubt that human-induced emissions of greenhouse gases (GHGs) are causing changes to the global climate. The actual rate and magnitude of the changes are uncertain. Yet, changes in climatic factors such as rainfall, temperature and wind patterns could have important implications for the success of development efforts. Climate change has moved from being a predominantly long-term and global issue to also becoming an immediate and local challenge.

3. There are several reasons why Norwegian development cooperation needs to consider climate change:

- Climate change is a poverty concern. The poor are the most vulnerable to climate change and its impacts. Poverty reduction – the main goal of Norwegian development cooperation – is compatible with the aim of adapting to climate change, and there is considerable potential for win-win opportunities.
- Climate change is a global issue, but adaptation will happen locally. Agencies like NORAD have considerable experience on the ground and could play a key role in "translating" climate change into a local development context.
- Climate change affects all aspects of development work. It may increase the risk of failure of development projects, as well as affect the vulnerability of development aid recipients. Further, decisions made today could have long-term implications for the vulnerability of societies and ecosystems vis-à-vis climate change.
- As a developed country party to the Climate Convention, Norway is expected to assist developing countries with, for example, human and institutional capacity building, transfer of technology and reducing the vulnerability of climate sensitive resources. The new funds for adaptation and the Clean Development Mechanism could offer new opportunities for development, facilitate climate adaptation and catalyse the introduction of clean technologies.
- There are synergies between development and the international conventions on climate change, biodiversity and desertification. The conventions share the common understanding that ecosystems underpin livelihoods, that environmental problems have many of the same root causes and that their impacts cut across geographical boundaries. Synergies can be found at the international, national and local level.

4. Climatic variation has always formed part of the framework for development cooperation. It has traditionally been dealt with by trying to reduce sensitivity to climate variability (for example, water wells, irrigation systems, drought resistant cultivars) and by attempting to ameliorate the consequences of floods, storms, droughts and other climate events (for example, food distribution and evacuation). Climate change nevertheless poses several new challenges to development cooperation, such as:

- Climate change vulnerability demands an increased focus on people's livelihood and coping strategies, as well as on the risks that they face
- Future climatic changes are expected to be more rapid than in the past, and seasonal weather patterns may become less predictable
- The frequency and magnitude of extreme weather events may increase
- A failure to consider climate change now may tie up an increasing amount of funds in emergency assistance
- Climate change occurs in a situation with a number of other large-scale societal and environmental changes (e.g., economic globalisation, HIV/AIDS, demographic changes, loss of biodiversity)
- There is a growing recognition that technological solutions will not be enough, and that there is also a need to look at the reasons why societies are vulnerable

5. Over the past few years, a number of multi- and bilateral agencies have initiated activities addressing climate change adaptation. Experiences so far highlight the potential synergy effects of addressing climate change in a development context. Key linkages that are being explored are those between climate change adaptation and (1) disaster mitigation and risk management; (2) fulfilment of the Millennium Development Goals, notably poverty reduction; and (3) the other "Rio Conventions" on desertification and biodiversity.

6. A number of institutional, economic and environmental factors determine whether or not an individual, household or community is vulnerable to climate change. For example, people who are highly dependent on climate sensitive natural resources (such as rainfed agriculture) or live in risky areas (such as flood-prone areas) are likely to be vulnerable. At the same time, institutional capacity, economic opportunities, natural resource utilisation and technology determine whether or not people are able to cope with a climatic event in the short-term and adjust to changes in the longer term. Institutional, economic and environmental conditions are continuously changing, thus vulnerability is also highly dynamic and context dependent. Famines may, for example, have as much to do with underlying societal factors and inequity of resource access as with a drought event itself. Measures aimed at reducing vulnerability and adapting to climate change can target the institutional, economic and environmental factors that shape people's ability to cope and sustain livelihoods when faced with climatic variability and change. These can be targeted through the entry points described below.

7. The review demonstrates a clear mandate for integrating climate change in Norwegian development policies and strategies. Entry points for adaptation are provided by the interactions among three main areas of Norwegian development cooperation: poverty reduction, natural resources management and humanitarian aid. Three strategic entry points are discussed: livelihoods security, capacity and sensitivity, and risk management. The study identifies specific types of interventions within these strategic entry points.

8. Several of Norwegian development cooperation's priorities as emerging from policy documents are pertinent to the strengthening of livelihoods security and thus local responses to climatic stress. Apart from supporting early warning, however, few Norwegian priorities explicitly concern measures that would strengthen risk management. Local capacity in events of disaster and sensitivity of production systems are implicit priority areas in Norwegian aid, which include the building of local institutions and strengthening of governance. There is potential for addressing climate adaptation more explicitly through these priority areas.

9. Integration of climate change adaptation in Norwegian development cooperation strategies is partly a question of coordination, understanding, evaluation and utilising existing knowledge. Most development work deal with issues of relevance to climate change. Local capacity to cope with climatic events and adapt to changes is contingent on the existence of economic opportunities, access to natural resources and technology, and strong institutions governing resources and responses.

10. Integration can take place through addressing, more explicitly, such factors aimed at strengthening local livelihoods and capacity, through the framework of existing strategies, programmes and tools. In

particular, adaptation can be integrated more explicitly into Poverty Reduction Strategy (PRS) processes. In addition, the structural causes of climate vulnerability can be addressed through efforts aimed at ameliorating the marginalisation of poor countries and peoples in global trade systems.

11. Main operational instruments and entry points for climate adaptation in development cooperation are identified as: instruments related to the Climate Convention; efforts aimed at realising synergies between conventions; environmental assessments; coordination of support and mainstreaming in development country policies and strategies; humanitarian aid and disaster management; and efforts related to the emerging area of Global Public Goods.

12. The study recommends that the following areas are given priority for integrating adaptation concerns into Norwegian development cooperation:

Internal measures, Norwegian development cooperation

- Reviewing tools and approaches in order to identify ways in which they can become explicit tools for adaptation
- Internal awareness raising and sensitisation
- Addressing potential synergies of coordination between the Ministry of Foreign Affairs and NORAD

Recipient country measures

- Integrating climate change in country programmes and PRSP processes
- Supporting network building and capacity development in developing countries
- Supporting the documentation of local knowledge and skills related to climate responses, and integrating these into national R&D systems

International mechanisms and collaboration

- Promoting pro-poor activities in the CDM and adaptation funds
- Addressing the consequences of trade and globalisation by integrating local livelihoods requirements into activities aimed at enhancing trade

1 Introduction

1.1 The challenge of climate change

There is now little doubt that human-induced emissions of greenhouse gases (GHGs) are causing changes to the global climate (Houghton et al. 2001). As a result, increasing attention is being devoted to assessing the potential impacts of future climate change and investigating how society may adapt to them.

Along with this, there is a growing recognition that climate change is not only an environmental issue, but also a key development challenge. First and foremost, this is due to the fact that among nations and social groups, the poorest are facing the most serious problems. The majority of the world's poor depend on agriculture and natural resources that are sensitive to climatic changes, and they have the lowest capacity to cope and adapt. Extreme climatic events, such as the 2000 flood in Mozambique or the more recent drought-induced food insecurity in Southern Africa, tie up huge sums in humanitarian aid that could otherwise have been invested in development, and may set national economies back by several years.

It is important to note that climatic variability as such represents nothing new, and that development assistance has always operated in high risk environments. However, there are several reasons why development cooperation should consider climate change more closely. Research suggests that human-induced climatic changes will be more rapid than earlier, that the climate may become more extreme, and that the timing of seasons (e.g., onset of rain) may change or become more variable. Further, many developing countries are already facing increasing pressures on natural resources as well as considerable social and economic changes (e.g., globalisation and market integration, HIV/AIDS, rural-urban migration). Where these pressures converge with climate change, effects on population groups may be particularly adverse.

1.2 Relevance of climate change to development cooperation

There are three broad groups of linkages between climate change and development cooperation (cf. e.g. Burton and van Aalst 1999, Klein 2001):

1. Climate change may affect the likelihood of success of development projects and programmes, as they have impacts on natural resources and people. A development project designed for one climate regime may not be suitable in another;
2. Development projects may affect the vulnerability of societies and ecosystems towards climate change: they may make them better prepared to deal with climate change, but they may also reduce their ability to adapt to climate change; and
3. Development assistance may affect the greenhouse gas emission pathways of developing countries, e.g. through support to renewable energy. Developing countries do not at present have obligations under the Climate Convention to reduce their emissions, but technology transfer and investments by Annex I countries[1] in emission-reducing activities in developing countries remain key issues in the negotiations.

The main focus of this paper will be (1) and (2), namely linkages between adaptation and development cooperation, and its implications for Norwegian development cooperation. The paper draws on emerging trends in the literature on adaptation. In the climate change research community, attention

[1] Countries listed in Annex I to the Climate Convention; these are industrialised countries including economies in transition.

over the past few years has changed from a predominantly scenario-based, top-down and "single-stress" approach of climate change impacts and adaptations, towards a more bottom-up approach, focusing on the resilience of societies in the face of multiple interacting climatic and social stresses. In particular, the paper draws on an understanding of climate vulnerability as being set in a social and economic context that defines adaptation options and capacities.

1.3 Purpose and structure of report

The purpose of this paper is to review linkages between climate change and development, and to identify key interventions and focal areas for adaptation to climate change in Norwegian development cooperation. A particular focus is on linkages to poverty reduction strategies. This implies first, a bias towards Africa, where five out of Norway's seven priority partner countries are located[2], and second, an emphasis on rural areas, where the impacts on livelihoods can be expected to be most direct and where the majority of the poor live. The review is based on development policies and strategies, not specific activities on the ground. Issues of emissions reductions fall outside the scope of the paper; they are, however, considered when relevant for development and its impacts on the poor, notably in connection with the Clean Development Mechanism of the Kyoto Protocol.

The chapters are organised as follows: Chapter 2 reviews the main concepts of climate change and development. Chapter 3 summarises the main challenges for adaptation to climate change in the main regions of relevance to Norwegian development cooperation. Chapter 4 explains climate change as a development issue, and explores the space of adaptation within key strategic areas of development cooperation, including poverty reduction, natural resources management and humanitarian aid. Chapter 5 reviews the ongoing activities of development agencies that are working towards linking development cooperation and climate change. Chapter 6 discusses the relevance of climate change to Norwegian development cooperation, and suggests strategic and operational entry points for supporting climate adaptation. Finally, Chapter 7 discusses potential priority areas and the way forward.

[2] Priority partner countries (*hovedsamarbeidsland*) are Uganda, Tanzania, Mozambique, Malawi, Zambia, Bangladesh and Nepal (www.norad.no).

2 Climate change: an overview[3]

2.1 The science of climate change

Climate can be described as "average weather". Climate change thus describes changes over time in parameters such as temperature, precipitation, wind speed and direction, and humidity. Changes can occur in extreme events, average values, as well as in spatial and temporal variability.

The existence of so-called greenhouse gases (GHGs) in the atmosphere is a precondition for life on earth. Without them, the global average temperature would be at least 34°C lower than today. Since the onset of the industrial era (1750), human-induced emissions from fossil fuel combustion and land use change has increased GHG concentrations in the atmosphere, resulting in an *enhanced* greenhouse effect. Carbon dioxide (CO_2) and methane (CH_4) are the two main greenhouse gases affected by human activities.[4] The concentration of CO_2 in the atmosphere has increased by 30% since 1750, with present concentration levels being the highest in more than 400,000 years.

The global average surface temperature has increased by 0.6°C (±0.2°C) over the past century, the largest increase during any century in the past 1,000 years. The 1990s was the warmest decade and 1998 was the warmest year since direct measurements began in 1861 (Houghton et al. 2001). There is now wide agreement within the scientific community that a human influence can be detected in observed climate data. The Intergovernmental Panel on Climate Change (IPCC), a panel of climate experts convened by the UN in 1988, concluded that human-induced emissions of greenhouse gases (GHGs) contributed to most of the observed warming over the last 50 years (Houghton et al. 2001).

Model predictions suggest that the mean annual global surface temperature will increase by between 1.4 and 5.8°C over the next 100 years, and that the global mean sea level may rise by between 9 and 88cm. This rate of warming is very likely to be greater than that seen over the past 10,000 years. There are significant uncertainties underlying these predictions, caused by a lack of understanding of the feedback processes in the climate system (i.e. modification of clouds, snow cover, ocean currents, vegetation responses, etc.) and uncertainty about future emission levels. There are likely to be considerable regional differences in changes to temperature, the distribution and pattern of precipitation, as well as to the frequency and intensity of extreme events such as storms, floods and droughts.

Historical emissions emanate largely from developed countries. Main CO_2 sources are fossil fuel consumption (oil, gas, coal) and land use changes (deforestation and land cover change), while methane stems from sources such as agriculture (ruminant animals, rice production), waste treatment and disposal, and landfills. Although total emissions from developing countries are expected to outweigh emissions from developed countries within the next few decades, it is important to note that emissions *per capita* will nevertheless remain far greater in the North than in the South. Due to the nature of the climate system and to continued emissions, human-induced climate change is likely to persist for many centuries.

Natural climate variability forms an important part of the environment with which humans interact. People have therefore developed strategies and management systems that respond to this variability. For example, cultivation in tropical areas is adapted to the timing of rainy seasons. Extremes in such variability, such as prolonged drought or heavy flooding, have nevertheless led to deaths and had severe impacts on human activities and welfare throughout history. A warming of the atmosphere may affect climate variability, for example, through changes in the frequency and intensity of extreme events or via natural cyclical climate phenomena such as ENSO (El Niño – Southern Oscillation).

[3] See also Annex V, presentation given at NORAD, June 5th 2003 (in Norwegian).

[4] Other gases include tropospheric ozone, nitrous oxide, hydrofluorocarbons, sulphur hexafluoride perfluorocarbons, chlorofluorocarbons, hydrochlorofluorocarbons and halons

2.2 Key climate change concepts

The dominating policy concern for climate change is to counteract the problem at its source, namely to reduce emissions of greenhouse gases to the atmosphere. In climate change terms this is described as *mitigation*, defined as human interventions to reduce the emissions of greenhouse gases or enhance CO_2 sinks in order to reduce the extent of global climate change (Houghton et al. 2001).

Impacts describe the effects of climate change, from their first order consequences (i.e. the direct effects of increased CO_2 concentrations in the atmosphere and changes in climate parameters) to their downstream effects on ecosystems and societies.

Adaptation, the main focus of this paper, is described as adjustments in practices, processes, or structures to take into account changing climate conditions, to moderate potential damages, or to benefit from the opportunities associated with climate change (McCarthy et al. 2001).

Vulnerability signifies "the extent to which a natural or social system is susceptible to sustaining damage from climate change" (Schneider and Sarukhan 2001, p. 89). Adaptation can thus be seen as a way of reducing vulnerability to climate change. Vulnerability is commonly seen as a function of three elements: first, the *exposure* of the system to climatic hazards, i.e. the physical risk that such an event may take place; second, the *sensitivity* of a system, i.e. the degree to which a given change in climate will lead to positive or negative changes in a system; and third, the *capacity*, referring to the capacity of a system to adjust practices, processes or structures to moderate or offset the potential damage or take advantage of the opportunities created by a given change in climate.

Resilience describes “the ability of groups or communities to cope with external stresses and disturbances as a result of social, political and environmental change” (Adger 2000b:347). Resilience was initially used for ecosystems, but the term is now increasingly used also in a social context.

It is important to note that many of these concepts are used differently by other research areas. For example, *disaster mitigation* is a common term in the literature on natural disasters, where mitigation concerns the reduction of adverse effects of disasters rather than the reduction of greenhouse gas emissions. Further, the specific use of the terms is also debated within the climate change research community. See Annex II for further details.

2.3 The UN Climate Convention, the Kyoto Protocol and Adaptation

The *UN Framework Convention on Climate Change* (UNFCCC, henceforth referred to as the Climate Convention) was established along with the Convention on Biological Diversity (CBD) and the Convention to Combat Desertification (CCD) at the Rio Summit on Sustainable Development in 1992. The Climate Convention entered into force in 1994 and has now been ratified by 188 parties (as of 17th February 2003), including nearly all UN member countries. The Convention’s main goal is to prevent dangerous human interference with the climate system. [5]

The *Kyoto Protocol* to the Convention was adopted at the Third Conference of the Parties in 1997. The Protocol is legally binding and commits Annex I countries (industrialised countries including economies in transition) to reduce their overall emissions of six greenhouse gases (GHGs) by at least 5% below 1990 levels during 2008-2012. The Kyoto Protocol has not yet entered into force. It will do so only when at least 55 countries have ratified the Protocol, incorporating countries representing at least 55% of the Annex I emissions of CO_2 in 1990. Since the USA (responsible for 36.1% of emissions) has declared that it will not ratify, the future of the Protocol now depends on Russia’s ratification.[6]

To lower the costs of reducing emissions, three so-called *flexible mechanisms* will be available: Emissions Trading, Joint Implementation and the Clean Development Mechanism (CDM). The two

[5] www.unfccc.int. For an overview of the climate negotiations, see http://unfccc.int/resource/guideconvkp-p.pdf or http://www.cicero.uio.no/background/negotiations.html (in Norwegian).

[6] For more information see http://www.cicero.uio.no/div/ratification/ (in Norwegian).

first mechanisms are restricted to the Annex I countries, while the CDM also involves developing countries. The CDM has two main goals: First, to assist developing countries achieve sustainable development, and second, to assist Annex I countries in meeting their emission targets. An Annex I country can qualify for emission reduction credits, called Certified Emission Reductions (CER), by implementing projects in a developing country according to the development goals set up by the host country. The private sector is expected to play a key role in the CDM, and companies will be encouraged to develop proposals and invest in approved schemes. Projects are likely to be selected, "primarily on considerations of financial returns and on alignment with existing business activities" (Aukland et al. 2002, p.25). CDM projects will promote adaptation through a 2% levy[7] on all CDM transactions, which will go into a new Adaptation Fund (see below).

Most international attention has until recently been on emission reductions. However, there are several references to adaptation in the Convention (Articles 4.1 (b,e) and 4.4.). Vulnerability and adaptation assessments were undertaken during the 1990s within the GEF-funded National Communications[8] as well as in country studies supported by the World Bank, UNEP, the Netherlands and the USA (cf. Smith and Lazo 2001). At COP7 (the seventh Conference of the Parties) in Marrakech in 2001, three funds were established, mainly to support adaptation activities. Two of the funds are part of the Convention, while one is part of the Kyoto Protocol:

- The Least Developed Countries (LDC) Fund
- The Special Climate Change (SCC) Fund
- The Adaptation Fund (Kyoto Protocol)

The *LDC Fund* is the only operative fund so far, with US$12 million at its disposal until mid-2004.[9] It is intended to assist LDCs carry out the so-called National Adaptation Programs of Action (NAPAs). An LDC Expert Group (LEG) was also created at COP7 to give advice on the preparation of NAPAs. One of the guiding principles of the NAPAs is that countries should use existing information and traditional knowledge, i.e. that there should be no new studies.[10] The *Adaptation Fund* will only become operational when the Kyoto Protocol enters into force. The modalities of the *Special Climate Change Fund* are still under negotiation (Dessai 2003). Part of the controversy surrounding the SCC Fund lies in the wide range of activities for potential funding, including diversification of the economies of oil-exporting countries. The LDC and SCC Funds are to be filled through voluntary contributions. In general, funding should be in addition to regular ODA funds, but the role of donors and development aid is still being discussed (Dutschke and Michaelowa 2003).

[7] The levy will be waived for CDM projects hosted by least developed countries.

[8] See http://unfccc.int/resource/natcom/nctable.html#nonannex1 for a list of submitted National Communications by non-Annex I countries.

[9] Norway has supported the LDC fund with four million NOK until mid-2004.

[10] http://www.undp.org/cc/napa.htm

3 Regional challenges in facing climate change

3.1 Climate change scenarios: downscaling and uncertainty

Different regions face very different challenges related to climate change. How a global mean temperature change may be manifested at local and regional scales is highly uncertain due to the incomplete understanding of interactions between the oceans, biosphere, cryosphere and climate systems, as well as the unpredictability of future emissions levels (Carter et al. 1999; Mitchell and Hulme 1999). Several global scenarios are produced by the Intergovernmental Panel on Climate Change (IPCC) in order to capture these uncertainties. Global circulation models (GCMs) simulate how global warming may be distributed geographically and seasonally in terms of climate parameters such as temperature, precipitation and sea surface pressure. Downscaling refers to analysing GCM results to provide more detail for smaller geographic areas, through the use of known physical and statistical relationships between the climate and natural systems in the relevant area. It should be noted that each of these steps involve a high range of uncertainty; thus the discussion of impacts in Section 3.2 below concerns possible rather than known futures.

Dynamic downscaling involves the driving of a nested regional dynamic model with boundary conditions drawn from a GCM simulation of future climate. While this procedure has been applied with relative success to numerous regions in the Northern Hemisphere, its implementation is constrained in many developing countries, such as in Southern Africa, by limited computing infrastructure (Joubert and Hewitson 1997). Empirical or statistical downscaling is less computationally demanding. Statistical or direct quantitative (mathematical) relationships between the atmospheric circulation and local climate parameters (such as temperature and rainfall) are derived from observed climate data. These relationships are then applied to GCM simulations in order to derive local scale information or scenarios. Predicting regional climate assumes that the basic dynamics and relationships are retained in a changed climate, although some changes may in reality be non-linear under enhanced greenhouse conditions. Sharp topographic and climatic boundaries between regions in, for example, Southern Africa, provide particular challenges for downscaling (Joubert and Hewitson 1997).

Further uncertainties are introduced in the process of modelling the impacts of climate change, where scenarios are used as inputs into hydrological or vegetation (or indeed, economic) models, for example, to predict future impacts. Given the uncertainties inherent in climate scenarios, together with imperfect knowledge about the relationships between climate parameters and other variables (for example, hydrological and vegetation factors, the interaction with other environmental changes, changing human practices and socioeconomic trends), it is very difficult to model future impacts on society with any accuracy. Such model outputs can nevertheless reveal interesting observations regarding the range of possible future impacts and uncertainties for which we have to prepare.

3.2 Seasonal forecasting

Using observed climate parameters and models of regional climate dynamics, weather forecasts can be developed for growing seasons, such as the rainy season in Southern Africa. Work is ongoing in developing seasonal climate forecasts that can assist in decision-making and improve people's ability to live with climate variability, in particular, fluctuations in rainfall. El Niño-Southern Oscillation events, for example, can be predicted with some skill, and sea surface temperatures are the basis for forecasts for Southern Africa (Vogel and O'Brien 2003). Challenges related to these forecasts are further discussed in Section 4.4.3.

3.3 Regional impacts of climate change

Table 1 below lists the main challenges brought by climate change impacts, and particular social and environmental factors that increase vulnerability in developing regions of Africa (mainly sub-Saharan

Africa), Latin America and Asia (except western Asia). Although the table focuses on challenges for adaptation, climate change may also bring opportunities. As agro-ecological zones shift, for example, future agricultural yields will depend on the ability to take advantage of opportunities and ameliorate negative effects. The speed of change, as well as any increase in the unpredictability of weather patterns or frequency of extreme events, may pose the greatest demands on the capacity to make such adjustments.

3.3.1 Africa

Sub-Saharan Africa is generally sparsely populated and rich in natural resources. Most of its inhabitants rely on natural resources in terms of agriculture and fishing, though some receive income from oil and mineral exploitation. Its people – agriculturalists, pastoralists and fisherfolk – have evolved a rich knowledge and flexibility in adapting to environmental fluctuations. However, poverty and declining health status (e.g. due to the spread of HIV/AIDS) are huge problems in the continent, and national economies are stretched by debt, lack of economic diversification, and declining terms of trade for their products.

The climates of sub-Saharan Africa vary from humid equatorial regimes to seasonally arid tropical regimes. High variability characterises the rainfall system in the Sahel, as well as in southern and eastern Africa, both seasonally and annually (Hulme et al. 2001). The character of circulation over eastern and southern Africa means that the regional climate is highly sensitive to small changes in the global climate. Mean annual temperatures in Africa have been rising steadily over the past few decades. Future warming is likely to be greatest over the interior of semi-arid margins of the Sahara and central southern Africa (McCarthy et al. 2001). The Sahel has experienced drying over the past 50 years, while no long-term trends are evident in east and southern African rainfall. Precipitation may decrease over southern Africa (Joubert and Hewitson 1997), while an increase is possible over eastern Africa and the Sahel over the same time period (Hulme et al. 2001). Surface runoff, which is a product of both rainfall and increased evaporation due to higher temperatures, is likely to decrease over most of southern and eastern Africa (PRECIS 2001). Evidence suggests that the variability and intensity of extreme events in southern Africa may be increasing (Tyson et al. 2002), and that the frequency and intensity of floods and droughts can be expected to rise (Joubert and Hewitson 1997). Particularly severe drought and flood incidences in eastern and southern Africa have been associated with the The El Nino-Southern Oscillation phenomenon (which occurs every two to seven years and originates in the climate system over the Pacific Ocean).

Table 1: Regional challenges in climate change adaptation

	Africa	Latin America	Asia
Social and environmental challenges	• Droughts • Floods and resulting landslides • Increased intensity of precipitation events • Extreme storm events and tidal waves • Reduced runoff and increased water stress • Disruption of water-dependent activities • International water management hampered by rainfall variability • Reduced hydropower production • Destruction of catchments and aquifers • Sea intrusion in deltas and coastal erosion • Arid and semi-arid ecosystems threatened • Possibility of reduced fish landings • Increased incidences of vector-borne diseases and reduced nutritional status • Reduced attractiveness of wildlife-based tourist destinations • HIV/AIDS • Poverty, high infant mortality rates and illiteracy • Weak institutions • Deteriorating terms of trade • Poor infrastructure • Expanding coastal cities	• Floods and resulting landslides • Droughts • Cold outbreaks/frosts • Heat outbreaks • Forest fires • Melting of glaciers • Loss of coastal land and biodiversity • Saltwater intrusion • Decreases in agricultural and livestock production in some areas • Potential user conflicts over water resources • Damages to infrastructure • Increased malnutrition • Increased geographic distribution of vector-borne diseases • Expansion of infectious diseases southwards and to higher elevations • Shantytowns in flood-prone and landslide-prone areas • National debt burden • Income inequalities • Deforestation, leading to reduced runoff and precipitation	• Droughts • Floods • Cyclones and intense rainfall events • Saltwater intrusion, erosion and flooding related to sea level rise • Coastal tourism, cities, infrastructure, fishing and agriculture threatened • Melting of glaciers • Hydropower and urban water supply affected by reduced stream flow and increased peak flow • Reduced area of boreal forests and changed distribution of rainforest and monsoon forest • Elevation shifts of mountain and upland ecosystems • Mangrove and tidal wetlands threatened by sea level rise • Bleaching of coral reefs • Increase in cardio-respiratory illness and mortality triggered by increase in heat-waves • Increased geographic distribution of vector-borne diseases • Increase in waterborne infectious diseases • Urbanisation • Industrialisation and related pollution • Poverty and income inequalities • Population pressure • Intensive land use, in particular in river basins

Future climate change and increased variability is likely to be a particular challenge for the agriculture sector and rural populations. Reduced runoff could exacerbate the current water stress, reduce the quality and quantity of water available for domestic and industrial use, and limit hydropower production. Other changes, such as a shift in vegetation zones upwards with a warmer climate, may increase agricultural potential in some highland areas. Sea level rise also represents a threat through

saltwater intrusion and coastal erosion, in particular, among the coastal nations of west, central and southeast Africa, and in the Nile delta.

3.3.2 Asia

Many areas of Asia are densely populated, with intensive land use, increasing urbanisation and industrialisation. The climate of southern and eastern Asia is dominated by the monsoon, which is related to the seasonal shift of pressure and winds due to thermal differences between the land and the sea. There are strong seasonal changes as well as high inter-annual and inter-decadal variability, and droughts and floods sometimes occur simultaneously within the continent. ENSO (El Nino-Southern Oscillation) events appear to be associated with drought years (Fu et al. 2002; Mitra et al. 2002).

South Asia has become warmer over the past century, largely through increases in maximum temperatures and diurnal ranges. There has also been a warming of nearly 1°C in most parts of East Asia over the same period, with the greatest increases taking place over the past 20 years. Rising temperatures in the region are likely to continue with global warming, becoming more pronounced in arid, semi-arid and Siberian regions than in coastal areas (Watson et al. 1997; McCarthy et al. 2001). The effect on future rainfall is uncertain. Future climate change could have a profound impact on the monsoon, which underpins the rainfall regime, and although projections reveal uncertainty regarding future effects, a reduction in monsoon precipitation is possible. Climate extremes in Southeast Asia, such as tropical cyclones and intense rainfall events, may increase with global warming (Lebel 2002).

Sea level rise is a critical issue for Asia, particularly for populations in island and coastal areas. Inhabitants living on low-lying coastal plains are at risk from both floods and sea level rise, and displacement from the coastal zone is a potential consequence of climate change. Melting of glaciers, with potentially dramatic consequences for downstream hydrology, ecology and human activities, as well as a decrease in water supply in other areas, are other critical threats associated with climate change.

3.3.3 Latin America

Most Latin American production activities are natural resource-based, however, the region is highly heterogeneous. Climates range from arid desert, such as in Mexico, Peru, Bolivia, Chile and Argentina, to humid tropical forest, as found in central Latin America. These central areas are subject to droughts, floods and periods of frost. ENSO events are associated with fluctuations in marine ecosystems off the north-western coast, and flooding along the otherwise arid coast of northern Peru and southern Ecuador.

Mountain regions and plateaus play an important role in maintaining the continent's climate, hydrological cycle and biodiversity, and may be subject to warming, ecosystem shifts and the melting of glaciers under future climate change. Evidence suggests that there has been a warming of more than 1°C over the past century in some areas of the continent, in particular the south. Temperatures may increase further with climate change, while semi-arid and sub-tropical zones may experience intensified and extended dry conditions. Rainfall may increase in some areas of the continent, such as north-western parts (McCarthy et al. 2001).

There are increasing concerns regarding the effects on the climate of deforestation, both in humid (rainforest) and dry forest areas. Land conversion, due to logging and the expansion of commercial agriculture, is releasing carbon to the atmosphere, contributing to an enhanced greenhouse effect. Through feedback mechanisms, changes in land cover may also affect local climatic conditions. The combined effects of deforestation, fragmentation of habitats and climate change potentially pose a threat to the biodiversity of the region.

4 Climate change as a development issue

4.1 General linkages

4.1.1 The effect of climate on development efforts

Many types of development activities will, by their very nature, need to consider the expected climate regime. This is the most obvious link between development and climate. Road construction projects will be using expected rainfall data when making drainage systems, bridges are constructed according to expected water levels, and building construction projects will consider relative humidity, rainfall, wind conditions and storms, among other factors.

Any changes to the climate will imply, first, a changed risk situation (such as increased risk of damage to buildings if the frequency of storms increases or inundation of buildings or increased coastal erosion due to higher sea levels), and second, that a particular activity may become less appropriate (such as coffee production in East Africa due to a reduction in the suitable areas). Importantly, climate change may also create opportunities, for example, agriculture may well benefit both from the expansion of cropping areas into highlands, and from potentially higher yields due to CO_2 fertilisation.

Climate change may affect development projects *directly* where they concern climate-dependent activities (such as infrastructure, hydropower generation, agriculture, forest management, nature conservation or ecosystem based tourism) or *indirectly*, for example when they relate to socially-oriented development activities that operate in climate-sensitive regions. Education projects in areas becoming more exposed to drought, for example, may be affected by poorer child nutrition and children participating in drought coping mechanisms, which can have a negative impact upon school attendance.

4.1.2 The effect of development efforts on climate

Development cooperation will affect the GHG emission pathways of developing countries through support to projects on energy, transport, forestry and agriculture, among others. Both the technology used and the rate of increase in activities will influence GHG emissions. There have been a number of efforts under the Climate Convention, through the pilot phase of Joint Implementation/Activities Implemented Jointly, and later through the preparatory phase of projects under the Clean Development Mechanism (CDM), where Annex I countries have supported emission reduction efforts in developing countries. The motivation has been that countries funding such projects would eventually get credits according to the amount of emission reductions achieved, while the developing countries (with no emission reduction obligations) would get access to cleaner technologies to help their development. A number of projects have focused on "co-benefits", i.e. that emission reductions also give other environmental benefits such as cleaner air in cities and forest protection (Aunan et al. 2003). Many of these have also been "no-regrets" or "win-win" solutions, meaning that they create net benefits regardless of considerations of climate benefits. Thus, there are potential synergies between development (that yields local environment and health benefits) and reducing GHG emissions.

Linkages between adaptation and mitigation may become increasingly important in development cooperation. Increasing the effectiveness of development cooperation to jointly address development and climate goals would mean both ensuring that future CDM projects contribute to adaptation, or at least do not increase vulnerability, while identifying adaptation options that minimise emissions (see Section 7.2.2).

4.1.3 The effect of development efforts on vulnerability

A third link between development and climate that is increasingly acknowledged is the effect of development work on the vulnerability of societies – notably the poorest – towards climatic changes. Development activities may affect the vulnerability and resilience of ecosystems and social systems in the face of climate change by altering some of the factors that determine vulnerability and the capacity

to adapt. Diversification of livelihood sources, improved infrastructure, resilient institutions and strengthening of local knowledge would contribute to reduced vulnerability. Likewise, development efforts could harm people's capacity to adapt if they reduce access to natural resources, lead to a more narrow resource base, increase wealth differences between social groups or introduce practices that are incompatible with local customs, traditions and knowledge. In addition to altering local factors, development cooperation activities may influence structural processes, including economic structures of marginalisation, terms of trade, and legal and policy structures, which may limit adaptive capacity at the local level.

In particular, actions within three main strategic areas of development cooperation impinge on local factors that determine vulnerability and adaptation, namely: natural resource management, poverty alleviation and economic development, and humanitarian aid. Entry points for adaptation that are found at the interfaces between these three main areas or themes of development cooperation are explained in Section 4.4. First, we distinguish some of the factors that determine vulnerability and adaptation.

4.2 Distinguishing factors that affect vulnerability

A number of factors determine whether or not an individual, household or community are sensitive to climatic changes, and whether or not they are able to cope and adjust in the longer term (Corbett 1988; Davies 1993; Gore 1993; Bohle et al. 1994; Glantz 1994; Yohe 2000). Factors include economic wealth, access to technology and resources, equity, access to education and information, infrastructure, respect for local knowledge and experience, participation, and institutional capacities (Smit and Pilifosova 2001). These factors can loosely be described as institutional, economic and environmental. Some of these are listed in Table 2:

Table 2: Examples of factors that influence vulnerability

Institutional factors	Economic factors	Environmental factors
• informal skills • local knowledge • formal education, skills and technology • informal networks • formal security networks • strength of local institutions	• labour • health • access to natural resources • access to communal natural resources, in particular biodiversity • access to alternative economic opportunities	• risky environment • degraded environment • high dependence on climate-sensitive sectors and natural resources • communal land and resources

For example, coping capacity is determined by the skills and labour resources that can be employed in alternative economic activities, and the existence of security networks (Ellis 1998; Gore 1993; Eriksen 2003; Dercon 2001). Types of networks, income opportunities and modes of resource access that operate outside the formal sector are very important to the most vulnerable groups because they do not easily have access to the formal sector.

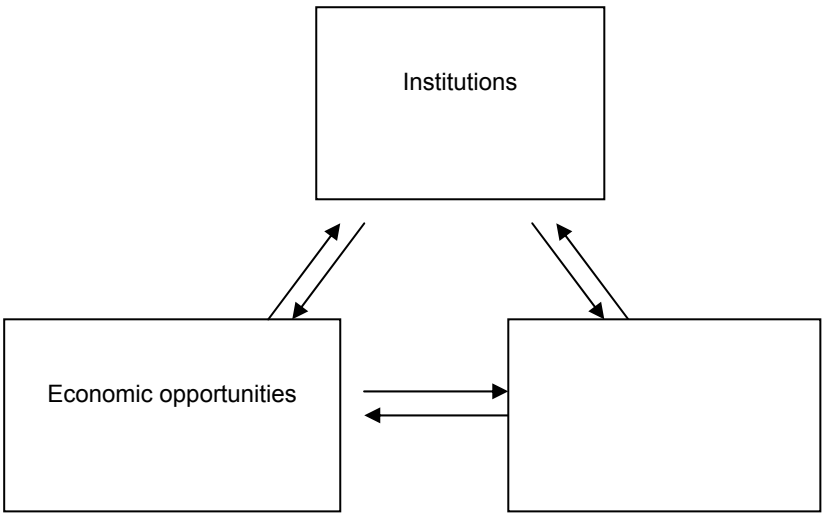
A risky, sensitive or resource-poor environment – in terms of exhibiting high frequency and severity of extreme climatic events or natural disasters, or being relatively resource-poor (for example, limited water resources and degraded soils), may contribute to vulnerability (Blaikie et al. 1994; Jodha 1995), although the most vulnerable do not always live in the most biophysically vulnerable places (Kates and Haarman 1992; Cutter et al. 2000). Individuals, households, groups and communities that are highly dependent on climate sensitive natural resources for food and income are liable to be vulnerable.

4.3 Targeting adaptation

There are two important points to be made regarding the extent to which vulnerability is shaped by the above factors. First, they operate in interaction. The three types of factors (or capital) that form the 'pillars' of adaptation illustrated in Figure 1, relating to institutions, economic opportunity, and natural resource use and technology, interact to enable local responses.[11] The existence of an economic opportunity may not enable a household to access an alternative source of income during a drought, for example, unless resources and technology are available, together with the appropriate institutions to govern their utilisation. Conversely, the existence of flood defences and drought resistant crops may not reduce sensitivity to climatic events unless the institutional framework is in place to maintain these defences and people have economic access to the improved seed technologies.

Second, a number of structural processes shape these vulnerability factors at the local level. Access to natural resources and technology, the strength of local institutions, or the existence of economic opportunities are to a large extent determined by processes of society (Kasperson 2001), and economic and political marginalisation. Famines often have little to do with drought and more to do with underlying societal factors (Glantz 1994).

The interaction of several external pressures, including the spread of HIV/AIDS, economic globalisation and political conflict, shape the vulnerability of populations in developing countries. Where climate change interacts with such stresses, there will be winners and losers from this 'double exposure', determined by both the position of a country, population, community or individual within economic and political structures, and their related capacity to face stress. Since it is shaped by many factors, vulnerability is very context specific. As these factors change over time and people continuously alter their coping and adaptation strategies, vulnerability is dynamic.



What emerges from the two main points above is that development cooperation can target adaptation by implementing measures at several different levels targeted at the factors that shape local vulnerability identified in Table 2. For example, the following capabilities may be strengthened:

1) local level informal coping mechanisms and access to formal coping mechanisms (without eroding the former),
2) national, district and household level ability to invest in measures to reduce both the sensitivity of physical structures (dams, flood defence, water harvesting) and sensitivity to adjustments in agricultural practices and resource use,

[11] This is line with the theoretical proposition by Bohle et al. (1994) that identifies political economy, expanded entitlements and human ecology as the three main dimensions of vulnerability.

3) the place of local communities within national and international structures, e.g. by combating economic and political marginalisation, and
4) national and district authorities', as well as civil society's, capacity to assist local communities in the face of natural disasters.

Whether targeting local adjustments or structural processes, adaptation efforts require close attention to the opportunities and constraints brought by climate change, and an awareness of the ways in which the "three pillars" interact locally. Many studies on adaptation focus on specific sectors, and the adjustments necessary to reduce sensitivity to changes in precipitation or temperature (e.g. agricultural technology research and natural resource management). Less effort has been put into designing measures to strengthen institutions and economic opportunities and thus local capacity.

4.4 Strategic entry points for adaptation

The institutional, economic and environmental factors and structures that shape local sensitivity and capacity can be thought of as lying at the interfaces between the three main areas of development cooperation, namely: (a) humanitarian aid, (b) poverty reduction and economic development, and (c) natural resources management. This interaction is illustrated in Figure 2 below. The interfaces between these three strategic areas provide entry points to supporting adaptation through development cooperation activities. These main entry points are: livelihoods, local capacity and sensitivity, and risk management and early warning (see Figure 2). The sections below elaborate these dimensions further.

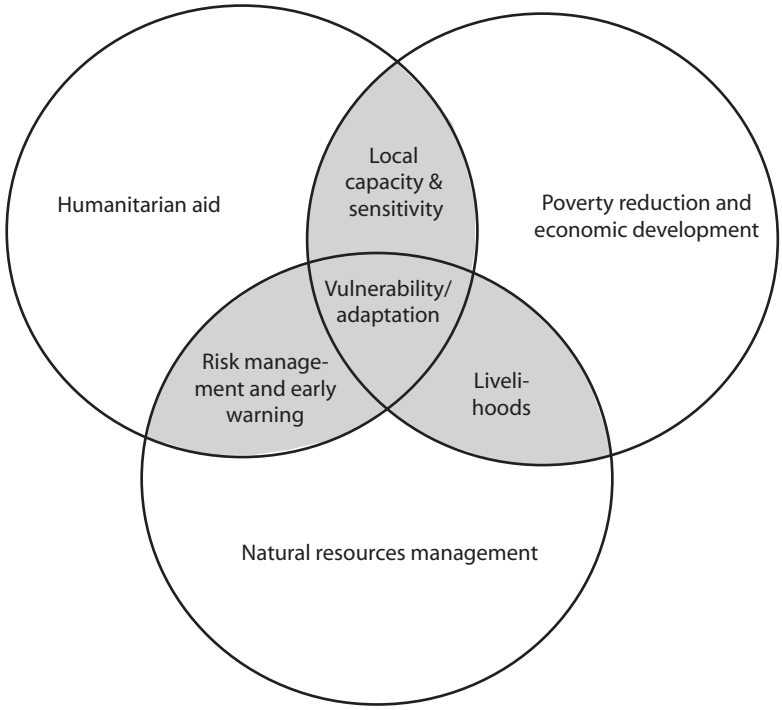


Figure 2: The interface between strategic areas of development cooperation

4.4.1 Livelihoods

Livelihoods refer to the capabilities, assets (including both material and social resources) and activities required for a means of living.[12] A livelihood is sustainable when it can cope with and recover from stresses and shocks." Livelihoods security is thus closely related to vulnerability. Natural resources are used as sources of livelihoods and livelihoods also represent peoples' strategies to deal with poverty (see also Carney 1998). In this way, livelihoods lie at the interface between the poverty reduction and natural resource management themes, as shown in Figure 2. A key issue in economic development and the way in which it relates to adaptation is the extent to which the types of development promoted lead to economic opportunities for the poorest and take account of climatic conditions and changes. Livelihoods represent a strategic entry point for adaptation, by reinforcing the existing strategies of vulnerable communities rather than seeking to replace them, and by considering local perspectives, capacities and priorities.

The livelihood approach links poverty with vulnerability reduction. Merely equating vulnerability with poverty has often led to categorising people as beneficiaries of aid rather than supporting the way in which people themselves prioritise their efforts to prepare for shocks. The livelihood approach, however, focuses on the diverse strategies that people employ, and the different factors that influence or put stress on livelihoods. Poor people's livelihood strategies and ways to deal with poverty is often more about addressing vulnerability and handling shocks than 'escaping' from poverty per se (Christoplos et al. 2001). The reasons that groups such as women, the elderly, children, the disabled, refugees, and pastoralists are vulnerable, and their strategies to deal with this vulnerability, are diverse (Chambers 1989). For example, indigenous people often have little political influence and their access to crucial coping resources, such as drought grazing land, is marginalised by processes such as the expansion of commercial agriculture and nature conservation areas (Igoe 2002).

Analysis of vulnerable groups' situations represents an opportunity to avoid the three main traps associated with the implementation of measures to reduce vulnerability. Targeting efforts specifically at the factors that cause vulnerability avoids the first trap, that of subsuming vulnerability reduction into a diffuse economic development agenda. Second, by supporting peoples' own strategies aimed at reducing vulnerability, the treatment of people as victims and passive beneficiaries without active participation in solving their problems, can be avoided. Third, the different causes of risk, together with their corresponding coping strategies, can be analysed, instead of ignoring livelihoods and falling into a 'technocratic rut' focused only on providing technical inputs, hardware and infrastructure (Christoplos et al. 2001, p192).

Poverty and vulnerability share many determining factors; thus many measures aimed at adaptation are likely to simultaneously reduce poverty. For example, command over resources affects both strategies to prepare for climatic events or change, such as investment in resistant agriculture or livestock rearing, the ability to draw on alternative sources of food and income when the main source fails, and the ability to rebuild structural damage after a natural disaster (Gore 1993; Guyer 1997; Adger 2000a). While environmental factors may lead to a drop in food production, other social factors, such as market failure, determine whether or not a household can achieve food security (Sen 1981; Drèze and Sen 1989; Adger 1996). Declining food production can be an important cause of inability to secure livelihoods for small scale food producers; however, soaring food prices and plummeting prices of assets are also important, as demonstrated by, for example, Devereux and Næraa (1996) in their study of the 1992-3 drought in Zambia. The underlying causes of livelihood failure are the political and economic structures of resource ownership and control. Biodiversity, in terms of agrobiodiversity and ecosystem robustness, has an important value for climate change adaptation. Local participation in natural resources management is crucial for diversification of livelihood sources.

4.4.2 Local capacity and sensitivity

Local capacity and sensitivity, a second strategic entry point for supporting adaptation through development cooperation, lie at the interface between humanitarian aid, and poverty reduction and economic development (Figure 2). Local capacity in terms of institutions, skills and knowledge, as

[12] www.livelihoods.org/info/guidance_sheets_pdfs/section1.pdf

well as the sensitivity of a production system to climatic variability and change, are critical to the vulnerability of a household, community or population group.

A disaster is a serious disruption to the functioning of society, causing widespread human, material or environmental losses which exceed the ability of affected society to cope using only its own resources (UNEP 2000).[13] Christoplos et al. (2001) argue that disaster reduction and preparedness have fallen between the cracks of the two key themes of humanitarian assistance and development assistance. Reduction of vulnerability, or adaptation, requires longer term measures related to strengthening local institutions and economic opportunities, while humanitarian assistance is targeted at alleviating the effects of a particular natural disaster once it has taken place, such as a flood. At the same time, the provision of an 'escape from poverty', a key philosophy of development assistance, has not focused on reducing vulnerability. There is increasing recognition, however, that strengthening local capacity and reducing sensitivity are necessary in order to reduce the severity of events that are currently targeted by humanitarian assistance, as well as the suffering of poor people. For example, development issues, including the social disruption brought by the HIV/AIDS epidemic, combined with a deteriorating health infrastructure, weakening local agricultural production and coping mechanisms, widespread poverty, policy failure and the increasing market share of non-drought resistant crops share much of the blame for the current food insecurity in southern Africa (UN 2002; Eriksen 2003). The strengthening of institutional capacity to generate necessary information, govern resources and formulate and manage appropriate responses form an important part of vulnerability reduction.

4.4.3 Risk management and early warning

The third strategic entry point, risk management and early warning, can be seen to lie at the interface between humanitarian aid and natural resources management (Figure 2). Risk management refers to the reduction of disaster risk and impact through early warning systems, seasonal climate forecasts (Vogel and O'Brien 2003), technical structures (such as flood defences that prevent climate-induced disasters from taking place), and the strengthening of disaster responses and emergency measures when faced with climatic events. Early warning systems are designed to monitor the situation on the ground in order to identify critical situations early and to target humanitarian aid at the most vulnerable. Vulnerability assessments connected to early warning systems develop location-specific indicators of adversity, measuring emerging impacts, including food stock decline, livestock and food prices, and vegetation indices (Lonergan et al. 1999; FEWSNET 2000; Ramachandran and Eastman 2000, Zambia National Vulnerability Assessment Committee 2003). These assessments are to be distinguished from other very different types of vulnerability assessments, such as national vulnerability assessments carried out as part of obligations under the climate convention (such as Mwandosya et al. 1998), and more academic studies aiming to enhance the understanding of vulnerability and identify what actions constitute adaptation (such as Corbett 1988; Davies 1993; Gore 1993; Bohle et al. 1994; Glantz 1994; Yohe 2000).

The use of risk management tools can potentially help reduce vulnerability; "Improved climate information in the form of forecasts can be included together with existing management tools, such as early warning systems and vulnerability mapping, to help reduce risks associated with climate variability" (Vogel and O'Brien 2003, p.4). In the case of Southern Africa, however, research has identified several major challenges to the expanded use of forecasts (Patt and Gwata 2002; Vogel and O'Brien 2003). Forecasting methods and the reliability of forecasts can be improved. The relationship between larger scale phenomena, such as ENSO, and local rainfall and temperature patterns is not entirely clear. The dissemination of conflicting forecasts from different sources can cause confusion. Since the late 1990s, this has been addressed through SARCOF (Southern Africa Regional Climate Outlook Forum), a series of meetings aimed at the development and distribution of consistent and clear consensus forecasts to the user community. Gaps in developing countries' technical capabilities to produce and apply seasonal forecasts, as well as a lack of research cooperation and exchange of

[13] A hazard is a threatening event, or the probability of it occurring. Risk is the expected loss of life, injury, property damaged and economic activity disrupted due to a particular hazard. These concepts are closely related to vulnerability.

information, are further constraints. Producing information that is of sufficient detail to guide farmer decision-making is another challenge. While SARCOF produces total seasonal rainfall forecasts, for example, users typically need to know the onset and end of rains, length of growing season, and the spatial distribution of rains. Improving the communication between researchers and users, so that research is responsive to user needs and information flows effectively back to users, would enhance forecast use. For example, the transfer of information from meteorological services to users has in some cases been weak (Vogel and O'Brien 2003).

Significantly, there are major constraints to using forecasts, even when perfect and disseminated in an optimal manner. Most farmers have limited options available to them in terms of alternative seeds, draft power, irrigation or availability of land. Thus effective coping is constrained by access to the resources needed to respond, and to adjust farming practices.

In addition to 'conventional' flood and coastal defences and other technological adaptation methods, natural resource management-based protection is important in reducing local vulnerability. Tri et al. (2001) show that protection of mangrove forests in Vietnam also enhances coastal protection against cyclones. Similarly, land use and forest cover influences runoff and the extent of flooding during extreme precipitation episodes.

Table 3: Entry points for adaptation (examples)

Livelihoods	Local capacity and sensitivity	Risk management and early warning
• economic opportunities for the poorest, including seasonal migration labour • climate considerations in economic and infrastructural development • access to, and viability of, communal resources and biodiversity (including forest products) • processing and marketing of local products • health and education • the role of local knowledge in economic development • women's coping mechanisms, and the 'informal' based mechanisms	• integration between 'traditional' and 'modern' agricultural and pastoral technologies and management systems • linkages between local 'informal' institutions and authorities • diversity of crops, agrobiodiversity • integration of adaptation into government department activities • land use planning and infrastructure planning • seed and input distribution, in particular local seed varieties and inputs • local research on crops, livestock and economic development that are adapted to the local climate	• early warning systems • local disaster response strategies (national and local institutions) • natural resource management based protection (mangroves, water catchments) • the space of local climate information as well as meteorological and climatological capacities of national institutions • national adaptation plans and vulnerability assessments • coastal defenses, urban drainage and water supply, hydroelectricity, flood defences

4.4.4 Specific entry points for adaptation

Table 3 outlines particular areas that can be targeted within the general entry points discussed in previous sections (i.e. livelihoods, local capacity and sensitivity, and risk management and early warning). These specific areas or entry points concern both local and national level planning and implementation measures. There are also synergies between these entry points; for example, the strengthening of linkages between local institutions and government authorities contributes both to enhancing local capacity (and reducing sensitivity) as well as enhancing local livelihoods. Although Table 3 outlines key entry points, it should be noted that it does not represent a comprehensive list and that there may also be other areas through which adaptation measures can be usefully implemented. For example, Table 3 mainly concerns local adjustments, however, addressing the structures of

marginalisation that create vulnerability can also be undertaken through other activities related to international trade negotiations and agreements as well as international institutional frameworks.

4.4.5 Integration and targeting

The fact that adaptation is integral to society rather than representing a separate sector suggests that adaptation is most appropriately addressed through its integration into strategic thinking on development and practical development cooperation activities. Existing programmes relating to the three strategic entry points (livelihood strategies, local capacities and sensitivity, and risk management and early warning systems) could be the foci of support for adaptation. Opportunities to reduce vulnerability can be found within a broad range of activities within these entry points, including programmes targeted at education and health. Donor coordination in integrating vulnerability reduction in development and reconstruction can, for example, be conducted through processes such as the development of Poverty Reduction Strategy Papers (PRSPs), as currently discussed in Rwanda (Danish Ministry of Foreign Affairs 2001). Global Public Goods is another emerging area through which adaptation may potentially be integrated into development cooperation (see Section 6.4.6).

The three pillars upon which local capacity to cope and adapt rest, i.e. those of institutions, natural resources and technology, and economic opportunities, and the way in which they are shaped by economic and political structures, could represent the practical factors on which such integration could be focused. Similarly, specifically targeted efforts aimed at adaptation, including NAPAs and potential pilot projects, could integrate the strengthening of institutions, environmental resources and technology, and economic opportunities, in order to support local capacity to cope and adapt. The particular instruments through which development cooperation can implement climate change adaptation are further described in Section 6.4.

5 International initiatives on climate change adaptation, poverty and development

5.1 Overview

This section gives an overview of recent and ongoing activities on climate change adaptation, development and poverty alleviation. The review, though not exhaustive, demonstrates that there is considerable interest in these issues among multilateral and international organisations, bilateral agencies and NGOs. Most initiatives are recent; many have emerged only after 2001. Until recently, climate change-related activities within development agencies largely focused on emission reductions, notably technology transfer and energy efficiency projects, as well as capacity building for developing country participation in the climate negotiations and for the preparation of National Communications.

Several parallel developments may explain the new interest in adaptation: First, the publication of the Third Assessment Report of the IPCC (Houghton et al. 2001) demonstrated increasing scientific agreement that human-induced climate change will be inevitable and that more attention must be given to the vulnerability of the poor. Second, three new funds targeting adaptation were established at the Seventh Conference of the Parties to the Convention in Marrakech, 2001, of which one is now operational. A summary of key initiatives is presented in Table 4, while Annex IV provides further details. The initiatives described in sections 5.2 and 5.3 reflect the entry points that various organisations have. Four areas may be identified that have up to now represented separate "communities". These communities are increasingly considering linkages among their areas of work (Burton et al. 2003):

- *Climate change assessments:* These have shifted from a scenario-based approach to also including bottom-up analyses of factors affecting vulnerability. CDM and NAPA-related activities have opened up opportunities for linkages to development and poverty.
- *Poverty reduction:* Many multi- and bilateral development agencies are now focusing on the mainstreaming of climate change into the Millennium Development Goals (MDGs), Poverty Reduction Strategy Papers and other development mechanisms. A prominent example is AfDB et al. (2003), where a group of ten development agencies reviewed climate change and poverty issues in the context of the MDGs.
- *Disaster mitigation and risk management*: Within the disaster and risk management communities, there is an increasing realisation of the need to address disaster mitigation in the context of long-term social development and climate change. One example is the recent initiative by the International Strategy on Disaster Reduction (ISDR).
- *Natural resources management:* Attention is increasingly being paid to biodiversity as a buffer against climatic changes and natural disasters and the mainstreaming of climate change considerations into resource management policies. There are also efforts to try to explore synergies between the three "Rio Conventions" (Biodiversity, Desertification and Climate Change). Work in this area is undertaken by the OECD, among others.

5.2 Development-related programmes of the Climate Convention and the IPCC

The Clean Development Mechanism (CDM) of the Kyoto Protocol has a dual objective: (1) to promote sustainable development for the host country, and (2) to provide emission reduction credits for the investor country (see Section 2.3 above). Two per cent of CDM transactions are to go into a new Adaptation Fund, except for CDM projects hosted by Least Developed Countries (LDCs). However, there is considerable debate as to whether or not the CDM will be successful, whether it will in fact lead to genuine, additional emission reductions and, importantly, if it will benefit the poor.

First, the demand for CDM projects is likely to be limited, due to the US opting out, the inclusion of forest sinks, and the possible inclusion of "hot air" sales (Jotzo and Michaelowa 2002).[14] The 2% levy may give a further disadvantage to the CDM compared to other flexible mechanisms.[15] Second, high competition on the supply side may mean that development goals are lowered to attract funds, and that CDM projects may follow the pattern of regular Foreign Direct Investments (FDI), namely, that the poorest countries, and projects that would benefit the poorest groups, are left out. While development aid should not be used directly for sponsoring the CDM in a way that diverts regular ODA funds, donors may have an important role to play as intermediaries, supporting capacity building in potential host countries (Dutschke and Michaelowa 2003).

National Adaptation Programs of Action (NAPAs) are meant to address the urgent and immediate national needs of Least Developed Countries (LDCs) in adapting to the adverse impacts of climate change. NAPAs are funded by the LDC fund, which was one of the three funds established at COP7 in Marrakech, 2001. NAPAs are expected to be completed during 2004, after which potential further expansion will be reviewed. Countries are to recognise the local community as a main stakeholder and take into account current vulnerability and existing coping strategies at grassroots level to identify priority adaptation activities (rather than focusing on scenario-based modelling in shaping long-term national policies).[16] Although good in principle, there are also concerns that NAPAs alone may not be enough to mainstream climate change into the national development agenda, and further that the NAPA process may favour large infrastructure projects rather than smaller efforts aimed at vulnerable and poor communities (Saleemul Huq, pers. comm.).

The Adaptation Policy Framework (APF) was set up by the UNDP National Communications Support Unit.[17] It is directed at national climate study teams and policy makers, and its main objective is to facilitate the incorporation of adaptation into a country's national development strategy. The APF outlines a stakeholder participatory process aimed at such incorporation.

Assessments of impacts and adaptations to climate change (AIACC) is a GEF (Global Environment Facility)-funded initiative implemented by the United Nations Environment Programme and executed by START (The Global Change System for Analysis, Research and Training) – which NORAD supports – and the Third World Academy of Sciences (TWAS). AIACC currently funds twenty-four regional studies, eleven in Africa, to carry out three-year investigations of climate change vulnerabilities and adaptations in developing countries. AIACC aims to "enhance the scientific capacity of developing countries to assess climate change vulnerabilities and adaptations, and generate and communicate information useful for adaptation planning and action." [18] AIACC provides funds, training, and mentoring of scientists in developing countries.

5.3 Initiatives by development organisations and NGOs

The OECD *Development and Climate Change Project* provides guidance on how to mainstream responses to climate change within economic development planning and assistance policies, with a focus on natural resource management. Activities include expert meetings and concept papers, and case studies are planned in Bangladesh, Egypt, Fiji, Nepal, Tanzania, Uruguay, and Vietnam. The OECD also publishes relevant *DAC (Donor Assistance Committee) guidelines*, a notable example being, 'Integrating the "Rio Conventions" in Development Co-operation' (OECD 2002c), which provides an overview of the linkages between the conventions on biodiversity, climate change and desertification, and describes ways for integration and synergies. Other relevant DAC guidelines are

[14] "Hot air" implies that actual emission levels are lower than the permits granted through the Kyoto Protocol. This is a problem particularly in countries like Russia, Poland and Ukraine (cf. Brandt and Svendsen 2002).

[15] This is to be corrected for by imposing a levy on the other flexible mechanisms if the target of $1 billion for the Adaptation Fund is not reached by 2005 (Richards 2003).

[16] http://www.undp.org/cc/napa.htm

[17] http://www.undp.org/cc/index2.htm

[18] http://www.aiaccproject.org/

on poverty reduction (OECD 2001b), and strategies for sustainable development (OECD 2001a), both noting the high vulnerability of the poor to climate change.

The World Bank: Burton and Van Aalst (1999) reviewed World Bank policies with regard to climate change vulnerability and adaptation, concluding that there are considerable gaps in procedures regarding project design, implementation and evaluation. One of the goals of the Bank's Environment Strategy (World Bank 2001) is to reduce poor people's vulnerability to environmental hazards, including climate-induced disasters. It has aimed at mainstreaming disaster prevention into all development practices, for example, through the Disaster Management Facility, established in 1998 (Christoplos et al. 2001). Recent projects include:

- *CPACC (Caribbean Project on Planning for Adaptation to Climate Change)*, a US$6.4 million GEF-funded project aiming to mainstream climate change adaptation into the sustainable development agendas of CARICOM countries, including Small Island and Low-lying Developing States.[19]
- *Integrating Adaptation Concerns into Development in Bangladesh*, consisting of: analysis and communication of climate change scenarios to policy makers and planners; identification of possible adaptation measures for coastal resources, freshwater flows, agriculture, human health, ecosystems and biodiversity; and discussion of their feasibility with stakeholders (Huq 2002).

The UNDP-led National Communications Support Unit has developed the Adaptation Policy Framework (APF), which provides technical support to NAPAs (mentioned in 5.2 above). Collaborating with eight countries (Costa Rica, Cuba, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama), it focuses on the links between biophysical impacts and the prevailing socio-economic conditions that contribute to vulnerability, such as high population densities in coastal areas and settlements in flood-prone areas. The UNDP has also supported capacity building for responding to climate-related environmental changes (Mauritania), co-ordinating responses to the Rio conventions, and identifying synergies (Morocco). Further, the UNDP has initiated a Disaster Reduction and Recovery Programme that integrates vulnerability into development and post-disaster recovery (UNDP 1999).

The Global Environment Facility (GEF): As the financial mechanism for the Climate Convention, the GEF has funded vulnerability and adaptation assessments as part of the National Communications of the Parties to the Convention. Further GEF funding for adaptation will also be provided under the new adaptation funds established in 2001, including ongoing support for the preparation of NAPAs. The GEF funds projects through its implementing agencies (the UNDP, UNEP and the World Bank).

The International Strategy for Disaster Reduction (ISDR) is the successor to the International Decade for Disaster Reduction (1990-99). It has published a global review of disaster reduction initiatives (ISDR 2002), which stresses the need for forging links between climate change adaptation and disaster reduction. The review highlights that much of the information requested from Parties to the Climate Convention will be of use for disaster reduction strategies. It also emphasises the wealth of knowledge that exists in traditional coping strategies, which should form the basis for future strategies. Earlier this year (2003), the ISDR launched a project aimed at: linking natural disaster reduction and adaptation to climate change; identifying how knowledge and experience drawn from coping with today's climate variability and extreme weather events can provide the basis for adaptation to long term climatic change; distinguishing research gaps and the type of information that can input into ongoing work on adaptation; and identifying how the climate adaptation and disaster communities can be brought closer together.[20]

The European Commission (EC) recently (18th March 2003) launched a communication entitled, "Climate Change in the context of development co-operation," proposing an EU action plan aimed at

[19] http://www.cpacc.org/ and http://lnweb18.worldbank.org/ESSD/essdext.nsf/42ByDocName/RegionalInitiativesCaribbeanPlanningforAdaptationtoGlobalClimateChange

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integrating climate change concerns into EU development cooperation activities. It highlights that climate change is as much a development problem as an environmental one, and underlines that developing countries are the most vulnerable to climate change and therefore deserve full support in addressing their vulnerability. It is argued that climate change concerns and their potentially disastrous long-term implications must be fully mainstreamed into EU development cooperation in a way that is coherent with the overarching objective of poverty reduction and the follow up from the WSSD.

German Technical Development Cooperation (GTZ): Klein (2001) reviewed 136 German-funded ODA projects in Africa on natural resources management and found that none of the project descriptions referred to climate change, and that attention to weather and climate-related stresses was low and primarily reactive. The author concluded that, "[the] limited consideration of climate-related stress is striking in light of the intricate balance between the productivity of Africa's natural resources and prevailing climate conditions." (p.9). GTZ's Climate Protection Programme (CaPP) was launched in 1993, but only its fourth phase (2001-2004) has included adaptation. The project's aims are as follows: to incorporate measures for adaptation in GTZ's work and to document their poverty-related effects; to evaluate how adaptation measures are implemented in current projects; to develop tools for integrating adaptation in project planning and implementation; to introduce tools for integrating adaptation internationally, e.g. in GEF funds; to give advice on integrating adaptation in project planning, implementation and monitoring; and to support individual measures for adaptation to climate change (GTZ 2001).

The Canadian International Development Agency (CIDA) manages the Canada Climate Change Development Fund, which was established in 2000 with a budget of Can$100 million over five years. One key goal is to contribute to sustainable development and poverty reduction. The fund currently supports seven adaptation projects, totalling Can$16 million in India, El Salvador, the Sahel, Bangladesh, Vietnam, the Caribbean and the South Pacific. CIDA also supports the following initiatives: (1) the identification of synergies among the Rio conventions and the mainstreaming of these in development planning; (2) the identification of ways to integrate climate change into CIDA programming; (3) the creation of the LDC Fund, committed an initial contribution of Can$10 million; and (4) participation in the World Bank's Prototype Carbon Fund (PCF) Initiative. Among others, CIDA supports the Climate Change Knowledge Network (CCKN), which is also supported by the Norwegian Government (Ministry of Foreign Affairs).[21]

The UK Department for International Development (DFID) does not have a separate climate change policy, but climate change is seen as part of the environmental context for poverty alleviation (DFID 2000; DFID et al. 2002). A Parliamentary review (House of Commons 2002) highlights the need to consider climate change as a separate development problem. It concludes that integration of climate change in DFID's work would not require radical changes, but that developing indicators and a system of climate impact assessments is necessary. Key entry points at the country level are considered to be Millennium Development Goals (MDGs), Poverty Reduction Strategy Papers (PRSPs), and National Strategies for Sustainable Development (NSSD). Suggested priority areas are the following: (1) to increase dialogue with other donors/agencies and seek to mainstream climate change in PRSs; (2) to raise awareness within its own departments, and to prepare guides on what country programmes can do regarding climate change. An estimated GB£201 million of funding to DFID projects was related to climate change (1997-2000). Eleven countries have been selected where DFID will work towards integrating climate change into country policies: Kenya, India, China, Russia, Uganda, South Africa, Zambia, Mozambique, Malawi, Nepal and Ghana (House of Commons 2002). Climate change activities to date include (a) preparation of IPCC summary reports for awareness raising in DFID, (b) funding of regional climate model and capacity development to improve local level information (Bangladesh), (c) support for the preparation of NAPAs, and (d) participation in developing the report, "Poverty and Climate Change: Reducing the Vulnerability of the Poor through Adaptation (AfDB et al. 2003)".

The United States Agency for International Development (USAID) established a Global Warming Initiative (GWI) in 1990, mostly supporting efforts to reduce emissions or increase sinks of

[21] http://cckn.net

greenhouse gases (Tarnoff 1997). Further, USAID was one of the key agencies behind the U.S. Country Studies Program, announced in 1992. The program gave financial and technical assistance to climate change studies in 56 developing countries and countries with economies in transition. Forty-nine of the countries conducted assessments of the vulnerability of climate-sensitive resources, while some also studied adaptation (Smith and Lazo 2001). USAID's Climate Change Initiative (1998-2002) had three main goals: (1) to support developing country participation in the UNFCCC, (2) to reduce net GHG emissions from the energy and land use/forestry sectors, and (3) to decrease developing country vulnerability. While the program appears to have a bias towards emission reductions efforts, support for vulnerability and adaptation has involved (USAID 1997; USAID 2000):

- Vulnerability analysis in Honduras (water supply/disaster preparedness), Indonesia, Tanzania and Mexico (coastal zone management)
- Mainstreaming of adaptation in national strategies for water supply (Panama) and ecosystem/economy (Guinea)
- Workshop on vulnerability and adaptation (Senegal)
- Strengthening worldwide climate-related disaster preparedness and mitigation, particularly in Mexico and Central America, including support to development of adaptation plans for extreme climate events

The Netherlands Climate Change Studies Assistance Programme[22] was launched in 1996 with funding from the country's Ministry of Foreign Affairs. The goals are to enable developing countries to implement commitments under the Climate Convention, to create greater awareness of climate change issues, and to increase the involvement of policy makers, scientists and the general public. Studies on vulnerability and adaptation are planned or have been undertaken in Bhutan, Bolivia, Colombia, Costa Rica, Ecuador, Ghana, Kazakhstan, Mali, Mongolia, Senegal, Surinam, Yemen, and Zimbabwe. Special attention has been given to issues of South-South cooperation, livelihood systems (especially the poor in river basins), coastal zones, natural resource sectors under high pressure, the health sector, and disaster preparedness and reduction (Dorland 2002). The Netherlands also participated in the preparation of a consultation draft on poverty and climate change (AfDB et al. 2003).

The Australian Agency for International Development (AusAID) has a climate change programme with a budget of Aus$237 million, aiming to implement projects that reduce poverty whilst producing positive climate change outcomes. Work is undertaken mainly in the Pacific Island nations. Adaptation is one of four priority areas, focusing on capacity building and technology transfer in monitoring and planning, with a focus on conducting vulnerability and impact assessments, and identifying adaptation options. Other areas include energy (technology transfer and capacity building), forestry and land management (carbon sinks, reforestation and sustainable forestry), and Focus on Pacific Island States (among others, improving disaster preparedness) (McGuigan et al. 2002).

The World Conservation Union (IUCN), the International Institute for Sustainable Development (IISD), the Stockholm Environmental Institute (SEI) and the Worldwatch Institute have launched a joint project to bring together climate change adaptation, disaster reduction and environmental management strategies to reduce communities' vulnerability to climate change. A Task Force, established in 2001, has developed a concept paper (Burton et al. 2003). The project's aims are to (1) identify environmental actions that reduce the vulnerability of social and economic systems; (2) enhance the role of these activities by offering a tool kit of options with detailed examples of their application to relevant actors in research, advocacy, policy-making and industry; (3) build the capacity of local institutions in regions and countries vulnerable to climate-related disasters to assess and respond to the environmental sources of vulnerability; and (4) create a platform for integrating environmental management measures that reduce community vulnerability into existing policy frameworks and international strategies on disasters mitigation, climate change adaptation, biodiversity conservation and poverty alleviation. It will produce case studies, guidelines and a

[22] For details, see http://130.37.129.100/english/o_o/instituten/IVM/research/climatechange/

network of institutions at the regional and national level with the capacity to assess and address vulnerability to climate-related disasters.

The International Institute for Environment and Development (IIED), Climate Change Programme: Established in 2001, the programme focuses on linkages between sustainable development and climate change, in particular themes of adaptation capacity in developing countries, climate change and sustainable livelihoods linkages in developing countries, capacity strengthening in developing countries, information dissemination, equity, as well as opportunities for carbon trading (Huq et al. 2003). The Climate Change Programme is partly funded by NORAD.

The Inter-American Development Bank (IDB) has developed an action plan on disaster response to reduce the sources of vulnerability in catastrophic events, a new policy on Natural and Unexpected Disasters (1998) and an Action Plan for Disaster Prevention and Mitigation (2000). The Bank has also initiated a programme of assessing climate change impacts and appropriate responses for the most at-risk areas of the region. In an initial activity in partnership with the UNDP, the IDB will work with the Caribbean Island nations, whose reliance on tourism for economic growth could be adversely impacted by climate change (IDB undated).

The Danish International Development Agency (Danida) has not to date developed a comprehensive document or strategy setting out the linkages between development aid and climate change. Work in the area has so far consisted of documents setting out linkages at the project level in relation to OECD/DAC (Frode Neergaard, pers. comm.). Danida is also providing financial support to the LDC fund for development of NAPAs (Udenrigsministeriet 2002).

The Swedish International Development Agency (Sida) is in the process of developing a strategy on climate change. Activities to date include support for a review of Sida's relationship to the Climate Convention (SIDA 1998), and a review of the issues of climate change, vulnerability and social justice (Kasperson and Kasperson 2001).

The World Water Forum seeks to establish a global programme of dialogues fostering communication between the climate science and water management sectors, and to incorporate climate change into integrated water management programmes. The recent Third World Water Forum in Japan (16-23 March, 2003) emphasised the need to focus on the effects of climate-induced extreme events on floods and droughts.[23]

Table 4: Examples of initiatives on climate change and development assistance

Agency/ Programme	Name of initiative(s) and year	Main technical areas	Type of activities and support
OECD	- Development and Climate Change Project (2002) - DAC Guidelines	Poverty alleviation Convention synergies	- Technical guidelines - Concept papers - Case studies planned in seven countries
UNDP	- National Communications Support Programme (2001) - Adaptation Policy Framework (2001) - Support to NAPAs	Climate Convention Poverty alleviation	- Technical guidance - Funding for case studies, assessments - Funding of NAPAs (through GEF)
World Bank	- Climate Change Team - Caribbean Project on Planning for Adaptation to Climate Change - Integrating Adaptation Concerns into Development in Bangladesh	Poverty alleviation	- Technical advice for preparation of GEF projects - Support to pilot studies - Funding

[23] http://www.world.water-forum3.com/2003/eng/press/pressrelease/press0316-03.html

Agency/ Programme	Name of initiative(s) and year	Main technical areas	Type of activities and support
UNISDR	- International Strategy for Disaster Reduction (1999)	Disaster reduction	- Report on disaster reduction - Study on climate change and disaster reduction - Technical advice
CIDA	- Mainstreaming climate change through Country and Regional Development Programming Frameworks - Canada Climate Change Development Fund (CCCDF)	Poverty alleviation	- Technical advice for mainstreaming - Funding for adaptation projects
DFID	- Poverty Elimination and the Environment (2000) - Global Climate Change and Sustainable Development (2002)	Poverty alleviation Livelihoods support	- Review of DFID and climate change - Case studies (11 countries)
USAID	- Climate Change Initiative (1998-2002)	Poverty alleviation Disaster preparedness	- Funding for participation in the UNFCCC - Funding for vulnerability analyses - Capacity building
GTZ	- Climate Protection Programme for developing countries (1993-), adaptation main focus on Fourth Phase (2001-2004)	Poverty alleviation Environmental conservation	- Technical advice - Guidelines and information material - Support to pilot projects
IIED	- Climate Change Programme (2001)	Adaptation capacity Sustainable livelihoods	- Technical/Scientific reports - Capacity strengthening - Information dissemination
SEI/IUCN/ IISD/ Worldwatch	- Task Force on Climate Change, Vulnerable Communities and Adaptation (2001)	Environmental conservation Livelihoods support	- Concept paper - Planning of case studies

6 The relevance of climate change to Norwegian development cooperation

6.1 Norwegian development cooperation

In 2001, total Norwegian ODA amounted to 12.3 billion NOK, of which 49% went to bilateral assistance, 30% to multilateral assistance, 16% to so-called multi-bi assistance[24], and 5% to administration. Key thematic areas' share of total expenditures (2001) include women's rights (10%), environment (11%), governance (16%) and health (10%) (MFA 2002a; NORAD 2002c). For bilateral aid administered by NORAD, the main recipient is Africa (52%), followed by Asia and the Middle East (26%), and Latin America (11%). Nine per cent is defined as global assistance and Europe & Oceania receives 1% (NORAD 2002c). Priority partner countries (*hovedsamarbeidsland*) for bilateral aid are Uganda, Tanzania, Mozambique, Malawi, Zambia, Bangladesh and Nepal (MFA 2002a).

The Ministry of Foreign Affairs (MFA) has the overall responsibility for Norwegian development policies and strategies, while NORAD is responsible for the technical implementation in recipient countries. Embassies can give support of up to 15 million NOK without prior approval from Oslo. In practice, there are several areas of overlap between the MFA and NORAD concerning policy and implementation, as well as between technical areas, which has been the subject of a recently completed evaluation of the Norwegian development policy administration (ECON 2003).

Recent trends in Norwegian development cooperation include (MFA 2002a; ECON 2003):

- Broader sector-wide approaches, i.e. a move from project to programme assistance
- Integration of Norwegian ODA into national Poverty Reduction Strategies (PRS), in line with the Millennium Development Goals (MDGs)
- Stronger emphasis on results and efficiency, and coordination and synergies; specifically, this involves (among other measures): coordination between NORAD and other donors, a more results-based management approach, and more emphasis on key strategic areas in each country.

In this chapter, we review the relevance of climate change to Norwegian development cooperation from two different angles:

1) *The impacts of climate change on Norwegian development cooperation:* Section 6.2 outlines the potential effects of climate change on key NORAD priority areas.

2) *Implications for the work of Norwegian development cooperation:* Areas where Norwegian development cooperation could consider climate change in its activities in order to help reduce the sensitivities and increase the adaptive capacities of developing countries in the face of climate change. The review considers the following: the implications of, and instruments (technical, funding) found within the Climate Convention and the Kyoto Protocol (when in force); instruments and mechanisms in Norwegian Development Cooperation (Environmental Assessments and other processes for design, planning and implementation); instruments and entry points within recipient countries; the potential synergies between the Rio Conventions; and the implications of the new developments concerning Global Public Goods.

This review focuses on principles, guidelines and instruments as apparent in policy and strategy documents, with a particular focus on the Plan of Action to Combat Poverty. Assessment of actual implementation of priorities or performance of projects is outside the scope of this study.

[24] Bilateral assistance administrated by multilateral organizations.

6.2 The goal of poverty reduction and climate change

The overarching goal of Norwegian development cooperation is poverty reduction, as set out in the Millennium Development Goals (MDGs) adopted by the UN in 2000. The Norwegian follow-up to the MDGs is concretised in the Government's action plan to combat poverty (MFA 2002a). Poverty is viewed as, "the lack of opportunity to live what we consider a decent life on [the] basis of our own judgement and standpoint;" (ibid.:73). This definition encompasses not only lack of income, but entitlements as well as access to a wide range of resources such as education and health, rights of resource use, good governance and other factors.

Table 5 below shows linkages between climate change, poverty reduction and key priority areas of Norwegian development cooperation. The table exemplifies the range of potential climate change impacts on the goal of poverty reduction and/or undermining the livelihoods of the poor.

It is important to note, first, that there are large variations between different developing countries. The table merely shows potential risks as described in Chapter 3 above; the uncertainty is considerable. Second, climate change takes place in interaction with a number of other political, economic, institutional or environmental changes, which may reduce or aggravate the impacts of climate change. Third, there is no automatic positive correlation between reduced poverty and reduced vulnerability. For example, top-down flood protection schemes implemented without consideration of the local situation and population needs, have been seen to disempower and negatively affect poor people (AfDB et al. 2003). What the table does reflect, however, is that climate variability and change – man-made or natural – matters to the poor, and consequently, that any strategy for poverty reduction must consider what it means in each particular situation.

6.3 Key priorities of Norwegian development cooperation and strategic entry points to climate adaptation

Vulnerability to climatic factors is only mentioned in general terms in the reviewed documents, most commonly in relation to natural disasters. The *Action Plan to Combat Poverty* (MFA 2002a) states that the insecurity and vulnerability arising from, among other factors, natural disasters are part of what defines poverty, because it undermines livelihoods (p.15, 19). The poor are among those affected most severely from pollution or reduced productivity (p. 9, 37). The Action Plan stresses the need for responsible management of the climate as a global public good (p.54), recognising that rich countries like Norway have a moral responsibility due to our high relative contribution to greenhouse gas emissions (p. 38, 54, 63). To combat poverty, more focus is to be given to the Least Developed Countries, as they have the least prospect of attracting investment from elsewhere, and within those countries, to target particularly vulnerable groups, including the disabled and indigenous groups.

Table 5: Examples of potential impacts of climate change on priority areas for Norwegian development cooperation (cf. AfDB et al. 2003; House of Commons 2002)

Thematic area	Potential impacts of climate change	Main MFA/NORAD strategies reviewed
Poverty	- Damage and loss of poor people's livelihood assets (health, access to water, homes, infrastructure) - Increased pressures on disaster management schemes (floods, droughts) - Large funds tied up in climate-related policy responses, risk of long-term set-back to economic growth affecting the poor most severely - Reduced crop yields, effects on regional and local food security - Decreased hydropower potential	- Plan of Action to combat poverty (MFA 2002a)
Environment, energy and natural resources management	- Ecosystem changes may reduce biodiversity and compound existing environmental degradation, in turn reducing adaptive capacity - Natural resources depletion reduces adaptive capacity - Negative effects as climate changes outside range of traditional coping	- Environment strategy (MFA 1997b) - Environmental Assessment

Thematic area	Potential impacts of climate change	Main MFA/NORAD strategies reviewed
	strategies, which are also being marginalized by other policies - Reduced water availability - Increased risk of forest fires - Increased soil erosion, mud- and landslides - Increased damage to coastal ecosystems, coral reefs and mangroves	Handbooks (NORAD 1991-1996)
Health, HIV/AIDS	- Increased heath-related mortality and illness, increased prevalence of vector-borne diseases (malaria, dengue fever) - Children and pregnant women particularly vulnerable - Ill health effects due to declining availability of clean water - Increased risk of malnutrition due to decreased food availability and quality - Increased risk of deaths due to extreme climate events - HIV/AIDS increases vulnerability by affecting the most productive part of the population - HIV/AIDS reduces the transfer of knowledge on grassroots indicators and coping with climate events between the generations	- Plan of Action to combat poverty - Policy positions on HIV/AIDS (MFA 2000; MFA 2002a)
Research and Education	- Damage to infrastructure - Loss of livelihood assets may reduce opportunities for education. Natural disasters reduce available time for education; displacement and migration reduce access to education opportunities - Education improves the capacity to access and understand scientific climate information and to use it in a local context - Important to build capacities to research climate impacts and adaptations in developing countries (scenarios, socio-economic analyses)	- Education strategy - Plan for styrking av forskning og høyere utdanning (Utenriksdepartement et 1999; MFA 2003)
Private sector development	- Access to markets, institutions and credit can reduce marginalization of poor and increase assets as buffers against climatic events and changes - A more diverse income base, savings and credit as a buffer to deal with climate impacts - Global and local market liberalization creates winners and losers; opportunities (increased market access for the poor may reduce vulnerability) as well as problems with “double exposure” (high vulnerability to both climate change and market impacts) - Climate change impacts may reduce Foreign Direct Investments due to increased risk. Existence of risk/disaster management systems may help attract foreign investments	- Private sector development strategy - Review of economic impacts of trade liberalization - (MFA 1999; Hagen, et al. 2001; NORAD 2002a,b)
Governance, corruption, civil society, human rights	- Climate change will put increasing strains (and tie up more resources to) early warning systems and emergency management structures - Institutions shape perceptions of stakeholders, act as “filters” and affect the ability to take action (affect vulnerability and affect the design of responses) - need accountability, openness, exchange of information, institutional learning processes (what do scenarios mean? etc.)	Good Governance and Anti-Corruption Action Plan (NORAD 2000); Handbook in Human Rights Assessment (NORAD 2001)
Gender	- Women and children most vulnerable to climate impacts. More burden on women for upholding household food security may reinforce traditional gender roles, less options for education and alternative activities - Impact on women has direct impact on household food security - Climate change reduces available time for participating in decision-making and income generation activities - Climate-related disasters have larger negative effects on female-headed households	- Strategy for women and gender equality (MFA 1997a)

Below, the relationship between NORAD's priority areas and climate adaptation, and the extent to which NORAD's priorities touch upon the entry points identified in Chapter 4 are assessed.

Natural resources and environment: The environment strategy (MFA 1997b) stresses that emergency relief should be conducted in such a way that it does not have a negative impact on the environment and natural resources, such as in refugee areas. Early warning systems for disaster preparedness are also supported. Beyond that, the strategy does not mention climate or climate change as a separate theme, though there are potential links with vulnerability within a number of priority areas: sustainable production systems; conservation and sustainable use of biological diversity; reduced pollution of soil, air and water; preservation of cultural heritage; and management of the natural environment's cultural values. It is crucial that, in addition to conserving natural resources, actual access to biodiversity and communal resources by the most vulnerable is enhanced, in order for such activities to provide an entry point to supporting adaptation. The MFA (1997b) suggests emphasis on the multiple use of forests and uncultivated areas, as well as on promoting user interests in coastal zone planning. These are areas within which local adaptive capacity could explicitly be taken into account.

Health and HIV/AIDS: Improving health services for the poor is a key aim of Norwegian development cooperation, giving priority to children, youth and women. The Norwegian poverty plan of action emphasises poor health as both a cause and an effect of poverty; poor health undermines livelihoods while poor people have little access to medicines and health services (MFA 2002a; MFA 2002b). The strong link between environmental degradation and health status and is emphasised. Key health priorities include the strengthening of national health services and vaccination programmes for the poor.

Recent climate events, such as hurricanes (e.g. Mitch and George in 1998) and floods (e.g. in China and Mozambique), had devastating health effects, inflicting great damage on public health systems and increasing the spread of respiratory diseases and epidemics, such as cholera and dengue fever. Climate change and variability may trigger disease and malnutrition through polluting sources of drinking water, with particularly adverse effects where the health status is already poor. Health impacts by climate change and variability are most severe for the poor as they tend to live in more exposed areas, have more fragile houses, and have the least access to health services. In mountain areas and higher latitudes, temperature increases may give positive health effects because of higher temperatures during winter (McCarthy et al. 2001).

Norwegian aid aims to limit the spread of HIV/AIDS, and to limit the negative impacts for infected people and for societal and economic development. Natural disasters contribute to the spread of HIV/AIDS through the displacement of people (UNAIDS 2001). Furthermore, HIV/AIDS increases the vulnerability of households. It tends to affect the most productive part of the population and often those with alternative sources of income, such as part-time work in towns. These groups often represent the communities' investment in education, and are key contributors of labour and financial investment in agriculture. Another important implication of HIV/AIDS is children losing their parents, and communities losing their social and institutional fabric. HIV/AIDS is thus "(…) blocking the transmission of traditional agricultural knowledge and practices to children and eroding the basis of food security" (FAO 2001). This is a significant setback in areas exposed to large fluctuations in weather conditions and where knowledge of how to deal with climate risks is embedded in local oral traditions (Grenier 1998; Warren and Pinkston 1998).

Education is increasingly prioritised in Norwegian development cooperation and is characterised as 'job number one', crucial to building a viable society (MFA 2003). Natural disasters constrain school attendance when money and assets are lost and parents are unable to pay school fees, when people are forced to migrate to other areas, and when able children and youth are drawn to assist their parents in working and securing their livelihoods. As poor education limits local adaptive capacity, this can have serious repercussions for the longer term.

Strengthening education for the most vulnerable is an entry point to supporting climate adaptation. NORAD already prioritises education for the most vulnerable children, including in the event of crises and emergencies. Relevant education aimed at meeting local and national needs is another priority.

Accordingly, technical and vocational training that promotes employment, and training programmes that provide the relevant competence and skills to groups that fall outside the formal school system are supported. For example, Mukuni Basic School in Zambia has introduced wood carving as a school subject (with NORAD support), enhancing a local livelihood option. Explicitly strengthening local skills and technology used in coping strategies (such as alternative livelihoods when harvests fail due to climate-related events) and reducing sensitivity to climatic events (such as natural resource practices in watersheds and mangrove forests) would be ways of supporting adaptation to climate change. For example, NORAD's goal of free education for all would reduce the stress that vulnerable families experience when payment of school fees coincides with the dry season or harvest failure. In addition, support for research and higher education could be targeted at enhancing, rather than replacing, local skills, plant and animal species, technologies and management systems that are adapted to local climatic conditions.

Development of the private sector: Core tasks within private sector development for NORAD include small-scale production, in particular micro-finance, and rural development, with a focus on local value creation and market orientation of primary industries (MFA 1999; NORAD 2002a,b). These two core tasks provide an opportunity to support adaptation by engaging in entry points to strengthen local livelihoods and reinforce the alternative sources of food and income to which people turn when faced with climatic events and changes. Private sector development is meant to, "help both to increase income and provide jobs for poor groups, and create the necessary economic basis for the countries' own investments in health and education. A vigorous private sector is also a major precondition for reducing aid dependence and preventing an increased debt burden" (NORAD 2002b). Giving the poor access to markets and improving processing of local products and opportunities for upgrading skills and technologies are both elements of combating poverty. Adaptation to climate change can be explicitly supported by paying particular attention to strengthening rural and dryland economic niches that are well suited to the local climate and which provide alternative livelihoods.

Trade is perhaps the main priority area within which structures of marginalisation that limit adaptive capacity can be targeted within Norwegian development cooperation. Norwegian development cooperation aims to provide help to, "reduce marginalization of the poorest countries and strengthen their capacity to exploit the potential of globalization, while limiting its disadvantages" (MFA 1999, p. 3). Some assistance is allocated by Norway to multilateral mechanisms and funds aimed at the constraints that developing countries face in achieving economic growth and poverty reduction through trade. Trade-related aid to assist LDCs to utilize new market opportunities will be a priority area in future. Cooperation with multilateral bodies as well as strengthening developing country capacity to negotiate the best possible international agreements largely falls within the Ministry of Foreign Affairs' sphere, although bilateral involvement may also be appropriate for Norwegian Development Cooperation. Increased South-South trade and regional economic cooperation, among the main goals of the Private Sector Development Strategy (NORAD 2002b), are potential tools for strengthening developing countries' position in international trade structures. Similarly, trade with developing countries is to be strengthened (MFA 1999).

The poverty action plan considers that developing countries have much to gain from liberalisation of trade through participating in the WTO and dismantling trade barriers (MFA 2002a). An important challenge is ensuring that international trade does not make the poor more vulnerable to market fluctuations and increased competition from abroad. While globalisation opens up major opportunities (NORAD 2002b), the combined effects of climate and more volatile markets can result in the poor becoming "double losers" (O'Brien and Leichenko 2000). Coupled with privatisation of land, pursuing particular market opportunities without prioritising local livelihoods may lead to decreased access to land and natural resources by the most vulnerable.

Gender: Promotion of women empowerment and gender equality is a key goal of Norwegian development cooperation, as a human rights issue as well as a key requirement to fight poverty (MFA 2002a). The Strategy for Women and Gender Equality in Development Cooperation (MFA 1997b) lists rights, decision-making processes, economic participation, education, health and natural resources management as priority areas. The need for integrating gender in all activities is emphasised.

Guidelines for gender analysis and assessment in project design and implementation is described in a separate handbook (NORAD 1999).

Gender has often been a "forgotten element" of climate change, but its significance is becoming more apparent with the involvement of issues such as poverty, vulnerability, and environmental resources management in climate change (Denton and Parikh 2003). Evidence suggests that women are harder hit by climate variability and change than men. More women than men are poor, they are harder hit by poverty and have a lower capacity to escape from poverty than men (BRIDGE 2001). A particular concern is the growing number of female-headed households. Further, the different roles and responsibilities of men and women affect their vulnerability. In a household, men are typically more involved in the cash economy, while women's responsibilities are household food security, supported by subsistence use of natural resources. For example, tasks of washing and water collection put women and children at particular risk of water-borne diseases (AfDB et al. 2003). It is also important to recognise the wealth of traditional knowledge held by women regarding the environment on which they depend for their livelihoods. Coping with extreme events place extra burdens on women who are constrained by, "...social and cultural structures that place them in inferior social positions limiting their access to income, education, public voice and survival mechanisms" (AfDB et al. 2003:6). Thus women must be involved in any strategy for disaster preparedness and climate change adaptation. Experience from Bangladesh shows that the number of women victims from cyclones was greatly reduced after they were involved in village-level disaster preparedness committees responsible for maintaining cyclone shelters and transmitting warnings (AfDB et al., ibid.).

NORAD has acknowledged the importance of targeting women on disaster mitigation, of recognising women's knowledge and of giving women better access to education (MFA 1997a; MFA 2002a). The education sector can potentially support climate adaptation through strengthening women's coping mechanisms as an entry point. Education increases women's ability to access relevant information and, importantly, to get their voices through to decision-makers. Strengthening girls' education not only enhances their access to alternative sources of livelihood in the 'formal' economy; if explicitly aimed at local needs and skills connected to climate responses, such a gender approach may also strengthen the adaptive capacity of those operating in the 'informal' sector. In order to strengthen women's knowledge systems and their ability to contribute, it is also important to have gender-disaggregated data on households, in order to improve understanding of today's coping strategies, and to target women in communicating climate-related information.

Good governance encompasses both the use of society's assets and people's ability to exercise their rights, and is fundamental to mobilizing people's resources for development and in turn poverty reduction. Good governance represents a key goal for Norwegian development cooperation and is described as encompassing accountability, transparency, participation, rule of law, and capacity and competence (NORAD 2000; MFA 2002a).

These governance factors are entry points to improving societies' resilience through influencing: the ability to develop systems of preparedness and monitoring; people's ability to access and give feedback to decision-makers; and the flexibility of governance structures to adapt to changing environments and build institutional memories. The use of seasonal climate forecasts provides a relevant example. The ability to monitor and forecast weather events, notably the El Niño phenomenon, has increased dramatically over the past few years, chiefly due to improved resolution of climate models. However, experiences from the 1997-8 event show that successful use of climate information requires strong local institutions, well-functioning procedures for interpretation and dissemination in a form that is understood by the end-users, and the building of trust and motivation among end-users (van Aalst et al. 2000). For user groups such as poor rural farmers who cannot afford to take big risks, access to information is not enough and may be of little value by itself.

6.4 Instruments and entry points: operational implications to Norwegian development cooperation

The previous chapter showed the thematic linkages between Norwegian development cooperation and climate change vulnerability and adaptation. This section examines the operational implications, i.e. the tools and mechanisms through which climate change can be integrated into potential entry points to development work. It also reviews existing knowledge and practice, which is seen as a useful foundation upon which further efforts to reduce vulnerability and meet development goals may be based. We address the framework set by international agreements, and examine the implications at recipient country level. Mainstreaming and institutional change issues, as well as targeted efforts aimed at addressing immediate development needs are two main ways of supporting adaptation through development cooperation.

6.4.1 Implications of the Climate Convention and the Kyoto Protocol

The implications of the Climate Convention and the Kyoto Protocol for Norwegian development assistance can be seen at two levels. At a general level, both the Convention and the Kyoto Protocol recognise the special needs of developing countries in terms of capacity building, transfer of technology and reducing the vulnerability of climate sensitive resources. The Convention clearly states that developed country parties, based on their historically dominant emissions, have a responsibility to assist developing countries, and in particular, Least Developed Countries. Similarly, the Kyoto Protocol makes several references (e.g. Articles 2.3, 3.14 and 10) to the need for special attention to developing countries, including assistance to human and institutional capacity building and the transfer of technologies.

Specifically, two relevant operational entry points for support are: 1) the support that Norway provides, through the GEF, to assessments of vulnerability and adaptation in developing countries; and 2) the potential support to the Clean Development Mechanism under the Kyoto Protocol (when it enters into force) as one of the ways to fulfil Norway's obligations.

Adaptation funds: The three adaptation funds set up at COP7 in Marrakech, 2001 (see also Sections 2 and 5), would be financed partly through Norway's involvement in CDM activities, and partly through voluntary contributions to the GEF. Only one of these funds is operational; one depends on the Kyoto Protocol entering into force, and one requires more precise definitions before it can be set into force. The EU and several other developed countries have pledged €450 million per year by 2005 in additional support to the funds.

So far, the GEF (as the financial mechanism of the Climate Convention) has funded National Communications of developing countries that are party to the Convention. The National Communications have included a (commonly) sector-based review of vulnerability and adaptation to climate change. The GEF has also funded a number of country- and regional-level studies involving vulnerability and adaptation assessments implemented by UNEP, the UNDP and the World Bank.[25] As it has become clear that more attention needs to be dedicated to adaptation, the three new funds established in 2001 are potential vehicles for addressing adaptation in a sustainable development context. One is already in operation, funding National Adaptation Programs of Action (NAPAs) of Least Developed Countries.

These funds could be potentially important vehicles for improving the livelihoods of the poor alongside reducing vulnerability. There are numerous experiences that could guide this work, including recent efforts to connect climate scenarios with bottom-up studies of the factors on the ground that affect people's vulnerability, considering current climatic variability together with future climate change, and the need to root adaptation strategies in local patterns of resource utilisation (Burton et al. 2003).

Clean Development Mechanism: The Clean Development Mechanism was set up as an opportunity for countries with obligations under the Kyoto Protocol to invest in emission-reducing activities in

[25] List of GEF-funded projects available at http://www.gefonline.org/projectList.cfm.

developing countries while at the same time addressing their prioritised development needs. The idea behind the CDM is that countries with obligations under the Kyoto Protocol (Annex I countries) are to support emission reduction activities in developing countries. The Annex I country will then get credits for the amount of emission reductions achieved (determined through a still to be agreed system of Certified Emission Reductions, CERs). The activities shall be deemed by the host country to be valuable as a development project in its own right, regardless of the emission reduction benefit. Discussed sectors for projects include energy and forestry, but this has yet to be settled (to be decided by the end of 2003). Forest projects in particular remain controversial. Rules for terrestrial carbon sink projects, limited to afforestation and reforestation are to be decided at COP9 in December 2003 (Grace et al. 2003).

To date, a number of initiatives have been launched to prepare for potential CDM credits, among others hosted by the World Bank (e.g. the Prototype Carbon Fund, Netherlands Clean Development Mechanism). Several pilot projects have been implemented. A number of private actors have been involved in implementing pilot projects and offering independent certification services.

The CDM is important not only because it is intended to fund adaptation activities (from a levy on all CDM transactions), but also because the ways in which CDM activities are undertaken may affect the vulnerability of the poor. While emission reductions and adaptation continue to be two separate areas in the climate change community, such divisions are artificial at the local level. CDM projects will be funded from government and private sources and are likely to focus on the energy sector (efficiency, biomass, windpower) and possibly carbon sequestration in forests, both of which are key to people's livelihoods. Further, CDM projects will be bilateral, i.e. between Norway and a host country, which underscores the need for coordinating this with Norway's policies and strategies for development cooperation. There are various interest groups that need to be taken into account in the design of CDM projects (Michaelowa and Dutschke 2000). A recent assessment describes transaction costs for a project under the CDM in its present form, or as currently negotiated, as very high (Grace et al. 2003), possibly making the targeting of such projects at vulnerable small-scale farmers difficult. However, *voluntary projects* for carbon sequestration have been piloted in Mexico and Mozambique[26]. Private individuals and companies wishing to compensate for their own emissions buy 'carbon neutrality,' effectively paying farmers (through a fund) for improved management, such as speeding up the fallow cycle and using agroforestry techniques. Such schemes are smaller in scale, require smaller transaction costs, and represent the type of projects that the CDM may, in the longer term (when its organisation is simplified and transaction costs reduced), be able to fund.

The way forward: Up to now there have been no apparent policy linkages between the above mentioned Norwegian support to the climate negotiation process and policies for Norwegian development cooperation. However, it is clear that if the CDM enters into force and NAPAs are followed up with country-level adaptation assessments, the potential amount of funds will necessitate new approaches and better coordination between climate change actions and NORADs work at different levels. NAPAs are primarily rapid assessments to identify and prioritise climate change adaptation actions through focal points in Least Developed Countries (LDCs). Beyond NAPAs, more efforts are needed in LDCs to identify how climate change will affect national development priorities, as well as capacity building and engaging with civil society to implement adaptation measures (Saleemul Huq, pers. comm.). National development priorities represent an area where NORAD and other development agencies have long experience. Improved coordination of climate change actions and Norwegian development cooperation's work would have implications both for the overall aims and strategies (aligning with the goal of poverty eradication), as well as for country support, thematic/sector programmes, human and institutional capacity building and project/community level support. On the mitigation side, NORAD may also play an important role in *voluntary* carbon sequestration measures, through facilitating small scale projects in LDCs.

[26] www.eccm.uk.com

6.4.2 Synergies among conventions on climate change, biodiversity and desertification in development

A recent OECD report (OECD 2002c) argues that measures undertaken under the three "Rio-Conventions" of CCD (Convention to Combat Desertification), CBD (Convention on Biological Diversity) and the Climate Convention are also key to development and poverty reduction. The CBD and CCD have extensive work on social implications, including giving considerable attention to local people and communities as custodians of knowledge and skills on resource management. It is clear that the Climate Convention could draw on experiences gathered here.

The document further discusses the linkages between the conventions, in that they have a common understanding of the following: that ecosystems underpin livelihoods, impacts cut across boundaries, and that many of the key root causes are the same, including the negative impact on sustainable development of reduction of biodiversity, climate change and desertification. The CCD differs from the two others in that it is more localised (not global) and more development-oriented. Climate change may affect desertification and biodiversity loss processes. Biodiversity concerns are discussed in more detail in a recent IPCC Technical Paper (Gitay et al. 2002). Eriksen (2001) reviews linkages between desertification and climate change.

There are important opportunities for Norwegian development cooperation in looking at the conventions together, both for internal synergies (coordinating the experiences between relevant departments at the MFA and NORAD) as well as country level synergies. At the country level it is important, first, that the national strategies for follow up to the three conventions are given due attention in the national development plans; notably the Poverty Reduction Strategy Papers are an increasingly important tool for coordinating national development plans. Second, the situation on the ground requires a coordinated response to the localised challenges of combining sound natural resources management with improvements in the livelihoods of the poor, helping to build more resilient and less vulnerable systems.

6.4.3 Environmental Assessments

Environmental Impact Assessments (EIAs) are required for all Norwegian supported development projects expected to have significant environmental impacts. Guidelines for EAs are set out in handbooks for 14 different sectors and thematic areas (NORAD 1991-6).[27] The handbooks include checklists for assessing the impacts of projects on the environment as well as socio-cultural structures. NORADs regulations and guidelines are currently being reviewed with the goal of strengthening the EA system, including increased use of *Strategic Environmental Assessments* (SEAs). SEAs have emerged over the last 5-10 years to address the weaknesses of EIAs, notably that they have been applied late in the planning process, applied only to individual projects and often detached from the broader societal context (Dalfelt and Næss 1997). SEAs, by contrast, are applied to policies, plans and programmes. They are intended to be a proactive rather than reactive instrument and to be applied early in the planning stage, and are thus a potentially powerful tool for facilitating strategic thinking around sustainability issues.

SEAs could be an appropriate tool for assessing how sectoral policies, plans and programmes affect the vulnerability of beneficiaries, and particularly how it affects the poor's ability to cope with climate variability and change. SEAs may also be a good mechanism for mainstreaming climate change into national development processes such as Poverty Reduction Strategy Papers (Burton and van Aalst 1999; Yaron and White 2002).

The main limitation to the use of environmental assessments, and particularly EIAs, for adaptation to climate change is that their purpose is to assess the risk *of* projects *to* the environment, not vice versa. EIAs are a good tool for assessing the GHG emissions of a project, but they would not be required for projects that may be vulnerable to climate change but with small emissions or negligible impacts on the environment; for example, school buildings located in areas that become more flood-prone with climate change. Some of NORAD's handbooks on EIAs recommend assessing the impacts

[27] Agriculture, livestock, forestry, fisheries, aquaculture, hydropower, water resources, transport, industry and energy, mining, waste management, town planning, crop protection, and oil and gas.

of existing activities and current environmental stress on the success of the projects, such as pollution sources that may affect the quality of agricultural projects. This could be extended to include vulnerability to future climate change. However, EAs (EIA and SEA) must then be applied to all projects, not only to those expected to have environmental effects (Burton and van Aalst 1999).

6.4.4 Coordination of support and mainstreaming in developing country policies and strategies

Another change in Norwegian development cooperation is an increased focus on coordinating donor support within the organization (including the sharing of responsibilities between NORAD and the MFA), and channelling Norwegian support through one common donor agenda in the recipient countries.

Poverty Reduction Strategy Papers (PRSPs) are considered a key tool for coordinating Norway's development cooperation with other agencies while the development countries themselves are left in charge of their own development process (MFA 2002a). PRSPs were introduced by the World Bank and the IMF in 1999 to promote growth and reduce poverty, as well as to describe associated external financing needs. PRSPs are prepared by governments through a participatory process involving civil society and development partners. They form the basis for the Poverty Reduction and Growth Facility (PGRF), which has replaced the Enhanced Structural Adjustment Facility (ESAF).

PRSPs have been criticized for, among other reasons, being "not so much a poverty reduction strategy as a growth strategy and the link between "economic growth" and resultant "poverty reduction" is tenuous".[28] An internal review of integration of environmental concerns in PRSPs concluded that linkages between poverty and the environment are not often well brought out. However, some promising examples were also found where such linkages were emphasised, notably the PRSPs for Mozambique, Honduras, Nicaragua, Burkina Faso, and Kenya (Bojö and Reddy 2002). The World Bank Environment Strategy (World Bank 2001) states that, "Several global environmental concerns—such as land degradation, water resource management and biodiversity loss, and the impacts of climate change—have strong linkages with poverty reduction. Such aspects will be included in PRSP reviews" (p. 213).

Recent reviews emphasize PRSPs as an important tool for mainstreaming climate change in national policies and strategies (AfDB et al. 2003; Agrawala and Berg 2002; House of Commons 2002; OECD 2002a). AfDB et al. (op. cit.) emphasize the need to go beyond the national level to integrate climate adaptation also into local level planning and implementation, following extensive decentralization processes in many developing countries. The Norwegian Ministry of Foreign Affairs guidelines for development cooperation with the Latin American region (UD 2003) exemplifies how sustainable management of natural resources (one of three main goals in this cooperation) can be integrated with the Millennium Development Goals and PRSPs. In specific, the performance of development cooperation work should be assessed on the basis of the extent to which the work contributes to fulfilling MDG and PRSP objectives. Guidelines for development cooperation could be a mechanism through which vulnerability and adaptation are placed on the agenda in discussions of how MDG and PRSP goals can be reached.

Other entry points for mainstreaming climate change include *National Strategies for Sustainable Development* (NSSD) and *National Environmental Action Plans* (NEAPs). A House of Commons report (2002) highlights the need to link the DFID's country assistance strategies and plans to PRSPs, NSSDs and NAPAs. Norway's position in connection with the WSSD in Johannesburg was that, "PRSPs and national strategies for sustainable development (NSSDs) should be combined into a single, integrated framework for the sustainable eradication of poverty. In this way the economic, social and the ecological dimensions of poverty are addressed. In cases where a PRSP has been made or is in progress, there should be no pressure to develop a separate NSSD."[29]

[28] http://www.weeklyholiday.net/201202/last.html. See also http://www.wdm.org.uk/cambriefs/debt/PRSPcrit.htm

[29] http://odin.dep.no/ud/norsk/p30000969/p30000916/p10003047/032121-220008/index-dok000-b-n-a.html

Other challenges with NSSDs and NEAPs are, first, that their implementation is commonly the responsibility of environment ministries, which are traditionally weaker agencies and have less power to put issues on the country's national development agenda. Further, climate change has commonly been seen more as a long-term environmental issue, while NSSDs have focused on short-term issues. This may be part of the reason why climate change to date has been largely ignored in NSSDs (House of Commons 2002). The above furthermore underlines that climate change should be considered as a key development issue, not only an environmental issue, and that current climate variability must be seen together with long-term climate change.

6.4.5 Disaster management and long-term development

Disasters may have long-term impacts; not only will the poorest have the least ability to withstand the disaster itself, they also have less capital and assets to recover afterwards. A disaster can be a major set-back to the development of a community (wiping out the livelihoods basis), a region (destroying infrastructure and linkages to central markets) or a country (tying up large budget funding). For example, Hurricane Mitch set back development by causing a drop in agricultural output in 1998. Outside assistance, while having an immediate positive effect, can also undermine local coping structures (directly by introducing "modern" technologies or indirectly by affecting people's confidence in their own methods). The ISDR and Red Cross give numerous examples of how local practices (indigenous knowledge, IK) are key sources of coping and adaptation.

The Ministry of Foreign Affairs is responsible for relief aid, while NORAD is consulted before action is taken in a country. Support is given through Norwegian or local NGOs or UN organizations. Activities include providing emergency and disaster relief, as well as supporting early warning systems (MFA 1997b). Norwegian development aid support includes emergency aid to flood victims and assistance to populations to rebuild production systems. In the wake of the droughts on the Horn of Africa, the MFA (2001) suggests that increased weight be put on strengthening local preparedness planning. Ensuring that the seed material is appropriate, i.e. suited to the local environment and farmers' production systems, was emphasised after the recent floods in Mozambique.

6.4.6 Global Public Goods, vulnerability and climate change

The issue of Global Public Goods (GPGs) has attracted increasing interest, most recently at the WSSD in Johannesburg last year. GPGs are public goods, such as clean air, world security and humanitarian rights, whose benefits reach across borders, generations and populations. Like all public goods, GPGs are non-excludable and non-rival, meaning that it is impossible to prevent anyone from enjoying it once it is provided, and that one person's consumption has no impact on another's. The main problem with Global Public Goods is that there is no incentive for private actors to produce them, and unless there is some form of international collective action they will be underprovided. Likewise, Global Public "Bads" (GPBs) – such as climate change, communicable diseases and transnational drug smuggling – are facing the problem of overprovision (Gardiner and Le Goulven 2002).

Climate change is a particularly challenging GPB for several reasons: it is characterized by many small contributors, large uncertainties about its existence foster inaction, and, unlike combating disease or drug smuggling, it offers small benefits of immediate action (Kaul et al. 1999; Sandler 2001), for example, curbing emissions today will only take effect decades into the future. The global public goods approach to climate change has several implications for poverty and vulnerability reduction:

- The "overprovision" of climate change is affecting the poor most negatively because of their dependence on climate-sensitive resources such as water, crop plants and forest resources for their livelihoods. The poor are also affected by climate-induced increases in the spread of communicable diseases.
- The poor will likely have different priorities from wealthier social groups on which GPGs should be provided first, but will have less power and ability to define the priorities at the national and international level.

- There are many relevant joint benefits or "spillover effects" between providing global public goods, on the one hand, and reducing vulnerability and poverty eradication on the other. Vulnerability reduction and combating poverty, while not GPGs, will contribute to other GPGs such as improved global health and strengthened peace and stability.
- While provision of GPGs such as biodiversity conservation and combating climate change will benefit the whole world, current international funding regimes for such activities in developing countries are to a large extent covered within normal ODA budgets. It is thus argued that development budgets are getting an unfair burden of what is not primarily an aid responsibility (Kaul et al. 1999).

An international task force on Global Public Goods was launched during the WSSD in Johannesburg.[30] One primary goal of the task force is to address GPGs, which are important to achieving the Millennium Development Goals, in particular poverty reduction.

[30] http://www.un.org/events/wssd/pressconf/020829conf7.htm

7 Discussion of potential priority areas

7.1 Synthesis

7.1.1 Why is climate change relevant for Norwegian development cooperation?

- **Climate change is a poverty concern:** The poor are the most vulnerable to climate change, and climate change could increase the disparities between the rich and poor. By and large, strategies for poverty reduction – the main aim of Norwegian development cooperation – are compatible with the aim of adapting to climate change, and there is large potential for win-win opportunities. Burton et al. (2003) argue that adaptation to climate change, by its cross-sectoral nature, provides an opportunity for a new approach to key global environmental problems as well as to the problems of the world's poorest people.
- **Climate change is a global issue, while adaptation will happen locally:** Any strategy for adaptation must consider the local context. Norwegian development cooperation, like other development agencies, has long experience with countries and communities, and could play an important role in "translating" climate change into a local context. Types of challenges and opportunities for adaptation vary considerably between geographic regions. There is a need to better understand the underlying causes of vulnerability, and to strengthen existing locally based systems.
- **Norwegian development cooperation is already working with adaptation.** Development activities, from health to education to governance, affect societies' capacity to adapt to climate change. Development decisions made today have long-term implications for the vulnerability of societies and ecosystems vis-à-vis climate change. Climate change may increase the risk of failure of development projects designed for the current climate. Further, climate change may affect the vulnerability of recipients of development aid, and the ecosystems they depend on for their livelihoods. Operational entry points include environmental assessments, national poverty reduction strategies, and linkages between the conventions of climate, biodiversity and desertification.
- **The Climate Convention and Kyoto Protocol have implications for Norwegian development cooperation.** As a developed country party to the Climate Convention, Norway is expected to assist developing countries on, for example, human and institutional capacity building, transfer of technology and reducing the vulnerability of climate sensitive resources. Vulnerable areas and Least Developed Countries should be given special consideration. Specifically, the newly established funds for adaptation and the Clean Development Mechanism are instruments that could offer new opportunities for development. Norway, along with other donors, will have obligations under the Kyoto Protocol (if and when it comes into effect) and could play an important role in supporting developing countries' participation. Moreover, developing countries will eventually have to take on emissions targets, and development assistance can play a key role in facilitating adaptation and catalysing clean technologies.
- **There are potential synergies between development and the conventions on climate change, biodiversity and desertification:** Actions taken under the three "Rio-Conventions" on desertification (CCD), biodiversity (CBD) and climate (FCCC) are also of key importance to development and poverty reduction. The CBD and CCD in particular, have done extensive work on social implications and local communities, and the conventions have a common understanding that ecosystems underpin livelihoods, that impacts cut across boundaries and that many of the key root causes are the same. There are thus synergy benefits in coordinating experiences from the MFA and NORAD on disaster reduction, climate change, resource management and poverty reduction; this applies internationally in the context of MDGs, on the country level through

PRSPs, and at the community level through a focus on improved livelihoods and reducing vulnerability of the poor to climate change as one of multiple stressors.

7.1.2 New challenges with climate change

Climatic variations have always formed part of the framework for development cooperation. Interventions have mainly dealt with climatic variations by trying to reduce sensitivity to climate variability (through supporting water wells, irrigation systems, drought resistant cultivars) and to ameliorate the consequences of floods, storms, droughts and other climate events (through food distribution, evacuation). Climate change nevertheless poses new challenges to development cooperation, such as:

- Climate change vulnerability demands increased focus on people's livelihood and coping strategies, as well as on the increasing risks that they may face, such as from drought and floods
- Climatic changes are expected to be more rapid than earlier, magnitudes of intra- and interannual variations may be larger, and seasonal patterns may become less predictable
- The frequency and magnitude of extreme weather events may increase
- A failure to consider climate change now may tie up an increasing share of funds in emergency assistance
- Climate change occurs in a situation with a number of other large-scale societal and environmental changes (e.g. economic globalisation, HIV/AIDS, demographic changes, loss of biodiversity)
- There is a growing recognition that technological solutions will not be enough, and that there is a need to look at the reasons why societies are vulnerable

7.2 Work areas for Norwegian development cooperation: potential dilemmas and conflict areas

7.2.1 Norwegian development cooperation strategies and entry points for adaptation

Although several assessments have been made, there are few practical adaptation projects that have been instituted by international organisations. Norwegian development cooperation has not explicitly been engaged in climate change adaptation in developing countries. Climate change as such is mentioned mainly in relation to its immediate, first order impacts, rather than vulnerability and adaptation. Several climate change activities are implicitly addressed in NORAD priorities, however. In Section 4.3, three strategic entry points (livelihoods, risk management and early warning, and local capacity and sensitivity) through which adaptation can be supported in development cooperation activities were identified. A review of Norwegian strategies reveals an emphasis on livelihoods-type entry points to adaptation, as well as capacity building and institutional strengthening in general.

There are a number of areas within Norwegian development cooperation with clear linkages to climate change.

- The education sector may provide some of the most potent means of supporting adaptation, through strengthening local skills and enterprises and reaching some of the most vulnerable groups.
- Within the natural resources area, conservation can be targeted to enhance local access, particularly by the poorest, to natural resources vital to coping mechanisms and alternative livelihoods during climatic events and changes. In addition, management can be aimed at reducing the sensitivity of coastal areas and enhancing watershed management to reduce the risk of flooding.
- Private sector development can support local small-scale production, value adding and market access for local products that are adapted to the climatic conditions.
- Within the gender area, access by the most vulnerable to education, employment and natural resources can be strengthened.
- Efforts in the health area can focus on the reduction of HIV/AIDS and other diseases that reduce the labour power, social texture and thus local adaptive capacity.

- Development cooperation aimed at promoting trade can focus on ensuring that local niche production, small scale producers and rural areas benefit from increased trade, as well as from fairer trade (in order to address structures of marginalisation).

Entry points that could be more explicitly targeted include activities on integration of climate adaptation considerations in economic and infrastructural development, in particular, strengthening the space of local knowledge in economic development, and promoting the processing and marketing of local products.

7.2.2 Potential dilemmas and conflict areas

- **Promotion of trade, equity issues and the vulnerability of the poor.** The contemporary global economic order encourages narrow specification in production and livelihoods (Jodha 2000). Coping strategies by poor people, by contrast, are based on diversifying activities and spreading risks. The most vulnerable groups in developing countries are seldom able to access the new market opportunities offered by globalisation, and investments, technical inputs and development projects tend to be skewed towards areas and people who are relatively less vulnerable. A key equity issue (see Adger 2001) is thus whether or not adaptation resources are allocated to those most *able* to adapt (the greatest adaptation potential), or to those with the most *need* to adapt (who are most vulnerable).

- **National versus locally adapted strategies.** The need for centralised, standardised responses that can effectively coordinate the efforts of many actors, may conflict with developing locally tailored solutions. Integration of climate change in national efforts such as the PRSPs will not alone ensure successful adaptation; it also has to trickle down to the local level. Conducting local level analysis of vulnerability measures that include many stakeholders is a time consuming and costly process. A challenge is ensuring that the local level is not marginalised in relation to national level institutions and priorities.

- **Privatisation.** Another potential dilemma concerns the current efforts by the World Bank and the donor community to promote the privatisation of land. In particular, privatisation of land may undermine flexible livestock grazing management systems that pastoralists use in order to be well adapted to a variable climate. Conservation of natural resources, such as through national parks, may similarly reduce access by the vulnerable to common property resources.

- **Political cost of reducing vulnerability.** There may be a political cost to redirecting priorities from visible development projects (such as technical infrastructure) to addressing more abstract and longer term threats, "It is hard to gain votes by pointing out that a disaster *did not* happen" (Christoplos et al. 2001). Conversely, natural disasters when they occur attract the attention of donors and development agencies; in addition, the distribution of aid can yield support among the population groups.

- **Effects of large-scale climate projects on the vulnerability of the poor.** Both larger scale GCM and infrastructural/technical measures to reduce the sensitivity of energy and agricultural production to climate change may have unintended negative consequences for the poorest. For example, carbon sequestration projects and the construction of flood defences and irrigation schemes may push poorer people out of land areas crucial to securing livelihoods, while the reduction in sensitivity may benefit mainly the larger producers. Similarly, the promotion of hybrid drought-resistant seeds and other technological measures to adapt to climate change may lead to higher investment and input costs for the poor (need to buy seeds, fertilisers, pesticides), and a loss of the local seed diversity developed over generations to suit diverse climatic conditions.

7.3 Recommendations for priority areas

The previous sections have demonstrated that climate change is relevant for Norwegian development cooperation, with clear linkages to poverty reduction and priority areas such as education, natural resources management, private sector development, gender, health and HIV/AIDS, and trade. Climate

change presents new challenges as well as potential dilemmas and areas of conflict. The following are suggested priority areas, representing strategic entry points to achieving the key overall goal: to reduce vulnerability and increase the capacity of the poor to adapt.

1. ***Internal measures, Norwegian Development Cooperation***

- **Review tools and approaches:** Conduct a detailed review and assessment of tools that are currently in use in project development and approval procedures in NORAD (e.g. related to Environmental Assessments and cross-sectoral/community development). Such a review would identify ways in which these can become explicit tools for achieving adaptation and poverty reduction.

- **Internal awareness raising and sensitisation:** Equally important to changing rules and regulations would be sensitisation of staff through information materials, seminars and dialogues on why climate change matters and how it can be addressed in their daily work. The World Bank Climate Change Team provides one example of an internal seminar for sensitisation.31

- **Address potential synergies of coordination between the MFA and NORAD:** Address coordination between the MFA and NORAD regarding adaptation-relevant activities, in particular, in the areas of humanitarian aid (disaster mitigation and risk management, and matters relating to the Climate Convention (CBD, Adaptation Funds), the Desertification Convention and the Biodiversity Conventions). This should aim to identify common ground and synergies between the work areas. The interface between short-term disaster intervention and long-term vulnerability reduction can be identified, in particular, regarding countries that experience dramatic climatic events, such as Mozambique and Bangladesh.

2. ***Recipient country measures***

- **Integrate climate change adaptation in country programmes and PRSP processes:** Particular attention could be paid to vulnerability factors and potential entry points in integrating climate change strategies in PRSP processes. Potential priority areas could be synergies between conventions, the implications of global public goods, and integration of adaptation in the development policy and planning process (rather than remaining an isolated environmental concern). This would entail efforts to strengthen developing country capacities and processes to integrate climate adaptation into development and sectoral policies, as well as economic planning and budget processes (Ministry of Finance, Planning). Another focus is to bolster donor coordination at the country level, identifying where the gaps are, which areas may be overemphasised and where NORAD can best contribute.

PRSPs try to encompass many aspects that are relevant to poverty reduction and development, although the environment is one which is not often well integrated. However, there are entry points for integrating vulnerability and adaptation, for example through:

- Addressing vulnerability to natural disasters as a cause of poverty, and identifying the most important factors that affect or constrain economic growth. PRSPs from Kenya, Mozambique, Honduras, Nicaragua and Bolivia exemplify the integration of a climate perspective. Policies could pay attention to increasing robustness as a strategy to combat poverty.

- Within each sector or theme and the revision and monitoring process guiding them (inter-agency groups), identify vulnerable groups and how the sectors/themes affect them. This process can focus on what makes people vulnerable, and how they can be made more resilient.

- Support network building and capacity development in developing countries, e.g. with respect to climate change science and the capacity to conduct vulnerability assessments. Regional collaboration can be supported through existing initiatives, such as START/AIACC. In addition, key individual research institutions, both within universities and independent research institutes,

[31] For more information, see http://lnweb18.worldbank.org/ESSD/essdext.nsf/46DocByUnid/A347FAC06C3BBA5685256B800061A2B3?Opendocument

could be targeted. Research capacity regarding vulnerability and adaptation could be supported through NORAD's programme for supporting collaboration between academic institutions in Norway and developing countries. In particular, capacity needs to be built regarding the socio-economic causes of vulnerability in individual developing countries, in order to go beyond the investigation of technical constraints to adaptation to identify social, political and economic barriers. Such capacity building may benefit from strengthening the links between social science research, climate research, and sectoral policy makers, in particular, linking institutional networks and agency cooperation regarding short-term famine response mechanisms with longer term development planning.

As a part of strengthening land use planning, there is a need to enhance analysis in individual countries of potential environmental changes, such as vegetation change or coastal erosion due to global warming and sea level rise, as well as to improve identification of areas currently at risk (for example to flooding) under the present climate regime.

- **Support the documentation, strengthening and integration of local knowledge, skills, and strategies for coping with climate events and changes:** Support the documentation of local coping strategies and techniques, and assess the technical potential for development and integration within national R&D systems. Such support could target South-South exchange of information, such as between India and African countries. In particular, the role of gender and local knowledge could be supported, and means of enhancing marketing and addressing the imbalance of public and private investment in local economic niches adapted to the local climatic and social context could be evaluated.

Local expertise and knowledge in risk management can be supported. Such efforts could be aimed at strengthening, for example, the capacity of academic institutions to develop climate forecasts, in particular, forecasts that include information that is useful to farmers. Institutions and mechanisms of information flow between users and researchers, the dissemination of information, and inclusion of local climate knowledge could be strengthened. It is crucial that such efforts simultaneously address the constraints that farmers face in making adjustments in response to forecasts, such as the lack of access to seeds and other inputs, as well as the underlying reasons for this lack of access (such as poverty and poor market access).

3. International mechanisms and collaboration

- **Promote pro-poor activities in the CDM and the adaptation funds:** This would involve enhancing pro-poor approaches in projects coming out of the Climate Convention adaptation funds as well as the CDM. Norwegian development cooperation could function as a broker, and assist developing countries integrate vulnerability assessments as part of projects' commitment to sustainable development, facilitating the best use of funds for the benefit of the poor. This would entail assessing the balance, and potential synergies, between adaptation and environmental considerations in projects. The potential role of development cooperation in reducing the transaction costs of CDM projects should be investigated. Of most immediate relevance is possible Norwegian development cooperation involvement in voluntary carbon sequestration projects that may precede, as well as take place alongside, CDM afforestation and reforestation projects. These projects are relatively small and have low transaction costs; they may be more easily targeted at vulnerable population groups and provide an alternative source of livelihood. In addition, the experiences from such projects may assist the future design of CDM projects aimed at ensuring sustainable development (and addressing poverty and climate vulnerability).

The development of local capacity (in civil society, NGOs and community organisations) to implement small-scale efforts among the most vulnerable and poorest communities is particularly important because there is a danger that the NAPA process may result in the production of a set of large infrastructure projects, which are often favoured by bureaucrats and policy makers (Saleemul Huq, pers. comm.).

- **Address consequences of trade and globalisation:** Integrate local livelihoods requirements (and local institutional capacity, economic opportunities and natural resource management and technology) into activities aimed at enhancing trade, including those targeting development countries' capacity to exploit new opportunities in globalisation. Address the particular dilemmas described in Section 7.3.

7.4 Expertise, support and collaboration

Table 6 provides an overview of the eight recommended priority areas, and gives examples of expertise in Norway and internationally under each of the areas. The purpose is to show examples of institutions and organisations that:

(a) may provide technical and operational expertise to NORAD and the MFA, and
(b) may be supported by Norwegian development cooperation (in the South) to increase developing countries' capacities to deal with climate change.

Many of the development organisations are already mentioned in Chapter 5 above. In addition, relevant research institutes (in Norway and internationally) are included, with relevant projects and publications. The list is not exhaustive but gives examples that the MFA and NORAD may want to consider for further collaboration. There are a number of institutes in Norway that carry out relevant research in the areas of poverty, development and local natural resource management, though as yet few focus directly on linkages to climate change. Outside Norway, there are several research centres that are conducting research on climate change vulnerability and adaptation in developing countries.

In developing countries, several institutes have been involved in research regarding vulnerability to climate change. Examples are TERI in India, ICIMOD in Nepal (Jodha 1990; 1995; 2000). In sub-Saharan Africa in particular, little research has so far been initiated by local research centres in this field, apart from in South Africa where climate research capacity is relatively strong.[32] A network (START) is being led from University of Nairobi. Several institutes have participated in collaborating research and assessments, such as the African Centre for Technology Studies[33], Sokoine University of Agriculture (Kihupi et al. 2003), CEEST[34] (Dar es Salaam, Tanzania), and ENDA Energy (Dakar, Senegal).

The weakness of the vulnerability and adaptation component of national climate assessments so far reflects the need to build up capacity in this area. Research capacity regarding vulnerability and adaptation could be supported through NORAD's programme for supporting collaboration between academic institutions in Norway and developing countries. More specifically, the following areas need strengthening:

- Research capacities on climate change science as well as social science based vulnerability analyses,
- South-South research collaboration and networks,
- Capacities to participate in climate change negotiations and in developing projects for adaptation, accessing funds through the CDM, the new adaptation funds or other sources, and
- Documentation and integration of local, climate-related knowledge in national research and development systems.

[32] For example, University of Witwatersrand (Coleen Vogel, Bruce Hewitson)

[33] Okoth Ogendo and Ojwang, eds. 1995

[34] Mwandosya et al. 1998

Table 6. Suggested priority areas for Norwegian development cooperation, technical expertise and potential collaboration partners.

Suggested priority area	Examples of technical expertise and operational collaboration partners
1. Review tools and approaches for integration of climate change adaptation	• IIED: Strategies, Planning and Assessment Programme (Dalal-Clayton and Sadler, 1999), http://www.iied.org/spa/index.html • GTZ: Climate Protection Programme Phase IV (Chapter 5) • CIDA/IAIA: International Study of the Effectiveness of Environmental Assessment (e.g. Sadler 1996), http://www.ceaa.gc.ca/0006/execsum_e.htm • World Bank: review of operational implications of climate change (Burton and van Aalst 1999)
2. Awareness raising, sensitisation and capacity building within Norwegian development cooperation	• World Bank_ Climate Change Team seminar series, http://lnweb18.worldbank.org/ESSD/essdext.nsf/46DocByUnid/A347FAC06C3BBA5685256B800061A2B3?Opendocument • GTZ: Climate Protection Programme Phase IV (Chapter 5) • CIDA: mainstreaming through Country and Regional Development Programming Frameworks (Chapter 5) • OECD/DAC: guidelines for integration of the Rio Conventions (OECD 2002c) • EC: Initiative on mainstreaming of climate change into development cooperation (Chapter 5) • IISD: Climate Change Knowledge Network (CCKN), Climate Compendium, http://cckn.net/compendium/ • CICERO: Klima-ABC (In Norwegian): http://www.cicero.uio.no/abc/
3. Address potential synergies of coordination between MFA and NORAD - Disaster/Risk Management - Conventions synergies	• FAO: Food Insecurity and Vulnerability Information and Mapping System, http://www.un.org.tr/fao/FIVIMS.HTM • ISDR: Climate change and disaster mitigation project (Ch. 5) • IRI: International Research Institute for Climate Prediction, applications of climate predictions, http://iri.columbia.edu/application/ • OECD/DAC: Integrating Rio Conventions in development coopartion (Ch. 5) • International Federation of Red Cross and Red Crescent Societies, World Disasters Report 2002, http://www.ifrc.org/publicat/wdr2002/ • Chr. Michelsen Institute, Bergen: e.g. Programme Between relief and development, http://www.cmi.no/research/betweenaid1.htm • CICERO, studies on climate change vulnerability and adaptation, www.cicero.uio.no.[35]

[35] Current projects include CICERO, Rutgers University and University of Eduardo Mondlane: Economic change and climate vulnerability in Southern Africa: Case studies in Namibia, Tanzania and Mozambique (2001-2003) CICERO, Rutgers University and TERI: Globalization and climate change in India: The impacts on agriculture (2001-2003) CICERO and University of East Anglia: Climate change vulnerability: Norway and Cuba. PhD project (2002-2006); Liverman and O'Brien 1991; Dalfelt and Næss 1997; Eriksen 2000a;

Suggested priority area	Examples of technical expertise and operational collaboration partners
	• Centre for Development and the Environment, University of Oslo, www.sum.uio.no. (e.g. Banik, 1997) • Care Canada, Reducing Vulnerability to Environmental Change Project, Bangladesh, http://www.acdi-cida.gc.ca/cida_ind.nsf/8949395286e4d3a58525641300568be1/45037088e38f49d885256b760063cc34?OpenDocument#REVCBangladesh • Care Norge, improving preparedness to disasters, http://www.care.no/?module=Articles;action=Article.publicOpen;ID=266;pa= • Fridtjof Nansens Institutt: klimaforhandlinger, biodiversitet • Noragric: Ofa et al. (2000), Molteberg (1997) • Department of Biology, University of Oslo: Ecological impacts of climate change • Utviklingsfondet (The Development Fund), food security and climate events in Honduras, http://www.utviklingsfondet.no/engelsk/indexe.htm • Dryland Coordination Group, studies on CDM, http://www.drylands-group.org/ • University of Bergen, Department of Geography, CROP Programme (http://www.svf.uib.no/sif/crop/backup/crop.htm), Meze-Hausken (http://www.nhh.no/geo/prosjekt/em/project98.html)
4. Integrate climate change in country programmes and PRSP processes	• DFID: Review of entry points for DFID on climate change (Chapter 5) • World Bank: Review of integration of Environment in I-PRSPs and PRSPs (Bojö and Reddy 2002) • OECD/DAC: guidelines for integration of the Rio Conventions (OECD 2002c) • Noragric: Forestry, poverty alleviation and Norwegian development cooperation (Ennals et al., 2003) • Bangladesh Centre for Advanced Studies/World Bank: Lessons learned from Bangladesh (Huq, 2002), http://www.bcas.net/ • IIED: Mainstreaming adaptation to climate change in Least Developed Countries (Huq et al., 2003) http://www.iied.org/climate_change/
5. Support network building and capacity development in developing countries	• AIACC: funds, training and mentoring of developing country scientists (Chapter 5) • UNDP/APF: National Communications Support Unit (Chapter 5) • NAPAs: National Adaptation Programs of Action (Chapter 5) • Globalisation and Poverty Programme (ODI/IDS), UK: Effective participation by developing countries in international governance, institutions and negotiations, http://www.gapresearch.org/governance/participation.html • Drought Monitoring Centre, Harare: Seasonal climate forecasts, http://www.dmc.co.zw/sarcof/SarcoF_process.htm

Eriksen 2000b; O'Brien ed. 2000; O'Brien and Leichenko 2000; O'Brien et al 2000; Aaheim and Sygna 2000; Eriksen 2001a; Eriksen 2001b; Eriksen and Olmos 2001; Kituyi and Eriksen, eds. 2001; O'Brien and Leichenko 2003; Leichenko and O'Brien 2002; Eriksen 2003; O'Brien and Vogel, eds. 2003.

Suggested priority area	Examples of technical expertise and operational collaboration partners
6. Support the documentation, strengthening and integration of local knowledge and skills, strategies for coping with climate events and changes.	• FAO: LinKS Project (http://www.fao.org/sd/links/about/about.html), Farmer Field Schools • World Bank: Indigenous knowledge programme (http://www.worldbank.org/afr/ik/) • University of Sussex: Scoones et al. (1996) • Climate Research Unit/Tyndall (Kelly and Adger 2000) • Dryland Coordination Group, studies on drought coping strategies, http://www.drylands-group.org/. Publications include Kebebew and Synnevåg (2001), Larsen and Hassan (2001) • Noragric, Agricultural University of Norway, Biodiversity and natural resource management programme, http://www.nlh.no/noragric/research/competenceareas.htm#biodiversity • Sokoine University of Agriculture, Tanzania: Seasonal weather forecasts and indigenous knowledge (Kihupi et al., 2003)
7. Promote pro-poor activities in the CDM and the adaptation funds	• World Bank: Community Development Carbon Fund, http://www.communitycarbonfund.org/ • Drylands Coordination Group/Noragric: Review of desertification control, rural development and CDM (Aune 2003) • Tyndall Centre, UK: Special Climate Change Fund (Dessai, 2003) • Tata Energy Research Institute, India; http://www.teriin.org/climate/cop6side.htm • African Centre for Technology Studies (ACTS), Nairobi • ENDA, Senegal: CDM in Africa (Sokona et al. undated), http://www.enda.sn/energie/cdm2.htm
8. Address consequences of trade and globalisation, equity issues	• Tyndall Centre, UK: Scales of governance and environmental justice (Adger 2001) • Globalisation and Poverty Programme, ODI/IDS, UK (Richards, 2003) • Oxford Institute for Energy Studies (Müller, 2002) • ICIMOD, Nepal: Globalisation and fragile mountain ecosystems (Jodha, 2000), http://www.icimod.org.np/

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Annex II: Concepts and definitions

Adaptation

Adaptation has only recently emerged as a separate topic; for long it was assumed that it would happen largely automatically or at very low cost. Adaptation has also been politically sensitive: many have viewed it as a diversion of the attention from the real climate problem, namely to reduce GHG emissions. The first IPCC Workshop on Adaptation was not held until 1998, ten years after IPCC was formed.

Adaptation refers to measures to reduce the sensitivity of a system, such as making agriculture less drought-sensitive, as well as increasing capacity to cope with an event, such as drought, once it takes place. *Coping capacity* refers to the ability to prepare for an anticipated event, respond to that event once it takes place, and recover from its effects, such as through accessing alternative sources of food and income when agriculture fails. *Coping* can be distinguished from adaptation in that it refers to the immediate actions in the face of an event or changes and ability to maintain welfare, whereas adaptation refers to long-term adjustments to the framework within which coping takes place (Adger 1996). Significantly, improving adaptation to current climate and strengthening coping can lead to measures that both address current vulnerability and contribute to adaptation to climate change (Burton 1997; Kelly 2000).

Development cooperation can support adaptation either through direct actions to reduce sensitivity and reinforce local coping and alternative livelihoods, or by strengthening the potential or ability of developing countries to make these adjustments to reduce sensitivity and reinforce coping options themselves. Thus, while the first alternative describes direct intervention in adaptation and the actual process of change, the second alternative would target the strengthening of *adaptive capacity*, the potential to institute such change[36].

Vulnerability

It is important to note that vulnerability in terms of local sensitivity and coping capacity is shaped partly by economic and political structures of marginalisation and the political ecology of resource control. These processes often operate on a global scale and are manifested, for example, in terms of trade. While adaptation at the local or national level may address the sensitivity and capacity of developing country populations, these populations will remain vulnerable to climate change to the extent that these global structures exist. Although outside the scope of most development cooperation activities, comprehensive climate change adaptation would ideally address sensitivity and coping capacity in terms of the national, regional and global scale structures of marginalisation, in addition to local level adjustments.

Vulnerability assessments is a term used to describe very diverse types of studies. One type of vulnerability assessments measures vulnerability with the goal of allocating resources effectively or to those most needy. Famine Early Warning Systems are tools to target intervention and aid at the most vulnerable areas and people during the course of an event. As a consequence, such studies have developed location-specific indicators of adversity measuring emerging impacts, including food stocks decline, livestock and food prices, and vegetation indices (Lonergan et al. 1999; FEWSNET 2000; Ramachandran and Eastman 2000; Zambia National Vulnerability Assessment Committee 2003). Studies are also emerging aiming to measure vulnerability at a national level, with the aim of exploring how future funding for adaptation, such as that derived from the Climate Convention, may be allocated equitably or effectively, according to national need and ability to adapt to climate change. Poverty assessments, human development indices, environmental vulnerability and sustainability indices that exist also capture some of the factors that shape vulnerability.

[36] Adaptation capacity sometimes refers both to the capacity to engage in coping in the short-term and adjustments in the long-term, such as in the IPCC.

A second type of vulnerability study aims at explaining vulnerability, identifying factors that lead to vulnerability and planning long-term adaptation. While some country vulnerability assessments have been carried out as part of obligations under the Climate Convention (such as Mwandosya et al. 1998) most of these studies are of a too general and aggregate nature to explain local vulnerability or assign priorities for action, leading to the initiation of the National Adaptation Programs of Action (NAPAs) currently being carried out (see Section 2.3). The IPCC has produced an assessment which describes vulnerability in different regions of the world (Watson et al. 1997). A number of academic studies are aiming to fill the current gap in understanding of vulnerability and generalise what actions constitute adaptation (such as Corbett 1988; Davies 1993; Gore 1993; Bohle, Downing et al. 1994; Glantz 1994; Yohe 2000).

Summary of key climate change terms:

Climate change	Changes over time in the values for climate parameters such as temperature, precipitation, wind speed and direction, and humidity. In the context of this study, this refers to the current increases in global temperatures due in part to human-induced emissions of greenhouse gases.
Mitigation	Human interventions to reduce the emissions of greenhouse gases or enhance the sinks of greenhouse gases in order to reduce the extent of global climate change.
Impacts	The effects of climate change, from the first order (direct effects of increased CO_2 concentrations in the atmosphere as well as changes in climate parameters on plants, animals and human beings), to downstream effects of such changes on ecosystems and societies.
Adaptation	Adjustments in practices, processes, or structures to take into account changing climate conditions, to moderate potential damages, or to benefit from opportunities associated with climate change. Includes measures to reduce the sensitivity of a system, such as making agriculture less drought-sensitive, as well as increasing capacity to cope with an event, such as drought.
Coping	The immediate actions in the face of an event or changes and ability to maintain welfare (in contrast to adaptation which refers to long-term adjustments to the framework within which coping takes place).
Vulnerability	The extent to which a natural or social system is susceptible to sustaining damage from climate change, determined by exposure, sensitivity and coping capacity (as well as structural processes).
Exposure	of the system to climatic hazards: the physical risk that such an event may take place.
Sensitivity	The degree to which a given change in climate will lead to positive or negative changes in a system, such as to the functions of an ecosystem or output from a particular type of agricultural production.
Coping capacity	The ability to prepare for an anticipated event, respond to that event once it takes place, and recover from its effects, such as through accessing alternative sources of food and income when agriculture fails.
Adaptive capacity	The potential or ability to institute adaptation; the capacity of a system to adjust practices, processes or structures to moderate or offset the potential damage or take advantage of opportunities created by a given change in climate.
Vulnerability assessments	Diverse types of studies, including: 1) studies aimed at measuring vulnerability with the goal of allocating resources effectively or to those most needy, such as Famine Early Warning Systems, and; 2) studies aimed at explaining vulnerability, identifying factors that lead to vulnerability and planning long-term adaptation, such as country vulnerability assessments carried out as part of obligations under the climate convention, as well as academic studies are aiming at enhancing the understanding of vulnerability and generalise what actions constitute adaptation.

Annex III: Acronyms and abbreviations

ADB	Asian Development Bank
AfDB	African Development Bank
APF	Adaptation Policy Framework (coordinated by UNDP)
AIACC	Assessments of Impacts and Adaptations to Climate Change
CBD	Convention on Biological Diversity
CCA/UNDAF	Common Country Assessment/United Nations Development Assistance Framework
CCD	United Nations Convention to Combat Desertification
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CIDA	Canadian International Development Agency
CO_2	Carbon dioxide
COP	Conference of the Parties
DAC	Development Assistance Committee of the OECD
DFID	UK Department for International Development
EA	Environmental Assessment
ENSO	El Niño-Southern Oscillation
FDI	Foreign Direct Investment
FEWS	Famine Early Warning Systems
GCM	General Circulation Models
GEF	Global Environment Facility
GHG	Greenhouse gases
GPG	Global Public Good
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Development Cooperation Agency)
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
IDB	Inter-American Development Bank
IFRC	International Federation of Red Cross and Red Crescent Societies
IISD	International Institute for Sustainable Development
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
ISDR	United Nations International Strategy for Disaster Reduction
IUCN	World Conservation Union
JI/AIJ	Joint Implementation/Activities Implemented Jointly
LA21	Local Agenda 21
LDC	Least Developed Countries
MDG	Millennium Development Goals
MFA	Ministry of Foreign Affairs, Norway
NAPA	National Adaptation Programs of Action
NEAP	National Environmental Action Plan
NGO	Non-Governmental Organisation
NORAD	Norwegian Agency for Development Cooperation
NSSD	National Strategies for Sustainable Development
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
PRSP	Poverty Reduction Strategy Papers
SCC Fund	Special Climate Change Fund
SEA	Strategic Environmental Assessment
SEI	Stockholm Environment Institute
TAR	Third Assessment Report of the IPCC

UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WSSD	World Summit on Sustainable Development, Johannesburg 2002

Annex IV: Review of international initiatives on climate change adaptation, poverty and development

Programmes and mechanisms of the Climate Convention and the IPCC

The Clean Development Mechanism (CDM)

There is considerable debate over whether and how the CDM could contribute to sustainable development and poverty alleviation, how the adaptation fund will work, and the potential role of development agencies. As mentioned in Chapter 2 above, the Clean Development Mechanism (CDM) under the Kyoto Protocol has a dual objective of emissions reductions and sustainable development, and a levy of 2% is to be put on all CDM transactions to contribute to an Adaptation Fund.

One challenge is how the Adaptation Fund can be made to work. The rules for its functioning are still not settled. The 2% levy for the adaptation fund has been criticised for giving the CDM a comparative disadvantage in relation to the other flexible mechanisms, and that it in effect puts the financial burden on developing countries. This is to be corrected for in 2005 with a levy on the other flexible mechanisms if the target of $1 billion for the Adaptation Fund is not reached by then (Richards 2003).

There is much controversy surrounding the CDM. Many are sceptical as to whether it will be able to promote sustainable development (McGuigan et al. 2002). It is argued that there may be little demand for CDM projects, particularly with the US opting out and the possibility of inclusion of "hot air" sales (Jotzo and Michaelowa 2002). This means that competition is likely to be high, and with the developing countries themselves defining the development criteria, they may downscale the criteria to attract funds. Another uncertain area is whether CDM projects will benefit the poor. Aune (2003) argues that community-level forestry projects could provide a tool for rural development and poverty alleviation. McGuigan et al. (op.cit.) note, however, that as CDM projects will involve many of the same risk factors as ordinary Foreign Direct Investment (FDI) "(…) CDM investments might follow the same pattern as FDI and leave out the poorest countries."

Donor agencies have a role to play in supporting developing countries in building capacities to attract CDM projects while upholding environmental and development standards. Though rules for the CDM are not settled yet, it is generally agreed that ODA funds shall not be directly used for purchasing CERs in CDM projects. However, Richards (2003) argues that donors can act as intermediaries, supporting developing countries by, for example:

- Developing a legal and policy framework for the CDM
- Developing institutional capacity for identifying and designing pro-poor CDM projects
- Lowering the transaction costs of sustainable development-oriented CDM projects
- Introducing risk mitigation mechanisms to increase the attractiveness of projects
- Securing property rights
- Developing supportive learning networks

National Adaptation Programs of Action (NAPAs)

NAPAs were established to address the urgent and immediate national needs of Least Developed Countries (LDCs) in adapting to the adverse impacts of climate change. NAPAs are funded by the LDC fund, which was one of three funds established at COP7 in Marrakech. An LDC expert group (LEG) was also set up at COP7 to advise on NAPA preparation. NAPAs for those LDCs that are interested are expected to be completed during 2004. When developing a NAPA, it is essential that the grassroots, local community is recognised as the main stakeholder. Community-level consultations will be one of the major inputs to the NAPA document. Similarly, countries should take into account current vulnerability and existing coping strategies at grassroots level to identify priority adaptation

activities (rather than focusing on scenario-based modelling to assess future vulnerability and long-term national policies).[37]

The Adaptation Policy Framework (APF)

The APF was set up by the UNDP National Communications Support Unit to provide guidance for developing and assessing climate change adaptation policies and measures. It is directed at national climate study teams and policy makers, and its main objective is to facilitate the incorporation of adaptation into a country's national development strategy. The APF is linked to NAPAs in that countries could utilise the stakeholder participatory process outlined in the UNDP Adaptation Policy Framework.

Assessments of impacts and adaptations to climate change (AIACC)

AIACC is a global initiative developed in collaboration with the IPCC and funded by the Global Environment Facility. AIACC aims to enhance the scientific capacity of developing countries to assess climate change vulnerabilities and adaptations, and generate and communicate information useful for adaptation planning and action. AIACC provides funds, training, and mentoring of developing country scientists to undertake multi-sector, multi-country research of priority to developing countries.[38]

Multi- and bilateral development organisations and NGOs

The OECD

Climate change activities within OECD include:

OECD Development and Climate Change Project: The project's objective is to provide guidance on how to mainstream responses to climate change within economic development planning and assistance policies, with natural resource management as an overarching theme. The project explores the trade-offs of "mainstreaming" climate change responses into development assistance, projects and plans. Activities and publications include:

- Informal Expert Meeting 13-14 March 2002 (OECD 2002a): The meeting brought together experts both from the climate policy and the development community.
- Concept paper on scope and criteria for case study selection (Agrawala and Berg 2002): outlines the analytical framework for an OECD project on Development and Climate Change. A three-tier framework is also described for the project case studies that will provide a country-level overview of principal climate change impacts and vulnerabilities, followed by an in-depth analysis at a sectoral or regional/local level on how climate responses could be mainstreamed into particular development policies and projects. Main emphasis of the case studies will be on adaptation responses.
- Climate relevant policy assessment: Recent work in the OECD, IEA, NEA and ECMT (OECD 2002b). The paper presents an overview of current OECD, IEA, ECMT and NEA work that may be relevant for designing, implementing and assessing domestic policies and measures for climate change mitigation (and adaptation) as well as fostering international co-operation on climate change.
- Case studies focus on natural resource management in seven countries: Bangladesh, Egypt, Fiji, Nepal, Tanzania, Uruguay, and Vietnam.

OECD/DAC guidelines:

- *Integrating the "Rio Conventions" in Development Co-operation* (OECD 2002c) provides an overview of the linkages between the conventions on biodiversity, climate change and desertification, and describes ways for integration and synergies.

[37] http://www.undp.org/cc/napa.htm

[38] www.start.org/Projects/AIACC_Project/about/right_frame.html

- *Poverty Reduction* (OECD 2001b) states that poor people are vulnerable to natural disasters and that the, "incidence and severity of these may be aggravated by global climate change, which is expected to accelerate." (p.40). The document also raises the concern that, "Global environmental pollution raises important coherence issues for OECD governments, both in relation to any unilateral actions they may take to reduce global warming and to restore the ozone layer, and in relation to the positions they take at relevant international forums." (p. 99). Climate change is one of the issues addressed within, "Areas of policy coherence," under "Natural resources and environmental sustainability."
- *Strategies for Sustainable Development: Practical Guidance for Development Co-operation* (OECD 2001a) says that, "Developing countries, and notably the least developed, are expected to be the most vulnerable to the impacts of global climate change, although their current contribution to the problem is small." (p. 20)

2001 Pilot Project on Sustainable Development and Climate Change consists of four case studies of Brazil, India, the West Africa region and South Africa. The studies emphasise mitigation. Case study authors identify issues and approaches relevant to an evolving regime for addressing climate change, given various national and regional circumstances, including economic profiles, political interests, institutions and capacities. The authors also consider the risks of climate change and the role of climate mitigation and adaptation policies within a sustainable development context, identifying possible synergies between development priorities and climate policy objectives (http://www.oecd.org/EN/document/0,,EN-document-55-2-no-28-31144-55,00.html).

The UNDP (United Nations Development Programme)

Climate change is a *crosscutting* issue within the UNDP-supported efforts under the Millennium Development Goal and the WEHAB (Water, Energy, Health, Agriculture and Biodiversity), which was proposed by UN Secretary-General, Kofi Annan as part of the preparations for the Johannesburg summit. The WEHAB framework was proposed as part of the Summit's Draft Plan of Implementation.[39]

The UNDP has launched *The National Communications Support Programme*[40] in co-operation with UNEP and the UNFCCC Secretariat. It works with around 130 participating countries in the regions of West, South and East Africa, the Arab States, Europe and the Commonwealth of Independent States, Asia, the Pacific, the Caribbean, and Central and South America. Core funding is provided by the GEF. Funding is also provided by the European Commission, Denmark, Finland, Norway and Switzerland. The Programme was established to provide technical support to enhance the capacity of non-Annex I Parties to prepare their initial National Communications. It also aims to promote the quality, comprehensiveness, and timeliness of initial National Communications. In this context, the areas in which countries have been seeking most support are: (1) preparation of their greenhouse gas inventory, (2) abatement studies, and (3) vulnerability and adaptation assessments. The National Communications Support Programme is closely linked to two other adaptation initiatives:

- NAPA (National Adaptation Programs of Action), which the Programme supports (see above)
- The Adaptation Policy Framework (APF) aims to assist Parties in mainstreaming the development of national strategies for adaptation in the sustainable development policy context. The ultimate objective of the APF is to enhance human well-being in the face of the threats and opportunities of climate variability and change. The APF facilitates the development of policies to increase adaptive capacity and the implementation of adaptation measures to reduce the potential negative impacts and exploit opportunities of climate variability and change. The APF is linked to NAPAs in that countries could utilise the stakeholder participatory process outlined in the UNDP Adaptation Policy Framework. When developing a NAPA, it is essential that the grassroots, local community is recognised as the main stakeholder. Community-level consultations will be one of the major inputs to the NAPA

[39] http://www.johannesburgsummit.org/html/documents/summit_docs/0902_conf16_add2.pdf

[40] http://www.undp.org/cc/index2.htm

document. Similarly, countries should take into account current vulnerability and existing coping strategies at grassroots level to identify priority adaptation activities (rather than focusing on scenario-based modelling to assess future vulnerability and long-term national policies)[41].

The *Small Grants Programme (SGP)* was established in 1992. Grants are awarded for activities which support community-level action in the biodiversity, climate change, and international waters focal areas. Fifteen per cent of the 3,000 projects funded to date are on climate change, focusing on mitigation. To be eligible, activities must either demonstrate the removal of local barriers to energy conservation and energy efficiency, or promote the adoption of renewable energy.[42]

Some concrete activities include (UNDP 2001):
- Building local capacity to respond to climate-related environmental changes in Mauritania
- Adaptation to Climate Change in Central America, Mexico and Cuba
- Promoting Synergies: Co-ordinating UN Conventions and Local Sustainable Development Priorities (Morocco)

The World Bank

Attention to climate change in the World Bank is part of the environment strategy endorsed July 2001, focusing on three main challenges: 1) improving quality of life, 2) improving the quality of growth, and 3) improving the quality of the regional and global commons (Huq 2002).[43]

The World Bank is working in three main areas on climate change adaptation:
1. *Assessments* (Caribbean and Bangladesh; Agriculture in Africa; Quick Assessments Best Practices)
2. *Prioritization and Mainstreaming* (Assessment of PRSPs, Redesign of Madagascar Port Project; Integration with development planning in Kiribati; Mainstreaming Climate Change in the Caribbean; Cost-Benefit Assessment Methodology)
3. *Barrier Removal* (Disaster Management Facility; Addressing drought management in central Asia; Scientific information needs of farmers and fishermen in Andean countries)

Burton and Van Aalst (1999) reviewed World Bank policies with regard to climate change adaptation and found that climate risks were not well assessed in project preparation and in Country Assistance Strategies. They concluded that there are considerable gaps in procedures regarding project design, implementation and evaluation. Further, security, in terms of reduced vulnerability, is one of the World Bank's three pillars of poverty alleviation (Christoplos 2001; World Bank, OECD, UNDP 2000). The World Bank has aimed at mainstreaming disaster prevention into all development practices, for example, through the Disaster Management Facility, established in 1998 (Christoplos 2001).

The Climate Change Team, located within the Environment Department, provides resources and technical advice for the World Bank's participation in the climate change negotiations. It also leads the Bank's efforts related to climate change vulnerability and adaptation issues for its client countries, and coordinates these efforts with the Bank's Disaster Management Facility.[44] The GEF projects of the World Bank focus on mitigation, in the areas of energy efficiency and conservation, renewable energy, energy technologies, and sustainable transport.

[41] http://www.undp.org

[42] http://www.undp.org/sgp/

[43] The Environment Strategy is described at http://lnweb18.worldbank.org/ESSD/essdext.nsf/41DocByUnid/BC26536DFC75818685256B49005594B3?Opendocument

[44] http://lnweb18.worldbank.org/ESSD/essdext.nsf/46ParentDoc/ClimateChange?Opendocument

Main instruments are Bank lending, PHRD Grants (for project development and pilots), GEF Grants, National Adaptation Strategy Studies (NASS), and the Vulnerability and Adaptation Resources Group. Through the above the Bank is also conducting capacity building activities. (Huq and Reid 2002).

Ongoing projects:

- *CPACC (Caribbean Project on Planning for Adaptation to Climate Change)*, a US$6.4 million project funded as an enabling activity by the GEF through the World Bank (implementing agency), and executed through the Organization of American States (OAS). The development objective is to mainstream climate change adaptation strategies into the sustainable development agendas of CARICOM countries, including Small Island and Low-lying Developing States (the participating countries are: Antigua and Barbuda; The Bahamas; Barbados; Belize; Dominica; Grenada; Guyana; Jamaica; St. Kitts; St. Lucia; St. Vincent and the Grenadines; Trinidad and Tobago). This will be sought through support for: (i) the integration of climate change considerations into development planning and sectoral investment projects; (ii) appropriate technical and institutional response mechanisms for adaptation to global climate change; and (iii) regional climate change monitoring and modelling.[45]
- *Integrating Adaptation Concerns into Development in Bangladesh*, initiated by the World Bank office in Dhaka with the aim of mainstreaming climate change adaptation issues in the regular development strategies in Bangladesh, to serve in turn as an example for other countries. The study consisted of two main activities, first, to analyse and communicate climate change scenarios to policy makers and planners, and second, to identify possible adaptation measures and discuss their feasibility with stakeholders. The sectors studied (identified as being most vulnerable) were coastal resources, freshwater flows, agriculture, human health, and ecosystems and biodiversity (Huq 2002).

The World Bank's Climate Change Team is located within the Environment Department and is part of the Bank's Environmentally and Socially Sustainable Network. The team supports participation in the climate change negotiations and provides technical advice to the preparation of GEF projects. The work is coordinated with the Bank's Disaster Management Facility.[46]

The GEF

As the financial mechanism for the Climate Convention, the GEF has funded vulnerability and adaptation assessments under the National Communications. At present, GEF funding for adaptation has been limited to awarding the Marrakech adaptation funds and providing support for the preparation of NAPAs (see Chapter 2). NAPAs are meant to be completed by next year, after which the situation will be reviewed for potential further expansion. The GEF funds projects through its implementing agencies (the UNDP, UNEP and the World Bank), while projects may be executed by other partners working in specialised areas.

The International Strategy for Disaster Reduction (ISDR)

The ISDR is the successor to the International Decade for Disaster Reduction (1990-99). It has published a global review of disaster reduction initiatives (ISDR 2002), which stresses the need for, "forging links between climate change adaptation and disaster reduction" (p.292). It highlights that much of the information requested from Parties to the Convention will be of use for disaster reduction strategies (for example, information on policy frameworks for implementing adaptation measures and response strategies in the context of disaster preparedness). The review also puts weight on the wealth of knowledge that exists in traditional coping strategies, which should form the basis for future strategies. Earlier this year (2003), the ISDR launched a project to link natural disaster reduction and adaptation to climate change. The project seeks to identify how knowledge and experiences drawn from coping with today's climate variability and extreme weather events can provide the basis for

[45] http://www.cpacc.org/ and http://lnweb18.worldbank.org/ESSD/essdext.nsf/42ByDocName/RegionalInitiativesCaribbeanPlanningforAdaptationtoGlobalClimateChange

[46] http://lnweb18.worldbank.org/ESSD/essdext.nsf/46ByDocName/AboutUs

adaptation, and explores the type of easily packaged information that can be fed into the ongoing work on adaptation to climate change. Further, the project seeks to identify research gaps on the climate adaptation side; it also investigates what is needed by the disaster community to take climate change into account, and examines how the two communities could be brought closer together.[47]

The European Commission (EC)

The EC recently launched a communication entitled, "Climate Change in the context of development co-operation", proposing an EU action plan aimed at integrating climate change concerns into EU development co-operation activities (18th March 2003):

- The EU Commissioner for Development and Humanitarian Aid Poul Nielson stated, "Climate change is as much a development problem as it is an environmental problem...the ability of developing countries to adapt to climate change is undermined by a lack of financial resources, adequate technology and stable and effective institutions... The Commission [will assist] developing partners in reconciling their legitimate needs for economic development with the protection of the environment and sustainable use of resources. We believe the best way to do this is by addressing climate change concerns within EU development co-operation activities in complete coherence with the overarching objective of poverty reduction."
- Environment Commissioner Margot Wallström added, "The developing countries are the most vulnerable to climate change and therefore deserve our full support in addressing this threat. The Kyoto Protocol offers them opportunities to combine efforts to combat climate change with the objective of economic development through the Clean Development Mechanism, as well as additional funding for measures to reduce emissions, adapt to climate change and build capacity. Our strategy today shows that we are willing to go further by making climate change an important cross-cutting objective for our development co-operation policy."

The Commission is proposing a strategy that assists EU partner countries in meeting the challenges posed by climate change, in particular, by supporting them in the implementation of the UN Framework Convention on Climate Change and the Kyoto Protocol. The communication argues that climate change concerns and its potentially disastrous long-term implications on, for example health, sustainable livelihoods and economic development in developing countries, need to be fully mainstreamed into EU development co-operation. Climate change concerns must be addressed, and it can and should be done in a way that is coherent with the overarching objective of poverty reduction. Beyond development co-operation, addressing climate change concerns is an integral part of the EU strategy for sustainable development as expressed before, during and in follow-up to the World Summit on Sustainable Development.

Four strategic priorities are identified:

(i) Raising the policy profile of climate change, both among EU development policy makers and practitioners, and in EU partner countries,
(ii) Support to EU partner countries for adaptation to the adverse effects of climate change,
(iii) Support to EU partner countries for mitigation of emissions of greenhouse gases causing climate change, and
(iv) Capacity development in EU partner countries.

The associated action plan translates the strategic recommendations into concrete actions whilst placing the emphasis on adaptation to climate change, capacity development and research. Through this Communication, the Commission invites the European Parliament, Member States, civil society and other stakeholders to contribute to the formulation and implementation of a coherent and co-ordinated EU approach to climate change in the context of development co-operation.

The European Commission has earlier published a working paper on EC economic and development co-operation and climate change (European Commission 1999a), focusing mainly on mitigation issues.

[47] Contact person: Carmen Schlosser, ISDR (abylis@wanadoo.fr)

The Inter-American Development Bank

The Inter-American Development Bank's work on climate change includes an action plan on disaster response to reduce the sources of vulnerability in catastrophic events. A new policy on Natural and Unexpected Disasters was adopted in 1998 and an Action Plan for Disaster Prevention and Mitigation was launched in 2000, which includes the creation of a new financing facility for prevention and mitigation activities. As more information emerges about the specific localized impacts of climate change on the Latin American and the Caribbean region, the geographic areas at risk will be targeted for assistance in developing and implementing sustainable development strategies for disaster prevention. With regard to the category of gradual non-catastrophic impacts, the Bank has initiated a programme of assessing what such impacts are likely to be for the most at-risk areas of the region, as well as appropriate responses. In an initial activity in partnership with the UNDP, the IDB will work with the Caribbean Island nations, whose reliance on tourism for economic growth could be adversely impacted by climate change (Inter-American Development Bank undated; Inter-American Development Bank undated).

GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit)

The Climate Protection Programme for developing countries (CaPP) was launched in October 1993 and is now in its fourth phase (2001-4). The main purpose of the project is to mainstream attention to climate change in relevant projects of German development cooperation. The first three phases focus solely on mitigation, whereas improving adaptation is included as a main objective of the fourth phase (GTZ 2001). The main focus is on the energy sector, while other important areas are transport, waste management and industry. The forestry sector will also become increasingly important following the decision taken at COP6 to allow sink projects in the CDM. Phase 1 supported country inventories of GHG emissions and sinks, as well as potential measures to reducing emissions. Phase 2 supported individual countries in preparing their national reports, as well as concrete emission-reduction activities in the energy and transport sector. The third phase focused mainly on supporting activities related to the CDM, and collecting experiences related to the preparation and organisation of CDM projects.

On adaptation, the fourth phase will incorporate measures to adapt to climate change and to document their poverty-relevant effects. Activities will include:

- Evaluating the status quo, i.e. how adaptation measures are implemented in current projects
- Developing orientation aids for the integration of adaptation in project planning and implementation, including determining the poverty-alleviating impacts
- Introducing orientation aids in the international arena, e.g. at the GEF adaptation funds
- Offering advice on adaptation and project planning, implementation and project impact monitoring
- Supporting exemplary individual measures that serve the purpose of adaptation to climate change

Further, increasing emphasis is given to coordination with other convention projects (biodiversity, desertification) (GTZ 2001).

The Canadian International Development Agency (CIDA)

CIDA has three broad approaches regarding climate change and adaptation (Huq and Reid 2002), namely:

1. Mainstreaming, in particular through addressing the need to improve the overall capacity of a country/system to adapt to changes and shocks. Improving poverty eradication through sustainable development is seen as one way of increasing adaptive capacity. CIDA is mainstreaming climate change through, for example, Country and Regional Development Programming Frameworks (CDPFs and RDPFs).
2. Managing the Canada Climate Change Development Fund (CCCDF) on behalf of the Government of Canada. The Fund was established in 2000 and has a budget of Can$100

million over five years. The fund is supporting 42 climate change projects on both mitigation and adaptation (emissions reductions, capacity building, adaptation policy development, carbon sequestration). The Fund currently supports seven adaptation projects, amounting to Can$16 million. Seventeen per cent of projects are currently funded in the following countries/regions: India, El Salvador, the Sahel, Bangladesh, Vietnam, the Caribbean and the South Pacific.

3. Supporting the development of National Adaptation Programs of Action (NAPAs). These are designed for LDCs. Through NAPAs, CIDA is looking into synergies between the UNFCCC and the conventions on desertification and biodiversity.

CIDA also works with climate change in the following ways: through identifying synergies among the conventions on climate change, biodiversity and desertification, and mainstreaming them in development planning; identifying ways to integrate climate change into CIDA programming; supporting the creation of the LDC Fund and committing an initial contribution of Can$10 million; supporting the National Adaptation Programmes of Action (NAPA); and participating in the World Bank's Prototype Carbon Fund (PCF) Initiative.

The UK Department for International Development (DFID)

DFID does not have a climate change policy *per se*, but climate change has been discussed as part of the broader context for poverty elimination and the environment in a recent report (DFID 2000). The report recognises that climate change may exacerbate negative environmental trends such as the spread of disease, increases in extreme weather events, sea-level rise, and others. It further recommends building climate change into programmes and policies to achieve win-win solutions, and the need for bringing the Kyoto Protocol into force. On climate change, listed priorities for DFID include policy coherence and coordination (including between the climate, desertification and biodiversity conventions) (DFID 2000).

A Parliamentary report (House of Commons 2002) found encouraging signs of greater attention to climate within DFID, but expressed concern that DFID continues to regard climate change as "just another environmental problem" (p. 68), and a subset of environmental issues rather than as a distinct challenge (DFID 2002b). The report stressed the need for looking at climate change as a development problem, and concluded that DFID does not need to radically change its policies, but that it is more a question of developing indicators and a system of climate impact assessments. Millennium Development Goals (MDGs), PRSPs and NSSD are highlighted as key entry points at the country level, to make sure that climate change is mainstreamed into development policies, while ensuring that it does not lose out to short-term environmental priorities.

A report of the DFID Development Committee (DFID 2002a) concludes that, among other measures, DFID should:

- Address climate change mitigation through participation in global fora and in discussions on issues such as carbon tax
- Address adaptation through promoting win-win solutions (more efficient energy, better pricing systems) and best practice from the UK; avoid supporting investments leading to maladaptation
- Increase dialogue with other donors/agencies and seek to mainstream climate change in PRSs. Constraints to mainstreaming are said to be the differing timeframes of national strategies, the MDGs, and the Climate Change Convention
- Raise awareness within its own departments, and prepare guidelines on what country programmes can do and what important events DFID should become involved in

A study commissioned by DFID found that activities that could be attributed to climate change amounted to GB£201 million over the years 1997-2000. The study reviewed 604 DFID projects in the areas of sustainable agriculture, biodiversity, sustainable forest management, energy efficiency, desertification, and water and sanitation.

Concrete climate change activities to date include (DFID 2002c):
- Preparation of summary reports of the latest IPCC report for awareness raising within DFID
- Funding of the PRECIS portable regional climate model and capacity development to improve local level information and information to policy makers. One of the selected pilot sites is Bangladesh
- Support to the preparation of NAPAs (participation in Least Developed Countries expert group and financial support)
- Participation in developing the report "Poverty and Climate Change: Reducing the Vulnerability of the Poor," presented at COP8 in Delhi.

DFID has also selected 11 countries where it plans to work to incorporate environmental issues, sustainable development and climate change into country policies: Kenya, India, China, Russia, Uganda, South Africa, Zambia, Mozambique, Malawi, Nepal and Ghana (House of Commons 2002).

The United States Agency for International Development (USAID)
USAID's Climate Change Initiative (1998-2002) had three main goals: (1) to support developing country participation in the UNFCCC, (2) to reduce net GHG emissions from the energy and land use/forestry sectors, and (3) to decrease developing country vulnerability. While the program seems to have a clear bias towards emission reductions efforts, support for vulnerability and adaptation has involved (USAID 1997; USAID 2000):

- Vulnerability analysis in Honduras (water supply/disaster preparedness), Indonesia, Tanzania, and Mexico (coastal zone management)
- Mainstreaming of adaptation in national strategies for water supply (Panama) and ecosystem/economy (Guinea)
- Workshop on vulnerability and adaptation (Senegal)
- Strengthening worldwide climate-related disaster preparedness and mitigation, particularly in Mexico and Central America; support to development of adaptation plans for extreme climate events

The Netherlands Climate Change Studies Assistance Programme
The Netherlands Climate Change Studies Assistance Programme[48] was launched in 1996 with funding from the country's Ministry of Foreign Affairs (Environment and Development Department). The goals are: to enable developing countries to implement commitments under the Climate Convention, to create greater awareness of climate change issues, and to increase the involvement of policy makers, scientists and the general public.

The programme is managed by the Institute for Environmental Studies (IVM) in co-operation with the Netherlands Coastal Zone Management Centre (CZMC). Studies on vulnerability and adaptation are planned or have been undertaken in Bhutan, Bolivia, Colombia, Costa Rica, Ecuador, Ghana, Kazakhstan, Mali, Mongolia, Senegal, Surinam, Yemen, and Zimbabwe. The work has been coordinated with the IVM/UNEP Handbook on Methods for Climate Change Impact Assessment and Adaptation Strategies. Special attention has been given to issues of South-South co-operation, livelihood systems (especially the poor in river basins), coastal zones, natural resource sectors under high pressure, the health sector, and disaster preparedness and reduction (Dorland 2002). The Netherlands also participated in the preparation of a consultation draft on poverty and climate change (AfDB et al. 2003).

The Australian Agency for International Development (AusAID)
AusAID has a climate change programme with a budget of Aus$237 million, aiming to implement projects that reduce poverty whilst producing positive climate change outcomes. Work is undertaken mainly in the Pacific Island nations. Adaptation is one of four priority areas, focusing on capacity building and technology transfer in monitoring and planning, with a focus on conducting vulnerability and impact assessments, and identifying adaptation options. Other areas include energy (technology

[48] For details, see http://130.37.129.100/english/o_o/instituten/IVM/research/climatechange/

transfer and capacity building), forestry and land management (carbon sinks, reforestation and sustainable forestry), and Focus on Pacific Island States (among others, improving disaster preparedness). (McGuigan et al. 2002).

The Danish International Development Agency (Danida)
Danida has not to date developed a comprehensive document or strategy setting out the linkages between development aid and climate change. Work in the area has so far consisted of documents setting out linkages at the project level in relation to OECD/DAC (Frode Neergaard, pers. comm.). Danida is also providing financial support to the LDC fund for development of NAPAs (Udenrigsministeriet 2002).

The Swedish International Development Agency (Sida)
Sida is in the process of developing a strategy on climate change. Activities to date include support for a review of Sida's relationship to the Climate Convention (SIDA 1998), and a review of the issues of climate change, vulnerability and social justice (Kasperson and Kasperson 2001).

The World Conservation Union (IUCN), the International Institute for Sustainable Development (IISD), the Stockholm Environmental Institute (SEI) and the Worldwatch Institute
The IUCN, IISD, SEI and the Worldwatch Institute have launched a joint project to bring together climate change adaptation, disaster reduction and environmental management strategies to reduce communities' vulnerability to climate change. A Task Force, established in 2001, has developed a concept paper (Burton et al. 2003). The project's aims are to (1) identify environmental actions that reduce the vulnerability of social and economic systems; (2) enhance the role of these activities by offering a tool kit of options with detailed examples of their application to relevant actors in research, advocacy, policy-making and industry; (3) build the capacity of local institutions in regions and countries vulnerable to climate-related disasters to assess and respond to the environmental sources of vulnerability; and (4) create a platform for integrating environmental management measures that reduce community vulnerability into existing policy frameworks and international strategies on disasters mitigation, climate change adaptation, biodiversity conservation and poverty alleviation. It will produce case studies, guidelines and a network of institutions at the regional and national level with the capacity to assess and address vulnerability to climate-related disasters.

The IUCN has prepared a Climate Change Strategy, aiming to mitigate and adapt to climate change using an ecosystems approach. They also aim to catalyze action by linking science with policy and practice. The strategy is guided by the following basic principles:

- Implementation of the Climate Convention and the Kyoto Protocol needs to be environmentally sound in order to be effective and sustainable
- Conserving biodiversity, ensuring social equity, alleviating poverty and improving welfare are necessary to mitigate and adapt to climate change
- Synergies with the conventions on biodiversity, desertification and wetlands will enhance implementation of the UNFCCC and its Kyoto Protocol
- Active participation of civil society, governments and the private sector is required to mitigate and adapt to climate change

The objectives are:

- To understand climate change, including developing policy options and build decision-support systems to provide information on climate change, ecosystems and communities
- To strengthen capacity for addressing climate change, including providing support for negotiations, national communications, policy development, awareness raising and public education
- To adapt to climate change, by assessing vulnerability and designing measures to adapt. Adaptation implies ecosystem approaches to flood, drought and disaster mitigation, and to the management of water, wetlands, forests and coastal and marine resources

- To promote equitable climate change solutions that support biodiversity, involving the development of best practices for carbon sequestration in terms of conserving biodiversity and supporting livelihoods

The International Institute for Environment and Development (IIED), Climate Change Programme
Established in 2001, the programme's goal is to enhance understanding of the linkages between sustainable development and climate change. Priority themes include adaptation capacity in developing countries, climate change and sustainable livelihoods linkages in developing countries, capacity strengthening in developing countries, information dissemination, equity, and enhancing opportunities for developing countries to take advantage of opportunities offered for carbon trading, including the CDM (Huq et al. 2003). The Climate Change Programme is partly funded by NORAD.

The World Water Forum
The World Water Forum seeks to establish a global programme of dialogues fostering communication between the climate science and water management sectors, and to incorporate climate change into integrated water management programmes. The recent Third World Water Forum in Japan (16-23 March, 2003) emphasised the need to focus on the effects of climate-induced extreme events on floods and droughts.[49]

[49] http://www.world.water-forum3.com/2003/eng/press/pressrelease/press0316-03.html

Table 8. International initiatives on climate change adaptation, poverty and development

Name of organisation/ Programme	Actions /Initiatives	Main focus	Year started	Budget	Recent and ongoing adaptation activities/projects	Level	Relevant websites
World Water Forum	Establish a global programme on climate science and water management sectors	Integrate climate change into water resources planning	2002		Discussion in World Water Forum (March 2003)	International	www.world.water-forum3.com/2003/eng/press/pressrelease/press0316-03.html
SIDA	Developing strategy on climate change for SIDA	Integrate climate change into Sida's programme			Review of issues of climate change, vulnerability and social justice (Kasperson and Kasperson 2001)	International	
AusAID	Climate Change Programme	Vulnerability and impact assessments, identifying adaptation options	2000	Aus$237 milion	Projects in Pacific Island Nations	Country/Region	
EC	Climate Change in the context of development co-operation	EU action plan aimed at integrating climate change concerns into EU development co-operation activities	1999		Review of EC Economic and Development Co-operation: Responding to the new challenges of Climate Change (European Commission 1999a)	Country/Region/international	http://europa.eu.int/comm/development/development_old/lex/en/climate.htm
Inter-American Development Bank	Action plan on disaster response Program of assessing climate change impacts for the most at-risk areas of the region	Disaster mitigation and risk analysis			In an initial activity in partnership with the UNDP, the IDB will work with the Caribbean Island nations, whose reliance on tourism for economic growth could be adversely impacted by climate change	Region	http://www.iadb.org/sds/ENV/site_2492_e.htm
The Netherlands	Climate Change Studies Assistance Programme	To enable developing countries to implement commitments under the Climate Convention, to create greater awareness of climate change issues, and to increase the involvement of policy	1996		Studies on vulnerability and adaptation are planned or have been undertaken in Bhutan, Bolivia, Colombia, Costa Rica, Ecuador, Ghana, Kazakhstan, Mali, Mongolia, Senegal, Surinam, Yemen, and Zimbabwe	Country	http://130.37.129.100/english/o_o/instituten/IVM/research/climatechange/

Name of organisation/ Programme	Actions /Initiatives	Main focus	Year started	Budget	Recent and ongoing adaptation activities/projects	Level	Relevant websites
		makers, scientists and the general public					
GEF	National Communications Adaptation Funds (3)	Funding mechanism for the Climate Convention Funding of adaptation activities Funding of NAPAs (through the UNDP)	1994/ 2001		National Communications NAPAs	Country	www.gefweb.org
CDM	Adaptation Fund, 2% of CDM transactions	Funding for adaptation to climate change in developing countries	Not started	Depends on activities	Not started	Country	http://unfccc.int/cdm/index.html (CDM) http://www.gm-unccd.org/FIELD/Multi/GEF/FR_Ad.htm (Adaptation Fund)
NAPA	National Adaptation Programs of Action	Address urgent and immediate national needs of LDCs for adapting to the adverse impacts of climate change	2001-2		NAPAs to be finished by 2004	Country	www.undp.org/cc/napa.htm
CIDA	- Canada Climate Change Fund (CCCDF) - Mitigation and adaptation projects	Integrate climate change with poverty, environment and development		Can$100 million	Adaptation Program: Projects in India, El Salvador, the Sahel, Bangladesh, Vietnam, Caribbean and the South Pacific	Country/ International	http://www.acdi-cida.gc.ca/climatechange
DFID	Review of DFID policies and programmes	Adaptive capacity, sustainable development, poverty eradication, MDGs	2001		Case studies of 11 countries (Kenya, India, China, Russia, Uganda, South Africa, Zambia, Mozambique, Malawi, Nepal and Ghana)	International /Country	www.dfid.gov.uk
GTZ	Climate Protection Programme for developing countries (CaPP)	Incorporate measures for adaptation in GTZ's work and to document their poverty-relevant effects	2001-4		- evaluate status quo for integration of adaptation in GTZ projects - develop tools for integration of adaptation in project planning and implementation		http://www.gtz.de/climate/english/

Name of organisation/ Programme	Actions /Initiatives	Main focus	Year started	Budget	Recent and ongoing adaptation activities/projects	Level	Relevant websites
					- introduce tools for integration of adaptation internationally, e.g. in GEF funds - give advice on integration of adaptation in project planning, implementation and monitoring; and - support individual measures for adaptation to climate change		
IUCN	Task Force on Climate Change, Vulnerable Communities and Adaptation	Livelihoods and climate change adaptation; reducing risk and strengthen resilience	2001		Consultation Draft (Burton et al. 2003) and other documents Planning of case studies	International/ Country	www.iisd.org/natres/security/ccvca.asp
OECD	- Development and Climate Change Project - DAC Guidelines	Guidance on how to mainstream responses to climate change within economic development planning and assistance policies	2002		Expert Meeting March 2002, Concept paper, policy assessment, case studies	International/ Country	http://www.oecd.org/EN/document/0,,EN-document-517-nodirectorate-no-21-31749-8,00.html
UNDP	National Communications Support Programme	Technical support to non-Annex I Parties to prepare their initial National Communications	2001-2		Support to NAPAs by LDCs	Country/ International	http://www.undp.org/cc/index2.htm and http://www.undp.org/seed/eap/html/climate.htm (Climate change and CDM)

Name of organisation/ Programme	Actions /Initiatives	Main focus	Year started	Budget	Recent and ongoing adaptation activities/projects	Level	Relevant websites
USAID	Climate Change Initiative (CCI)	1) Developing country participation in UNFCCC 2) Decrease emissions 3) Decrease vulnerability	1998-2002		- Vulnerability analysis in Honduras (water supply/disaster preparedness), Indonesia, Tanzania and Mexico (coastal zone management). - Mainstreaming of adaptation in national strategies for water supply (Panama) and ecosystem/economy (Guinea) - Workshop on vulnerability and adaptation (Senegal) - Strengthening worldwide climate-related disaster preparedness and mitigation, particularly in Mexico and Central America; support to development of adaptation plans for extreme climate events	Country/Region	http://www.usaid.gov/environment/climate_change.html
World Bank	- Climate Change Team - Caribbean Project on Planning for Adaptation to Climate Change - Integrating Adaptation Concerns into Development in Bangladesh	- Technical advice to preparation of GEF projects - Support to pilot studies - Funding			- CPACC (Caribbean Project on Planning for Adaptation to Climate Change) - Integrating Adaptation Concerns into Development in Bangladesh	Country/ Region/ International	http://lnweb18.worldbank.org/ESSD/essdext.nsf/46ParentDoc/ClimateChange?Opendocument and http://lnweb18.worldbank.org/ESSD/essdext.nsf/46ByDocName/KeyThemesVulnerabilityandAdaptationPovertyandClimateChange
ISDR	International Strategy for Disaster Reduction	Disaster Reduction	1999		- Report on disaster reduction - Study on climate change and disaster reduction	International	www.unisdr.org

AIACC	Assessments of Impacts and Adaptations to Climate Change (Part of the START Programme)	Enhance the scientific capacity of developing countries to assess climate change vulnerabilities and adaptations, and generate and communicate information useful for adaptation planning and action			Provides funds, training, and mentoring of developing country scientists to undertake multi-sector, multi-country research of priority to developing countries	Country/Region	START: http://www.start.org/ AIACC: www.start.org/Projects/AIACC_Project/about/right_frame.html.

Annex V

Presentation at NORAD, 5 June 2003 (in Norwegian)

The full document (77 slides) is available at http://www.cicero.uio.no/media/2437.ppt or by email from admin@cicero.uio.no.