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Financing climate change policies in developing countries

Compilation of briefing papers

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Authors: Part 1: Yuri Okubo and Axel Michaelowa
University of Zurich, Institute for Political Science

Part 2: Arno Behrens
Centre for European Policy Studies (CEPS)

Part 3: Richard J.T. Klein
Stockholm Environment Institute

Part 4: Saleem Huq and Jessica Ayers
International Institute for Environment and Development

Administrator: Camilla Bursi
Policy Department Economy and Science
DG Internal Policies
European Parliament
Rue Wiertz 60 - ATR 00L008
B-1047 Brussels
Tel: +32-2-2832233
Fax: +32-2-2846929
E-mail: camilla.bursi@europarl.europa.eu

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Introduction

1. Rationale for the study

In the context of its 7th Thematic Session on "Trade, Competitiveness, Financing and Employment" organized on 29th May 2008, the Temporary Committee on Climate Change (CLIM) requested a study on the financing of climate change policies in a global context.

Previous studies published in the last year by the European Parliament have already addressed several aspects of the financing of EU climate change policies, including: the adequacy of EU budgetary allocations and initiatives for meeting EU policy objectives, the functioning and revision of the EU emission trading scheme and possible options for new revenue generation, review of experiences with the current existing mechanisms such as Clean Development Mechanisms (CDMs) and Joint Implementation.

- A study addressing the question "Does the EU have sufficient resources to meet its objective on energy policy and climate change?" was published in January 2008.[1] The study describes the various estimates made of the annual global cost of tackling climate change as well as the EU's share. It analyses the resources devoted to climate change in the EU budget and includes suggestions for rectifying identified shortcomings. The study ends with an assessment of the potential of the EU emissions trading scheme to raise additional resources at EU level to tackle climate change.
- The study on "Climate change legislation and initiatives at international level and design options for future international climate policy"[2] and the study "Climate change legislation and initiatives at EU level"[3] have reviewed, amongst other issues, the experiences to date with the Kyoto Mechanisms (CDMs and Joint Implementation).
- The study on "Engaging emerging economies, removing barriers for technology cooperation"[4] analyses the situation of technology transfer to emerging economies for mitigation and adaptation to climate change within the current climate change regime and in further international technology cooperation policies. It presents key actors and their roles, highlights success factors and identifies barriers and potential for improvement.

The focus of these studies has primarily been the financing mechanisms for mitigating climate change and achieving EU's policy objectives, mainly from the EU's perspective. No particular assessment has been undertaken so far on the external dimension of EU financing policies in particular towards developing countries, which will be the most affected by the impacts of climate change.

The focus of the present report was therefore set on assessing in more detail the financing initiatives in developing countries and their adequacy for meeting climate change objectives (in particular adaptation) and on providing views and recommendations for EU policy makers which could contribute to the improvement of EU and international policy in this field.

2. Climate change and development aid

A note on "Engaging developing countries in climate change negotiations"[5] has briefly addressed the issue of financing mechanisms for developing countries.

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[1] Ref. IP/D/BUDG/CONT/FWF/2006-072/lot 3/C1/SC 3
[2] Ref. IP/A/CLIM/ST/2007-03 PE 393.514
[3] Ref. IP/A/CLIM/ST/2007-01 PE 393.506
[4] Ref. IP/A/CLIM/NT/2007-15 PE 401.005
[5] Ref. IP/A/CLIM/NT/2007-17 PE 401.007

It argues that for instance for adaptation, funds mostly come from North-South cooperation on climate change via the CDMs; that these funds represent only a fraction of what is needed to cope with the worst impacts of climate change and that both new resources and effective delivery mechanisms are needed.

On the other hand, new instruments and financing initiatives aimed at developing countries and addressing climate change objectives are being established by donor countries (the Global Climate Change Alliance in the EU, the Environmental Transformation Fund in the UK, the Cool Earth Partnership in Japan, and the Climate Investment Funds in the US) and new revenue mechanisms are under consideration at EU and international level.

Several programmes within development aid cooperation for instance at the EC level (such as in the field of environment, energy, water, rural development, transport), are also directly or indirectly addressing climate change related aspects or will be affected by the consequences of climate change. In this context tools and mechanisms are being developed and tested for improving the processes of "climate portfolio screening", “climate mainstreaming” and reporting mechanism of development agencies and financing institutions.

Within the UNFCCC and the Bali Action Plan process, discussions are ongoing on the further set up, budgetary allocations and management of international funds for tackling the impacts of climate change in developing countries (Adaptation Fund). Strong divergence of views exist, notably between developing countries and industrialized countries but also within experts in the field. The disagreement regards the mechanisms that should be established for increasing the budgetary allocations and improving the effectiveness of those instruments in meeting climate change objectives, without sacrificing the commitment to meeting the Millennium Development Goals (MDGs). Developing countries fear that climate change objectives are taking away financing from development aid and poverty alleviation goals and therefore strongly advocate separate funds to be created for climate change objectives. They do not trust the promise of “new and additional finance” from developed countries, since already the financial resources required to meet the MDGs have not materialised and the target reaffirmed recently in Monterrey of providing 0.7% of GDP as conventional Official Development Assistance (ODA) has been achieved by only a handful of countries.

To gain a better understanding of the current situation where contradictions and paradoxes between development and climate change objectives seem to appear, this report provides some well-founded answers to the following questions, which could enlighten EU policy-makers for the further decision-making process at the EU and international level:

- Are climate change policies and development objectives compatible? What are the current trade-offs or synergies between the two?
- How are the existing EU and international climate change financing mechanisms in developing countries being implemented, and what is their real impact today? How can the effectiveness of the implementing mechanisms be improved?
- What is the experience with regards to integration of climate change objectives in EU and international development aid assistance? What further measures should be taken at policy, programme or project level to mainstream climate change (adaptation / mitigation) into development aid, without jeopardizing development objectives?
- Is the level of financing for adaptation in developing countries adequate? How should the further climate change international funding mechanisms be established and how should they function? How can additionality of funds be ensured and how should they be managed?

3. Structure of the study

To provide answers to these questions, four briefing papers were requested from four experts in the field. Each of them was asked to address these questions from a different perspective. In the spirit of maintaining the diversity of contributions by the different experts, the content of the contributions was at no point streamlined to reflect a particular view. Therefore, contradictory views and repetitions on certain details may be found between chapters in this compilation. This, it is our hope, will not be confusing for the reader but can be seen as healthy grounds for further discussions on the subjects.

The study is divided into 4 chapters in the following sequence:

1. **Assessing the interaction between climate change financing and development aid:** what are the impacts of those policies today, and what are potential incoherencies in the different intervention areas of development assistance with regards to climate change adaptation and mitigation objectives and development objectives.
2. **Providing an overview of EC programmes and international EC funded financing initiatives aimed at developing countries** in the field of climate change mitigation and adaptation (objective, allocated budgets and financing mechanisms) and recommendations to improve coherence and effectiveness of the different EC mechanisms.
3. **Assessing the mechanisms for mainstreaming of adaptation and mitigation of climate change in development policies and programmes** at EU and international level and for climate risk assessment and recommendations for improvement (EU/donor perspective).
4. **Assessing mechanisms for mainstreaming of adaptation and mitigation into development projects on a national and local level** and recommendations for improvement (recipient countries perspective)

4. Contents of the study

In part 1 Yuri Okubo and Axel Michealowa from the Institute of Political Science of Zurich University have reviewed the literature on climate and development to analyse whether using development aid for climate policy is an efficient manner for reaching the Millenium Development Goals. Their analysis is based amongst other on the latest data available on international financial flows towards developing country in the field of climate change.

Their review highlights the fact that some synergies between the objectives of promoting short- and medium term poverty alleviation and adaptation to climate change can be found. However, regarding mitigation, more of a trade-off can currently be seen and that most climate-change related assistance flow into medium income, emerging economies, and only addresses poverty alleviation indirectly, if at all. They also advocate that the priority of development assistance should clearly remain on poverty reduction and that a separate budget line should be used to address the growth in GHG emissions in a relatively small number of countries, to avoid obfuscation of a decline of resources aimed at poverty alleviation.

In particular, their view is that it should be ensured that only those climate policy related activities, which have a high positive impact on poverty reduction can be financed through development aid funds and that using those funds for CDM capacity building is not an efficient way to achieve MDGs. They also recognize that "climate-proofing"' of development assistance aid could be improved by integrating risk reduction and adaptation to climate change in the development and poverty reduction plans of poor countries. For instance short-term impact of climate change should be considered when planning poverty alleviation measures while recognizing the long-term impact trend as well.

In part 2 Arno Behrens from the Centre for European Policy Studies (CEPS) presents and analyses the variety of different external aid initiatives and financing mechanisms of the EC, addressing climate change and development objectives, such as those stemming from the 2004 EU Action Plan on Climate Change and Development, from the Global Climate Change Alliance (GCCA) and those under the Thematic Programme for Environment and Sustainable Management of Natural Resources (ENRTP). The paper also outlines related Commission commitments with the European Investment Bank (EIB), the World Bank and the United Nations.

The review suggests that the current complexity of responsibility in the management of those different initiatives (managed by various Directorate Generals under various thematic programmes and budget lines), would require organizational restructuring, a more transparent and clearer reporting mechanism (taking into account all funds for external aid) and the development of better indicators to evaluate the impacts of those initiatives.

Overall it appears that the Commission is just at the beginning of taking full account of climate change in development cooperation. The Commission is still in early stages regarding the development of ex-ante climate-proofing tools, but is more successful in promoting clean technologies in developing countries, particularly in the energy sector. The paper concludes that achieving the aim of consistently integrating climate change into development policies will require more than adding new funds and merging existing funding instruments under a new heading (such as the GCCA), and that the Commission should also focus on improving tools for climate proofing of all other current development cooperation.

Finally, given the global financing needs related to climate change in developing countries, the Commission contribution is considered rather limited. The Commission, Member States and – first and foremost – the private sector, would need to step up commitments to fill the financing gap as well as launch innovative financing mechanisms as soon as possible. The paper concludes that the Commission's proposal for a "Global Climate Finance Mechanism", a frontloading mechanism whose funds could be channelled to existing initiatives and funds, has the potential to raise substantial amounts of funding within a short period of time.

In part 3, Richard Klein from the Stockholm Environment Institute discusses the different ways in which adaptation to climate change is relevant to ODA and presents the case for integrating adaptation to climate change into main stream development planning and decision making ("mainstreaming"), both from the operational and climate policy perspective. He first identifies the policy paradoxes associated with mainstreaming and proposes how the EU and its Members States could address them within EU policy but also in the context of international negotiations.

The paper explains how "mainstreaming adaptation into development" can have different meanings to people depending on whether they hold a technology-based view of adaptation ("climate proofing") or a development-based view ("mainstreaming plus"). It presents the limitations of a technology-based view of adaptation, and highlights the underlying factors and structural issues that adaptation strategies should address to be effective. The author further assesses the current mechanisms for adoption and implementation of National Adaptation Programmes of Action (NAPAs) by least developed countries and the current process and existing screening tools of donor "Portfolio screenings".

In the context of the current Bali Action Plan, the dilemma of management of financial flows for adaptation and for development is explained and the pros and cons of stand-alone adaptation and mainstreamed adaptation funding are presented:

	Stand-alone adaptation	Mainstreamed adaptation
Pro	Easy to calculate new and additional funding needs	More efficient in implementation
	Greater country ownership	More effective, more sustainable impact
Con	High administrative costs when scaled up	Difficult funding situation, possibly diverting ODA
	Synergies with development may be missed	Seen as imposing conditionalities

The paper proposes that the GCCA plays a role in clarifying how traditional ODA, the Adaptation Fund and various other bilateral and multilateral funds for adaptation can complement one another. Provided that its budget is substantially increased, the GCCA could become an important instrument for providing follow-up support in the implementation of adaptation activities identified in NAPAs.

The paper furthermore recommends that the EU should accept a transparent, principle-based allocation of responsibility for adaptation funding, resulting in adequate, new and additional money to support adaptation programmes in developing countries. Levies on carbon market transactions and auctioning emission permits are presented as the two existing mechanisms for generating new and additional funds consistent with the polluter-pays principle. In addition, the overall EU's official development assistance should reach 0.7% of gross EU income, without including new and additional funds generated by the carbon market.

"In part 4, Saleem Huq from IIED and Jessica Ayers from LSE, review the mechanisms for mainstreaming adaptation to climate change into development projects at the national and local level. The paper begins with a discussion of the linkages between development and climate change, including examples of synergies and tradeoffs, and discusses the particular role of development assistance in facilitating climate change adaptation in vulnerable developing countries outside that of the UNFCCC.

The paper highlights two key ways in which development assistance can enhance adaptive capacity in recipient countries: (1) Mainstreaming climate change into development by integrating climate change into ongoing development planning to 'climate proof' existing development investments, maximising the potential of development projects to enhance adaptive capacity, and avoiding maladaptation; (2) Targeted adaptive capacity building: development interventions aimed to build adaptive capacity at all levels, identifying entry points for the incorporation of climate change considerations into national development priorities as well as sectoral plans.

The review of these mechanisms shows that while climate-proofing development offers fairly immediate opportunities for 'win-win' climate and development options, enabling environments at the national, sectoral and local levels must be created in order for mainstreaming to be effective, to ensure that adaptation interventions are suitable for local contexts, and national and local agencies have the capacity to receive them.

The paper explains that building adaptive capacity in partner countries through development assistance is a slow process which requires a 'learning by doing' approach for integrating climate change into local and national institutions. This process is broken down into four key stages, over a timeframe of five to seven years, through which it is proposed that successful mainstreaming of climate change into development can achieve enhanced national and local adaptive capacity.

Furthermore the paper presents concrete examples and case studies are drawn from development and climate change activities in the most vulnerable countries to climate change (Least Developed Countries, Small Island Developing States, and Africa, because in these countries the climate change-development nexus is apparent)."

Part 1: Are climate policies geared towards the same objectives as development policies?

Authors; Yuri Okubo and Axel Michaelowa
University of Zurich, Institute for Political Science.

Executive summary

Increased attractiveness of climate change-related activities for development co-operation has led to a rapid reorientation of development aid flows in the last 15 years. Donor countries have used at least USD 10 billion of bilateral ODA for climate policy purposes during 2002-2006. Some donor countries including the EU are trying to systematically integrate climate policies and measures into development cooperation. The increased flow of development aid for climate purposes may become a problem if the key objective of ODA, poverty alleviation - codified in the Millennium Development Goals (MDGs) - and climate change mitigation and adaptation are not compatible.

We reviewed literature on climate and development whether using development aid for climate policy is an efficient means of achieving the MDGs. Climate change is likely to have a significant impact in developing countries, especially on the poor and may make it more difficult to meet development goals. However, the priority measures to reach the MDGs show very little overlap with climate mitigation and adaptation policy-related activities.

Adaptation measures can be expected to have more synergies with poverty alleviation than mitigation. A combination of adaptation and poverty alleviation can be important in the context of addressing climatic effects on health, safeguarding food production capacity, and reduction of impacts of meteorological extreme events on marginalized social groups.

The gap is larger in mitigation. One measure that directly reduces GHG emissions and simultaneously helps to achieve MDGs is the reduction of indoor pollution via the introduction of renewable energy. The most effective way to address mitigation, however, is to reduce emissions from large emitting sectors and rapidly industrializing countries. This is shown by the dominance of China, Brazil and India in hosting CDM projects as these countries have also institutional, financial and technical capacity to develop projects. Small scale clean energy projects that could have the highest impact on poverty alleviation are rare within the CDM. Moreover, most CDM projects address poverty alleviation indirectly, if at all. Poverty is rooted in structural, institutional and long-term factors, which cannot be changed by a few CDM projects. Thus, use of development aid for CDM projects in poor countries is not an efficient way to achieve MDGs.

We further looked at the literature on development and energy use to consider their relationship. Only when countries reach an intermediate level of development, do energy use and related carbon emissions start to grow rapidly while improvement in development indicators slows down. It seems that reaching the MDGs would not necessarily entail high increases in greenhouse gas emissions. Therefore, to curb emissions growth in countries that achieve the MDGs, it would be sensible to address middle-class energy use by applying efficiency standards, rather than addressing the poorest of the poor.

On the other hand, one political and economic reason for financing climate policy with development resources would be that the funds for climate are likely to fall magnitudes short of the estimated costs of adaptation. However, many developed countries are far from reaching the 0.7% GDP development aid funding target.

From the climate perspective it is also important to create an innovative funding mechanism as to ensure predictable and adequate funding for adaptation as just diverting funds from current ODA would not be enough to cover the estimated cost. We must ensure separate budget lines for development and climate and only those climate policy related activities which have a high positive impact on poverty reduction should be ODA financed.

On the other hand, ODA-financed projects should consider the possible climate change impacts and the trade-offs with climate policies/goals, especially with adaptation. In current development strategies and plans, climate concerns are not being fully addressed. In addition, poverty alleviation projects could sometimes increase vulnerabilities. To avoid contradiction, it is important to review strategies for MDGs to consider short-term climatic effect and existing vulnerability while recognizing the long-term trend of climate change. 'Climate-proofing' development assistance will benefit donors and the poorest groups, ensuring ODA projects' long-term sustainability.

1. Introduction

The awareness about linkages between climate change and development has been raised ever since the Earth Summit in Rio de Janeiro in 1992, where the environment and development agendas were addressed simultaneously. The social and economic development using fossil fuels has meanwhile been recognized as the very driver of climate change, and the question that has been raised in this context is how to reconcile development with the challenges posed by human-induced climate change. This line of thought led to the idea of the Clean Development Mechanism (CDM), one of the flexible mechanisms agreed under the Kyoto Protocol in 1997, which has the double objective to assist industrialized countries to reach their emission reduction targets and at the same time assist developing countries to achieve sustainable development. Moreover, the clear scientific evidence that climate change is already taking place increased the awareness of the need for adaptation, especially for the most vulnerable developing countries. The consequence is that donor countries have shifted part of their Official Development Assistance (ODA) allocations to climate change mitigation and adaptation activities. This may become a problem if development assistance funds allotted to climate policies neglect the main objective of the ODA, poverty alleviation.

This report reviews literature on climate and development and considers whether climate policies are geared towards the same objective as development policies. First, we review to what extent ODA has been used in a climate context. In section 3, we analyze whether using development aid for climate policy is an efficient means of achieving the Millennium Development Goals (MDGs), considering that the MDGs are a concrete representation of the poverty alleviation goal of ODA. In section 4 we consider what effect the pursuit of MDGs may have on GHG emissions. Section 5 examines the current funding for poverty alleviation and climate change and the estimated needs in the future. The final section discusses how climate change concerns could be integrated in ODA allocation without jeopardizing the poverty reduction objective.

2. Financing initiatives in the field of climate change in developing countries

Current flows of financial resources dedicated to climate change issues in developing countries are mainly from the Global Environment Facility (GEF) and other multilateral institutions, with some bilateral and regional contributions.

The GEF occupies a special position as the operating entity of the financial mechanism of the UN Framework Convention on Climate Change (UNFCCC), and has allocated over USD 2.4 billion to projects addressing climate change since its inception in 1991 (UNFCCC 2007d). The GEF has provided funds mostly for mitigation activities. As of June 2007, one third of the resources (USD 861.1 million) have been allocated to support renewable energy and a comparable amount (USD 719.8 million) has been approved for energy efficiency. Another USD 480 million has been spent for other mitigation activities, such as low greenhouse gas (GHG)-emitting energy technologies. For adaptation, USD 25 million, or 1% of GEF resources have been allocated so far (UNFCCC 2007d).

Except for the fund under the GEF, which has a clear objective to finance environmental problems including climate change, it is hard to obtain data about to what extent other development aid has been used for climate purposes.

The UNFCCC (2007b) summarizes bilateral and multilateral contributions to mitigation and adaptation-related activities in developing countries by Annex II countries[6] of the Convention, but there are data gaps and inconsistencies in reporting approaches among parties and across periods. Some parties did not use the categories provided by the UNFCCC, some reported on financial contributions using different years and some even noted that their contributions may not be strictly climate change-related. This raises the issue of validity of statistical comparisons and aggregations. In addition, although the UNFCCC parties had agreed that developed countries should provide "new and additional" funds to help developing countries meet their Convention commitments, many Annex II parties did not mention whether those funds were additional to the ODA or why they considered them to be additional (UNFCCC 2007b). It should be noted that almost all climate change-related activities in developing countries can be financed with development assistance and there is no limitation to the use of ODA funds for climate-related activities. The only exception is that ODA-financed purchase of Certified Emission Reductions (CERs) from CDM projects leads to a deduction of the market value of these CERs from the ODA volume in the year where the CERs accrue to the donor (OECD/DAC 2004).

Recently, Tirpak and Adams (2008) analyzed financial data from bilateral and multilateral donors during 1997–2005, and identified that aid for energy totaled over USD 64 billion or 6–10% of all development assistance. From this total, the bilateral aid for energy amounted to over USD 20 billion during the period and averaged 2% of total development assistance. The authors found that coal-fired power plants received approximately USD 3 billion (15% of bilateral aid); and that funding for gas power plants increased, particularly in the last three years, averaging approximately USD 590 million annually during those years. Bilateral support for all renewable energies (excluding hydropower) was approximately USD 2 billion (10%) over the period, with wind energy receiving the most support (over USD 600 million).

Over the period examined, the number of renewable projects per year doubled from approximately 100 to 200, while the number of non-renewable projects remained nearly static at approximately 50. The aid from multilateral institutions[7] for energy totaled over USD 43 billion for the same period (70% of total aid for energy).

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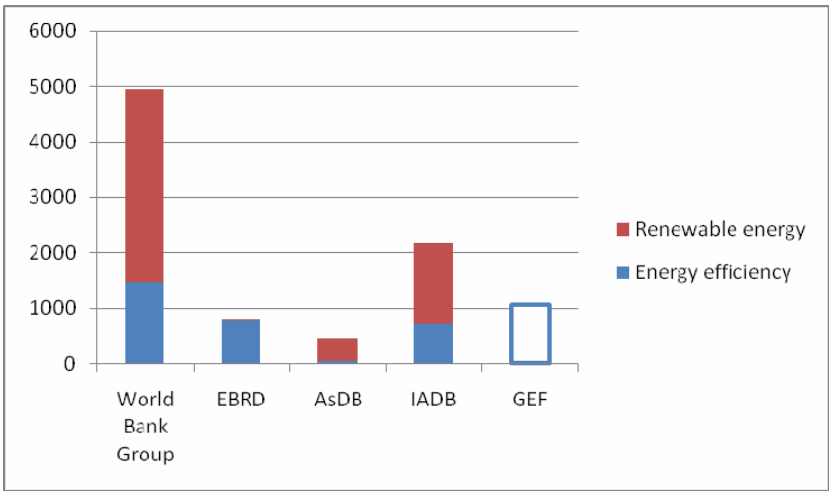
[6] Parties of the Convention agreed that countries listed in Annex II of the Convention will provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations in the Convention. Those countries are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and United States of America.

[7] Multilateral institutions included in this data are World Bank Group (WBG), Asian Development Bank (AsDB), European Bank for Reconstruction and Development (EBRD) and Inter-American Development Bank (IADB).

The amount dedicated to energy efficiency and renewable energies was approximately USD 8.4 billion (see Figure 1). Although one cannot say that all renewable energy projects reduced GHG or had a clear focus on climate change as this depends on the baseline of emissions in the project area, Tirpak and Adams conclude that there has apparently been some recognition that lower GHG-emitting technologies need to be promoted and diffused among developing countries.

Figure 1 Multilateral funding for energy efficiency and renewable energies 1997-2005 (USD million)



Source: Tirpak and Adams, 2008
* Energy efficiency: includes efficiency improvements in energy supply and demand and improvements in district heating
* Renewable energy: hydro, wind, geothermal, biomass, solar for electricity and for thermal applications
* The data of GEF is for renewable energy and energy efficiency and includes gas power and coal bed methane

Beyond the energy sector, there is substantial mitigation potential in other sectors such as forestry, agriculture and waste. Moreover, development cooperation activities also encompass adaptation measures to climate change, in particular to sea level rise, desertification and meteorological natural disasters. These variables are usually hard to separate from others, but OECD started to collect data on "Rio marked ODA", aid activities that target the objectives of the Rio Conventions including climate change, which are available in an online database on the OECD web page. According to these data, between 2002 and 2006, the members of the OECD Development Assistance Committee (DAC) spent around USD 9.3 billion or 1.8% of total bilateral ODA for climate change-related activities (OECD/DAC online database)[8]. Additionally, the OECD database includes multilateral funding from the EC amounting to USD 653 million or 1.2 % of their ODA for climate change activities in the same period. However, the bilateral data cannot be taken as comprehensive or coherent data as the interpretation of what is counted as climate related activities and whether to include only mitigation or also adaptation activities to the "Rio markers" seems to differ among donors and even among EU Member States (Santos and De Lopez 2007). Japan occupies 75% of the currently provided data and the rest is shared by other donor countries. From these data, however, we see that the OECD DAC member countries recognize that they have spent at least USD 10 billion during the period for climate change measures.

Although the amount of funds that has been allocated to climate change from development aid remains unclear, the fact that OECD has started to collect data and report on Rio markers alone suggests that donor countries have used development funds at least partially for climate policy purposes.

[8] Finland, Italy, Ireland and Luxemburg have not provided data.

In addition, some donor countries are trying to systematically integrate climate policies and measures into development cooperation (see e.g. the declaration by OECD members "Integrating Climate Change Adaptation into Development Co-operation" in 2006). The EC adopted a communication titled "Climate change in the context of development cooperation" in 2003, and has identified four strategic areas to integrate climate change in the context of development cooperation. These areas are: (i) Raising the policy profile of climate change, (ii) Support for adaptation, (iii) Support for mitigation, and (iv) Capacity development. Its Action Plan was adopted in November 2004 (EC 2004). In September 2007, the EU created the Global Climate Change Alliance (GCCA), which renewed the commitment of the EU Action Plan on Climate Change and Development to systematically integrate climate change into development cooperation (EC 2007). GCCA focuses on five areas: implementing concrete adaptation measures; reducing emissions from deforestation; helping poor countries take advantage from the global carbon market; helping poor countries to be better prepared for natural disasters; and integrating climate change into development cooperation and poverty reduction strategies. The Commission earmarked €50 million over the period 2008-10 and an appeal was made to the EU Member States to dedicate part of their agreed commitments to increase ODA over the coming years to the cause of coping with climate change in the most vulnerable countries.

The increased attractiveness of climate change-related activities for ODA spending may become a problem if the objective of ODA, poverty alleviation, and climate change mitigation and adaptation are not compatible. In the next section we will examine whether development aid spent on climate change issues actually helps to achieve the development objectives codified in the MDGs.

3. Climate change impact on MDGs and the role of climate policies

3.1 The objective of ODA

The main objective of ODA is poverty alleviation and the guiding principles are the MDGs. The MDGs were endorsed and adopted by 189 countries in the UN Millennium Declaration in 2000. They consist of 8 goals with 18 concrete targets with clear quantitative indicators, which provide a framework for measuring development progress. From an EU perspective, the MDG-focused objective of ODA is provided in the joint statement by the European Parliament and the European Commission in 2005. It stresses that the primary and overarching objective of EU development policy is the eradication of poverty in the context of sustainable development and an emphasis is put on the MDGs. In detail, the eight MDGs are:

Goal 1: Eradicate extreme poverty and hunger

Goal 2: Achieve universal primary education

Goal 3: Promote gender equality and empower women

Goal 4: Reduce child mortality

Goal 5: Improve maternal health

Goal 6: Combat HIV/AIDS, malaria and other diseases

Goal 7: Ensure environmental sustainability

Goal 8: Develop a global partnership for development

While climate policy is clearly related to the Goal 7 of the MDGs, the link with other goals may be unclear. In the further sections we will look at these possible links.

3.2 The effect of climate change on the poor and in achieving MDGs

The poorest nations of the world and poor groups in developed countries are likely to be hardest hit by the effects of climate change (Klein et al. 2007, Kok et al. 2008) They rely heavily on climate-sensitive sectors, such as agriculture and fisheries and are less able to respond to the direct and indirect effects of climate change due to limited human, institutional and financial capacity.

Development organizations have become more aware of this new threat and have analyzed the effect of climate change and climate change related policies on the achievement of the MDGs (see e.g. Mitchell and Tanner 2006). They point out to many ways in which climate policy related activities may help to reach the development goals.

Goal 1 – eradicating extreme poverty and hunger - will be affected by the level rise, desertification and irregular rainfall induced by climate change. The effect is particularly strong for many poor countries, especially coastal countries, small island states and the countries in the Sahel. It will reduce food security and destroy productive assets such as arable land, infrastructure, housing, etc. Helping countries to adapt to projected changes and secure food for the poor would contribute to goal 1.

Goal 2 only has an indirect connection to climate policies. More vulnerable livelihoods (due to climate impacts) mean more children engaged in employment. The empirical literature shows a negative indirect link between ill health and education, as well as between poverty and education in general (see e.g. Michaelowa 2001a, 2001b). The poor are affected the most by climate change and as women make up two-thirds of world's poor, women are likely to be more affected by climate change than men.

This creates the link with goal 3. In addition, if children are affected by natural disasters and climate change, mothers' burden is increased. They have to care for the ill children and go longer distances to fetch fresh water for their household activities. In case of sickness, girls are often sent to the doctor at a later stage than boys. Climate change is thus likely to slow down efforts to work on gender equality and the empowerment of women.

The link with goals 4-6 becomes clear if one considers the projected impact of climate change on vector born diseases, e.g. mosquito-borne diseases or malaria, which is particularly dangerous for pregnant women and young children.

The relationship with goal 7 is obvious because climate change directly damages the ecosystems and many natural resources, whose stability would be a prerequisite for economic development and for sustainability.

And finally, global partnerships, as called for by goal 8, encompass the cooperation between developed and developing countries to help the latter to adjust to the adverse effects of climate change. Moreover, adaptation may reduce the threat of civil and cross-border conflict over increasingly scarce resources such as land and water.

Examining each MDG, we see that goal 7 will be directly undermined and other goals are indirectly undermined by the effects of climate change. In the next segment, we will define different measures of climate policy and subsequently discuss their development benefits.

3.3 Mitigation and adaptation: two paths to address climate change

The IPCC (2007) defines adaptation as initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. Various types of adaptation exist, e.g. anticipatory and reactive, private and public, and autonomous and planned.

Adaptive capacity is seen as the ability of a system to adjust to climate change (including climate variability and extremes), to reduce potential damages, to take advantage of opportunities, or to cope with the consequences of extreme events. Sectoral focus of adaptation lies on management of natural resources (e.g. land/soil, water, forest and coastal resources), through agriculture, forestry, and fisheries and reducing the vulnerability of infrastructure, human settlements and human health.

Mitigation is defined as an intervention to reduce anthropogenic emissions of greenhouse gases and enhance sinks. This includes energy efficiency measures and replacement of fossil fuel by renewable energies and land use, land use change and forestry (LULUCF).

Some of the major measures of mitigation and adaptation are listed in Table 1.The question is whether these measures could promote development and possibly help to achieve MDGs.

Table 1 Example of measures of mitigation and adaptation to climate change

Adaptaiton options		**Mitigation options**	
Sector	**Measures**	**Sector**	**Measures**
Water	**Expanded rainwater harvesting,water storage and conservation techniques, water re-use,desalination,water-use and irrigation efficiency**	**Buildings**	**Efficient electrical applicances, improved insulation, passive and active solar design for heating and cooling,alternative refrigeration fluids, recovery and recycling of fluorinated gases, avoid energy consuming device**
Agriculture	**Adjustment of planting dates and crop variety, crop relocation, improved land management: erossion control and soil protection through tree planting**	**Transport**	**More fuel efficient / hybrid vehicles and air craft, biofuels, modal shifts from road transport to rail and public transport systems, non-motorised tranport planning**
Infrastructure/settlement	**Relocation, seawalls and storm surge barriers, landacquisition and creation of marshlands/wetlands , protection of existing natural barriers**	**Energy Supply**	**Improved supply and distribution efficiency, fuel switching from fossil fuels to renewable energies and powers(hydro, solar, wind, geothermal, bioenergy etc.),reduce energy loss (including transport)**
Human health	**Heat-health action plans, emergency medical services, improved climate sensitive disease surveillance and control, safe water and imoproved sanitation**	**Industry**	**more efficient end-use electrical equipment, heat and power recovery, material recycling and substitution, control of non-CO2 gas emissions, advanced energy efficiency**
Tourism	**Diversification of tourism attractions&revenues, shifting ski slopes to higher altitudes and glaciers artificial snow making**	**Agriculture**	**Improved crop and grazing land management to increase soil carbon storage, restoration of cultivated peaty soils, improved (rice) cultivation techniques and livestock,manure management to reduce CH4 emissions, improved nitrogen gertiliser applicaiton techniques to reduce N2O emissions, dedicated energy crops to replace fossil fuel use**
Transport	**Relocation, design standards and planning for roads, rail and other infrastructure to come with warming and drainage**	**Forestry/ forests**	**Afforestation, reforestation, forest management, reduced doforeestation, harvested wood product management, use of forestry products for bioenergy to replace fossil fuel use, tree species and carbon sequestration**
Energy	**Strengthening of overhead transmission and distributuion infrastructure, underground cabling for utilities, energy efficiency use of renewable sources, reduced dependence on single sources of energy**	**Waste**	**Landfill CH4 recovery, waste incineration with energy recovery, composting of organic waste, controlled waste water treatment, recycling and waste minimisation**

Source: IPCC, 2007
* Early warning systems apply to all sectors in adaptation

3.4 Effective measures to achieve the MDGs and the role of adaptation

In this section, we look into development research that examined the measures to achieve the MDGs to investigate whether these measures are geared towards the same objective as climate policies. Unfortunately, the priorities mentioned to reach the MDGs (see UNDP 2005) only show very little overlap with climate policy related activities.

For example, food security (goal 1) is a function of several interacting factors, of which food production potential is only one. Poverty and the lack of food purchasing power probably have a more direct bearing on food security.

Effective ways to achieve the objective of universal primary education (goal 2) include reducing or eliminating school fees, providing school meals, increasing supply of teachers, reducing of repetition rates, or bringing schooling closer to home (see e.g. Glewwe, Kremer 2006, UN 2005). Combating AIDS is also important for achieving education, especially for sub-Saharan Africa where the education crisis has been made worse by its impact. In 1999 alone, nearly 1 million children in that region lost their teachers to AIDS. The cumulative effect of these deaths has been placing an untenable burden on many countries that already lacked sufficient trained teachers (UN 2005).

Extreme weather events might destroy schools, but this should be addressed by disaster reduction measures rather than education improvement measures. Suggested measures to promote gender equality (goal 3) in the report range from quotas for seats in parliament to safe transportation, separate toilets for boys and girls and removing gender stereotypes from the classroom, and ensuring female enrolment and retention in school. Goal 4 calls for better food supply, health services, safe water and better sanitation, which might be combined with adaptation measures. However, half of all deaths of children under 5 are caused by pneumonia, diarrhea, malaria, measles and AIDS, and most of them could be avoided by low cost measures such as exclusive breastfeeding for infants, antibiotics for acute respiratory infections, oral rehydration for diarrhea, immunization or the use of insecticide-treated mosquito-nets and appropriate drugs for malaria (UN 2005). Similar measures are called for in the context of general health care (goal 6) while for the maternal health (goal 5), the successful strategy of ensuring skilled birth attendants is emphasized. The vast majority of maternal deaths and disabilities could be prevented through appropriate reproductive health services before, during and after pregnancy. For example, Bangladesh, one of the poorest countries in the world was able to substantially reduce maternal mortality by focusing on skilled birth attendants, access to emergency obstetric care and expanded family planning programs (UN 2005, 2007). For achieving goal 8, the UN document stresses development aid and debt relief as well as international trade policies, in particular the agricultural subsidies in industrialized countries and the remaining high tariffs on clothing, agricultural products and textiles need to be addressed. Other issues are the spread of information technologies and the attempt to fight youth unemployment, in order to reduce the risk of social unrest. Possibility of synergies with adaptation would be the cooperation between public authorities and private firms to enhance the availability of essential drugs against diseases and / or the availability of necessary ingredients to prepare these drugs, although the most needed drug for diseases such as AIDS, tuberculosis and malaria would differ from region to region. From these literatures it should be noted that effective means to address MDGs are different from adaptation and mitigation measures and there might not be many areas in which their priorities truly overlap.

Adaptation and poverty alleviation measures could work in tandem in improvements of food productivity and food supply systems, improvement of health, and disaster reduction strategies such as early warning systems. However, even here the synergy is not automatic. For instance, adaptation through the construction of dams, the use of new irrigation methods or the introduction of adapted crops will not contribute to MDGs at least in the short run if the poor are forced to move for the new construction, or the construction were to protect high value assets only, or if the adapted crops are more expensive, leading to higher food prices. For example, new coastal infrastructure, such as dikes could disturb mangroves and coral reefs that provide fish and other important food resources for poor people. Irrigation can lead to the salinisation of groundwater and the degradation of wetlands, as well as leaving subsistence farmers with reduced access to groundwater and productive land. The ODA financed activities should focus on the poor to avoid these trade-offs.

In the next part, we will consider mitigation measures, which seem to have less overlapping areas than adaptation.

3.5 The role of mitigation measures in achieving MDGs

The report of the GEF, which assessed the impact of all of its activities (including climate change) on the MDGs (GEF 2005) reports that while adaptation to this change may mitigate the adverse effects, any direct measures to stop or reduce climate change will, by the same token, be directly beneficial to those who would otherwise be under threat. Moreover, many of the activities introduced to substitute for the use of fossil energy specifically benefit the poor.

Renewable energy can be more easily introduced in remote areas than conventional energy. The related access to electricity enhances agricultural productivity, improves the quality of health care and the attendance in school. For example, electricity can refrigerate medicine, sterilize medical equipment, and incinerate medical waste. Moreover, it is a necessary condition for fresh water supply system needed to reduce the burden of infectious disease (REN21 2008). Using electricity for cooking and heating can reduce the time that children, especially girls, spend out of school collecting fuel and save millions of women and children from indoor air pollution, which is known to cause serious, often life threatening, respiratory infections. This creates linkages of GEF activities to MDG goals 1 to 6. Renewable energy sources, such as hydro power, wind power, geothermal power, and liquid biofuels can reduce dependence on oil and natural gas, creating energy portfolios that are less vulnerable to price fluctuations. In many circumstances, these investments can be economically justified as less expensive than a narrower, fossil fuel dominated energy system. Therefore renewable energy has possibility to merge with poverty alleviation.

However, as has been discussed in the previous section, installing renewable energies might not be the priority to achieve the MDGs. Also, installing renewable energy that reaches the poor might not be a priority of climate mitigation. We will further look at this in the next section.

Apart from reduction of indoor pollution via the introduction of clean energy, it seems that there are few areas in which priorities of climate mitigation and poverty alleviation truly overlap. Considering the role of mitigation in MDGs, Goal 7, on environmental sustainability, explicitly considers the reduction of greenhouse gas emissions, increase in energy efficiency and efforts to combat deforestation through sustainable forest management, but the connection is indirect to other goals. Even in the GEF, which reported the positive impact of climate measures on the MDGs, financing priorities are not identical with those formulated for the fight against poverty. From 1991-2005, the bulk of GEF investments flowed to Asian countries and China alone received about half of all resources spent on the continent (Michaelowa and Michaelowa 2005). Africa including North Africa received only 19% of GEF climate policy funding.

3.6 CDM and poverty alleviation

As we have seen in the previous section, renewable energy has a vital role in achieving MDGs. From the climate perspective, however, introducing renewable energies for poverty alleviation would not have much effect on reducing GHG, at least in the short term. This is one of the reasons why there are few small scale renewable projects in CDM. The most effective way to address mitigation is to reduce emission from the countries and sectors that emit the most, and have the potential to reduce. This is clear if one looks at the regional distribution of the CDM. The project distribution is heavily dominated by bigger developing countries, such as Brazil, China and India that also have institutional, financial and technical capacity to develop projects. It is also apparent that private investment will continue to flow primarily to the relatively more advanced developing countries where the growth in energy use makes the investments economic.

While poverty reduction requires a regional focus on sub-Saharan Africa and South Asia, the former region has a very small number of projects. The less advanced developing countries present fewer mitigation opportunities- and hence, can expect less private investment (Heller et al. 2003). This is a very unfair situation that should be changed, but the question is whether current CDM could work as a poverty alleviation mechanism if ODA is used to encourage vulnerable countries to participate in this emission reduction mechanism.

Sirohi (2007) analyzed the effect of the CDM on rural poor alleviation in India, but concludes that it is ambiguous. First, the benefits of the projects focusing on improving energy efficiency in industries, fossil fuel switching in industrial units and destruction of HFC-23 would remain largely firm-specific and are unlikely to have an impact on rural poverty. In fact, until the 15th May, 2008, out of the total CERs that India has got, two companies from Gujrat and Rajasthan have cornered more than half (WIO 2008).

Sirohi also identified that even renewable energy projects, which are looked upon as having the highest potential for sustainable development may at best reduce the poverty gap to some extent in the project area through the provision of short-term wage employment in the project activities. The rural poor and small farmers have a poor asset base and few skills that would allow participation in CDM. In addition, their low purchasing power would not allow access to electric power generated by a CDM project. Therefore, even if CDM projects may ameliorate seasonal and borderline cases of poverty, the more persistent chromic poverty would remain. The structural, institutional and long-term factors of poverty, such as the distribution of land holdings, the productivity of land, the quality of labor force, etc., are not changed by a few CDM projects.

Using ODA for CDM has still strong support among some donor countries and capacity building for CDM is supported by several donor countries including EU. In the European Commission communication of climate and development and in GCCA, preparation for CDM project activities and capacity building is recognized to be among ODA priorities (EC 2007). However, CDM seems not to contribute in achieving MDGs as we have seen in the above discussion (see also Olsen, 2007 for a general review on the CDM and sustainable development; and Schneider, 2007, for a more recent study). Using ODA for CDM thus cannot be justified.

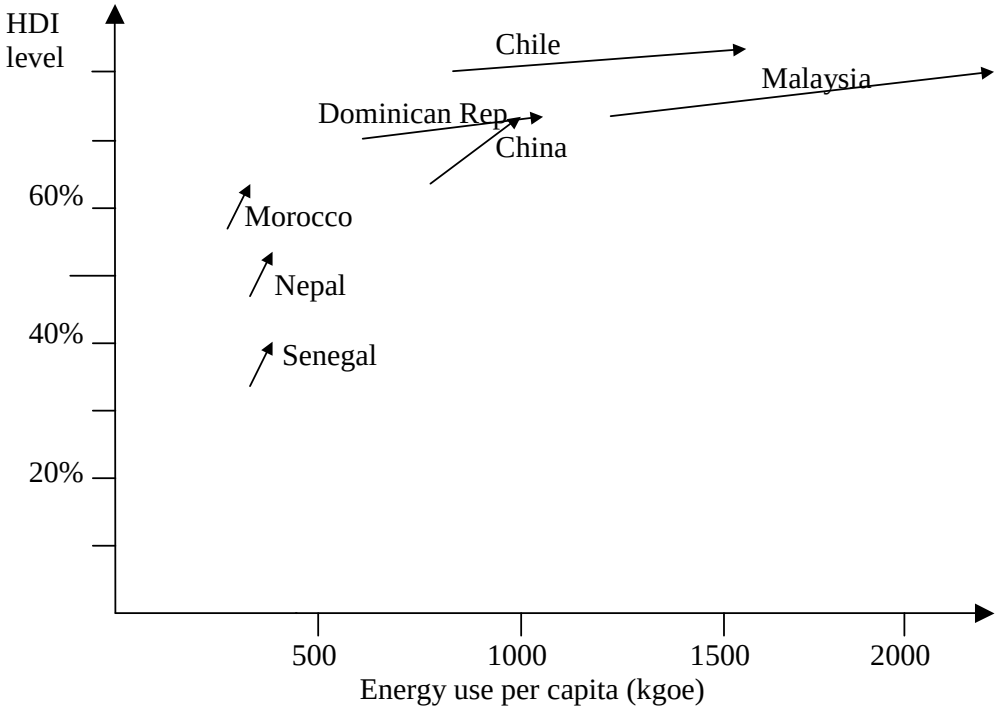
4. Development and energy use

It is a fact that highly developed societies have higher energy consumption and greenhouse gas emissions than those on a low development level. However, there is no linear correlation between human development and energy use. Generally, development indicators can improve rapidly from low levels with only small increases in per capita energy use. Socolow (2006) has calculated that if the basic human needs for the estimated 1.6 billion people without access to electricity and the 2.6 billion people without clean cooking fuel were to be met overnight, the increased energy use required would produce less than a 3% increase in global CO2 emissions. Only when countries reach an intermediate level of development, does energy use start to grow rapidly while improvement in development indicators slows down.

This seems to suggest that reaching the MDGs would not necessarily entail high increases in greenhouse gas emissions as the largest gains could be made in countries that are still on the left-hand side of Figure 2. However, if one looks at the large countries China and India that have made the most substantial progress towards the MDGs during the last decade, one finds that they have increased their energy consumption considerably associated with a rapid increase in greenhouse gas emissions. Michaelowa and Michaelowa (2007) discuss that one reason might be the adoption of energy-intensive lifestyles, which is the typical effect of economic growth.

This is documented by the explosive growth in electricity-consuming household appliances and private cars in China and all over South East Asia and now in India.

Figure 2 Changes of Human Development Index and per capita energy use for selected countries, 1990-2000



Source: Michaelowa and Michaelowa (2007)

They also discuss that several examples of car use portray the emission reduction potential of preventive policy strategies. The Brazilian city of Curitiba was able to keep car use at 25% of comparable cities by developing an urban master-plan that prevented urban sprawl and a high-capacity public bus system (Rabinovitch and Leitman 1996). In Tokyo, Seoul, Singapore and Hong Kong, early restraint of car ownership and/or use, which began before car ownership reached 100 cars per thousand people, provided a time period in which high quality public transport could be built, and in which a transit-friendly urban structure could develop (Barter and Kenworthy 1997).

These examples show that effective climate policy to reduce the impact of economic development and growth on greenhouse gas emissions typically implies targeting middle income classes, as well as countries in an early take-off situation, rather than the poorest of the poor. The challenge is therefore to address middle-class energy use by introducing appliance efficiency standards and public transport systems, as well as urban policies that discourage car use. Using ODA to address middle-class energy use would not address the prime objective of eradicating poverty.

5. The cost of climate change and poverty alleviation

Another political and economic reason for financing climate policy with development resources would be the shortage of funds dedicated for climate policy purposes.

A report prepared by the UNFCCC (2007a) estimated the additional investment that may be required in 2030 to return GHG emissions to current levels at USD 200–210 billion. The estimated overall additional investment and financial flows needed for adaptation in 2030 amount to several tens of billions USD. They offer an estimate of USD 49-171 billion globally, with USD 28-67 billion in non-Annex I developing countries.

The problem is that at present there is no obligation for funding under the UNFCCC. The financial mechanisms of the Convention depend on replenishments through voluntary contributions from donors.

To date, pledges for the Least Development Fund (LDCF), which supports National Adaptation Programs of Action (NAPAs) for the 49 LDCs, and Special Climate Change Fund (SCCF) amount USD 227 million. The only potential for expansion in the current negotiation is funds from the **Adaptation Fund (AF)** under the Kyoto Protocol. The main flow of funds for this will come from a 2% levy on CERs. UNFCCC calculates that the AF would receive USD 80-300 million per year for the period 2008–2012. Funding for the post 2012 depends on the negotiations and the level of demand in the carbon market, but the level of funding could be USD 100–500 million per year in 2030 for a low demand and USD 1–5 billion for a high demand (UNFCCC 2007a). This will still be less than the amount likely to be needed.

On the other hand, the commitment to provide 0.7% of GNP for ODA in order to achieve the MDGs has not been met by the donor countries yet. First pledged 35 years ago in a 1970 General Assembly Resolution, the 0.7 target has been affirmed in many international agreements over the years. The UN Millennium Project's analysis indicates that 0.7% of rich world GNI can provide enough resources to meet MDGs. They estimate that a comprehensive package to meet the MDGs would cost about USD 75-150 per person per year over the period, and that less than half of this would need to be financed by ODA. However, so far, only five countries (Norway, Luxemburg, Netherland, Sweden, and Denmark) have met or surpassed the 0.7 target. The average of total OECD DAC is 0.33% (UN Millennium Project 2008).

Miller (2008) discusses that a further challenge to making more financing available for climate-related investments is to assure poorer countries that funds are not being redirected from the primary objective of ODA, poverty alleviation. Resources provided to developing nations need to be 'new and additional'. "*This is a legitimate concern because the growth in GHG emissions is coming from a relatively small number of countries and is associated with power generation and manufacturing rather than the provision of basic energy services to the poor. The two goals are distinct except insofar as climate change may make it more difficult to meet development goals; both will require substantial focusing of resources to meet international goals*" (Miller 2008:160).

It should be ensured that only those climate policy related activities, which have a high positive impact on poverty reduction can be ODA financed.

As it is not probable that donor countries increase their ODA up to the standards of the needs of adaptation in the short-term, it is also important to create and agree on innovative financing for climate change adaptation that is predictable and adequate. A number of proposals of new mechanisms for adaptation for the period after 2012 are on the table in the UNFCCC negotiations and a possible expansion of the adaptation fund is currently being discussed under the Kyoto Protocol (see e.g. UNFCCC 2007d).

6. Integrating climate change concerns into ODA without jeopardizing poverty reduction

In financing poverty alleviation projects, ODA-financed projects should recognize the future climate change impact and the trade-offs with climate policies/goals, especially with adaptation. To consider future climate change is important to ensure the sustainability of poverty alleviation projects and setting priorities. For example, UNEP analyzed that in Kenya, the total area suitable for growing tea may be dramatically reduced with a temperature increase. Only higher-elevation areas would remain appropriate for tea growing and other areas would become too hot to grow tea (UNEP, GRID 2000).

This work demonstrates the potential dangers of not taking climate change into account in strategic sectoral planning.

Several institutions and organizations have started to consider climate change in their development activities and analyzed what proportion of total aid portfolios may be in sectors potentially affected by climate risk, where climate change concerns should thus need to be taken into account (see Klein et al. 2007 for a detailed analysis). Burton and van Aalst (1999) found that a significant share of the portfolio (up to 62%) is potentially vulnerable to climate change when analyzing the exposure of the World Bank's investment portfolio to climate risks in six countries.

In a review of the vulnerability of sampling projects from FY03 to FY06, it was estimated that 55% of the World Bank projects are sensitive to climate risks and roughly 25% are at significant risk (World Bank, 2006a). The OECD examined official aid flows (ODA and Other Official Flows) by all donors in six developing countries (Tanzania, Fiji, Egypt, Nepal, Bangladesh, and Uruguay) (OECD 2005). Estimates of aid directed at activities potentially affected by climate risks range from 12-26% of total national official flows in Tanzania to 50-65% in Nepal. In monetary terms, aid flows at risk from climate change represent half a billion USD of official aid flows in Bangladesh and Egypt, and about USD 200 million in Tanzania and Nepal. (Gigli and Agrawala, 2007).

Despite these risks, in current development strategies and plans, climate concerns are not being fully addressed. Many core development activities that relate to areas that could be affected by climate change, such as national development plans, long-term perspectives to country assistance strategies and poverty reduction strategy papers (PRSPs) generally pay little attention to climate change (Agrawala 2008). Peloso (2008) compared priorities and overlapping areas in NAPAs and PRSPs of 20 countries. In 6 of these countries actions in the PRSP were related to options not prioritized by the NAPA, and in most sectors where overlap was found, the PRSP did not address climate issues. Another example is a review of the European Commission's Country Strategy Papers (CSPs) for the period 2002-2006. It showed that climate change was identified as a priority for only three countries: China, Brazil and Argentina (Santos and De Lopez 2007). One reason would be that the development priorities are different from climate priority measures as has been discussed in this paper. However, the lack of links between NAPAs and PRSP even in areas where climate change impacts on poverty are large is a reason for concern.

Considering future climate impact is also important to avoid trade-offs of adaptation and poverty alleviation projects as some of the ODA projects could increase the vulnerabilities. Some of these examples are:

- Policies to encourage tourism or plans to encourage ecotourism in fragile areas. It may pose added risks to already fragile systems that are also projected to be critically affected by climate change. Such a problem exists in Tanzania, whose Kilimanjaro ecosystem is vulnerable to forest fires as a result of warmer and drier conditions (Agrawala 2008).
- Building houses in climate vulnerable areas, such as coastal, hot and water scarce areas might increase the needs of adaptation.
- New roads construction that affect settlement patterns; even if a new road were constructed so as to withstand climate change it is equally important to consider whether or not it would attract new settlers to areas exposed to natural hazards (Agrawala et al. 2003a). In addition, there is a demonstrable link between access and deforestation.

- Coastal conversion such as shrimp farming. Such projects would provide employment and boost incomes, but it may also leave coastal communities more vulnerable to coastal hazards such as storm surges, and reduce their future ability to adapt to the impact of climate change (Klein et al. 2007).

Donors and development cooperation agencies, including the EC, are increasingly recognizing climate change as a serious challenge to their core activities. Most of their initiatives are at the level of high-level declarations or pilot activities initiated by the climate specialists in these agencies (Gili and Agrawala 2007) and their translation into operation practices is still at an early stage (Agrawala 2008). The mainstreaming process should, however, be done in a transparent manner. It should not lead to the diversion of ODA to climate policies that do not achieve direct poverty alleviation. For many people in developing countries climate change is not at the forefront of their concerns but rather one of many factors which keeps them in poverty. The adaptive capacity of affected poor communities clearly needs to be increased, but it is important to acknowledge that the impacts of climate change on people's lives and livelihoods and the needs will vary greatly depending on their existing vulnerabilities (Klein et al. 2007).

Many sectors providing basic livelihood services to the poor are not able to cope even with today's climate variability and stresses (Sperling 2003). Therefore, they need to work on adaptation from the starting point of current variability. To date, many climate change vulnerability, impact, and adaptation assessments have focused on the medium to long term (WB 2003) and there is a lack of short-term impact information, which would be more useful for reducing poverty now. In addition to the short-term and local specific information on climate change, to avoid the trade-off with adaptation measures would demand a relatively high level of understanding of the complex societal processes that generate vulnerability and poverty. Combining measures that manage and reduce present-day risks and at the same time are suitably flexible and robust to cope with an uncertain future climate will be a challenge. Gathering information on the short-term impact and existing vulnerabilities, some of which is available in NAPAs, while recognizing the long-term impact and at the same time reviewing of policies and strategies for MDGs across the agency's portfolio would be a good way forward.

Avoiding trade-offs with adaptation will benefit donors and the poorest groups ensuring ODA projects' long-term sustainability.

7. Conclusions and Recommendations

Reviewing the literature on development and climate, some synergies between the objectives of promoting short- and medium term poverty alleviation and adaptation to climate change can be found. However, regarding mitigation, more of a trade-off can currently be seen. Most climate-change related assistance flows into medium income, emerging economies, and only addresses poverty alleviation indirectly, if at all.

On the other hand, climate change is likely to have a significant impact on developing countries and the poor are likely to suffer the most. In the first place, the developed countries need to take serious mitigation measures as they have the historical responsibilities. It is apparent, however, that without getting developing countries with emerging economies involved, it is unlikely to avoid serious future climate change. The developed countries need to provide developing countries with technological and financial support.

However, in the framework of ODA, the clearly defined priority is on poverty. There should be a separate budget line to address the growth in GHG emissions in relatively small number of countries to avoid obfuscation of a decline of resources aimed at poverty alleviation.

What ODA should consider is how development assistance can be 'climate-proofed' by integrating risk reduction and adaptation to climate change in the development and poverty reduction plans of poor countries.

Recommendations to avoid incoherence and contradictions:

1. It should be ensured that only those climate policy related activities, which have a high positive impact on poverty reduction can be ODA financed:
    a. Synergy with adaptations to climate change can be important in the context of addressing impacts on climatic impacts on health, safeguarding food production capacity, inclusion of marginalized social groups in mitigation of impacts of meteorological extreme events.
    b. Switch to renewable energy to avoid indoor air pollution

    Providing ODA for CDM capacity building is not an efficient way to achieve MDGs
2. To ensure separate budget lines for climate and development, create innovative financing for climate change adaptation that is predictable and adequate
3. Consider short-term impact of climate change when planning poverty alleviation measures while recognizing the long-term trend of impact as well
    a. Improve information on local and short-term impact of climate change
    b. Improve understanding of the existing vulnerability and the relationship with poverty to avoid trade-offs
    c. Raise awareness among decision makers and stakeholders on climate change cause and impact
    d. Review current poverty alleviation projects to integrate short term impact of climate change

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9. List of Abbreviations

AF Adaptation Fund

CDM Clean Development Mechanism

CER Certified Emission Reductions

CSP Country Strategy Papers

GCCA Global Climate Change Alliance

GHG Greenhouse Gas

GNP Gross National Product

IPCC Intergovernmental Panel on Climate Change

LDC Least Developed Countries

LDCF Least Developed Countries Fund

LULUCF Land use, land use change and forestry

MDG Millennium Development Goal

NAPA National Adaptation Programmes of Action

ODA Official Development Assistance

OECD DAC Organization for Economic Co-operation and Development Development Assistance Committee

SCCF Special Climate Change Fund

UNDP United Nations Development Program

UNFCCC United Nations Framework Convention on Climate Change

Part 2: Financing for Climate Change Mitigation and Adaptation in EC Development Cooperation

Author: Arno Behrens
Centre for European Policy Studies (CEPS)

1. Introduction

Climate change is a massive threat to human development, both in industrialised countries and in developing ones. While industrialised countries are largely responsible for the high concentration of greenhouse gases in the atmosphere, it is in the developing world where people are most vulnerable and least adaptive to the consequences of global warming[9]. This is not only due to the geographic location of most developing countries in the global south, but also because of their limited capacity to cope with changes such as lower agricultural yields, growing water stress, flooding of low-lying lands, and spread of infectious diseases to new, warmer areas[10]. However, developing countries will not just be faced with the challenge of adapting to climate change. There will also need to be considerable efforts to mitigate global warming, especially by combating deforestation - which is responsible for about 20% of global CO2 emissions. If not consistently addressed in development programmes, climate change will undermine international efforts to fight poverty and exacerbate existing inequalities between the rich and the poor.

In 2007, the UNFCCC published an analysis of existing and potential investment and capital flows regarding the international response to climate change[11]. Investment and financial flows directed to developing countries are estimated to amount to an additional € 61-62 billion[12] ($ 76-77 billion) for mitigation and at least another € 23-54 billion ($ 28-67 billion) for adaptation in the year 2030. According to the report, the most costly sectors for mitigation efforts will be transport, forestry, and industry. Funds for adaptation will mainly be focused on infrastructure, water supply, and agriculture, forestry and fishery. The magnitude of these financial transfers may be explained by the fact that developing countries will be especially vulnerable to the impacts of climate change while offering most of the cost effective opportunities for reducing emissions. The additional investment needs stated in the report refer to both private- and public-sector investments. However, the role of private investors is stressed as they contribute 86% to investments and financial flows.

Estimates about annual adaptation costs in developing countries vary greatly, with figures ranging from € 8-32 billion ($ 10-40 billion)[13] to $ 50-80 billion[14] per annum.

The main issue is climate proofing future development investments.

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[9] See, for example, UNDP (2007), Stern Review (2006), Working group on climate change and development (2007), Oxfam (2007)

[10] See European Commission (2008), DG Development information website, http://ec.europa.eu/development/policies/9interventionareas/environment/climate/climate_en.cfm, accessed on 5 June 2008

[11] UNFCCC (2007), Report on the analysis of existing and potential investment and financial flows relevant to the development of an effective and appropriate response to climate change, Dialogue on long-term cooperative action to address climate change by enhancing implementation of the Convention, Dialogue Working Paper 8

[12] Financial data originally quoted in 2005-USD was exchanged into Euro using the average 2005 USD/EUR exchange rate (1.2441). Source: Eurostat.

[13] World Bank (2006), Clean Energy and Development: Towards an Investment Framework, Development Committee, 5 April 2006

[14] See European Parliament (2008), Draft Report on building a Global Climate Change Alliance between the European Union and poor developing countries most vulnerable to climate change, Committee on Development, Rapporteur Anders Wijkman, 20 May 2008

Regarding such financial estimates, the World Bank[15] stresses that "it is not possible to make an accurate direct calculation of the additional costs associated with adaptation", because they partly depend on the effectiveness of mitigation efforts. Furthermore, the experience in mainstreaming adaptation into development projects is limited. Associated incremental cost estimates range from 5% to 20%, including "additional project preparation costs to assess climate risks, costs associated with instigating new activities more appropriate to the changing climate, and some direct costs in modified infrastructure"[16].

The European Union is at the forefront of promoting international action on climate change and has repeatedly called for alliance building with developing countries, in particular enhanced cooperation with Least Developed Countries (LDCs)[17]. In its Green Paper on adaptation options for Europe[18], the European Commission underlined the need to integrate climate change into "existing external policies and funding instruments, and where appropriate design new policies". Within this context, the European Commission has advanced a number of initiatives to support developing countries in their efforts to mitigate and adapt to climate change. These include, for example, the 2004 EU Action Plan on Climate Change and Development and the Global Climate Change Alliance. These and others will be presented in this briefing note, as well as their financial implications. The paper will also outline related Commission commitments with the European Investment Bank (EIB), the World Bank and the United Nations.

2. EC Policy Context

2.1 The EU Action Plan on Climate Change and Development

The growing understanding that climate change need to be consistently integrated into development policies encouraged the European Commission to adopt a Communication in May 2003, which dealt with climate change in the context of development cooperation[19]. In its ambition to assist partner countries in the fight against poverty, the fulfilment of the Millennium Development Goals (MDGs) and the promotion of sustainable development, the Commission concluded that climate change needs to be an integral part of EU development cooperation activities. The Communication includes a proposal for an Action Plan to support partner countries, including four strategic priorities, namely (i) raising the profile of climate change, (ii) support for adaptation to climate change, (iii) support for mitigation of climate change, and (iv) capacity development. The European Council agreed on pursuing the Commission's climate change strategy in December 2003[20] and adopted the Action Plan 2004-2008 in November 2004[21].

The Council Conclusions of November 2004 include a concrete set of actions for each of the four strategic priorities, to be implemented by the Commission, member states, national and local governments in partner countries, NGOs and other agents.

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[15] World Bank (2006), An Investment Framework for Clean Energy and Development: A Progress Report, Development Committee, 5 September 2006.
[16] Ibid.
[17] See, for example, Council of the European Union (2007), Presidency Conclusions of the Brussels European Council (8/9 March 2007), 7224/1/07 REV 1
[18] European Commission (2007), Green Paper from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, Adapting to climate change in Europe – options for EU action, COM(2007) 354
[19] European Commission (2003), Communication from the Commission to the Council and the European Parliament, Climate Change in the Context of Development Cooperation, COM(2003) 85
[20] Council of the European Union, Document 15498/03
[21] Council of the European Union, Document 15164/04

Funding from the Commission will mainly come from the Environment and Natural Resources Thematic Programme (ENRTP) and through geographical funds at country and regional level. The ENRTP foresees a total of € 23.3 million for the period 2007-2010 for the implementation of the EU Action Plan[22]. However, according to the 2007 Annual Action Programme[23] implementing the ENRTP, funding for 2007 has been limited, as the Action Plan will only benefit from a certain share of the 5-15% (about € 1.5-4 million) allocated to implementing a range of different EU initiatives related directly to climate change. This amount is likely to be at least doubled in 2008.

Under current arrangements, the implementation of the EU Action Plan will come to an end in 2008. An extension has been proposed by the Commission, but depends on member states' approval.

2.2 The Global Climate Change Alliance (GCCA)

The GCCA[24] will be the key element of the EU's external development action in the area of climate change, possibly replacing the EU Action Plan mentioned above, should the latter not be extended. It will provide a platform for dialogue and exchange as well as practical cooperation between the EU and those developing countries most vulnerable to climate change, in particular Least Developed Countries (LDCs) and Small Island Developing States (SIDS). The Alliance aims to increase developing countries' capacities to adapt to climate change and to support their participation in global mitigation efforts.

The GCCA renews the commitment of the EU Action Plan on Climate Change and Development to systematically integrate climate change into development cooperation. As a platform for dialogue and exchange, the GCCA will support developing countries to realise the integration of development strategies and climate change by providing regular opportunities for meetings between the EU and participating countries. Beyond dialogue and exchange, the GCCA will provide technical and financial support for adaptation and mitigation measures, and for the integration of climate change into development strategies. Assistance provided under the GCCA is proposed to focus on five areas: (i) developing and implementing concrete adaptation strategies; (ii) reducing emissions from deforestation; (iii) helping poor countries to take advantage of the Clean Development Mechanism (CDM); (iv) helping developing countries to be better prepared for natural disasters; and (v) integrating climate change into development cooperation and poverty strategies. Priority will be given to adaptation, Disaster Risk Reduction (DRR) and climate change integration.

The GCCA became fully operational in 2008, with a first call for proposals in January (under the climate and forest headings of the ENRTP). In its upcoming decision on the 2008 Annual Action Plan, the Commission will commit € 10 million to the GCCA for this year.

€ 3 million of this amount will be used to set up a facility to supply support, hold events and conduct analyses and studies, which is likely to be done via tender procedure. The other € 7 million will be used to support pilot actions in 3-6 pilot countries addressing adaptation and/or mitigation measures linked to climate change, in principle directly with identified partner governments.

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[22] European Commission (2007), Thematic Strategy for the Environment and Sustainable Management of Natural Resources, including Energy (ENRTP), Commission Decision of 20 June 2007

[23] European Commission (2007), Consolidated version of the 2007 Annual Action Programme implementing the programming document "Thematic Strategy Paper for the environment and sustainable management of natural resources, including energy (ENRTP) for the period 2007-2010" for the Development Cooperation Instrument, adopted by the European Commission on 3 December 2007 and amended on 19 December 2007.

[24] See European Commission (2007), Communication from the Commission to the Council and the European Parliament, Building a Global Climate Change Alliance between the European Union and poor developing countries most vulnerable to climate change, COM(2007) 540

Total Commission funding for the GCCA will be around € 300 million over the coming few years. For the period 2008 to 2010, this amount includes € 60 million under the GCCA heading of the ENRTP (€ 10 million in 2008, € 25 million each in 2009 and 2010), around € 35 million under the forests heading of the ENRTP, and about € 15 million under the heading of the EU Action Plan. The intra-ACP envelope of the 10th European Development Fund (EDF) could contribute about € 40 million for GCCA strict, up to € 180 million for Disaster Risk Reduction (DRR) – one of the priority areas of the GCCA – and a tentative amount of € 200 for renewable energy between 2008 and 2013. As the EDF only applies to ACP countries, similar options for the DCI will be assessed, which would benefit Asia, Latin America and other regions. The Commission is also looking for other GCCA related finance in national and regional programmes. Appeals to member states have only had limited impact so far, with only Sweden willing to commit to an additional € 5.5 million. The preferred aid modality will be budget support, but project support will not be excluded.

A recent Draft Report of the EP Committee on Development[25] welcomed the GCCA initiative, but noted - amongst others - that the € 60 million devoted under the GCCA heading of the ENRTP so far are "woefully inadequate". It called on increasing member state's contributions and the application of innovative finance mechanisms to reach financing of at least € 2 billion annually by 2010 and € 5-10 billion annually by 2020.

The Commission stressed that the GCCA is strictly complementary to and supportive of the ongoing process within the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. Participation in the GCCA is intended for those countries effectively committed to taking measures to respond to climate change.

2.3 The Global Energy Efficiency and Renewable Energy Fund (GEEREF)

The Global Energy Efficiency and Renewable Energy Fund (GEEREF)[26] is a fund of funds structure proposed by the European Commission, which shall support small and medium sized energy projects designed to support sustainable development in developing economies and economies in transition. It aims to maximize the leverage of public funds in raising finance for investment in energy efficiency and renewable energy projects. Its priority will be on the ACP region. As such, GEEREF constitutes a development tool as well as a contribution to global efforts to combat climate change. As a global public-private partnership, it aims to overcome existing barriers for investment in clean energy technologies by offering new risk-sharing and co-funding options for various commercial and non-commercial investors. This will also help CDM projects to take off. The technical emphasis will be on technologies with a proven track record, including mainly small hydro, biomass and on-shore wind. The focus will be on projects below € 10 million, as these are largely ignored by commercial investors.

GEEREF is presently in its final phase of approval and should become operational in summer 2008. It will be set up for an unlimited period, but can be dissolved by the shareholder Assembly. The initial funding target for the GEEREF is € 100 million, however, the Commission expects additional private risk capital of at least € 300 million up to € 1 billion to be mobilised through regional sub-funds and at the project and SME level.

[25] European Parliament (2008), Draft Report on building a Global Climate Change Alliance between the European Union and poor developing countries most vulnerable to climate change, Committee on Development, Rapporteur Anders Wijkman, 20 May 2008

[26] See also European Commission (2006), Communication of the Commission to the Council and the European Parliament, Mobilising public and private finance towards global access to climate-friendly, affordable and secure energy services: The Global Energy Efficiency and Renewable Energy Fund, COM(2006) 583

With (indicative) funding of about € 80 million from the European Commission[27] until 2010 and additional pledges by the German (€ 24 million) and Norwegian (€ 10 million) governments, the fund is already "well above"[28] € 100 million.

The 2007 Annual Action Programme implementing the ENRTP indicates total Commission commitments of € 30 million in 2007. € 25 million have been committed to the Fund itself, and another € 5 million to a "Support Facility" of the GEEREF, which will support the creation and operations of Regional Funds. These regional sub-funds will ensure that GEEREF will be flexible to take the specificities of regional energy efficiency and renewable energy markets into account.

Once 70% of the initial commitment to GEEREF proper have been invested (i.e. € 17.5 million out of the initial installment of € 25 million), the Commission will pay a second installment of € 20 million (most likely in 2008 or 2009). The third (2009) and fourth (2010) installments will amount to € 15 million each.

3. Climate change related commitments in EC development cooperation

The European Commission is developing a financial reporting tool, which summarises all funds committed to climate change related projects in development cooperation managed by DG Aidco between the years 2002 and 2007. The methodology used has been based on the 2002 OECD DAC report on aid targeting the objectives of the Rio Conventions (FCCC, CCD, CBD), using the so called "Rio Markers"[29]. These markers allow for a differentiation between climate-related funding and funding focussed on desertification and biodiversity. They are thus intended to improve the comparability of reported data. The Rio marker "Climate Change" is based on mitigation and is used to identify projects that contribute to one or more of the following objectives:

- The mitigation of climate change by limiting anthropogenic emissions of GHGs, including gases regulated by the Montreal Protocol;
- The protection and/or enhancement of GHG sinks and reservoirs;
- The integration of climate change concerns with the recipient countries' development objectives through institution building, capacity development, strengthening the regulatory and policy framework, or research;
- Developing countries' efforts to meet their obligations under the Convention.

The Commission requested desk officers and delegations to review projects in their domain as to the relevance for the climate change Rio marker, while also taking adaptation projects into account. This methodology ensures the absence of "false positives" (i.e. projects that are not related to climate change), but cannot guarantee completeness of the results.

The preliminary figures below should thus be taken with care as some mitigation related projects may be missing.

With respect to adaptation, the European Commission was faced with definition difficulties. In its broadest sense, the fight against poverty – and thus every development project – is always an effort to increase the local population's abilities to cope with vulnerability and thus also climate extremes.

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[27] € 75 million have been committed under the ENRTP 2007-2010 and another € 5 million have been financed by an ad-hoc Budget Line (21.04.05) created by the EP with special aim to support pilot actions and preparatory actions.

[28] European Commission (2007), Speech by Commissioner Stavros Dimas on "GEEREF - Innovative Financing for Clean Energy", UN Climate Change Conference, Bali: Side-event on Global Energy Efficiency and Renewable Energy Fund (GEEREF), 13 December 2007

[29] OECD-DAC (2002), Aid Activities Targeting the Objectives of the Rio Conventions 1998-2000, Paris

However, in order to get a meaningful collection of projects, the financial reporting tool only takes those projects into account, that focus mainly on increasing the adaptation capacity to climate change – either because the project clearly defines adaptation as an objective, or because the project contributes to reducing the impacts of clearly identified consequences of climate change. The amounts stated in the preliminary results below are thus merely indicative estimations of the real impact of EC funding to improve adaptation in developing countries.

Figure 1 shows the reported total climate change related commitments of the European Commission in development cooperation managed by DG Aidco between the years 2002 and 2007. Total commitments increased from about € 161.9 million in 2002 to about € 402.8 million in 2007. Total commitments reported for 2006 (€ 307.3 million) represent about 7% of total funds managed by DG Aidco in that year (€ 4.2 billion). The largest increase of total commitments can be observed between 2005 and 2007[30]. In addition, the figure for 2007 is expected to increase further, as it does not yet include programmes committed to in 2007 where project selection is ongoing and the share of funding directed to climate change related projects thus still unclear.

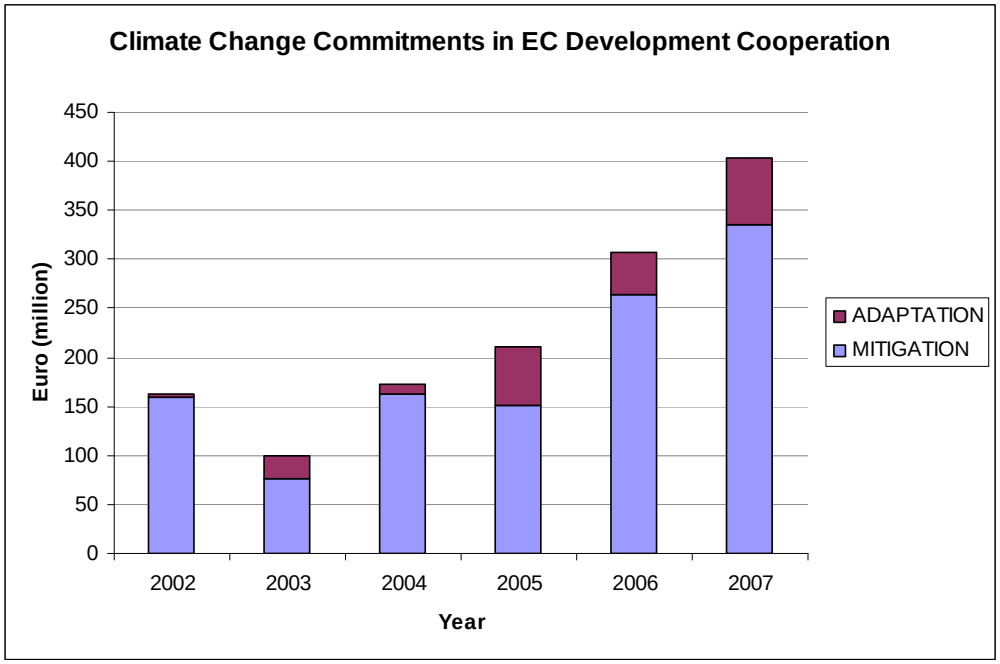

Figure 1: Preliminary results of a financial reporting tool designed by the European Commission to improve reporting on climate change related commitments in EC development cooperation.

Over the entire period between 2002 and 2007, total commitments amounted to some € 1.35 billion, with the bulk of € 1.15 billion directed to mitigation projects, and about € 204.6 million to projects related directly to adaptation. The main beneficiary of these funds was Africa with € 436.5 million for mitigation and € 36.0 million for adaptation. Latin America, the countries participating in the European Neighbourhood Policy (ENP) and Asia each received less than half of the funds dedicated to Africa. The share of different regions in total commitments did not significantly differ between the years 2002 and 2006.

[30] This may also be due to the fact that 2007 was the last commitment year under the 9th EDF and some funds *had* to be committed.

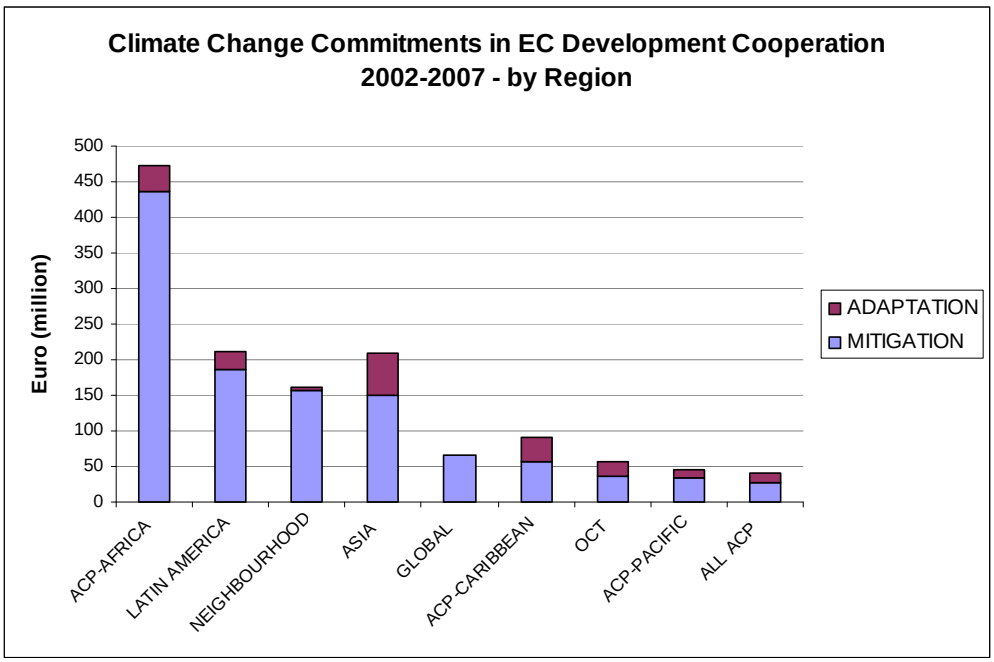

Figure 2: Preliminary results of a financial reporting tool designed by the European Commission to improve reporting on climate change related commitments in EC development cooperation.

The sectoral analysis shows that Commission funding managed by DG Aidco between 2002 and 2007 was primarily directed to projects related to mitigation in the forestry, renewable energy, and biodiversity sectors. Forestry was supported with about € 282.9 million for projects dealing with the preservation of tropical and other forests, sustainable management of forests, fight against illegal forestry and against deforestation for land use change, reforestation, rehabilitation of areas affected by desertification, and institutional support. Support for renewable energies of € 273.8 million concentrated on wind and solar energy facilities, energy generation from biomass and waste, hydropower, geothermal power, and institutional support. Almost the same amount (€ 271.9 million) was spent on biodiversity and the protection of protected areas (forests, coastal ecosystems, mangroves and wetlands).

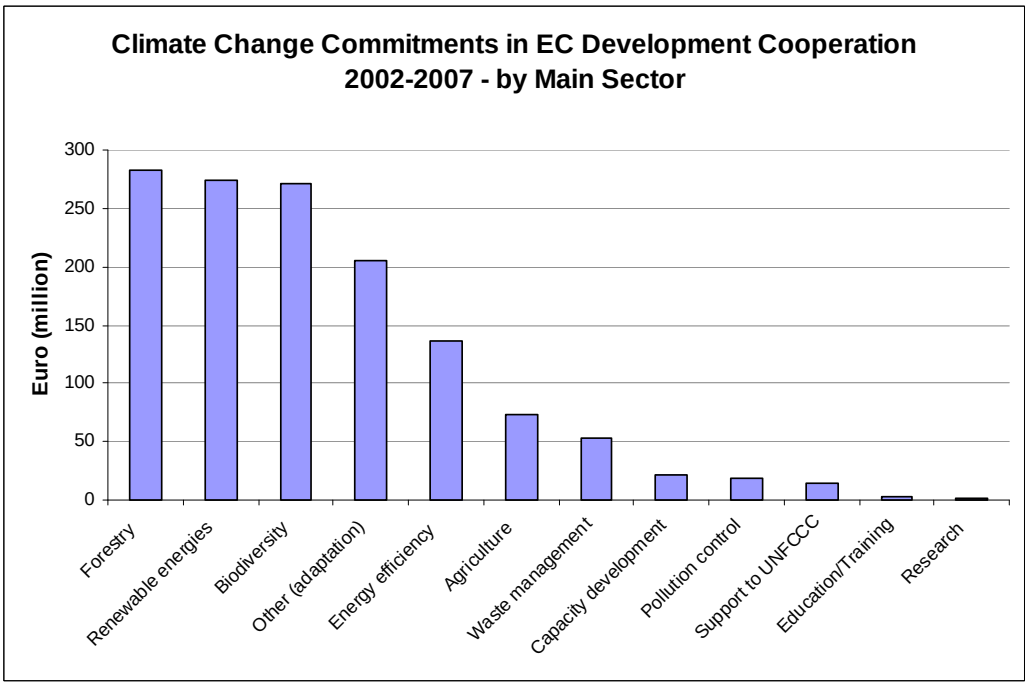

Figure 3: Preliminary results of a financial reporting tool designed by the European Commission to improve reporting on climate change related commitments in EC development cooperation.

In regards to adaptation, the European Commission committed about € 204.6 million managed by DG Aidco for the period between 2002 and 2007. As noted above, this figure is purely indicative as it only takes into account projects that are most evidently and directly linked with adaptation. Such projects relate to disaster risk reduction (e.g. early warning systems, sea defences and other infrastructure for extreme weather events), rural development and food security (e.g. promotion of drought resistant crops and water efficient agriculture), sustainable water management and health issues (e.g. improvement of health systems to cope with outbreaks of malaria, dengue and other infectious diseases).

4. The Thematic Programme for Environment and Sustainable Management of Natural Resources including Energy (ENRTP)

4.1 Overview

The "Thematic Programme for Environment and Sustainable Management of Natural Resources, including Energy" (ENRTP) addresses the environmental dimension of development and other external policies and helps to promote the EU's environmental and energy policies abroad[31]. It is currently the main instrument for climate change related funding in EC development cooperation.

The ENRTP is legally based on the Development Cooperation Instrument (DCI), which allocates a total (indicative) amount of € 804 million to the ENRTP for the period 2007-2013 and € 469.7 million for the period 2007-2010.

4.2 Multi Annual Strategy 2007-2010

The "Thematic Strategy for the Environment and Sustainable Management of Natural Resources, including Energy (ENRTP)"[32] is a guide to the implementation of the Thematic Programme for the period 2007-2010. It includes the 2007-2010 Multi-Annual Indicative Programme (MAIP) which breaks down financial allocations to five priority themes as indicated in Table 1.

Priority Theme	*Indicative allocation 2007-2010 (€ million)*
1. Working upstream on MDG7: promoting environmental sustainability	14.2
2. Promoting implementation of EU initiatives and internationally agreed commitments (incl. EU Action Plan, GCCA etc.)	273.8
3. Improving expertise for integration and coherence	8.2
4. Strengthening environmental governance and EU leadership	38.5
5. Support for sustainable energy options in partner countries and regions, and GEEREF	115.4
Total programmed funds (excl. administrative management)	**450.1**
Total programme (incl. administrative management)	**469.7**

Table 1: ENRTP indicative funding allocations for 2007-2010

[31] See European Commission (2006), Communication from the Commission to the Council and the European Parliament, External Action: Thematic Programme For Environment and Sustainable Management of Natural Resources including Energy, COM(2006) 20

[32] European Commission (2007), Thematic Strategy for the Environment and Sustainable Management of Natural Resources, including Energy (ENRTP), Commission Decision of 20 June 2007

While most of the priority themes could be somehow indirectly linked to the climate change agenda, it is mostly Priorities 2 & 5 that are directly relevant to it.

Priority 2 includes € 23.3 million for the implementation of the EU Action Plan on Climate Change in Development (see section 2.1) and originally € 50 million for support to the GCCA (see section 2.2). According to Commission information, about half of the € 71.8 million dedicated to forests could be climate change related, as they contribute to reducing emissions from deforestation. In addition, there are € 12.3 million foreseen for climate change and biodiversity in regions benefiting from the European Neighbourhood and Partnership Instrument (ENPI).

Funding for Priority 5 initiatives mainly consists of € 75 million for GEEREF (see section 2.3). Some of the remaining € 40.4 million will also benefit (mainly) mitigation activities.

In addition to the amounts indicated above, the Annual Policy Strategy (APS) 2009 of the European Commission allocated another € 70 million for ENRTP from the budget margins. These are, of course, not yet included in the Thematic Strategy and must be added to the total programme volume. The largest part of this sum (i.e. € 60 million) will be used for clean technology transfer activities between 2009 and 2013 (following up on the Bali Roadmap and the EU-China Near Zero Emissions coal project). However, only € 10 million have been committed for 2009 and 2010, with the rest committed for 2011-2013. The remaining € 10 million will be used to increase GCCA allocations in 2009 and 2010.

To conclude, around € 200 million allocated to the ENRTP between 2007 and 2010 can directly be related to climate change initiatives. This represents roughly 40% of total programme funds for that period. In addition, there are some € 50 million that have at least partly been allocated to climate related programmes.

The conclusion that roughly half of the funds allocated to the ENRTP between 2007 and 2010 will be spent on climate change related projects may thus be a sensible.

4.3 Annual Action Programme 2007

The 2007 Annual Action Programme[33] (AAP) is the annual implementation document under the ENRTP. It contains concrete projects, (calls for) proposals and support mechanisms to address the five priorities as laid out in the ENRTP 2007-2010. Total commitments under the AAP 2007 amount to € 81.7 million and are divided over five "Action Fiches", each covering one or more of the five priorities of the ENRTP.

Action Fiche A aims to promote the implementation of EU initiatives and internationally agreed commitments (Priority 2) and to support sustainable energy options in partner countries and regions (Priority 5). Only 5-15% of the € 25.2 million allocated to Priority 2 will directly benefit climate change related initiatives such as the EU Action Plan and the GCCA. Forests will play a crucial role benefiting from 50-70% of the allocated budget. The rest of the available funds for Priority 2 under Action Fiche A will be spent on Biodiversity and Desertification. Under Priority 5, the Commission committed € 5 million to improving sustainable management of energy resources, including renewables.

[33] European Commission (2007), Consolidated version of the 2007 Annual Action Programme implementing the programming document "Thematic Strategy Paper for the environment and sustainable management of natural resources, including energy (ENRTP) for the period 2007-2010" for the Development Cooperation Instrument, adopted by the European Commission on 3 December 2007 and amended on 19 December 2007.

Climate change related commitments under Action Fiche B include a maximum contribution of € 3 million to the EU Water Initiative (see also section 5.3) and the EU Energy Initiative (see also section 5.4), a contribution of € 2 million under the forest sub-theme for an action addressing the issues of bio-energy, sustainability and trade-offs, a contribution of € 0.2 million for the action to support the agreed work programme of the OECD/DAC, including support to the OECD's Environet work on environmental/poverty and climate change issues, a contribution of € 0.27 million for the Global Gas Flaring Reduction partnership (GGFR), and a contribution of € 1 million for one or more actions in the context of the Commission's membership in the Methane to Market Partnership (M2M).

Action Fiche C includes two targeted proposals directly related to climate change: a contribution of € 0.65 million to the UNFCCC and a contribution of € 1.37 million to UNEP, some of which will also benefit the Bali Strategic Plan for Technology Support and Capacity Building in developing countries. In addition, Action Fiche C includes a call for proposals which foresees € 0.6 million for support for policy dialogue to facilitate international negotiations on a global and comprehensive post-2012 climate change agreement and another € 0.5 million for outreach on Greenhouse Gas Emissions Trading by sharing information and experience with non-EU Countries.

Action Fiches D and E cover commitments to the GEEREF - € 25 million to the Fund itself and another € 5 million to a "Support Facility" (see section 2.3).

A very rough estimate shows that substantial funds, certainly more than half of the annual commitments, are allocated to climate change related initiatives in the AAP 2007.

4.4 Outlook for 2008

Given that the 2008 Annual Action Programme is still in a written procedure in the DCI committee as this paper is finalised, it is only possible to indicate possible developments for that year. It seems likely that total commitments will increase as compared to 2007.

This is partly due to the envisaged contribution of € 10 million to the GCCA and an extra allocation to what used to be Action Fiche A in the AAP 2007 (focussing on Priorities 2 & 5 of the ENRTP, see section 4.3). Contributions to the GEEREF, on the other hand, are foreseen to decrease to € 20 million.

5. Other EC funding in climate change related areas

This section will only give a very broad overview about European Commission development aid programmes in other areas that are directly or indirectly affected by climate change. Given the scope of this briefing paper, the list is not exhaustive. In addition, it should be noted that estimations about the climate related share of EC funding is not possible for most of the areas described below without a detailed analysis of each of the initiatives.

5.1 Food Security

Changing climatic conditions and the increased occurrence of extreme whether events have direct consequences on agriculture and food production, especially in LDCs. Poverty is the main reason for the vulnerability of farmers to climate change. The continuing degradation of soil, water, forests and other plant resources increases the hardship of livelihoods, especially in rural areas. To decrease the agricultural vulnerability in LDCs, the EC is about to agree on supporting the new CGIAR Challenge Programme on Agriculture and Climate Change with € 6 million for the period 2009-2010. Commission adoption is expected by the end of July 2008.

The Consultative Group on International Agricultural Research (CGIAR) will use this money "to seek ways to protect water and other natural resources under extreme weather conditions and other pressures, to develop crop varieties that are adapted to harsh climates, and to identify policy and institutional innovations that better enable countries and communities to cope with these conditions"[34].

5.2 Deforestation and Tropical Forests

According to the EuropeAid Annual Report 2007, the EC approved 67 new projects worldwide in 2006 representing a total EC contribution of € 103.7 million. This amount includes € 79.8 million under the programme for Forests, mainly supporting local efforts to develop participatory models of resource utilisation. Projects relating to forests and governance received € 31 million, of which € 13.3 million were directly linked to the development co-operation component of the EU Forest Law Enforcement Governance and Trade (FLEGT) Action Plan[35].

The total EC contribution also includes € 23.9 million under the programme for Environment[36]. These projects mainly focus on capacity-building in developing countries for implementing Multilateral Environmental Agreements (MEAs), in particular the UNFCCC.

5.3 Water

Water and sanitation are priority areas in the EU development policy. According to the EuropeAid Annual Report 2007, € 475 million were allocated under the 9th EDF for water and sanitation in 14 ACP countries and a further € 500 million through the ACP-EU Water Facility[37]. This Facility provides funds towards the objectives of the EU Water Initiative (EUWI) which was launched at the 2002 World Summit for Sustainable Development in Johannesburg (WSSD) with the aim to boost the sustainable delivery of water and sanitation services and improving integrated water resources management practices.

However, the EuropeAid Annual Report 2007 criticises the slow and regional differentiated progress of the EUWI three years after its launch and calls for greater commitment on behalf of the member states[38].

5.4 Energy

Access to affordable energy is a principal component of the MDGs. The EU's framework for dialogue and partnerships with developing countries is the EU Energy Initiative for Poverty Eradication and Sustainable Development (EUEI). The EUEI is a joint commitment by EU member states and the European Commission aimed at supporting improved access to sustainable energy services through more efficient use of fossil fuels and traditional biomass and by increasing the use of renewable energy. The EUEI thus also contributes to climate change mitigation[39]. The Initiative mobilises public and/or private resources for specific actions and instruments, both from domestic and international sources. The EUEI and its specific actions, including the Energy Facility, the COOPENER programme, the Partnership and Dialogue Facility (PDF) funded by member states, and other projects, are signs for a significant increase in the attention to energy issues in EU/EC development cooperation.

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[34] CGIAR (2008), CGIAR & climate change, Global climate change: can agriculture cope?, available at http://www.cgiar.org/impact/global/climate.html, accessed on 20 June 2008
[35] Ibid.
[36] European Commission (2007), EuropeAid Annual Report 2007, EuropeAid Co-operation Office
[37] Ibid.
[38] Ibid.
[39] See also European Commission (2007), EU action against climate change – Working with developing countries to tackle climate change

The ACP-EU Energy Facility is one if the EUEI instruments to support the supply of energy services in rural areas. 75 projects have been selected for funding with a total volume of € 220 million, 40% of which will support renewable energy[40].

The COOPENER programme is another vehicle to implement the EUEI. As part of the "Intelligent Energy – Europe programme", it will help to alleviate poverty through the promotion of sustainable energy[41]. It includes 40 projects in Asia, sub-Saharan Africa and Latin America. Asian projects include REEPRO (Cambodia, Laos), RENDEV (Bangladesh and Indonesia) and RESIREA (Vietnam, Laos, Cambodia). Finally, the EC committed € 21.5 million to the EC-ASEAN Energy Facility (EAEF) between 2002 and 2007 with a focus on renewable energy and energy efficiency[42].

Please also refer to section 2.3 for more information on GEEREF, the main funding instrument set up by the EC to support the use of clean, affordable energy in developing countries.

6. The European Investment Bank

The European Investment Bank (EIB) is the long-term lending bank of the EU and "aims to contribute, by financing sound investment, to the policy objectives of the European Union"[43]. While the EIB is mainly lending in the EU and Candidate countries, it has some climate change related initiatives in its portfolio directed towards developing countries.

As a general principle, the EIB screens all its projects for their potential to mitigate climate change and generate carbon credits. By calculating with a shadow price for CO2-emissions of up to € 45, some of the worst performing projects are eliminated and are not taken into consideration for financing. The same is true for adaptation requirements, which are taken into consideration at the design stage of projects to make them "climate proof".

Apart from its normal lending mandate for countries outside the EU, in which climate change is essentially referred to as part of the eligibility criteria, the EIB has recently set up a "Facility for Energy Sustainability and Security of Supply" which amounts to € 3 billion for the period 2007-2013. Eligible projects include wind, biomass, solar, geothermal and small/medium sized hydro, energy efficiency, carbon capture and storage (CCS), etc. The Facility also includes projects that contribute to EU security of energy supply, including the extension of transportation infrastructure in producer and transit countries, enhancing physical and environmental security, and upstream oil and gas developments directly related to EU supply. Climate change is thus not necessarily the main focus of all projects under this Facility. So far, however, € 500 million have been committed to a climate change related framework loan to China, which was signed in November 2007. Projects under this loan are currently under consideration, including four projects related to wind energy and two related to forestry.

In order to facilitate small and medium sized projects aimed at promoting climate change related investments in developing countries (Mediterranean countries, ACP, South Africa and Latin America), the EIB has set up a "Global Authorisation Mechanism" (GA) with a volume of up to € 100 million for the period between 2006 and 2008. Special emphasis of the GA is on carbon credit generating projects, which may be financed with a minimum of € 5 million to a maximum of € 12.5 million and a total of 75% of the total project costs.

[40] Ibid.
[41] Ibid.
[42] Ibid.
[43] EIB (2008), Corporate Operational Plan 2008-2010, Luxemburg

In addition, the EIB has launched the "Climate Change Technical Assistance Facility" (CCTAF), which provides upfront finance in the form of conditional loans for technical expertise associated with the development of project-based carbon assets (credits) under the Clean Development Mechanism (CDM) and Joint Implementation (JI) instruments of the Kyoto Protocol. The CCTAF has a size of € 5 million and aims to promote CDM and JI projects by providing assistance throughout the whole project cycle "from the initial project assessment through to the certification and commercialization of carbon credits"[44]. The grant needs to be paid back once the project yields appropriate carbon credits. In case the project fails, the EIB takes care of the CCTAF costs. The EIB thus "aims to help develop projects that would otherwise not be implemented"[45].

Finally, the EIB (in collaboration with other IFIs) has set up four "Carbon Funds" in 2007 with the aim to facilitate the exchange between demand and supply on the carbon market. The "Multilateral Carbon Credit Fund" (MCCF) has been launched in collaboration with the European Bank for Reconstruction and Development (EBRD) to support EBRD and EIB shareholders as well as other parties "to meet their mandatory or voluntary greenhouse gas emission reduction targets"[46]. The MCCF buys carbon credits from eligible projects in transition countries from Central Europe to Central Asia and thus increases their internal rate of return (e.g. by 1-7 percent for renewable energy projects). Initial commitments to the fund total € 190 million until 2013. The EIB is linked to the EBRD through a co-management agreement.

Another fund, the "Post-2012 Carbon Credit Fund", was set up in March 2008 by the EIB and four other leading European public financing institutions. It is based on the fact that in the absence of an international policy regime for emission reductions and carbon trading after 2012, "it is difficult for new climate-friendly projects to monetise their future reductions in greenhouse gas emissions"[47]. The Fund thus focuses on purchasing Kyoto-compliant carbon credits generated after 2012, potentially until 2020, by entering into forward agreements with project owners for the delivery of "Certified Emission Reductions" (CERs) and "Emission Reduction Units" (ERUs) generated under the CDM and JI. Once the shape of the post-2012 regime emerges, the Fund will on-sell to compliance and other buyers of carbon credits. The EIB contributes € 50 million to the total volume of € 125 million. The Fund may continue until 2024 but is expected to end by 2013 with the sale of the Emission Reduction Purchase Agreements (ERPAs).

In collaboration with the World Bank, the EIB in 2007 launched the "Carbon Fund for Europe" (CFE). This Fund is intended to help European countries to meet their Kyoto commitments. At the same time, it supports investment in clean technology projects in developing countries and thus helps them to achieve sustainable development. The volume of the CFE is € 50 million until 2017. The EIB contributes to the Fund in terms of management, knowledge about the European economy and a large project pipeline in developing countries.

Finally, the "EIB/Kreditanstalt für Wiederaufbau (KfW) Carbon Programme" focuses on assisting EU-based small and medium-sized enterprises (SMEs) which are commonly excluded from such risk sharing arrangements to access carbon credits for voluntary or statutory compliance purposes. Initial commitments of € 100 million are shared between the two institutions. The Fund is expected to be dissolved in June 2013.

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[44] EIB (2007), Climate Change Mitigation and Adaptation Activities - Global Authorisation for the financing of small and medium scale climate change projects - Marketing Prospectus, Luxemburg
[45] EIB (2007), Climate Change Technical Assistance Facility, Luxemburg
[46] EIB (2008), Corporate Operational Plan 2008-2010, Luxemburg
[47] EIB (2008), Post 2012 Carbon Credit Fund: Looking beyond the Kyoto Protocol, Luxemburg

With respect to the general climate change policy of the EIB, the Corporate Operational Plan 2008-2010 (COP) calls for all approved climate change financing initiatives to be fully operational by 2008 and that the existing carbon funds start to fulfil their targets. While the COP includes a target of € 900 million for renewable energy activities within the EU in 2008, it does not contain a similar target for developing countries. In the absence of such a target, the EIB expects to sign projects worth € 500 million for renewable energy initiatives outside of the EU in 2008.

7. World Bank initiatives

EC funding to World Bank initiatives related to climate change is negligible. This has been confirmed by DG Development and is also reflected in the EuropeAid annual report on financial contributions to the World Bank[48]. The latter allocates a mere € 1.6 million of the total amount of € 540.8 million pledged by the European Commission to Trust Funds of the World Bank signed in 2007 to MDG 7 (environmental sustainability). As regards climate change, EC contribution may be slightly higher taking into account the following concrete Trust Funds signed in 2007:

- Coastal and Biodiversity Management Project in Guinea Bissau (€ 0.75 paid in 2007 out of € 1.5 million planned)
- EC Drought Management Initiative in Kenya (€ 4.25 paid in 2007 out of € 8.5 million planned)
- Agricultural value chain development and diversification in ACP-Countries (€ 1.25 paid in 2007 out of € 2.5 million planned)

Other relevant Trust Funds the EC is committed to but where no money has been paid yet include:

- Conference on poverty reduction, environment and growth in Africa (€ 0.15 planned)
- Addressing climate change in the Middle East and North-Africa (MENA) region (€ 1.5 million planned)
- Forest Carbon Partnership Facility (FCPF) (€ 5 million planned)

The European Commission is not financially involved with the "Global Environment Facility" (GEF) and does not contribute to other initiatives of the World Bank, such as the "Clean Technology Fund" or the "Strategic Climate Fund". The latter represents an umbrella fund, which will include the "Pilot Programme for Climate Resiliance" (PPCR), an initiative regarded to be in close similarity to the European GCCA (see section 2.2). Although the Commission will collaborate with the PPCR by exchanging information and coordinating pilot projects, it prioritises the GCCA and invites member states to contribute to the Commission initiative before turning towards the PPCR.

8. EC contributions to UN initiatives

The European Commission is cooperating with the United Nations on a broad range of issues and provides substantial funding to UN initiatives. Total financial contributions of the EC have increased from less than € 200 million in 1999 to about € 1.4 billion in 2006[49]. EC support to the UN is scattered throughout the whole EC system, with the bulk provided by the so called RELEX family consisting of the Directorates General for Development, Enlargement, External Relations, Humanitarian Aid, Trade and the EuropeAid Co-operation Office. The latter alone (EuropeAid) provided some € 1.01 billion in 2006.

[48] European Commission (2008), Financial Contributions of EuropeAid to the WB in 2007, EuropeAid

[49] UN (2007), Improving Lives – Results from the partnership of the United Nations and the European Commission in 2006, United Nations System in Brussels, Brussels

It is extremely difficult to determine how much of these funds are climate change related. EC assistance in this area covers a wide variety of policy areas including food security, agricultural development, health, environment-security linkages, humanitarian coordination for immediate response, and (natural) disaster prevention and mitigation. An indication of relevant EC spending may be given by EuropeAid, which estimated that about 11%, or about € 100 million, of its total financial contributions are related to MDG 7[50] and thus to efforts directed at ensuring environmental sustainability (i.e. protecting environmental resources, biodiversity, access to drinking water, etc.). This share remained constant in 2007[51], although EuropeAid's contribution to the UN had decreased considerably to € 719 million (mainly due to reasons related to a reform of the external cooperation instruments and a reduction of contracts signed in Iraq).

In addition to EuropeAid, the Directorate General for Humanitarian Aid spent some € 18.9 million on thematic funding for UN agencies dealing with responses to humanitarian crises in 2007[52]. Some natural disasters may – at least indirectly – be attributed to global climate change (e.g. hurricanes, droughts, floods and other extreme weather events), and parts of these € 18.9 million need thus to be considered for the purpose of this study. Again, it is difficult to assign a concrete amount due to classification problems.

Other contributions to UN agencies are referred to in the ENRTP 2007Annual Action Programme, which includes € 0.65 for the UNFCCC and € 1.37 million to UNEP, some of which will also benefit the Bali Strategic Plan for Technology Support and Capacity Building in developing countries (see section 4.3).

9. Conclusions

Reporting on climate change related financing in EC development cooperation is certainly not straight forward. One problem is the definition of "climate change related financing". As noted above in section 3, a broad definition could include almost all development projects because they aim to reduce poverty – the prime cause for vulnerability to climate change. Of course, such a definition is not helpful for the purpose of a paper like this, which is thus restricted to an analysis of thematic areas such as energy, clean technology, forestry, water management, food security etc. Another challenge arises from the fact that a variety of different initiatives is managed by various different DGs under various thematic programmes and budget lines. Without the cooperativeness of EC officials (especially in DG Development, DG Aidco and DG Environment), it would have been extremely difficult to get a picture beyond the most visible initiatives. In order to facilitate future financial overviews about climate related development cooperation, it is thus recommended for the Commission to establish a transparent, publicly available reporting mechanism. The financial reporting tool as presented in section 3 is a first step in the right direction, but its preliminary results do not yet allow for robust conclusions as to amount and development of climate related commitments. It should be in the interest of the European Commission to refine the tool and to sharpen its results to take into account all funds for external aid, not just those managed by DG Aidco.

On the other hand, it should be noted that a purely financial analysis of EC commitments may not be able to illustrate the impacts of EC initiatives on local communities.

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[50] European Commission (2007), Financial Contributions of EuropeAid to the UN Funds, Programmes and specialized Agencies in 2006, EuropeAid

[51] European Commission (2008), Financial Contributions of EuropeAid to the UN Funds, Programmes and specialized Agencies in 2007, EuropeAid

[52] European Commission (2008), Annual Review 2007, DG for Humanitarian Aid (ECHO)

The most costly initiatives may not be the ones with the highest impact. Similarly, not all impacts are measurable in financial units. Other indicators should be taken into account to evaluate the full impact of EC development cooperation on climate change mitigation and adaptation.

The complexity of responsibilities within the EC system calls for a clarification of structural responsibilities, especially within the RELEX system. It may thus be worthwhile to consider merging some of the DGs responsible for development cooperation into one entity managing *all* aid programmes. While this may be politically difficult to achieve, it would increase efficiency, transparency and visibility of EC development cooperation and would also facilitate standardised climate mainstreaming of development projects and related reporting.

As to the EC initiatives presented above, it is clear that the Commission is just at the beginning of taking full account of climate change in development cooperation. This has also been concluded by a recent review of the EU Action Plan (see section 2.1), which found that "climate change concerns remain to be integrated into EU external and internal policies impacting partner countries" and that "[c]limate change has not yet been mainstreamed into EU development cooperation"[53]. The Commission is still in early stages regarding the development of ex-ante climate-proofing tools, but is more successful in promoting clean technologies in developing countries, particularly in the energy sector. Achieving the aim of consistently integrating climate change into development policies will require more than adding new funds such as the GCCA and to merge existing funding instruments under a new heading.

This may be effective for increasing visibility but may not necessarily help to integrate climate change into other existing development aid. The Commission should thus also focus on improving tools for climate proofing all other current development cooperation.

Finally, given the global financing needs related to climate change in developing countries (see section 1), the Commission contribution is indeed rather limited. However, it is not just the Commission that is required to increase funding substantially. Member states and – first and foremost – the private sector will need to step up commitments to fill the financing gap. Innovative financing mechanisms need to be explored further and launched as soon as possible. The Commission's proposal for a "Global Climate Finance Mechanism", a frontloading mechanism whose funds could be channelled to existing initiatives and funds, has the potential to raise substantial amounts of funding within a short period of time.

[53] ECORYS-NEI (2007), EU Action Plan on Climate Change and Development: 1st Bi-annual Progress Report (2004-2006), Rotterdam

10. List of abbreviations

AAP	Annua l Action Programme
ACP	African, Caribbean, and Pacific Countries
APS	Annual Policy Strategy
CBD	Convention on Biological Diversity
CCD	Convention to Combat Desertification
CCS	Carbon Capture and Storage
CCTAF	Climate Change Technical Assistance Facility
CDM	Clean Development Mechanism
CEPS	Centre for European Policy Studies
CER	Certified Emission Reductions
CFE	Carbon Fund for Europe
CGIAR	Consultative Group on International Agricultural Research
CO_2	Carbon dioxide
COP	Corporate Operational Plan
CSP	Country Strategy Papers
DCI	Development Cooperation Instrument
DG Aidco	EuropeAid Co-operation Office
DG DEV	DG Development
DRR	Disaster Risk Reduction
EAEF	EC-ASEAN Energy Facility
EBRD	European Bank for Reconstruction and Development
EDF	European Development Fund
EECCA	Eastern Europe, Caucasus and Central Asia
EIB	European Investment Bank
ENPI	European Neighbourhood and Partnership Instrument
ENRTP	Environment and Natural Resources Thematic Programme
ERPA	Emission Reduction Purchase Agreement
ERU	Emission Reduction Units
EU	European Union
EUEI	EU Energy Initiative for Poverty Eradication and Sustainable Development
EU-ETS	European Union Emissions Trading System
EUR	Euro (€)
EUWI	EU Water Initiative
FCCC	Framework Convention on Climate Change
FCPF	Forest Carbon Partnership Facility
FLEGT	Forest Law Enforcement, Governance, and Trade
FSTP	Food Security Thematic Programme
GA	Global Authorisation Mechanism

GCCA	Global Climate Change Alliance
GEEREF	Global Energy Efficiency and Renewable Energies Fund
GEF	Global Environmental Facility
GGFR	Global Gas Flaring Reduction
GHG	Greenhouse gases
IFI	International Financing Institutions
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
KfW	Kreditanstalt für Wiederaufbau
LDC	Least Developed Countries
M2M	Methane to market
MAIP	Multi-Annual Indicative Programme
MCCF	Multilateral Carbon Credit Fund
MDG	Millennium Development Goals
MEA	Multilateral Environmental Agreement
MENA	Middle East and North-Africa
NGO	Non-governmental organisation
OECD	Organisation for Economic Co-operation and Development
PPCR	Pilot Programme for Climate Resilience
R&D	Research and Development
REC	Regional Economic Communities
REEPRO	Promotion of the Efficient Use of Renewable Energies in Developing Countries
RENDEV	Reinforcing Provision of Sustainable Energy Services in Bangladesh and Indonesia for Poverty Alleviation and Sustainable Development
RESIREA	Renewable Energy Sustainable Programs for Intelligent Rural Electrification and Poverty Alleviation
SBS	Sector Budget Support
SID	Small Island Developing States
SME	Small and medium enterprises
SSATP	Sub-Saharan Africa Transport Program
UN	United Nations
UNEP	United Nations Environmental Programme
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WSSD	World Summit for Sustainable Development

Part 3: Mainstreaming climate adaptation into development policies and programmes: a European Perspective

Author: Richard J.T. Klein
Stockholm Environment Institute

1. Introduction

It is now beyond reasonable doubt that climate change is happening, that its cause is the rising concentration of greenhouse gases in the atmosphere, and that these greenhouse gases stem primarily from human activity. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR4) included observations of the first effects of climate change. It also concluded that even the most stringent mitigation efforts would not avoid further impacts of climate change in the next few decades (IPCC, 2007). This makes adaptation essential, particularly in addressing near-term impacts. Yet mitigation remains crucial as well, for reliance on adaptation alone would lead to a level of climate change to which effective adaptation is no longer possible, or only at very high social, economic and environmental costs. Successful action on climate change therefore needs to include both mitigation and adaptation.

Impacts of climate change will be experienced by many groups of society and across many economic sectors. Impacts will occur as a result of increased water stress, flood risk, food insecurity, biodiversity loss, loss of livelihoods, economic production losses, increased health risks, and other factors discussed in the IPCC AR4. Estimates of the net cost of climate change impacts depend on the rate and magnitude of climate change and on the economic assumptions adopted by the analysts.

Mitigation and adaptation

Action on climate change can take the form of mitigation and adaptation. Mitigation concerns all policies and measures aimed at reducing the emission of greenhouse gases such as CO_2, or at capturing them in forests, oceans or underground reservoirs. Adaptation is the term used to describe all activities aimed at preparing for or dealing with the consequences of climate change, be it at the level of individual households, communities and firms, or of entire sectors and countries.

The IPCC AR4 concluded that:

- For global average temperature increases of 1–3°C above 1990 levels, both costs and benefits can be expected in different places and sectors,
- Low-latitude and polar regions are projected to experience net costs even for small increases in temperature,
- For global average temperature increases greater than 2–3°C, it is very likely that all regions will experience either declines in net benefits or increases in net costs.

Global mean damage costs could be 1–5% of global gross domestic product (GDP) for 4°C of warming, with developing countries expected to experience larger losses. The larger losses in developing countries are due not only to their geographical location (arid, semi-arid, low-lying coastal areas and flood plains, and small islands), but also to higher social and economic vulnerability. In locations with higher exposure, higher sensitivity and low adaptive capacity to climate change impacts, the net costs will be significantly larger than the global aggregate.

These numbers show that climate change is not only or even primarily an environmental challenge: for the largest part of the world it is, above anything else, a development challenge. The links between greenhouse gas emissions, mitigation of climate change and development have been well studied over the years.

More recently the links between adaptation and development have been highlighted. A crucial eye-opener was the report *Poverty and Climate Change: Reducing the Vulnerability of the Poor through Adaptation*, prepared by ten bilateral and multilateral donor organisations in 2003. It concluded that climate change presents a challenge to meeting important development objectives, including the Millennium Development Goals (MDGs), and that effective pro-poor development is key to adaptation, such as (Sperling, 2003):

- *Supporting sustainable livelihoods* by targeting development efforts to help communities to enhance social and human capital, preserve and restore natural capital, and secure appropriate physical and financial capital,
- *Ensuring equitable growth* by fostering growth in areas of the economy that provide opportunities for increased employment and higher returns for poor people's assets,
- *Improving governance* by making public institutions responsive, participative and accountable to those they serve in order to make decision-making processes and implementation more robust and effective.

The report recommended that adaptation be designed so as to be consistent with development priorities. It presented a strong case for taking climate change into account in development activities, in particular where this could add a long-term sustainability component to official development assistance (ODA). Klein (2001) identified three ways in which adaptation to climate change is relevant to ODA:

- The risk of climate change to the ODA activity and its deliverables (e.g. water supply, food security),
- The vulnerability to climate change of the community or ecosystem that should benefit from the ODA activity,
- The possible effects of the ODA activity and its deliverables on the vulnerability of communities or ecosystems to climate change.

This briefing note presents the case for integrating adaptation to climate change into mainstream development planning and decision-making (also referred to as "mainstreaming"). In so doing it will focus on mainstreaming adaptation into ODA and discuss it from both an operational and a climate policy perspective. It will identify two policy paradoxes associated with mainstreaming and propose how the European Union and its member states could address them. First, however, it will give a short summary of how recent thinking on adaptation to climate change in developing countries has evolved.

2. Adaptation to climate change: more than technology

The traditional view of adaptation tends to assume that a national government is responsible for implementing technological adaptation measures (e.g. dams, early-warning systems, seeds and irrigation schemes) based on specific knowledge of future climate conditions (e.g. Carter et al., 1994). However, this technology-based view of adaptation has been challenged for three reasons (e.g. Smithers and Smit, 1997; Burton et al., 2002; Adger et al., 2003).

First, even though climate science has made great advances over the past years, it often remains difficult to project future impacts of climate change in sufficient detail to justify investment in technological adaptation measures, in particular on a local scale. An important uncertainty relates to the effect of a changing climate on the frequency, magnitude and spatial occurrence of extreme weather events, such as floods, cyclones and droughts. Planning specific measures based on projections of future climate conditions therefore presents a great challenge to developing countries.

Second, technological adaptation measures can be important in reducing vulnerability to climate change, but they do have their limitations. Three issues need to be considered here (Klein et al., 2007):

- Technological adaptation measures may be only partially effective if they do not address non-climate factors that contribute to vulnerability to climate change. For example, the technological improvement of a water supply system to ensure the availability of water during dry spells will be of limited benefit to people who do not have access to this water. The inequitable distribution of water rights or the price of the water may be more important factors in causing vulnerability to drought than deficient water supply technology.
- Technological adaptation measures may be ineffective if they are not suited to local conditions. For example, new drought-resistant crop varieties may indeed be very resistant to drought, but their acceptance in a community also depends on their costs and availability, access to fertiliser and other inputs, storage constraints, ease of preparation, flavour and so on.
- Technological adaptation measures may turn out to be maladaptive if they are implemented without recognition of relevant social and environmental processes. For example, new coastal infrastructure could disturb the offshore sediment balance, resulting in erosion in adjacent coastal areas. Irrigation can lead to the salinisation of groundwater and the degradation of wetlands, as well as leaving subsistence farmers with reduced access to groundwater and productive land.

Third, the traditional view of adaptation does not consider the reliance of adaptation on development, and vice versa. People are vulnerable not only to climate change but to a range of other stresses, depending on factors such as health status, education and other socio-environmental circumstances shaped by political and economic processes (Kelly and Adger, 2000; O'Brien et al., 2004). Government initiatives and technological measures designed to adapt to specific changes in climate may therefore fail to address the issues considered as most urgent by local communities. These issues may include access to water and food, health and sanitation, education and livelihood security.

3. Mainstreaming adaptation into development

The above leads to the conclusion that adaptation to climate change should not be restricted to, for example, installing bigger pipes and planting drought-resistant crops, but instead take a comprehensive approach that seeks synergies with development. An adaptation strategy could include measures that address the underlying factors of vulnerability to climate change, particularly on a local scale. These underlying factors are often structural issues characterising low development, such as high dependence on natural resources, resource degradation, inability to secure basic needs and lack of information and capacity (Sperling, 2003). If technological measures are required to reduce vulnerability to climate change, they need to be accompanied by non-technical measures (e.g. training and capacity building, institutional support) that ensure that the technologies are accessible, effective and suited to local conditions.

The first empirical studies of climate adaptation (reviewed and assessed in the IPCC AR4 by Adger et al., 2007) have also shown that the success of adaptation relies strongly on broader development progress. When adaptation is limited to responses specific to climate change, it neglects the fact that vulnerability to climate change does not emerge in isolation.

For example, it may help to provide a rural household that grows a particular subsistence crop with a more drought-resistant variety, but a more robust and comprehensive adaptation strategy would seek more broadly to improve food security through a set of coordinated measures that include agricultural extension, crop diversification, integrated pest management and rainwater harvesting. In addition, a poor rural household is more likely to use these options if it has a literate family member, if it has access to investment capital through local financial institutions, if it enjoys relatively intact social networks, and if it can hold policymakers accountable. In other words, it takes more than narrow, climate-focused measures to build adaptive capacity.

A recent study by the World Resources Institute, *Weathering the Storm: Options for Framing Adaptation and Development* (McGray et al., 2007), confirms this view. It reviewed more than 100 initiatives labelled as adaptation in developing countries and found that in practice there is little difference between these adaptation initiatives and what can be considered good development. The difference lies more in the definition of the problem and the setting of priorities than in the implementation of solutions. The study presents adaptation as a continuum, ranging from more narrowly defined activities aimed specifically at addressing impacts of climate change, to building response capacity and addressing the drivers of vulnerability (see Figure 1).

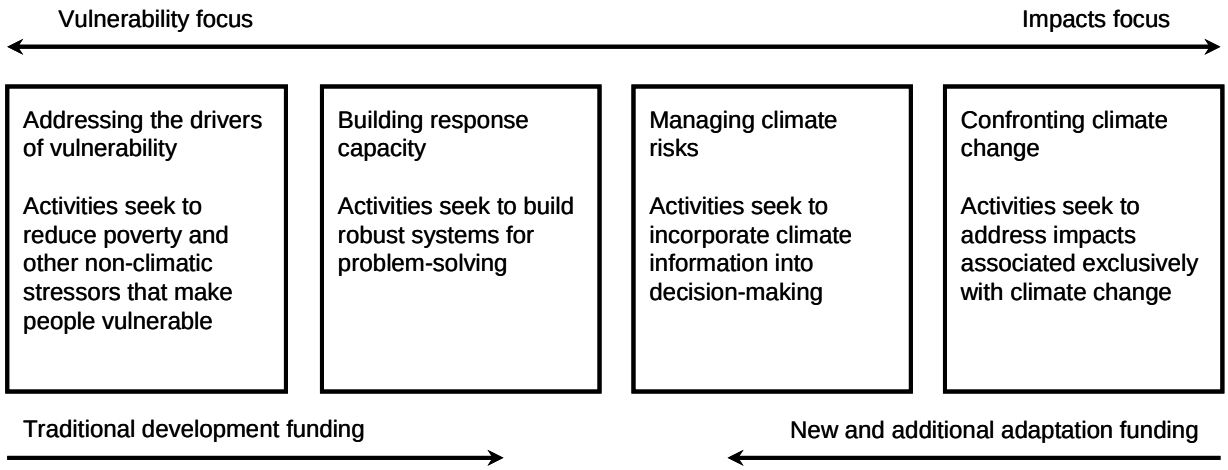

Figure 1: Adaptation is a continuum from addressing the drivers of vulnerability to confronting the impacts of climate change (adapted from McGray et al., 2007).

Mainstreaming adaptation into development can mean different things to different people depending on whether they hold a technology-based view of adaptation or a development-based view. In the technology-based view, mainstreaming largely refers to ensuring that projections of climate change are considered in the decision-making of relevant government departments and agencies, so that technologies are chosen that are suitable to the future climate. For example, water managers would fit a drainage system in an area projected to experience more intense rainfall events with bigger pipes when replacing old ones, and agricultural extension services concerned about the possibility of increased drought would advise farmers to select crop varieties that are better suited to grow under dry conditions. This type of mainstreaming has also been referred to as "climate-proofing" or "mainstreaming minimum". It focuses on the two right-hand boxes in Figure 1.

In the development-based view, mainstreaming can ensure that, in addition to climate-proofing, development efforts are consciously aimed at reducing vulnerability by including priorities that are critical to successful adaptation, such as ensuring water rights to groups exposed to water scarcity during a drought. This type of mainstreaming has been referred to as "mainstreaming plus", and focuses on the full continuum of Figure 1.

Mainstreaming in ODA

Discussions on mainstreaming are most advanced in the context of ODA, which still contributes a substantial share of income of many developing countries, particularly the least developed countries. In April 2006 the OECD organised a ministerial-level meeting of its Development Assistance Committee (DAC) and its Environment Policy Committee (EPOC). The meeting served to launch a process to work in partnership with developing countries to integrate environmental factors efficiently into national development policies and poverty reduction strategies. The outcomes of the meeting were an agreed Framework for Common Action Around Shared Goals, as well as a Declaration on Integrating Climate Change Adaptation into Development Co-operation. These outcomes are providing an impetus to all development agencies to consider climate change in their operations and thus facilitate mainstreaming. The OECD is currently preparing practical guidance for doing so.

It recognises that adaptation involves many actors, ranging from individual households to national governments, but that an enabling environment needs to be created to ensure they can adapt successfully. This includes removing existing financial, legal, institutional and knowledge barriers to adaptation, and strengthening the capacity of people and organisations to adapt.

When linking adaptation with development, it is important to recognise that poverty reduction does not always equate with vulnerability reduction (Adger et al., 2003; Eriksen and Kelly, 2007). In these cases synergies between adaptation and development may not exist. There are well-documented cases of activities aimed at reducing poverty that have in fact increased vulnerability. For example, the conversion of mangroves into shrimp farms may generate economic gains but leave coastal communities more vulnerable to coastal hazards such as storm surges. New roads in developing countries often affect settlement patterns; even if a new road were constructed so as to withstand climate change it is equally important to consider whether or not it would attract new settlers to areas exposed to natural hazards. If conflicts arise between poverty reduction and vulnerability reduction, adaptation would involve designing and implementing measures that are more targeted to specific threats than development activities tend to be. Mainstreaming can then ensure that development activities themselves are not maladapted to climate change.

4. Mainstreaming adaptation from an operational perspective

Regardless of whether one holds a technology-based or a development-based view of mainstreaming, from an operational perspective mainstreaming makes common sense: it is a "no-regrets" approach to making development investments more climate-proof and ensuring they enhance adaptive capacity. The potential for doing so is considerable.

Many developing countries have already begun to integrate climate risks into their sectoral and national development planning. India, for example, has adopted policies to reduce risks and enhance the adaptive capacity of the most vulnerable sectors and groups. Those policies are primarily driven by the objective of ensuring sustainable livelihoods and alleviating poverty. For example, adaptation in the agricultural sector includes the development of drought-resistant crop varieties, the promotion of crop diversification and the extension of the National Agricultural Insurance Scheme. Overall, India reports to be spending 2% of its GDP on adaptation activities in the areas of agriculture, water resources, health and sanitation, coastal zones, forests and disaster risk reduction (Ray, 2007).

Since 2001 the least developed countries (LDCs) have been preparing national adaptation programmes of action (NAPAs), which allows these countries to identify priority activities that respond to their urgent and immediate adaptation needs.

Since 2001 the least developed countries (LDCs) have been preparing national adaptation programmes of action (NAPAs), which allows these countries to identify priority activities that respond to their urgent and immediate adaptation needs. One of the features of the NAPAs is that they do not attempt to implement broad national development goals but rather build upon national goals and integrate adaptation into existing national plans. For example, Gambia established a project steering committee chaired by a Permanent Secretary, with representatives from the National Assembly and from government departments responsible for budgetary issues, poverty alleviation, and oversight of local government and decentralisation. In many LDCs the NAPA process has strengthened institutional capacity at the national level, thus improving the countries' ability to integrate adaptation into sectoral planning and decision-making. Rwanda, for example, identifies adaptation as a development priority in its latest Economic Development and Poverty Reduction Strategy (EDPRS), which covers the period 2008–2011. Rwanda aims at developing sectoral strategies to implement the EDRPS whilst taking into account the priorities it identified in its NAPA.

In spite of these efforts made by developing countries, in many cases external support will be required to meet adaptation needs. ODA is already an important source of income for many LDCs, and it can play a major part in supporting adaptation. The OECD estimated that in Nepal, for example, as much as 50–65% of total ODA is directed at activities potentially affected by climate risks (Agrawala, 2005). At the same time, more than 60% of all ODA from OECD countries could positively contribute towards adaptation and adaptive capacity. This potential is now being recognised by donor agencies. Several of them have started screening their portfolios for mainstreaming opportunities.

Klein et al. (2007) analysed the six portfolio screenings that were publicly available by 2006, focusing on both the results and the methods applied. The six screenings were conducted independently from one another and therefore used different methods, but they all pursued the same two goals:

- To ascertain the extent to which existing development activities already consider climate risks or address vulnerability to climate change,
- To identify opportunities for incorporating climate change into future activities.

Klein et al. (2007) found that climate change was initially almost absent from the agencies' activities. Where mentioned, it was framed as an issue of mitigation and in the domain of environment ministries and departments. Notably, little connection to climate change was made in areas where the climate already poses clear risks today.

However, since the initial screenings the situation has changed considerably, based on an increased understanding of the need for mainstreaming and what such mainstreaming would entail for donor agencies. In addition to screening their portfolios, donor agencies have now begun to screen individual projects to identify whether or not:

- Climate change could pose a risk to meeting the objectives and producing the deliverables of the project,
- Concrete adaptations and measures to strengthen adaptive capacity could be incorporated into the project design,
- The project might turn out to be maladaptive by increasing the exposure of people and economic assets to climate risk.

A range of project screening tools and methods have been developed to assist in this process, all of which are currently being tested. Three examples are presented in the box on this page.

At the initiative of the Swiss Agency for Development and Cooperation, a group of donor agencies have recently started an informal process to share experiences from the use of these and other screening tools and methods. Any lessons learnt may be considered by the OECD in its preparation of the aforementioned guidance for mainstreaming.

Screening tools for mainstreaming

The UK Department for International Development is piloting the tool ORCHID (Opportunities and Risks from Climate Change and Disasters) in Bangladesh, China, India and Kenya. ORCHID takes a risk management approach to identify practical and cost-effective measures to integrate disaster risk reduction and climate change adaptation into development activities. The World Bank is testing its tool ADAPT (Assessment and Design for Adaptation to Climate Change: A Prototype Tool) in South Asia and sub-Saharan Africa. ADAPT identifies potential climate risks posed to projects in agriculture and natural resource management by undertaking a sensitivity analysis for specific projects. It also gives advice on adaptation activities. The International Institute for Sustainable Development, IUCN – the World Conservation Union, the Stockholm Environment Institute and Intercooperation have collectively produced the tool CRiSTAL (Community-based Risk Screening Tool – Adaptation and Livelihoods). It considers agriculture, water resource management, infrastructure and natural resource management and is currently being piloted in Nicaragua, Mali, Tanzania and Sri Lanka. CriSTAL delivers vulnerability and livelihood profiles as well as details for project modification.

5. Mainstreaming adaptation from a climate policy perspective

Mainstreaming adaptation into development makes common sense from an operational perspective and also from a development policy perspective. After all, the integration of similar policy objectives into one operational programme leads to a more efficient use of financial and human resources than if adaptation were designed, implemented and managed separately from ongoing development planning and decision-making. It reduces transaction costs and improves the effectiveness of aid. But from a climate policy perspective mainstreaming creates a dilemma. Financial flows for adaptation and those for development (e.g. ODA) are managed separately as a result of climate policy negotiations. It is as yet unclear if and how the separate funds could be combined.

Article 4.4 of the United Nations Framework Convention on Climate Change (UNFCCC) commits developed countries to assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects. This assistance is understood to come in the form of new and additional funding (i.e. beyond what developed countries are already planning to provide as ODA).

In 2001 the Conference of the Parties (COP) to the UNFCCC established three funds to support adaptation activities in developing countries: the Least Developed Countries Fund and the Special Climate Change Fund under the UNFCCC, and the Adaptation Fund under the Kyoto Protocol. The two funds under the UNFCCC are operational and managed by the Global Environment Facility (GEF), as is the Strategic Priority "Piloting an Operational Approach to Adaptation", which the GEF established under its Trust Fund. The operational GEF funds provide funding to eligible countries to meet the additional costs of adaptation. The remaining costs are to be borne either by the recipient country and/or by other bilateral or multilateral donors. As of March 2008, USD 270 million had been pledged for adaptation under the Least Developed Countries Fund and the Special Climate Change Fund, of which USD 50 million has been allocated.

Investment needs for adaptation

Adaptation to climate change will bring with it additional costs for both the public and the private sector. In the past two years a number of organisations have published estimates of these costs. The United Nations Framework Convention on Climate Change (UNFCCC) estimated the additional investment and financial flows needed worldwide to be USD 60–182 billion in 2030. The largest uncertainty in this estimate is in the cost of adapting infrastructure, which may require USD 8–130 billion in 2030, one-third of which would be for developing countries. The UNFCCC also estimated that an additional USD 52–62 billion would be needed for agriculture, water, health, ecosystem protection and coastal-zone protection, most of which would be used in developing countries. In total, USD 28–67 billion in additional investment and financial flows would be needed for adaptation in developing countries in 2030.

Others arrive at similar estimates. The World Bank concluded that the incremental costs to adapt to projected impacts of climate change in developing countries are likely to be of the order of USD 9–41 billion per year, whilst Oxfam International estimated this number to be over USD 50 billion per year. The United Nations Development Programme has the most pessimistic estimate to date: it suggested that by 2015 financing requirements for adaptation in developing countries could amount to USD 86–109 billion per year.

The Adaptation Fund is not yet operational. As decided by the COP serving as the Meeting of the Parties to the Kyoto Protocol (CMP) in 2007, it will be managed by a special Adaptation Fund Board (AFB). The AFB is developing specific operational policies and guidelines to be approved by the CMP in Poznan in December 2008. The Adaptation Fund is the first financial instrument under the UNFCCC and its Kyoto Protocol that is not based solely on voluntary contributions from donor countries. It receives a 2% share of proceeds from project activities under the Clean Development Mechanism (CDM) and can also receive funds from other sources to fund concrete adaptation projects. The actual amount of money that will be available from the fund depends on how much the CDM is used and on the price of carbon. According to a World Bank estimate it is likely to total USD 100–500 million by 2012.

In spite of these dedicated funds, developing countries are concerned that as a result of donors seeking to create synergies between adaptation and development investments, funding for adaptation will not be new and additional but in effect will be absorbed into ODA budgets of a fixed size. The concern is fuelled by the fact that the amount of money available in these new funds is only a fraction of the estimated investment needs in developing countries (see box). Moreover, only a handful of countries have achieved the target, reaffirmed most recently in Monterrey, of providing 0.7% of their gross national income as ODA. A second, related concern is that mainstreaming could divert any new and additional funds for adaptation into more general development activities, which limits the opportunity to evaluate, at least quantitatively, their benefits with respect to climate change specifically. Third, there is concern that donors' use of ODA to pursue mainstreamed adaptation could impose conditionalities on what should be a country-driven process.

6. The Bali Action Plan and beyond

The Bali Action Plan, agreed in December 2007, launched a comprehensive process to enable the full, effective and sustained implementation of the UNFCCC through long-term cooperative action, now, up to and beyond 2012, in order to reach an agreed outcome and adopt a decision in Copenhagen in December 2009. The Bali Action Plan attaches equal weight to mitigation and adaptation, and identifies technology and finance as the key mechanism to enable developing countries to respond to climate change. It lists five issues that can enhance action on adaptation:

- International cooperation to support urgent implementation of adaptation actions, including through vulnerability assessments, prioritisation of actions, financial needs assessments, capacity building, and integration of adaptation actions into sectoral and national planning,
- Risk management and risk reduction strategies, including risk sharing and transfer mechanisms such as insurance,
- Disaster reduction strategies and means to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change,
- Economic diversification to build resilience,
- Ways to strengthen the catalytic role of the UNFCCC in encouraging multilateral bodies, the public and private sectors and civil society, building on synergies amongst activities and processes, as a means to support adaptation in a coherent and integrated manner.

Work is already underway on these five issues, and this needs to continue. However, more efforts are needed if the Bali Action Plan is to lead to success in Copenhagen. In particular with respect to mainstreaming it will be necessary to address the following two questions:

- Should adaptation be designed as stand-alone activities or should it be mainstreamed into development projects and programmes?
- Should the provision of support for adaptation follow the polluter-pays principle or is it an additional focus of ODA?

In reality these questions are not either/or questions, as the answers depend on the type of adaptation that is being considered and on what it is trying to achieve (cf. Figure 1). However, the current climate negotiations under the UNFCCC are leaving little room for such nuance, in particular the negotiations on adaptation funding for developing countries. As mentioned earlier, developing countries are concerned that efforts to promote the mainstreaming of adaptation are in fact a ploy of the developed countries to avoid having to provide new and additional funding for adaptation. As recently as the UNFCCC subsidiary bodies meeting in June 2008, developing countries therefore called for stand-alone adaptation activities, as these would allow for the measurable, reportable and verifiable use of new and additional funding, as stipulated in the Bali Action Plan.

Thus, the first question is related to the second one, which shows that the operational perspective of mainstreaming ("common sense") cannot be separated from the climate policy perspective ("new and additional funding"). Both the current set up of adaptation funding under the UNFCCC and the fact that ODA is gradually being used less to support project-based activities and more to provide programme and budget support make it difficult to make mainstreaming happen in practice. At the same time, however, the need for adaptation investments in developing countries becomes increasingly evident, and the willingness of developed countries to make funds available increases as well. An important bottleneck seems to be to reach agreement on the modalities of adaptation funding under the UNFCCC. Table 1 summarises the pros and cons of both stand-alone adaptation and mainstreamed adaptation in the context of adaptation funding.

	Stand-alone adaptation	Mainstreamed adaptation
Pro	Easy to calculate new and additional funding needs	More efficient in implementation
	Greater country ownership	More effective, more sustainable impact
Con	High administrative costs when scaled up	Difficult funding situation, possibly diverting ODA
	Synergies with development may be missed	Seen as imposing conditionalities

Table 1: Pros and cons of stand-alone adaptation and mainstreamed adaptation in the context of adaptation funding, as perceived and expressed during UNFCCC negotiations.

Regardless of whether they are used to support stand-alone or mainstreamed activities, existing and expected resources fall short of the estimated costs of adaptation by roughly two orders of magnitude. Substantially more financial resources are needed. A number of developed countries and development banks are in the process of setting up separate ODA-based funds that could also support adaptation activities in developing countries, thus complementing or competing with the GEF funds and the Adaptation Fund. The new funds include the Environmental Transformation Fund announced by the United Kingdom, the Cool Earth Partnership by Japan, and the Climate Investment Funds proposed by the United States, United Kingdom and Japan in cooperation with the World Bank. The modalities for funding and the governance structures of the funds are still under discussion, so it is too early to comment.

However, there has been some early concern about the fact that these funds are donor-driven, that money may be made available as loans instead of grants, and that possible competition between these funds and those under the UNFCCC and the Kyoto Protocol may lead to a decoupling of adaptation and mitigation in the climate negotiations. Such decoupling could undermine the developing countries' position that support for adaptation is a moral imperative for the developed countries, which has to go hand in hand with emission reductions. In addition, it could weaken the carbon market. The carbon market, created by the Kyoto Protocol, has the potential to move huge financial flows to developing countries for mitigation and adaptation. In theory the carbon market could make a future climate agreement self-financing: if emission targets were ambitious the price of carbon would rise significantly, which would increase financial flows to developing countries.

The aforementioned Adaptation Fund is the first example of the use of market-based options to generate substantial financial resources to address climate change (as opposed to using ODA). However, instead of taxing carbon emissions (which would be in line with the polluter-pays principle), it taxes carbon exchanges, which provides a disincentive to investments in developing countries. Nonetheless, developing countries and many non-governmental organisations see the institutional set-up of the Adaptation Fund as superior to those of the separate funds that are being established. In particular the direct representation of developing countries on the Adaptation Fund Board and the fact that applicant countries can choose their own implementing entities is seen as a strong improvement on the existing GEF-managed funds under the UNFCCC. The GEF has been criticised for the way in which it has managed the funds for adaptation under the UNFCCC (e.g. Möhner and Klein, 2007), and it has yet to gain widespread support for its role as the secretariat of the Adaptation Fund Board.

In addition to the 2% levy on the CDM, substantially more funding for adaptation can be generated by putting a levy on, for example, emission trading in developed countries and on air travel. Various options have been considered in a separate briefing note. Regardless of the preferred modalities for generating funds, adaptation financing needs to evolve into an arrangement in which Parties accept binding commitments to contribute resources towards adaptation. Parties at COP-13 in Bali reiterated the need for such steps, calling for "adequate, predictable and sustainable financial resources". To rely on ad-hoc discretionary contributions is to risk a perennial shortfall in resources.

A principle-based and transparent process for determining national burden-sharing contributions to international adaptation funding is necessary, and there is a legal basis for this. It is a universal ethical principle that it is wrong to harm others (or risk harming them) for one's own gain, and that one owes compensation if one does such harm. Over time this moral principle has become firmly encoded in national case law and legal reasoning with respect to environmental pollution within national boundaries. International law echoes the same principle. The Stockholm Declaration of 1972 declares in Principle 21 (reaffirmed in Principle 2 of the Rio Declaration) that states have "the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction" and reiterates in Principle 22 that "States shall cooperate to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such States to areas beyond their jurisdiction".

Mainstreaming in Europe

Mainstreaming can be beneficial to developed and developing countries alike. For example, the European Commission has progressed adaptation through the European Climate Change Programme group on Impacts and Adaptation, under the remit "to integrate adaptation fully into relevant European policy areas, to identify good, cost-effective practice in the development of adaptation policy and to foster learning." The information from the working group informed the European Commission and led to a Green Paper on adaptation, published in 2007. The Commission is currently preparing a White Paper on adaptation, due for publication in November 2008, which will set out the next steps in the development and implementation of European Commission adaptation policy.

The European Commission's 2007 Green Paper *Adapting to Climate Change in Europe – Options for EU Action* puts great emphasis on integrating adaptation into sectoral planning and decision-making. For example, it outlines the challenge to incorporate measures to cope with climate change into all sectors covered by the Water Framework Directive of the EU, starting with the first planning cycle for 2009. The use of economic instruments should provide strong incentives to reduce water consumption and increase efficiency of use.

Whilst the main focus of the Green Paper is on adaptation within the EU member states, it also contains a section on integrating adaptation into EU external actions. It states that the EU must further assess how to integrate adaptation to climate change into existing external policies and funding instruments, and where appropriate design new policies. Adaptation should also be integrated into strategies for poverty reduction (i.e. Poverty Reduction Strategy Papers, PRSPs), as well as development planning and budgeting. The emphasis on integration is stronger than in the 2004 *EU Action Plan on Climate Change and Development*, suggesting that support for mainstreaming adaptation into development has grown. The European Commission has established a Global Climate Change Alliance (GCCA) to promote an enhanced dialogue on climate change between the EU and developing countries, and to support pilot projects, in particular regarding integration of adaptation activities in key sectoral policies.

Yet despite these promising initiatives, it is clear from the above that a much larger effort is required of the European Union and its member states to support adaptation and mainstreaming in developing countries.

First, the European Union and its member states will need to clarify their position concerning the two questions posed in the previous section. As for the first question, there is no need to make an *a priori* decision for stand-alone adaptation or for mainstreaming. Instead, the choice for one or the other will need to be an outcome of a country-driven national planning process.

National adaptation planning in developing countries needs to be supported under the UNFCCC, and developed countries will need to provide follow-up support to implement adaptation activities identified in these national plans. The GCCA could become an important European instrument for providing such follow-up, provided that its budget is substantially increased.

As for the second question, it then depends on the nature of these activities whether ODA or new and additional funding is most appropriate to support adaptation to climate change. ODA could be used to support activities that fit in the two boxes on the left-hand side of Figure 1 (addressing the drivers of vulnerability and building response capacity), whilst new and additional funding could support activities corresponding with the two boxes on the right-hand side (managing climate risks and confronting climate change). The European Union and its member states should provide clarity on how traditional ODA, the Adaptation Fund and various other bilateral and multilateral funds for adaptation can complement one another. In addition, they should address concerns that mainstreaming adaptation may not lead to new and additional funding. The GCCA could play a role in providing such clarity and addressing the concerns.

Second, the European Union and its member states should accept a transparent, principle-based allocation of responsibility for adaptation funding, resulting in adequate, new and additional money to support adaptation programmes in developing countries. Levies on carbon market transactions and auctioning emission permits are two existing mechanisms of generating new and additional funds consistent with the polluter-pays principle. The use of such mechanisms needs to be expanded. In addition, the overall European Union's official development assistance should reach 0.7% of gross EU income, without including new and additional funds generated by the carbon market. In collaboration with the OECD DAC, the European Union should develop guidance for bilateral donor agencies to ensure that funding for adaptation is reported consistently in all member states.

Finally, the European Union and its member states need to invest in trust building with the developing countries. Regardless of the direction of the current discussions, an agreement in Copenhagen in 2009 is clouded by a "trust deficit" between developed and developing countries. Questions of equity and fairness in climate policy extend to virtually all agreements that require North–South cooperation. Within climate policy, developing countries question the good faith of developed countries because of the failure of many of them to meet their Kyoto commitments. As mentioned earlier, there is also little faith in the promise of new and additional finance for developing countries. Notwithstanding the strong global consensus behind the MDGs, the financial resources required to meet these goals have not materialised (and neither have the necessary institutional and governance changes). Earlier, the achievement of Agenda 21 targets was hindered by a lack of financial resources, and the target reaffirmed most recently in Monterrey of providing 0.7% of GDP as conventional ODA has been achieved by only a handful of countries.

Another potential area of distrust on the side of developing countries is the neutrality of processes or institutions through which agreements are implemented, money is disbursed, and disagreements are resolved. This includes not only questions concerning the neutrality of international financial institutions, but also those of donor conditionalities. The trust deficit will hobble an agreement in Copenhagen unless during the next two years developed countries can gain trust by addressing the equity, fairness and institutional concerns of developing countries.

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Part 4: Streamlining Adaptation to Climate Change into Development Projects at the National and Local Level

Authors: S. Huq and J. Ayers
International Institute for Environment and Development

1. Introduction

The relationship between climate change and development is now well established[54]. In the first place, climate change is a result of unsustainable development: human induced greenhouse gas emissions that are driven by unsustainable socio-economic development pathways. Conversely, sustainable development can reduce vulnerability to climate change, because vulnerability depends on the capacity of a society to cope with and adapt to climate related hazards, which is constrained by, inter alia, lack of resources, poor institutions, governance, inadequate infrastructure and other economic factors related to a lack of development[55]. The impacts of climate change also impede development, and threaten the efficacy and sustainability of development interventions. In this way, poverty is both a driver and an outcome of critical development-climate linkages.

Adaptation activities are therefore increasingly recognised as synonymous with development, and key to good development practice; whilst development aimed at improving the living conditions and access to resources of those living with climate change impacts is a prerequisite for successful adaptation. The relationship may be summarised as follows:

Good (or sustainable) development (policies and practice) can (and often does) lead to building adaptive capacity. Doing adaptation to climate change often also means doing good (or sustainable) development.

However, there can also be tradeoffs between climate change and development strategies. While development is likely to equate with vulnerability reduction, this is not always the case; for example, where economic development strategies increase dependency on climate sensitive resources; or where adaptation interventions adopted by donors do not equate with the development priorities of recipient countries. Climate change also adds an urgency to vulnerability reduction, and requires additional resources and information to take into account the departure from stable climatic conditions, and adaptation to a more uncertain climatic future in light of long term climate trends[56].

Given this close relationship between climate change and development, development assistance has a very particular and important role to play in limiting the impacts of climate change in vulnerable developing countries, additional (but related) to that of the formal climate change management frameworks of the United Nations Framework Convention on Climate Change (UNFCCC). It is therefore important that donor investment in light of climate change takes account of this relationship, and also the tradeoffs between climate and development practice, to avoid development that results in maladaptation, and adaptation and mitigation strategies that are inconsistent with development objectives.

One approach to ensure consistency and effectiveness in development and climate change approaches is to mainstream climate change into the wider development agenda.

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[54] Adger et al., 2003; Klein et al., 2003, 2007; Gigli and Agrawala, 2007
[55] Klein et al., 2003; 2007
[56] Burton et al., 2006

Mainstreaming involves the integration of policies and measures to address climate change into ongoing sectoral and development planning and decision making, to ensure the long term sustainability of investments as well as reduce the sensitivity of development activities to climate change.

This briefing paper will review mechanisms for mainstreaming adaptation to climate change into development projects at the national and local level, to streamline development and climate change objectives. The paper will begin with a discussion of the linkages between development and climate change, including examples of synergies and tradeoffs, and discuss the particular role of development assistance in facilitating climate change adaptation in vulnerable developing countries outside that of the UNFCCC. The paper then highlights two key ways in which development assistance can enhance adaptive capacity in recipient countries:

1. *Mainstreaming climate change into development:* Integrating climate change into ongoing development planning to 'climate proof' existing development investments, maximise the potential of development projects to enhance adaptive capacity, and avoid maladaptation;

2. *Targeted adaptive capacity building:* targeted development interventions should aim to build adaptive capacity at all levels, identifying entry points for the incorporation of climate change considerations into national development priorities as well as sectoral plans.

Mainstreaming will be discussed briefly (for a more comprehensive analysis of mainstreaming, see Klein, this volume), and it will be shown that while climate-proofing development can offer fairly immediate opportunities for 'win-win' climate and development options, enabling environments at the national, sectoral and local levels must be created in order for mainstreaming to be effective, to ensure that adaptation interventions are suitable for local contexts, and national and local agencies have the capacity to receive them.

Finally, it will be shown that building adaptive capacity in partner countries through development assistance is a slow process requiring a 'learning by doing' approach for integrating climate change into local and national institutions. This process will be broken down into four key stages, over a timeframe of five to seven years, through which it is proposed that successful mainstreaming of climate change into development can achieve enhanced national, sectoral, and local adaptive capacity. Examples and case studies will be drawn from development and climate change activities in the most vulnerable countries to climate change, which will be understood here to be the Least Developed Countries, Small Island Developing States, and Africa, because in these countries the climate change-development nexus is apparent (See Box 1).

2. The role of development in climate change adaptation

2.1 The relationship between climate change and development

As noted, climate change and development are closely linked in the following ways:

i. Climate change threatens the progress of development;

ii. Sustainable development can reduce vulnerability to climate change;

iii. Climate change is historically the result of unsustainable development.

Box 1: The 100 Most Vulnerable Countries to Climate Change

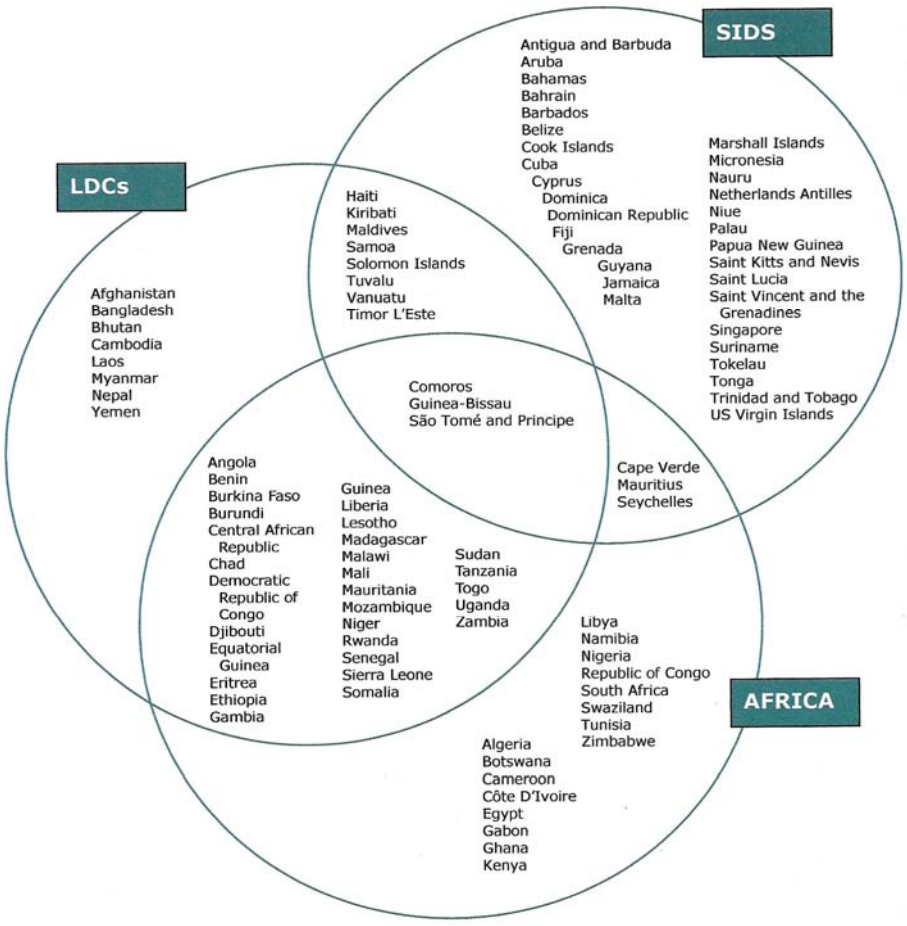
Adapted from: Huq, S., and Ayers, J. 2007. "Critical List: The 100 Countries Most Vulnerable to Climate Change".

According to the fourth IPCC assessment report of the Intergovernmental Panel on Climate Change (IPCC), the impacts of human induced climate change are likely to be felt in poor countries and poor communities first. The IPCC highlight the following as being particularly vulnerable:

- Small Island Developing States (SIDS)
- Africa
- Mega deltas (particularly in Asia)
- Polar regions

The United Nations Framework Convention on Climate Change (UNFCCC) recognises SIDS and Africa as being particularly vulnerable, and adds to this the group of Least Developed Countries (LDCs). Taken together, the countries of the SIDS, LDCs and Africa form one group of the 100 nations most vulnerable to climate change, with a total population of well over one billion. The composition of these three groups of most vulnerable countries are shown below.

As shown, there is considerable overlap between these groups of countries; for example, a number of SIDS, physically vulnerable because of their location on small low-lying islands or coasts, are also socioeconomically vulnerable LDCs. Many African countries are also LDCs, and as noted by the IPCC (2007) Africa is one of the most vulnerable continents to climate variability and change because of multiple stresses and low adaptive capacity. These conditions are mutually reinforcing: A low level of development constrains adaptive capacity.



The impacts of climate change on development can be considered in the context of the Millennium Development Goals (MDGs). The Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment report includes the following impacts of climate change in developing countries, among others:

- Drought affected areas will become larger in some areas.
- Heavy precipitation events will become more common increasing flood risks
- The overall impacts of food production in developing countries are likely to be negative because of increased likelihood of crop failure and diseases and mortality of livestock
- Eventual impacts on human development indicators, such as health and education.

Some of the targets set in order to reach the MDGs within the 2015 timeframe are directly sensitive to these impacts of climate change, including addressing hunger caused by droughts and floods; providing access to water and sanitation; and preventing and treating malaria. Without adaptation the Bank projects that the cost of climate change impacts in exposed developing countries could range from several percent to tens of percent of GDP, or up to $100 billion at year[57]. Development interventions to achieve the MDGs are also threatened by climate change. A review by the OECD in 2005 of ODA contributions concluded that 30-40% of ODA is sensitive to climate risks[58]. The World Bank estimates that up to 40% of the development financed by overseas assistance and concessional leans is sensitive to climate risk[59].

Second, good development reduces vulnerability to climate change, so the role of development assistance in enhancing adaptive capacity of the most vulnerable countries is significant. Again if we consider the MDG targets, reducing poverty, providing general education and health services, improving living conditions in urban settlements, providing access to financing and markets and technologies, will all improve the livelihoods of the most vulnerable and in turn improve their ability to engage in adaptive action[60]. A recent analysis of the categories of ODA activities reported by the OECD DAC countries, carried out by the OECD and IEA, demonstrates that more than 60% of all ODA could be relevant to building adaptive capacity and facilitating adaptation[61]. The contribution of ODA to building adaptive capacity in the most vulnerable countries is therefore significant, particularly given that around 90% of all foreign flows into LDCs is constituted by ODA[62].

However, development does not always contribute to adaptation, and indeed may even result in maladaptation through the development of policies and practices that increase vulnerability. This can be the case where development investments are isolated and do not take into account the implications of climate change and climate variability on the development activity; or the impact of the development activity on other factors related to vulnerability. Burton and Van Aalst (2004) cite the example of investment in an irrigation scheme that does not fully consider the possibility of changes to rainfall variation under climate change scenarios, with inappropriate water pricing inducing the wasteful use of water in a way that can become a threat to the sustainable use of water resources under climate change scenarios.

[57] Burton et al., 2006
[58] Agrawala., 2005
[59] Burton et al., 2006
[60] Levina, 2007
[61] Levina, 2007
[62] Levina, 2007

Therefore while development assistance has a role to play in reducing vulnerability, an integrated approach is needed across sectors and scales, because through isolated action important climate-development linkages may be missed. To avoid maladaptation through development, vulnerability reduction works best when it is integrated into national planning, and reflected in both policies and projects.[63] It is therefore important that capacity is built to integrate climate change across development planning at all scales.

Finally, because climate change is the result of unsustainable development pathways, those countries that are least developed (and most vulnerable), are also the least responsible for climate change, whilst the industrialised nations are responsible for the increasing vulnerability of the South. This raises an important ethical point: that the responsibility of assisting the most vulnerable countries in coping with the impacts of climate change is *additional to* existing aid commitments: North-South financing for adaptation should be based on the "Polluter Pays Principle" (PPP), that attributes the costs of pollution abatement to polluters without subsidy, pointing towards responsibility-based rather than burden-based criteria[64]. Financing for adaptation is not owed to poor countries as "aid" but as compensation from high emissions countries to those that are most vulnerable to the impacts[65]. This is specifically recognised by the UNFCCC in which article 4.4 specifies that developed countries have committed to help "particularly vulnerable' countries meet the costs of adaptation.

This is problematic for financing adaptation through development assistance: while there is clearly a role for development institutions in enhancing adaptive capacity, responsibility for adaptation does not lie with these institutions, particularly where it may compete with other development objectives in partner countries. Before considering how adaptation can be mainstreamed into development polices, programmes and projects, it is therefore important to distinguish the role of development institutions from the formal climate change institutions of the UNFCCC in this regard.

2.2 The specific role of development assistance in adaptation to climate change

The primary mechanisms for managing both adaptation and mitigation to climate change operate through the United Nations Framework Convention on Climate Change (UNFCCC). Finance for adaptation under the UNFCCC is through four funds (Box 2).

Although financing adaptation through the UNFCCC satisfy the criteria of being additional to aid, these funds have proved problematic in achieving effective adaptation on the ground for three reasons: First, funds fall significantly short of those needed. Estimates generated by the World Bank put the costs of adaptation at between $10 - $40 billion annually for climate proofing investments in developing countries. This figure has since been criticized for being too conservative, and more recent estimates by Oxfam put the figure at over $50 billion annually[66]. Yet the World Bank estimates (very optimistically) that the Adaptation Fund may amount to $100 million to $500 million per year, while contributions to the Marrakech funds managed by the Global Environment Facility may amount to $200 million per year[67].

Second, many developing countries have expressed concern over the difficulties experienced in accessing funding for adaptation under the UNFCCC, and many countries simply do not have the capacity to meet the reporting, additionality, and burdensome co-financing criteria required by the UNFCCC and its financial mechanism, the Global Environment Facility.

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[63] Burton and Van Aalst, 2004
[64] Thompson and Rayner, 1998
[65] Action Aid, 2007; Oxfam, 2007
[66] Oxfam International, 2007
[67] World Bank, 2006

Box 2: Funding for Adaptation under the UNFCCC

Source: www.gefweb.org and http://unfccc.int/

The our funds for adaptation under the UNFCCC are:

1. Least Developed Countries Fund (LDCF), established under the UNFCCC to help developing countries prepare and implement their National Adaptation Programmes of Action (NAPAs)
2. Special Climate Change Fund (SCCF), also established under the UNFCCC to support a number of climate change activities such mitigation and technology transfer, but place top priority on adaptation.
3. GEF Trust Fund's Strategic Priority for Adaptation (SPA) which pilots 'operational approaches' to adaptation.
4. Adaptation Fund (AF), which sits under the Kyoto Protocol and is intended to assist developing countries carry out 'concrete' adaptation activities.

The LDCF, SCCF and Trust Fund are relatively small funds as they are based on voluntary pledges and contributions from donors. As of April 2007, the LDCF and SCCF only amounted to around US$114 million in received allocations. All three funds are managed by the Washington-based Global Environment Facility (GEF) under the guidance of the UNFCCC. The Adaptation fund is funded by a 2% levy on CDM transactions. The AF has the potential to generate by far the largest funding source for adaptation; the revenue generated from the CDM levy alone is projected to be between $160-$950m. The World Bank has estimated that the levy could generate funding in the range of US$100-500 million through to 2012 (World Bank, 2006). Further, there is talk of applying the levy to international air travel, which itself has the potential to generate $4-10 billion annually.

Third, while international adaptation efforts to date have delivered some information, resources, and capacity building, they have yet to facilitate significant on-the-ground implementation, technology development or access, or the establishment of robust national institutions to carry the adaptation agenda forward[68]. Therefore, the existing arrangements under the UNFCCC cannot serve alone as an adequate basis for achieving the much-needed assistance on adaptation in the most vulnerable countries.

While ODA cannot, given the principle that action on adaptation should be additional, be seen as an alternative to global action on adaptation or a means of filling the gap in international financing commitments on climate change, it can and does provide an important avenue for improving adaptive capacity in vulnerable developing countries, because adaptive capacity is limited by factors that are typically the focus of development practitioners. Development is therefore clearly relevant in building adaptive capacity and its role in addition to that of the UNFCCC should be defined.

Importantly, the UNFCCC support for adaptation addresses adaptation in the narrowest sense, as adaptation to climate change, distinct from climatic variability. At the level of climate negotiations, the distinction is important, because such information informs political questions surrounding costs and burden sharing. However, action at this level is therefore limited in the extent to which it can contribute to broader and sustainable vulnerability reduction.

For example focusing on climate specific technological measures may increase vulnerability by inadvertently reducing adaptive capacity. Klein et al., cite the examples of new coastal infrastructure which could disturb the offshore sediment balance, resulting in the erosion in adjacent coastal areas; or irrigation schemes that can lead to the salinisation of ground water and the degradation of wetlands, as well as leaving subsistence farmers with reduced access to groundwater and productive land[69].

[68] Burton et al., 2006
[69] Klein et al., 2007

Such maladaptations often affect those with the least power and lowest access to resources, who are by definition the most vulnerable to the impacts of climate change.

Building adaptive capacity through development however takes a different approach to adaptation from that of the UNFCCC, seeing it not as a stand-alone issue but merged with wider issues of vulnerability reduction. Development practitioners have the capacity to address a broader range of factors contributing to vulnerability on the ground, beyond targeted climate change interventions. Further, development activities can complement the UNFCCC process by building the climate change capacity of partners in developing countries, to facilitate UNFCCC financed activities.

The role of development assistance in adaptation is therefore not to replace or remove responsibility from the formal mechanisms of the UNFCCC, but to add value to these through development that contributes to adaptation.

The next section will describe the ways in which climate change adaptation can be streamlined into development processes to achieve these goals.

3. Streamlining Adaptation to Climate Change into Development

In light of the recognition of the synergies between development and adaptation, and the specific role of development assistance in complementing international climate change processes, this paper suggests that there are two key ways in which development assistance can enhance adaptive capacity in recipient countries:

1. Mainstreaming climate change into development: Integrating climate change into ongoing development planning to 'climate proof' existing development investments, maximise the potential of development projects to enhance adaptive capacity, and avoid maladaptation;

2. *Targeted adaptive capacity building:* targeted development interventions should aim to build adaptive capacity at all levels, identifying entry points for the incorporation of climate change considerations into national development priorities as well as sectoral plans.

Mainstreaming adaptation into development involves the integration of information, policies and measures to address climate change into ongoing development planning and decision making. Mainstreaming is seen as making more sustainable, effective and efficient use of resources than designing and managing climate policies separately from ongoing activities. (Klein et al., 2003).

One way of mainstreaming climate change into development processes is through screening of development portfolios through a climate change lens. Portfolio screening involves the systematic examination of an agency's set of policies, programmes or projects, with the aim of identifying how concerns about climate change can be combined with an agency's development priorities [70] . Such screening helps in identifying both which existing development projects are particularly threatened by climate change; and to identify opportunities for incorporating climate change more explicitly into future projects and programmes. Klein (in this compilation) presents a detailed case for mainstreaming adaptation into ODA, and shows that mainstreaming has significant potential for contributing to positively towards adaptation and adaptive capacity in partner countries.

[70] Klein et al., 2007

The actual implementation of options takes place through stakeholders 'on the ground' who must have the capacity and resources to do this, so successful implementation of options arising depends on the viability of resources to create an enabling environment for adaptation, including the capacity to adapt[71]. Therefore while 'climate proofing' development portfolios is integral and mainstreaming is important, development institutions must also contribute to adaptive capacity building and institutional support on climate change in partner countries in sectoral and development policies[72].

Development practitioners need to build adaptive capacity across scales in partner countries for two reasons. First, from the point of view of successful implementation of donor projects: When climate change is mainstreamed into development activities there is a risk that the climate change priorities of development actors conflict with the development priorities in partner countries, raising concerns with many developing countries over the diversion of financial flows intended for ongoing development activities. It is important that the risk that climate change poses to development activities, and the importance of mitigating these risks, is well understood and integrated to minimize the conflicts between donor strategies and local development priorities. In addition, Klein et al (2007) reveal that "actual implementation (via pilot projects) is still at an early stage or absent altogether" in donor agencies and IFIs[73]. There is a need to build capacity for project implementation in partner countries. Institutionally, adaptation requires the means to support the development of national capacity on climate change.

Second, donor strategies have a role to play in facilitating the successful implementation of the more formal climate change mechanisms of the UNFCCC. A development-based strategy could closely complement a convention-based strategy, ensuring that adaptation strategies prepared with Convention support are implemented, and could leverage resources that are lacking from the climate regime. For example, while Article 4.1 of the convention calls for Parties to take climate change into account in their development planning, but until recently there was little guidance on how to move this forward. Further, any decisions in the climate regime will have to be supported by corresponding decisions and implementations within institutions focused on development and disaster preparedness[74]. Development assistance can build the capacity to implement such approaches.

Supporting a Convention-based approach to adaptation will also strengthen development-orientated adaptation. While a development-centred approach would largely be outside the climate regime, it may be through the regime that the necessary political momentum to carry initiatives forward can be achieved. Therefore while the UNFCCC can provide political incentives for integrating adaptation into national and local development strategies, donors are well positioned to work through the existing channels of multilateral and bilateral assistance to build the capacity for integrating climate considerations across the relevant institutions. To build complementarity between Convention- and development-based approaches to adaptation, institutional mechanisms need to be developed to forge links between climate change activities initiated under the UNFCCC and risk management and development activities of national and sectoral planners. This requires capacity building at the local and national levels to integrate climate change expertise into policy and planning, strengthening capacities in the technical and planning disciplines most relevance to understanding potential climate impacts and devising response strategies[75].

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[71] Klein et al., 2003
[72] Klein et al., 2003
[73] Klein et al., 2007
[74] Burton et al., 2006
[75] Burton et al., 2006

3.1 Four steps to mainstreaming climate change into national and local development processes

Integrating climate change expertise across scales is a slow process, which can be broken down into four steps, through which a learning-by-doing approach can eventually result the mainstreaming of climate change into planning and policy that is relevant to both development and UNFCCC processes (See figure 1).

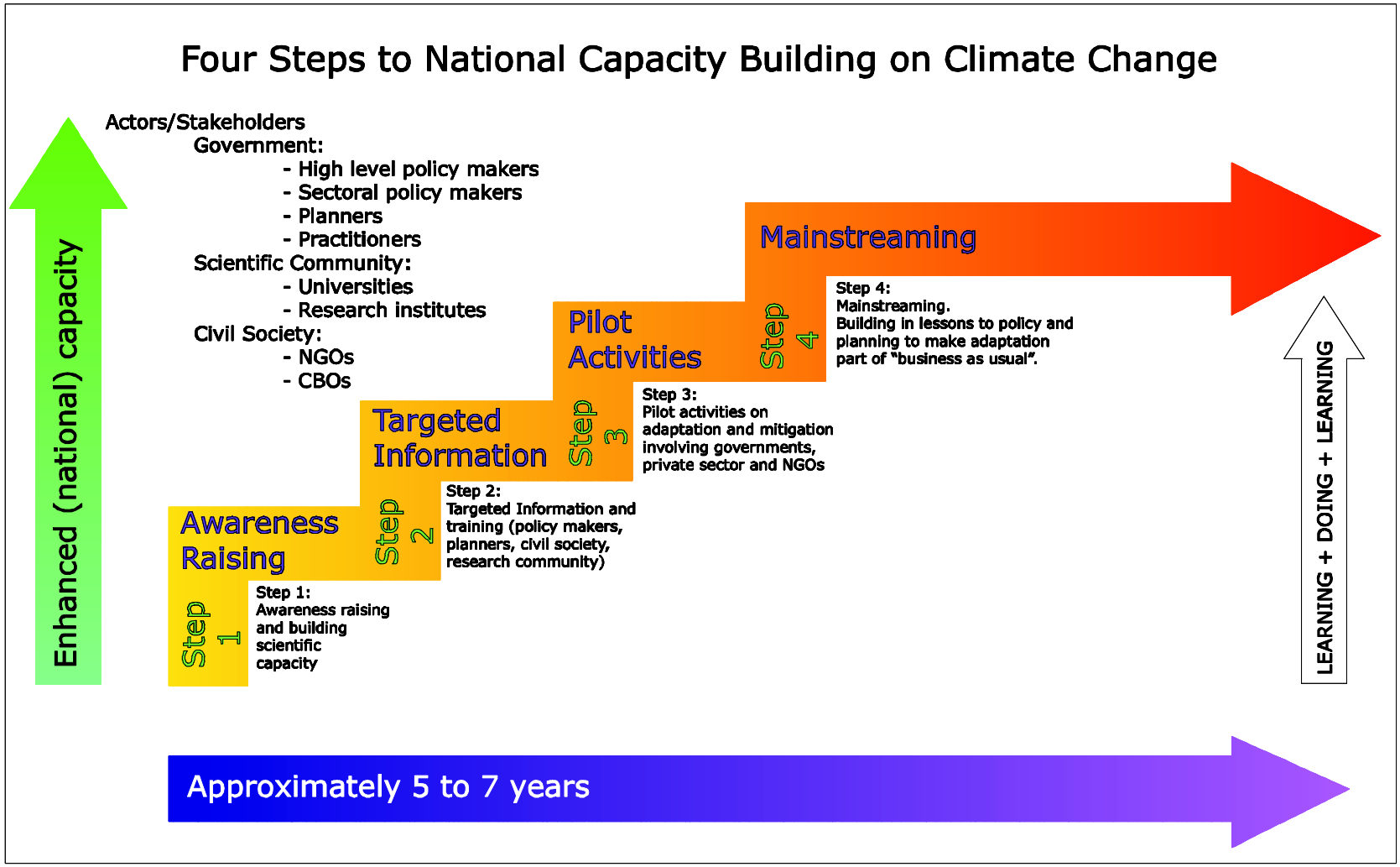
Step one requires awareness raising of the relevance of climate change to development pathways and processes must be built. This is necessary to ensure that climate change is recognised not only as relevant but in some cases an urgent priority across sectors. In addition, scientific and technical capacity on climate change must be built so that accurate climate information can be generated that is applicable to informing development policies and plans. This includes the downscaling of climate modelling data as far as can be usefully meaningful as well as more general climate-change related information such as the identification for climate trends at the national, regional, and local levels, and the strengthening of forecasting and early-warning weather systems. It is currently possible to predict climate patterns at the sub-national scale up to several months into the future, and ongoing research is improving seasonal forecasting techniques and accuracy. In terms of longer, decadal time scales, climate models today generally agree at the hemispheric scale[76].

In addition to generating climate information, awareness must be raised of the existence of this information and its relevance to decision makers. A recent 'gap analysis' in Africa showed that while climate information does exist that could aid decision makers in making 'climate smart' decisions, information is seldom incorporated.[77] Improving climate services, raising awareness of climate information and providing evidence of its value to decision makers are essential to beginning to align development and climate change priorities, and building capacity on climate change.

Step two involves generating more targeted information, which requires the translation of scientific information into a format that is applicable to practical action by different stakeholders, including policy makers, planners, civil society organisations and research communities. It is the incorporation of such information that will strengthen the linkages between development-orientated and Convention-orientated processes. However, the availability of the scientific information is not enough; institutional receptivity across relevant sectors and organisations to use this information must be built. For example, Hellmuth et al., described the way in which both poor local level climate data *and* a failure to incorporate climate considerations into policy and practice, means that the benefits of early warning systems and improved climate science are generally failing to reach African decision-makers [78] . This requires consideration not only of the type of new information and technologies for adaptation, but also the processes needed to deliver, communicate, finance, receive and operationalise it[79]. Box 5 shows how building capacity to incorporate climate forecasting data into cyclone response strategies in Bangladesh contributed significantly to reducing the impact of Cyclone Sidr in November 2007 (Box 3).

[76] Hellmuth et al., 2007
[77] IRI, 2006
[78] Hellmuth et al., 2007
[79] SouthSouth North, 2007

Figure1: four steps to National Capacity Building on Climate Change



Source : S. Huq and J. Ayers

Box 3: Translating scientific concepts, knowledge and data for practical action by different stakeholders – A case study of the use of early warning systems to minimise the impacts of cyclones in Bangladesh

Source: Bangladesh Red Crescent Society, personal communication; and IRIN News, 2007-11-23.

Early warning system data can be gleaned from meteorological departments and satellite data, and can be essential in minimising the impacts of extreme weather events such as storms and cyclones which are set to increase in frequency and intensity as climate change progresses. Such data was used to reduce the impact of the recent cyclone Sidr, which hit Bangladesh in November 2007. Improved early warning technology meant that the Government of Bangladesh received news of the exact direction and intensity of the category 4 cyclone 72 hours before it made landfall. The World Meteorological Organisation's global cyclone observatory started feeding data to its regional outpost at the Indian Meteorological Office in New Delhi. The message was relayed from New Delhi to the Bangladesh authorities in Dhaka, who passed it on to the local Red Crescent office. To disseminate the information to the 15 districts that were affected worst affected, a network of 40,000 trained Red Crescent volunteers were mobilised. They cycled around the country, using megaphones to order residents into the 1,800 cyclone shelters and 440 flood shelters. By the time Sidr hit the coast on 15 November, around two million people were already sheltered. The programme was significant in minimising the death toll of the cyclone: while the death toll was estimated by the Red Crescent Society to be between 5,000 and 10,000, a cyclone of a similar magnitude that hit Bangladesh in 1991 killed 190,000 people . This integration of hi-tech information into low-tech, low-cost and locally appropriate information dissemination methods maximised the outreach of the early-warning system. It also demonstrates the value of cross-sector and cross-scale coordination. The improved early warning systems were effective in conjunction with a wider programme of action supported by the donor community, including the US and the EU, which has supported disaster-preparedness to mitigate the impact of tropical storms and improve post-disaster relief and reconstruction since 1991. This wider programme integrates improved early warning and evacuation systems with supporting infrastructure such as includes the placing of cyclone walls within trees to protect vulnerable areas from storm surges (Humanitarian Information Unit, US Department of State, 2007)

Step 3 requires the piloting of actions on adaptation and also mitigation, involving government and non-government organisations and the private sector, to demonstrate good practice. In order to effectively mainstream climate change into policy, policy makers and planners must be able to see the relevance of climate change to their work and be able to learn from demonstrable results. Assistance is required for project planners and managers to integrate risk reduction and climate change adaptation information into development projects, and several tools are being developed to facilitate this work. One example is the CRiSTAL tool (Box 4) which assists development project managers in integrating climate change into community-level projects.

Box 4: **Tools for developing pilot projects that demonstrate the integration of climate data into development activities – The Community-based Risk Screening Tool - Adaptation and Livelihoods**

Adapted from: IISD 2007, "Summary of CRiSTAL: Community-based Risk Screening Tool – Adaptation & Livelihoods."

CRiSTAL (Community-based Risk Screening Tool - Adaptation and Livelihoods) is a tool designed to assist project planner and managers with integrating risk reduction and climate change adaptation into community-level projects. Developed by IISD in partnership with the World Conservation Union–IUCN, Stockholm Environment Institute–United States and Intercooperation, the tool synethesises information on climate change and livelihoods to undertand how projects can be designed in such a way as to foster adaptataion and minimise maladapattaion in developemnt actvities. By focusing on community-level projects, CRiSTAL promotes the development of adaptation strategies based on local conditions, strengths and needs. In an effort to render this tool as useful as possible, IUCN, IISD, SEI-US and Intercooperation conducted a series of pilot field tests on planned or ongoing natural resource management projects in Mali, Bangladesh, Tanzania, Nicaragua and Sri Lanka. Project team members travelled to the field sites to work with local project managers and community stakeholders in gathering relevant information, applying the tool and developing recommendations on how to adjust project activities so build local adaptive capacity to climate change and climate variability. Results from the field tests provided constructive feedback on the design and application of CRiSTAL, while the testing process itself has raised awareness of climate change issues in vulnerable communities. The tool provided an entry point for discussing local observations of climate variability and the impacts of climate change in a participatory manner, encouraging communities to look for opportunities to enhance their adaptive capacities. For project planners and managers, CRiSTAL provided a useful framework for understanding the links among climate, livelihoods and project activities.

Step four involves the full integration of climate change into policy and planning across different sectors and scales, requiring a shift from 'business as usual' to investments and planning that incorporate climate change information. Further capacity building will be needed at the policy level across sectors to ensure that lessons from steps 1-3 can be effectively built into the policy process. This capacity building at the national and sectoral levels should start alongside step one to ensure the targeted stakeholders are fully engaged in the entire process; however, it may take several years before the lessons drawn from steps 1-3 are fully mainstreamed into 'business as usual' across all sectors and scales. An example of targeted national capacity building in Bangladesh is shown in Box 5.

Once climate change awareness and capacity start to grow, climate change can then start to be fully integrated into national, sectoral and local development plans, both to ensure that development is climate proofed, and adaptive capacity is maximized across sectors and scales. At the national level, bilateral country programmes can support the integration of climate change priorities into national planning strategies for example Poverty Reduction Strategy Papers. This should set the stage for the integration of climate change concerns at sectoral and local levels, given that ideally all sub-national development planning should tie in with national development priorities.

Box 5: Targeted National Capacity Building in Bangladesh

Adapted from Huq and Ayers, 2008:"Climate Change Impacts and Responses in Bangladesh"

In 2003 Bangladesh established a Comprehensive Disaster Management Programme (CDMP) with UNDP, DFID and EC donor assistance, with the aim of refocusing the government towards greater emphasis on disaster preparedness and risk reduction. CDMP has a number of disaster management components, among them to establish an integrated approach to climate change and disaster management, expanding risk reduction approaches across a broader range of hazards, with specific reference to climate change. There are three main areas of focus:

i. Capacity building for the Ministry of Environment and the Department of Environment to coordinate and mainstream climate change into their existing activities;
ii. Strengthening existing knowledge and information accessibility on impact prediction and adaptation;
iii. Awareness raising, advocacy and coordination to promote climate change adaptation into development activities.

Capacity building included assisting the creation of a 'climate change cell' within the Department of Environment (DOE) to build government capacity for coordination and leadership on climate change issues. The cell coordinates awareness raising, advocacy and mechanisms to promote climate change adaptation and risk reduction in development activities, as well as strengthening existing knowledge and information accessibility on impacts and adaptation to climate change. It has established climate change focal points within numerous institutions, thus providing a foundation for the mainstreaming of climate change awareness in future. The location of the Cell within the DOE has however so far limited its potential to integrate climate change as a priority outside of the environmental department. However, the CDMP is preparing to next phase II of its programme and discussions are under way to re-house the Cell in an institution that is better able to mainstream climate change into development financing and planning (one such institution would be the Planning Commission). (AGRECO Consortium, 2008)

3.2 Streamlining climate change into sectoral development

Integration of climate change into sectoral level planning should be supported through bilateral assistance and coordinated through national sector policies. To date, few sectoral plans in the most vulnerable countries specifically address climate change concerns; yet there are many ongoing sectoral plans that are addressing climate change impacts indirectly or without specific acknowledgment. Table 1 presents some examples from Africa of sectoral plans that are relevant to reducing the impacts of climate change across sectors. There is therefore significant potential for development assistance to strengthen adaptive capacity through integrating climate change knowledge and data into existing sectoral plans and institutions. Certain sectors are more directly sensitive to climate change impacts, and these should be prioritized for climate change mainstreaming. These include agriculture, water resources, forestry, industry, energy, transportation, health, fisheries, tourism, and coastal zone management. All these sectors also affect socio-economic living standards and are important in sustainable development and national development plans.[80] Sectoral plans should be screened (in a similar way to development portfolios described above) and climate change information should be identified and integrated into the planning process, facilitated by steps 2 and 3 above.

[80] IIED, 2008

Table 1: National Sectoral Policy Measures that Support Adaptation in Africa

Agriculture
1. Drought-resistant crops, soil conservation, the establishment of seed banks to preserve biological diversity in Ethiopia.
2. Mozambique has policies and strategies such as increasing seed varieties, developing a national seed industry, developing and research into new low-cost technologies to deal with droughts, adopting community based knowledge, opening local research centres and promoting conservation practices.
3. Developing drought resistant crops in arid and semi-arid areas of Tanzania.
4. Government research into seed varieties that are fast maturing, drought resistant and high producing in Malawi. Crop and animal husbandry practices have been improved with irrigation being a major focus. Many areas are now showing changes in cultivated land areas, crop types and cultivation technologies. National policies and programmes have also been developed to enhance food production and distribution during times of drought.
Water Resources
5. Improved water supply to communities and sustainable innovations in borehole well construction in Malawi.
6. The water sector in Mozambique is promoting dam construction for irrigation purposes and hydropower production.
7. Shallow wells and deep well drilling programmes and projects are being developed in Tanzania as a response to changing hydrological regimes. Dams and chacos are being constructed for human and livestock water supplies and following the prolonged droughts Tanzania developed a national strategy on Water sources and Lands.
8. Water harvesting techniques have been implemented in nine areas in several states of Sudan. These projects have increased community access to reliable water, and their capacity to cope with reduced precipitation, higher temperatures and drought – issues which have also been incorporated into the NAPA.
Forestry and wildlife
9. Targeted afforestation and reforestation programmes to control siltation and provide fuel wood in Burundi.
10. Community Based Natural Resource Management – promoting the use of ecosystem good and services, as opposed to reliance on agriculture, in climatically marginal areas in Botswana and eastern Namibia.
11. The National Biodiversity Strategy and Action Plan of 1999 in Tanzania supports the implementation of initiatives to address climate change at a national level.
Health
12. The Ministry of Health in Mozambique has strategies to respond to disease outbreaks following disasters, and is conducting a national Roll Back Programme on Malaria by promoting the use of mosquito nets and other prevention methods.
13. Sudan's Roll Back Malaria Programme aims to improve surveillance and epidemic management and provide options for preventative interventions. Given the links between climate change and malaria, ensuring policy coherence between the Programme and the NAPA has been important.
Clean Energy
14. In Tanzania, investment in alternative clean energy sources, such as wind, solar and biofuels compensates for lost hydro potential. The Sustainable Industry Development Strategy (1996-2020) also highlights the need to develop a green industrial sector to ensure sustainable development.
Fisheries
15. Fisheries management adaptation measures for closed seasons, control agreements with foreign fleets and establishment of marine reserves in the Seychelles.
Disaster risk reduction
16. Establishment of the Disaster Management unit under the Prime Ministers' Office, and preparation of the disaster management strategy in Tanzania.

Source: IIED 2008

In Tanzania, for example, DANIDA has funded the analysis of climate change impacts on agriculture, health, and water sectors. This information can now be used to integrate targeted adaptive capacity building in these sectors. In Bangladesh, recommendations from the World Bank on the impacts of climate change on the water sector have been incorporated into coastal zone management programs and adopted in the preparation of disaster preparedness plans and a new 25 year water sector plan.[81]

3.2 Streamlining climate change into local development

Building capacity on climate knowledge and data can aid the streamlining of climate information into local development strategies. Community-level stakeholders, particularly those engaged in climate sensitive sectors such as farming, comprise the most vulnerable groups, and also the largest number of decision makers. It is therefore essential that community stakeholders are engaged with the process of streamlining climate change information into development planning.

At the same time, local autonomous coping and adaptive strategies should be integrated with any new, external climate data and information. In the most vulnerable regions, livelihood systems will have a wealth of experience of coping with interlocking stressors including climate variability, and the most appropriate adaptation strategies will incorporate local knowledge. Communities such as poor smallholders located in areas of ecological fragility will have an extensive knowledge of options for coping with adverse environmental conditions and often intricate systems of gathering and interpreting weather patterns and adapting their seasonal farming practices accordingly.

The challenge, then, is to maintain the potential for current local and traditional institutions to enhance adaptive capacity, whilst acknowledging that climate change presents novel risks, and facilitating the transfer of new knowledge, information and resources to enhance resilience into these existing institutional structures. Building national capacity through a step-wise approach can encourage the cross-scale capacity building required to bring together a range of stakeholders to facilitate local adaptation. For example, Mali's Direction Nationale de la Météorologie (DNM) provides climate information to rural people, via extensive collaboration between government agencies and research institutions, media, extension services and farmers. These different groups form a multidisciplinary working group composed of technical, development and research experts as well as farmers and the media. This group helps to bridge the gap between climate and agricultural communities by translating climatic data in a way that is locally meaningful and ensuring local priorities and contexts are incorporated into information delivery. The project therefore supplies climate-related information directly to farmers, helping them to measure climate variables themselves so they can incorporate climate information into their decision making[82]. Multi-stakeholder engagement means that local and national government and donor agencies are more responsive to project outputs, facilitating the scaling up of the programme and further contributing to national capacity building on climate change.

[81] Huq and Ayers, 2008
[82] Hellmuth et al., 2007

4. Conclusions

This briefing paper has discussed the synergies and tradeoffs between development and climate adaptation, namely that the underlying factors of vulnerability to climate change are often reflective of low development, such as high dependence on natural resources, resource degradation, inability to secure basic needs and lack of information and capacity[83]. Climate change also threatens the progress of development and development investments. Development assistance therefore clearly has an important role to play in building the adaptive capacity of the most vulnerable countries, and the most vulnerable communities within them. It is therefore important that climate change adaptation is streamlined into development policy and processes across scales and sectors.

However, integrating climate change adaptation into development work should not detract from existing development priorities. Where conflicts arise between climate change and development incentives, development priorities must not be compromised. It is also important that development assistance is not seen as an opportunity to 'plug the gap' in UNFCCC processes that are falling short on providing adequate support for adaptation. The role of ODA in facilitating adaptive capacity is therefore distinct from the formal Convention processes.

There are many opportunities for development to complement the formal mechanisms of the UNFCCC. ODA can take a more inclusive approach to vulnerability reduction, addressing both the underlying drivers of vulnerability associated with low development, as well as specific climate change impacts.

Further, ODA can build capacity in partner countries to maximize the potential of convention processes on adaptation, for example donors are well positioned to strengthen national capacity, whilst development practitioners and disaster risk reduction practitioners also have a wealth of experience in dealing with reducing vulnerability to climate hazards and extremes and local, sub-national and national scales. Development therefore has an important role to play in building adaptive capacity, both for its own sake and for supporting the UNFCCC process. This paper has proposed a four-step approach to national capacity building on climate change through development assistance, through awareness raising, targeting information, piloting activities and eventually mainstreaming climate change into 'business as usual' policy and planning.

It should also be noted, however, that climate data is not always directly relevant to development. Given that a community vulnerable to current climate variability is likely to be vulnerable to future climate change, it is not necessarily important to wait for climate change data to become available to start building adaptive capacity into existing projects. Further, given the close relationship between development and adaptive capacity, a 'more of the same' approach is recommended, particularly in climate sensitive sectors such as disaster preparedness, water and agriculture to avoid tradeoffs between meeting development priorities and climate change needs.

[83] Sperling, 2003

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