Supporting Adaptation to Climate Change: What role for Official Development Assistance?

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1. Introduction

It is now well established that anthropogenic climate change is a reality,[3] and that those worst affected will be the poorest people, in poor countries.[4] The impacts of climate change therefore pose a massive threat to development, and action on adaptation to climate change, particularly in developing countries, is urgent. Adaptation to climate change describes the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.[5] The current costs of adaptation in developing countries are huge, and while estimates vary, there is general agreement that figures are in the range of tens of billions of dollars per annum[6]. In response, the United Nations Framework Convention on Climate Change has instigated several funding mechanisms in an attempt to meet adaptation needs in developing countries, however these funds have been heavily criticised by both the development and academic communities for being both fiscally and technically inadequate. [7]

Recent attention has therefore turned to the existing and potential role for development assistance in supporting adaptation, largely because of the extensive overlap between these two fields. Firstly, the impacts of climate change can impede development and threaten the efficacy and sustainability of development investments.[8] In turn, sustainable development can reduce vulnerability to climate change, because vulnerability depends on factors linked to development, including access to economic, ecological, social and human resources, and inadequate institutions, governance and infrastructure. [9] Adaptation activities are therefore often regarded as synonymous with development activities and key to good development practice.[10] As stated by Huq and Ayers (2008),

"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".

Given the close relationship between development and adaptation, coupled with the evident shortcomings of UNFCCC for meeting adaptation needs, it is tempting to use existing channels of development assistance for filling the gap in adaptation funding and support. However, this is contentious at the international level because, firstly, not all adaptation is development, and not all development reduces vulnerability to climate change adaptation. For

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[3] IPCC, 2007
[4] Huq and Ayers, 2007
[5] IPCC, 2007
[6] Ayers, 2009; Müller, 2008
[7] Möhner and Klein, 2007; Action Aid, 2007; Oxfam, 2007
[8] Burton and Van Aalst, 2004; Klein et al., 2007.
[9] Klein et al., 2003, 2007; Huq et al., 2006.
[10] Huq and Ayers, 2008; Ayers and Dodman, forthcoming.

example, adaptation interventions adopted by donors may not equate with the development priorities of recipient countries.

Secondly, because climate change is the result of unsustainable development pathways, those countries that are least developed (and most vulnerable) to climate change, are also the least responsible, whilst the industrialised nations are responsible for the increasing vulnerability of the South. The responsibility of assisting the most vulnerable countries in coping with the impacts of climate change is *additional to* existing aid commitments.[11]

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. It is therefore important to distinguish the role of development institutions from the formal climate change institutions of the UNFCCC, and consider how development assistance might support and complement adaptation funding and action under the Convention, rather than supplementing it.

This paper aims to contribute to this debate by considering the role of ODA in relation to the UNFCCC adaptation financing channels. The paper will begin with a discussion of adaptation needs in developing countries, and the frameworks under the UNFCCC set up to meet these needs. We will then outline 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, but related to, that of the UNFCCC. It will be shown that ODA can build adaptive capacity in partner countries both by addressing the underlying drivers of vulnerability that are the target of traditional development assistance; and secondly, through mainstreaming adaptation into development planning to achieve climate resilient development. It will be proposed that carefully planned mainstreaming can complement Convention-led processes, and enable better access to and effectiveness of UNFCCC support, but that this is a slow process requiring a 'learning by doing' approach for integrating climate change into local and national institutions. A framework for achieving national capacity building on climate change through development will be proposed, and a strategy will be suggested that could be achieved in four key stages, over a timeframe of five to seven years.

2. The costs of adaptation in developing countries

Estimating the costs of climate change impacts and adaptation is inherently problematic, as evidenced by the lack of quantified data on the topic,[12] and the variety in the scale of estimates (sometimes in orders of magnitude) that have been undertaken. Further, these estimates have tended to be based on strong assumptions, such as perfect foresight, and there are very few cross-sector studies that look at the cumulative effects within countries or the wider macro-economic consequences of impacts or adaptation.[13]

However, a number of organisations have attempted to calculate the costs of adaptation in developing countries. The World Bank estimates that climate proofing development investments (including ODA and concessional finance, foreign direct investment and gross domestic investment) in developing countries alone will cost between US$ 10 billion and US$ 40 billion annually.[14] This figure has since been criticized for not taking into account the

[11] Oxfam, 2007; Action Aid, 2007; Ayers, 2009
[12] Agrawala and Fankhauser, 2008
[13] Klein and Persson, 2008
[14] World Bank, 2006

costs of climate proofing existing supplies of natural and physical capital where no new investment is planned, the costs of financing new investments specifically to deal with climate change, or the costs to households and communities to fund their own adaptation needs.[15] More recent estimates by Oxfam that do acknowledge these factors put the costs of adaptation closer to US$ 50 billion annually,[16] while the United Nations Development Programme (UNDP) put forward the most pessimistic scenario to date, suggesting this could spiral to US$ 86-109billion annually by 2015.[17] The longer it takes to implement an effective international agreement to halt and then reduce greenhouse gas emissions, the higher these costs of adaptation will be and the more likely that the limits to adaptation will be reached and exceeded.[18]

3. Meeting adaptation needs through the UNFCCC

The main source of international funding for adaptation is the United Nations Framework Convention on Climate Change (UNFCCC). There are four funds relevant to adaptation under the UNFCCC: The Least Developed Countries Fund (LDCF), established under the UNFCCC to help developing countries prepare and implement their National Adaptation Programmes of Action (NAPAs); The Special Climate Change Fund (SCCF), also under the UNFCCC to support a number of climate change activities such as mitigation and technology transfer, but prioritises adaptation; The Global Environment Facility (GEF) Trust Fund's Strategic Priority for Adaptation (SPA), which pilots 'operational' approaches to adaptation; and the Adaptation Fund, which sits under the Kyoto Protocol.[19]

These funds are not adequate to meet adaptation needs in developing countries.[20] First, they do not amount to anywhere near enough. As of March 2008, the total resources pledged to the LDCF, the SCCF and the SPA totalled US$298 million, ($172.8 million to the LDCF, $75.6 million to the SCCF, and $50 million to the SPA)[21]. Further, donors are delaying on meeting their pledged commitments, because of an alleged lack of adequate and accountable mechanisms in developing countries for receiving and disbursing money.[22] This means the actual funds contained in the LDCF are $91.8 million; the SCCF $59.9 million; and the SPA $50 million[23]. This leaves almost $100 million pledged to the UNFCCC that is still outstanding.

Second, many developing countries have expressed concern over the unclear guidance and high transaction costs attached to GEF funding mechanisms. For example, in their comprehensive review of GEF-managed funds for adaptation, Möhner and Klein (2007) show that the GEF does not provide adequate operational guidance (in the form of programming papers), making it difficult for developing countries to apply for project funding. In addition, although funding through the GEF is not formally conditional, requirements attached to funding include burdensome reporting and co-financing criteria. For example, the LDCF and SCCF will only meet the costs of additional adaptation needs imposed on the country by the impacts of climate change, while the costs associated with baseline development activities (that would occur anyway in the absence of climate change) must be supported by co-financiers.

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[15] ActionAid, 2007
[16] Oxfam International, 2007
[17] UNDP, 2007
[18] Ayers, 2009.
[19] www.gefweb.org
[20] Ayers and Huq, 2008; Möhner and Klein, 2007
[21] GEF, 2008
[22] Ayers, forthcoming
[23] GEF, 2008

However, distinguishing 'additional' costs of climate change impacts from baseline development needs is extremely complex if not impossible. Secondly, many countries cannot afford to meet the baseline development costs so the offer of funding for the additional cost is futile. To give a recent example, one of the projects identified by the NAPA of Tuvalu is coastal infrastructure to protect the shoreline from erosion, a problem regardless of climate change (and so an existing development need), but one exacerbated by climate change (so also an additional cost). The NAPA project team, even with the help of a UNDP consultant to assist, had extreme difficulties calculating the 'adaptation' component of the infrastructure needs. Further, being a poor country, the 'baseline' infrastructure is not yet in place and funding is not available to pay for it. Thus, the offer to fund, as it were, the 'top section' of the infrastructure required to respond to 'additional' impacts of climate change, is absurd in light of the fact that co financing to pay for the lower section cannot be found. The project is currently in limbo while cofinancing is sought.[24]

Finally, funding through the GEF is disbursed through implementing agencies such as the UNDP, the UNEP and the World Bank, which adds further bureaucracy to the process; for example, many LDCs have expressed concern over the functional relationships with implementing agencies inhibiting access to funding for NAPAs from the LDCF.[25] To return to the example of Tuvalu, the NAPA used UNDP Fiji as the Implementing Agency. In the course of the project, late disbursement of funds from UNDP led to delays in NAPA activities.[26]

Therefore funding under the GEF is inadequate to meet the current costs of adaptation in developing countries, both fiscally and in terms of accessibility. The Adaptation Fund does provide a more positive model for funding under the UNFCCC. It has the potential to generate more significant sums, because it is funded by a 2% levy on Clean Development Mechanism (CDM) transactions; the revenue generated from the CDM levy alone is projected to be between $160-$950m[27]. There is also talk of applying the levy to international air travel, which itself has the potential to generate $4-10 billion annually.[28] The Adaptation Fund also has a unique governance structure, which avoids many of the issues of ownership and accountability faced by the other funds. It is not managed by the GEF, but has its own independent board (the Adaptation Fund Board) with representation from the five UN regions as well as special seats for Least Developed Countries and Small Island Developing States. The GEF provides secretariat services on an interim basis. Further, countries can make submissions for funding directly to the Fund as opposed to going through designated implementing agencies (as is the case with the GEF funds), and countries can also designate their own implementing agencies such as NGOs to make submissions for funding directly to the Adaptation Fund. However, the Adaptation Fund is not yet operational, and even optimistic projections of the funds that could be raised do not meet estimates of the total costs of adaptation in developing countries.

A further issue with funding under the UNFCCC is that the UNFCCC defines adaptation a narrow sense, as adaptation to climate change as distinct from climatic variability (hence the 'additionality' criteria). At the level of climate negotiations this distinction is important, because such information informs political questions surrounding costs and burden sharing.[29] Funding for adaptation is the responsibility of high-income, high-emitting countries, to be paid to countries most vulnerable to the impacts of those emissions. It is therefore relevant for

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[24] Tuvalu NAPA Team, personal communication, October 2008
[25] Ayers, 2009
[26] Tuvalu NAPA Team, personal communication, October 2008
[27] Müller, 2007
[28] Müller, 2007
[29] Huq and Ayers, 2008

the negotiations to distinguish between funding for building resilience to climate change (which is additional to ODA contributions) versus that for building resilience to climate variability more generally (which could be included in ODA contributions).[30] This UNFCCC approach is supported by many developing countries in order to prevent industrialized countries incorporating adaptation funding into development assistance and thereby avoiding providing new and additional funding for adaptation under the UNFCCC. Therefore, as recently as the June 2008 meeting for the subsidiary bodies to the UNFCCC, developing countries called for the measurable, reportable and verifiable use of new and additional funding for climate change-specific activities (as opposed to more general resilience building).[31]

However, building adaptive capacity requires actions that focus not only on the measurable and verifiable impacts of climate change but also on a wide range of factors that contribute to a broader reduction in vulnerability to climate variability and climate change.[32] It is important that funding is made available for adaptation activities that can also address other, non-climatic, aspects of vulnerability. Such activities have traditionally been the focus of development practitioners, yet the climate regime has not conventionally engaged many of the agencies and actors whose participation in adaptation is essential.[33] ODA may therefore provide an avenue to address the shortfalls of funding under the UNFCCC.

4. Funding Adaptation through Development Assistance

4.1 The need to include development in adaptation funding

Defining adaptation in specifically climate change terms ignores the now widely accepted role for development in contributing to building resilience. Vulnerability to climate change is determined not only by the impacts of climate change on people and the resources on which they depend, but also by the entitlement of individuals over these and alternative resources.[34] By extension, sustainable development reduces vulnerability to climate change. If we consider the Millennium Development Goals (MDGs), for example, reducing poverty, providing general education and health services, improving living conditions in urban settlements, and providing access to financial markets and technologies, will all improve the livelihoods of vulnerable individuals, households an communities, and therefore increase their ability to engage in adaptive action.[35] An analysis of the categories of ODA activities reported by the OECD DAC countries demonstrated that more than 60% of all ODA could be relevant to building adaptive capacity and facilitating adaptation.[36] There is therefore clearly a role for development assistance to play in reducing broader vulnerability to climate change.

Further, there are incentives for the development assistance community to take up this role, because climate change will compound the existing vulnerabilities of developing countries and threaten the achievement of the MDGs, for example hunger caused by droughts and floods; providing access to water and sanitation; and preventing and treating malaria[37]. Climate change poses a threat to the sustainability of development investments, and the

[30] Ayers, 2009
[31] Klein, 2008; Klein and Persson, 2008
[32] Adger et al., 2003; Agrawala, 2005; Klein, 2008; Schipper, 2007
[33] Burton et al., 2006
[34] Sen, 1999; Adger, 1999
[35] Levina, 2007
[36] Levina, 2007
[37] Huq and Ayers, 2008

World Bank estimates that up to 40% of development financed by overseas assistance and concessional loans is sensitive to climate risk.[38]

Finally, failing to take adaptation into account in development practice can result in maladaptation, where actions or investments enhance rather than reduce vulnerability to impacts of climate change. For example investment in an irrigation scheme that does not take into account the possible changes in rainfall variations under climate change scenarios may not be sustainable in the long-term. On the contrary, irrigation may actually increase dependency on water and water-reliant practices (such as the persistent use of water dependent crops) in the short term, when in fact ways of increasing the efficiency of water usage or changing cropping patterns may be a more useful way to spend limited resources to make development investments climate resilient and contribute towards adaptation.

Given these synergies between adaptation and development, and the risks of maladaptation in development, supporting adaptation through development assistance makes sense.[39] ODA has the remit to address a wider range of vulnerabilities than those included in the narrow definition of adaptation considered by the UNFCCC, and so could complement Convention approaches by addressing underlying causes of vulnerability, increasing the effectiveness of climate-specific adaptations.

As such, adaptation has been embraced not only by the climate change community, but also by the development assistance community.[40] There are two main ways in which ODA is being used to finance development assistance: first, through the generation of specific bilateral or multilateral funds for reducing vulnerability to climate change, which are independent (but supposedly supportive) of the UNFCCC; and second, through "mainstreaming" climate change into existing development plans and processes, and 'climate proofing' development investments.[41] The potential for each of these to contribute to building adaptive capacity in developing countries as well as support a convention-based approach, will be discussed in turn.

4.2 Supporting adaptation through new bi- and multi-lateral development funds

One way of supporting adaptation using development assistance is by generating funds through bilateral and multilateral institutions that can capitalize on the experience of development agencies in reducing vulnerability. One of the largest and most recent example of such a fund can be drawn from the World Bank Climate Investment Funds (CIFs).

The overall objective of the CIFs is to provide concessional loans for policy reforms and investments that achieve development goals through a transition to a low carbon development path, and a climate-resilient economy.[42] One of the programs under the CIFs relevant to adaptation is the Pilot Programme on Climate Resilience (PPCR), with a target size of US$ 1 billion, aimed at increasing climate resilience and building adaptive capacity in developing countries.

However, the development of the CIFs in general, and the PPCR in particular, has been controversial.[43] First, the governance structure of the CIFs and PCCR have been heavily criticised as being donor-driven[44], potentially undoing the progress made with the Adaptation

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[38] Burton et al., 2007
[39] Dodman et al., 2009; Ayers, 2009
[40] Schipper, 2007; Ayers and Dodman, forthcoming; see e.g. Sperling, 2003
[41] Ayers, 2009
[42] World Bank, 2008
[43] See Muller, 2008
[44] CCCD, 2008; Müller and Winkler, 2008

Fund, which had only been decided upon a few months previously to the announcement of the PPCR.

Second, most of the funding under the PPCR will be made available through loans, not grants, and these loans are to be counted as ODA. Criticism against the PPCR on this basis reiterates the point made earlier; that responsibility for assisting the most vulnerable countries in coping with the impacts of climate change must be additional to existing aid commitments. Financing for adaptation is not owed to poor countries as "aid" but, rather, as compensation from high emissions countries for those that are most vulnerable to the impacts.[45] This principle is specifically recognized by the UNFCCC through article 4.4, which specifies that developed countries have committed to helping "particularly vulnerable" countries meet the costs of adaptation.[46]

These criticisms were attached to the PCCR especially because it was originally entitled the Adaptation Pilot Fund, widely interpreted as a move to compete with the AF under the Kyoto Protocol,[47] and seen as a case in point for attempting to finance adaptation through development assistance. The initiative was understandably ill received by the developing countries and the NGO community, particularly given that donor-instigated adaptation funds are counted as part of the 0.7% ODA commitments, which are not fulfilled by the majority of donors. Such an arrangement rings of earmarking aid for adaptation purposes and the imposition of 'new conditionalities', going against the principles of the Paris Declaration on Aid Effectiveness, including partner country ownership of aid budgets.

In response to these criticisms, the Bank redesigned the "Adaptation Pilot Fund" to the "Pilot Programme on Climate Resilience". A recent revised proposal included a more balanced representation of donor and recipient countries and includes the chair of the Adaptation Fund Board, in an attempt to remove the sense of 'competition' with the Adaptation Fund and instead reframe the PPCR as a complementary to the UNFCCC process. Although these arrangements are still under discussion, this does point to progress on understanding the role of ODA for contributing to broader adaptive capacity – or "climate resilient development" – rather than specific and additional climate change adaptation. Rather than funding adaptation as it is understood by the UNFCCC, and which is morally an additional responsibility of developed countries to current ODA contributions, new development funds relevant to climate change adaptation should be used to fund what the UNFCCC cannot; broader resilience building, necessary for 'additional' adaptation to be successful.

This can be illustrated through the example of the Tuvalu NAPA project in section 3. Guidelines to fund only climate-change specific adaptation (the 'top section only' of the coastal infrastructure) have resulted in an impossible situation, because co-financing to meet 'baseline' development needs (the bottom section of the coastal infrastructure) cannot be met. The role for development assistance in this case is clear: to fund the 'baseline' development needs, in order that UNFCCC finance can fund the incremental costs. This meets the principal that adaptation finance should be additional to ODA, whilst also overcoming some of the practical barriers that this principle gives rise to in terms of doing adaptation on the ground.

This does not, of course, solve the problem of attempting to calculate the difference between climate change-specific adaptation and broader resilience development, nor do the authors wish to undermine very valid debates over whether the UNFCCC defines adaptation too narrowly.[48] Rather, this offers a practical solution for development assistance to contribute

[45] Oxfam, 2007; Action Aid, 2007
[46] Klein, 2008
[47] Müller , 2008
[48] See Schipper, 2007

towards adaptation under the existing climate regime.

4.3 Mainstreaming Adaptation into Development

A second way of supporting adaptation through development assistance is to 'mainstream' adaptation into development assistance, planning and processes. Mainstreaming 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 policies separately form ongoing activities.[49] In theory, mainstreaming can avoid the problem of tradeoffs between development and adaptation and create 'no regrets' opportunities for achieving both.[50]

Klein (2008) discusses two types of mainstreaming in development; firstly, a "technology based view of adaptation" that sees mainstreaming in terms of 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 for a future climate. This has also been referred to as "climate proofing" development, and in the context of ODA, can involve the 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[51]. 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.

The second type of mainstreaming takes a "development based view of adaptation" which ensures that in addition to climate proofing, development efforts are consciously aimed at reducing vulnerability by including priorities that are essential for successful adaptation, such as ensuring water rights to groups exposed to water scarcity during a drought. This latter option takes a more holistic approach to adaptation, seeing responses not as stand-alone or discreet climate-specific options, but as also addressing the underlying drivers of vulnerability that expose people to climate change impacts.

Mainstreaming does not avoid the problems described above of funding for adaptation being additional for ODA, and a sense of new conditionalities being attached to aid, particularly in the first case where aid is 'climate proofed.'[52] However, a 'development-based' approach to mainstreaming ODA does offer an opportunity to encourage integration of climate change and development beyond donor operations, to facilitate mainstreaming across national development planning and processes in partner countries.[53] ODA contributes a substantial share of income in those countries most vulnerable to climate change, particularly the Least Developed Countries. ODA therefore has the potential integrate of adaptation with development not only in donor processes, but also by facilitating mainstreaming across national development planning and processes in partner countries.[54]

4.4 The role of Development Assistance: Enabling and supporting mainstreaming of adaptation into national development plans

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[49] Klein et al., 2003
[50] Klein, 2008
[51] Klein et al., 2007
[52] See Klein, 2008, for a full discussion
[53] Klein, 2008
[54] Klein, 2008

Development assistance and practitioners have an important role to play in facilitating the mainstreaming of climate change into partner country development plans and processes across scales. This will contribute to both minimising maladaptive actions, and also conflicts between development and climate change priorities, because the risks posed by climate change to those development priorities will be better understood. Facilitating mainstreaming of adaptation into local and national development would help to build national capacity on climate change and support a Convention-based approach. 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.

However, while there is a lot of rhetoric about integrating adaptation into development, there is very little understanding of exactly what this means in practice. To echo calls from a recent WRI report in relation to mainstreaming, "concrete models and approaches are needed."[55] This paper responds to this call, building on a framework originally proposed by Huq and Ayers (2008) for mainstreaming adaptation into development at the national level, and in doing so, build complementarity between Convention and development-based approaches to adaptation. In order to achieve this, 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 relevant to understanding potential climate impacts and devising response strategies[56]. Huq and Ayers (2008) suggest that four steps are needed to achieve this goal, elaborated below.

5. 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, however this should be in the context of existing development concerns – addressing the underlying causes of vulnerability must be part of the first step. This can be done through drawing on experiences of climate change at the household, community and district level, and understanding how the risks people experience have been affected by climate variability and climate change.

At the same time, there is a need for improved tools for climate change data analysis, to provide information that is relevant, credible, and particularly, meaningful to the risks people experience everyday across sectors and scales. Scientific and technical capacity on climate change must therefore also be invested in so accurate climate information can be generated that is applicable to informing development policies and plans. This includes the

[55] Bapna and McGray, 2008
[56] Burton et al., 2006

downscaling of climate modelling data as far as can be usefully meaningful, as well as sustaining climate observation networks at local and regional levels.[57]

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.[58] 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. This requires investment in institutional capacity across all scales, but particularly at the district level with participation form local communities. 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[59]. Consideration must therefore be given 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[60]. Communication channels and forums to support information and skills transfer need to be developed. Box 1 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.

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. For example, although scientific studies dating back to the late 1990s have shown the implications of climate change of Bangladesh, it was the occurrence of three major natural disasters in the last two years, coupled with evidence of increased effectiveness at dealing with these (see Box 1), that brought adaptation to the attention of national policy makers. Assistance is therefore required for project planners and managers to align and integrate risk reduction and climate change adaptation information into their development priorities.

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

[57] Osbahr, 2008
[58] IRI, 2006
[59] Hellmuth et al., 2007
[60] SouthSouth North, 2007

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 2.

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.

6. Conclusions

Given the overlap between development and adaptation objectives, there must be a role for ODA in financing adaptation, independent, but supportive, of the UNFCCC. At the level of the negotiations, defining adaptation as additional to development is currently necessary to ensure that developed countries fulfil obligations to meet the costs of the additional stress that climate change will put on already vulnerable developing countries. On the ground, however, defining adaptation as separate from and additional to development is impractical, given that all adaptation must be underpinned by development objectives that seek to address the underlying causes of vulnerability. Any 'stand-alone' adaptation actions that are not also supported by development cannot be effective; indeed, in practice, 'stand-alone' adaptation does not really exist.

Until progress towards resolving these tensions is made and more practical guidelines for funding adaptation under the UNFCCC can be developed, development assistance has a vital role to play both in supporting the UNFCCC, and building resilience to climate change more broadly. While a development-centered approach is outside the climate regime, it may be through the regime that the necessary political momentum to carry initiatives forward is achieved.[61]

Mainstreaming climate change adaptation into development is one way of taking advantage of the synergies between them to meet the mutual objective of vulnerability reduction. 'Climate proofing' development will ensure the sustainability of development investments, whilst 'climate-proofed development' will build resilience to climate change. However, this cannot be seen to fulfil developed-country commitments on financing adaptation, which must take place through the formal mechanisms of the convention. Yet this principle of adaptation commitments being additional to ODA commitments reinforces the notion that adaptation is somehow 'additional to' development, and supports a definition of adaptation under the Convention that is too narrow to be able to actually address vulnerability on the ground. In this case, development funds can be used to finance development-based vulnerability reduction activities – or 'climate resilient development' - that current definitions of adaptation under the convention do not include.

Therefore under the current climate change regime, both ODA and the UNFCCC have independent roles to play in financing climate change adaptation in developing countries. But these roles are complementary; mainstreaming adaptation into development across scales can help build adaptive capacity in partner countries and reduce 'baseline' vulnerability, on top if which Convention-based action on adaptation will be more effective. The 'four step'

[61] Huq and Ayers, 2008

approach suggested here to mainstreaming adaptation at the national level attempts to bring together development-orientated and Convention-based approaches to adaptation. The starting point is vulnerability reduction, but the framework acknowledges that climate change data and information is relevant to the sustainability of development outcomes under a changing climate, and should be integrated where they can be relevant to the risk reduction process.

It is recognised that climate data and information is not always directly relevant to development. Given that a community that is vulnerable in an existing climate is likely to be vulnerable to future climate change, it is not necessary to wait for climate change data to become available to start building adaptive capacity. Rather, the starting point for vulnerability reduction is development, and so the priorities for any development agency must first be meeting their existing aid commitments and focusing on community priorities in the near-term. Mainstreaming will not be effective if existing development trajectories are inconsistent with the objectives of adaptation, so first and foremost a "more of the same" approach to development must form the underlying basis for any adaptation program undertaken by development agencies. However, the next step is mainstreaming adaptation into development across sectors and scales, to ensure the long-term sustainability of development investments, and to avoid maladaptation as a result of development investments that do not incorporate climate change.

Finally, the ideas put forward in this paper are an attempt to find practical solutions to meeting climate change needs on the ground through currently imperfect climate change and development frameworks. The authors acknowledge that much needs to be done to reframe adaptation under the Convention, and in exploring the role for development in adaptation, and recognise the need for further research on this agenda.

Box 1: 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)

Box 2: 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)