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REVIEW ARTICLE

Mainstreaming climate change adaptation into development in Bangladesh

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The close linkages between climate change adaptation and development have led to calls for addressing the two issues in an integrated way. 'Mainstreaming' climate information, policies and measures into ongoing development planning and decision-making has been proposed as one solution, making a more sustainable, effective and efficient use of resources than designing and managing climate policies separately from ongoing activities. But what does mainstreaming look like in practice? This paper reviews the process of mainstreaming in Bangladesh, one of the countries that has made significant progress on adaptation planning and mainstreaming. The paper begins by making the case for mainstreaming, by exploring linkages and trade-offs between adaptation and development and reviewing the literature on mainstreaming. Second, it considers how to implement mainstreaming in practice, reviewing an existing four-step framework. Examining this framework against the plethora of mainstreaming experiences in Bangladesh, the paper considers how the framework can be used as a tool to review progress on mainstreaming in Bangladesh. The paper concludes that while the framework is useful for considering *some* of the preconditions necessary for mainstreaming, experiences in Bangladesh reflect a much more complex patchwork of processes and stakeholders that need to be taken into consideration in further research.

Keywords: mainstreaming; climate change; adaptation; development; Bangladesh

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1. Introduction

Adaptation to climate change has been defined as adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (IPCC, 2007). Although the whole world is affected by the impacts of climate change, it is widely accepted those most in need of support for adaptation are the poorest people in developing countries (Adger, Huq, Brown, Conway, & Hulme, 2009; Ayers & Dodman, 2010; Burton, 2004; Huq & Ayers, 2007; IPCC, 2007; Schipper, 2007). This is because although exposure to impacts is driven by climatic hazards, the capacity to adapt to these hazards is determined by factors related to (under) development such as poverty, social and political marginalization, meaning people are unable to cope with both climate and other stresses. For example, individuals and households that have reliable access to food and adequate food reserves, clean water, health care and education will inevitably be better prepared to deal with a variety of shocks and stresses – including those arising because of climate change (Dodman, Ayers, & Huq, 2009). The links between development and adaptation have resulted in calls to tackle the two issues in an integrated way – to 'mainstream' climate change adaptation into development support and development planning (Huq et al., 2004; Klein, Schipper, & Dessai, 2003, Klein, 2010; Olhoff & Schaer, 2010).

Mainstreaming involves the integration of information, policies and measures to address climate change into ongoing development planning and decision-making (Klein et al., 2003). It is seen as making more sustainable, effective and efficient use of resources than designing and managing policies separately from ongoing activities (Ayers & Huq, 2009a; Klein et al., 2003). In theory, mainstreaming should create 'no regrets' opportunities for achieving development that is resilient to current and future climate impacts for the most vulnerable, and avoid potential tradeoffs between adaptation and development strategies that could result in maladaptation in the future (Ayers & Huq, 2009a; Klein et al., 2003).

But what does mainstreaming look like in practice? As the mainstreaming agenda is taken up by international

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organizations, developed country agencies and developing country planners, various approaches are emerging. This paper reviews the process of mainstreaming in Bangladesh, one of the countries making significant progress on adaptation planning and mainstreaming. It begins by making the case for mainstreaming, exploring the linkages and trade-offs between adaptation and development and describing the various approaches to mainstreaming from the literature. Second, it considers how to implement mainstreaming in practice, drawing on a conceptual framework originally proposed in Huq and Ayers (2008). Finally, it examines this framework against the plethora of mainstreaming experiences emerging in Bangladesh and considers what can be learnt for informing future research on adaptation mainstreaming.

2. Methodology

This paper is intended as a review rather than as a research paper. The primary purpose of this paper is to review a framework for mainstreaming adaptation originally proposed in Huq and Ayers in 2008. At the time the framework was written, mainstreaming was in its infancy, with little in the way of documented practice. At the time, while other guidelines existed for mainstreaming adaptation into development (described in the next section of this paper), the framework was an early attempt to map what was going on in practice. This paper returns to the framework, and considers the value of the framework against what has been learnt from mainstreaming in practice. We review domestic progress on mainstreaming in Bangladesh, which has taken strides at national and sub-national levels in terms of mainstreaming adaptation. The majority of the paper is based on analysis of existing literature and critiques of adaptation planning and mainstreaming in Bangladesh since the publication of the review, and supports this analysis with interview data conducted with Government, non-governmental organization (NGO) and donor officials engaged in the processes described. Firstly, we describe the way mainstreaming has emerged in Bangladesh, and the numerous approaches that have been taken. Second, we review this experience against the framework, and consider how the framework could be updated and revised in the light of these experiences.

3. Mainstreaming adaptation and development: a framework for analysis

3.1. *Why mainstream? The linkages between adaptation and development*

Historically, climate change adaptation and development have been managed in different arenas. Climate change adaptation emerged as a response to climate change impacts as governed under the United Nations Framework Convention on Climate Change (UNFCCC). The 'ultimate objective' of the UNFCCC is the mitigation of greenhouse gas emissions to prevent 'dangerous' climate change. Thus, adaptation emerged under global governance structures from discussions of climate change impacts and how they could be managed. This has developed into an 'impacts-based' approach to adaptation (Burton, Huq, Lim, Pilifosova, & Schipper, 2002; Ford, 2008), which has resulted in what Klein defines as 'technology-based' interventions such as dams, early-warning systems, seeds and irrigation schemes based on specific knowledge of future climate conditions (Klein, 2008).

However, scholars and practitioners from development and disaster risk reduction fields have repeatedly pointed out that such 'stand-alone' approaches to adaptation targeting very specific climate risks, are unlikely to be effective where they do not also address the underlying factors related to development that make people vulnerable (Adger & Kelly, 1999; Cannon, 2000). During the 1980s, observers from these fields began to draw attention to the link between the risks people face, and the reasons behind their vulnerability to these risks in the first place (Sen, 1999). Such arguments suggested that using the impacts of hazards as the starting point for adaptation to environmental hazards was misguided, because it ignores the ways in which local and wider contexts determine people's *vulnerability* (Blaikie, Cannon, Davis, & Wisner, 1994; Smit & Wandel, 2006).

The development community applied this thinking to climate change adaptation as early as 1987, when the Brundtland Report cited climate change as a major environmental challenge facing development (Ayers & Dodman, 2010). Researchers began to apply theories of social vulnerability to adaptation (Adger & Kelly, 1999), while development agencies began to recognize climate change as a threat to development efforts and poverty reduction (Sperling, 2003). Central to the proposals being put forward was that poverty underpins vulnerability, and therefore good development must be the starting point for adaptation. Burton (2004) suggests that analysing vulnerable communities would reveal an existing 'adaptation deficit', which is the existing capacity of many vulnerable countries and groups to cope with and adapt to *existing* climate risks. Adaptation would need to reduce this deficit to increase people's resilience to climatic variation more generally, before they can adapt to future changes (Burton, 2004). Such insights have led some scholars to conclude that much adaptation simply represents a practical means of achieving sustainable development (Huq & Ayers, 2008).

This has given rise to recommendations to support sustainable livelihoods, improve governance and make institutions more accountable and participatory as part of adaptation support (Klein, 2008; Sperling, 2003). For example, in Vietnam, Kelly and Adger (2009) propose

that possible adaptive outcomes from a climate-vulnerability analysis might include: prioritizing poverty reduction; income diversification; and addressing land and common property management rights. Such interventions could well be part of a development programme irrespective of climatic risks. Levina (2007) highlights the potential for the Millennium Development Goals to reduce vulnerability: reducing poverty, providing general education and health services, and providing access to financial markets and technologies will all improve the livelihoods of vulnerable people, and increase their adaptive capacity. An analysis of official development assistance (ODA) activities demonstrated that more than 60% of all ODA could be relevant to facilitating adaptation (Levina, 2007).

The relationship between adaptation and development also works in the other direction: climate change poses a direct threat to the sustainability of development investments. The World Bank estimates that up to 40% of development financed by overseas assistance and concessional loans is sensitive to climatic risk (Burton, Diringer, & Smith, 2006). This not only challenges poverty reduction strategies over the medium term, but also consequently undermines the capacity of the poorest people to adapt (Anderson, 2011). Thus, under climate change, the 'adaptation deficit' will be exacerbated.

Finally, failing to take adaptation into account in development practice can result in maladaptation, where actions or investments create further risks for adaptation (Barnett & O'Neill, 2010). Barnett and O'Neill (2010) describe five key dimensions of maladaptation, including actions that increase greenhouse gas emissions; disproportionately burden the most vulnerable; have high opportunity costs; reduce long-term incentives to adapt; and create path-dependency.

Thus, at least in principle, development and adaptation are now recognized as co-dependent (IPCC, 2007; Olhoff & Schaer, 2010). As adaptation gained prominence under the UNFCCC, its context has shifted from being tied into discussions over impacts and thresholds (Burton, 2004) towards explicit recognition of the role of development in managing adaptation in the scientific and policy guidance emerging from the Intergovernmental Panel on Climate Change (IPCC) and UNFCCC (Schipper, 2006). In the development context, donor agencies are increasingly seeking to 'climate-proof' their investments and make them relevant to the building of adaptive capacity (Tanner, 2008). A review undertaken of interventions labelled as 'adaptation' found that in practice, adaptation and development are not implemented as discreet interventions, but instead lie along a continuum between those that overlap almost completely with development, and those focused specifically on climate impacts (McGray, Hammill, & Bradley, 2007). Accordingly, there is broad agreement within both the climate and development community that an integrated approach to doing adaptation and development makes sense (Ayers & Dodman, 2010; Gupta, 2009; IPCC, 2007).

3.2. *Addressing adaptation and development through mainstreaming*

Integrating adaptation into development is often referred to as 'mainstreaming'. In general terms, mainstreaming refers to integrating an issue into existing (usually development) institutions and decision-making. The term is perhaps best known in relation to 'gender mainstreaming' (Booth & Bennett, 2002). More recently, 'environmental mainstreaming' entered the development policy agenda. This is defined by Dalal-Clayton and Bass (2009) as the informed inclusion of relevant environmental concerns into institutional decisions that drive national and sectoral development policy, rules, plans, investment and action.

Mainstreaming, or ensuring integrated policy-making, therefore has a long history in both development and environmental policy (see Ross & Dovers, 2008). Applied to climate change adaptation, mainstreaming has been proposed as a key avenue through which to address adaptation and development together (Huq et al., 2004; Klein, 2008; OECD, 2009). But mainstreaming in practice can mean different things to different people (Dalal-Clayton & Bass, 2009; Klein, 2008).

First, what are we mainstreaming? Perspectives on this question differ depending on whether we take a technology-based (impacts-based) or a development-based view of adaptation (Klein, 2010). In the technology-based view, mainstreaming largely refers to ensuring that projections of climate impacts are considered in decision-making about investments, so technologies (e.g. drainage systems or crop varieties) are chosen or improved to withstand the future climate. This type of mainstreaming has also been referred to as 'climate-proofing' or 'mainstreaming minimum' (Klein, 2008), and can involve screening of development portfolios through a climate-change lens (Klein et al., 2007). A 'climate-proofing' only approach to mainstreaming has been widely criticized for failing to fully address the underlying drivers of vulnerability; not addressing maladaptation; and not realizing the potential of development interventions to achieve climate resilience (Ayers, Kaur, & Anderson, 2011; Klein, 2008; Seballos & Kreft, 2011). For example, strengthening an embankment to ensure that it can withstand anticipated increases in storm surges will not protect those who cannot afford to reside behind it, and may inadvertently encourage investment and settlement in a climate-vulnerable area.

On the other hand, a vulnerability or development-based view of adaptation gives rise to a more holistic approach, in which in addition to climate-proofing, development efforts deliberately aim to reduce vulnerability by including priorities essential for adaptation. Klein (2010) provides the

example of securing water rights for groups exposed to water scarcity during a drought. This latter option takes adaptation responses not as stand-alone or discrete options, but as support to a range of processes that address the underlying drivers of vulnerability: 'Mainstreaming-plus' (Klein, 2010) or 'adaptation as development' (Ayers & Dodman, 2010). It recognizes that adaptation involves many actors, requires an enabling environment with existing financial, legal, institutional, and knowledge barriers to adaptation removed, and involves strengthening capacity of people and organizations to adapt (Klein, 2010). Similarly, Gupta and Van Der Grijp (2010) define climate change mainstreaming as the process by which development policies, programmes and projects are (re)designed and (re)organized, and evaluated from the perspective of climate change mitigation and adaptation. This arguably means assessing how they impact the vulnerability of people (Gupta & Van Der Grijp, 2010).

Second, what – or whose – development are we mainstreaming into? Given that much of the support for adaptation is channelled through the international development institutions, mainstreaming has been discussed from the perspective of development cooperation (OECD, 2009), which means making selected investments of donor agencies climate-proof and also relevant to building adaptive capacity. For example, in response to a call from the G8 in Gleneagles (2005) to climate-proof development assistance, the UK Department for International Development (DFID) piloted climate risk assessments of its development portfolios in Bangladesh, India and Kenya, and selected non-DFID funded water sector programmes in China (Tanner, 2008). The Asian Development Bank (ADB) is climate-proofing agriculture, water resources, infrastructure and transport sector projects in Asia and the Pacific, incorporating adaptation and mitigation components in relevant development projects and providing technical assistance for climate-resilient development. International and national NGOs have also played a key role in mainstreaming, including providing information and pilot projects which feed lessons into broader government processes.

But, only focusing on mainstreaming adaptation into external development assistance does not necessarily take into account the corresponding changes required in the wider national and local institutional environments to ensure that investments are sustainable. As noted by Lebel, Li, and Krittasudthacheewa (2012), the national level provides the overall framework within which sectoral and other sub-national levels operate, and where policy goals from long-term strategies are translated into action plans and budgets.

These two perspectives are not necessarily divergent. Indeed, enabling mainstreaming at the national level should be the ultimate purpose of external assistance. The Paris Declaration on Aid Effectiveness commits all donor agencies to supporting national ownership over the development and implementation of development strategies (OECD, 2005). Yet, observers have cautioned that, especially where a 'climate-proofed' approach is adopted, mainstreaming adaptation into development aid could undo progress made against the principles of country ownership and public participation (Klein, 2008). This is because in targeting mainstreaming into development cooperation portfolios, rather than developing-country processes, responsibility rests with donor agencies rather than with the domestic institutions.

Instead, this paper proposes that focusing on developing country institutions and processes is likely to encourage a more holistic and integrated approach to adaptation mainstreaming, because by definition, the enabling environment of development investments is also taken into consideration. As such, this paper proposes a definition of climate change adaptation mainstreaming that is based on that for environmental mainstreaming put forward by Dalal-Clayton and Bass (2009), and in line with the definition proposed by Gupta and Van Der Grijp (2010):

> Mainstreaming should result in the informed inclusion of relevant climate vulnerability concerns into the decisions and institutions that drive national, sectoral, and local development policy, rules, plans, investment and action. This can be achieved in part through development cooperation – and mainstreaming adaptation into donor portfolios would be part of the alignment process – but the target of mainstreaming is national and sub-national level processes, and the key agents of mainstreaming are national and sub-national government and non-government stakeholders.

3.3. *A framework for mainstreaming*

The need for developing countries to mainstream adaptation into development planning is reflected in various avenues under the UNFCCC. Article 4.1 of the UNFCCC calls for Parties to take climate change adaptation into account in development planning. Guidance for the development of National Adaptation Programmes of Action (NAPAs) under the UNFCCC states that NAPAs should be 'mainstreamed' into national development planning processes (LEG, 2002). Various guidance exists on 'how to mainstream' adaptation into development, but these are generally targeted 'how-to' guides aimed at development professionals (OECD, 2009; UNDP-UNEP, 2011). Some early guidance was developed for mainstreaming NAPAs into development planning (LEG, 2002), but this was annexed in the overall NAPA development guidelines, and given limited funds for NAPA preparation, many countries did not have the resources or incentives to ensure an integrated approach to NAPA development (Burton & Van Aalst, 2004).

Huq and Ayers (2008) propose a framework for mainstreaming at the national level (see Figure 1). As with

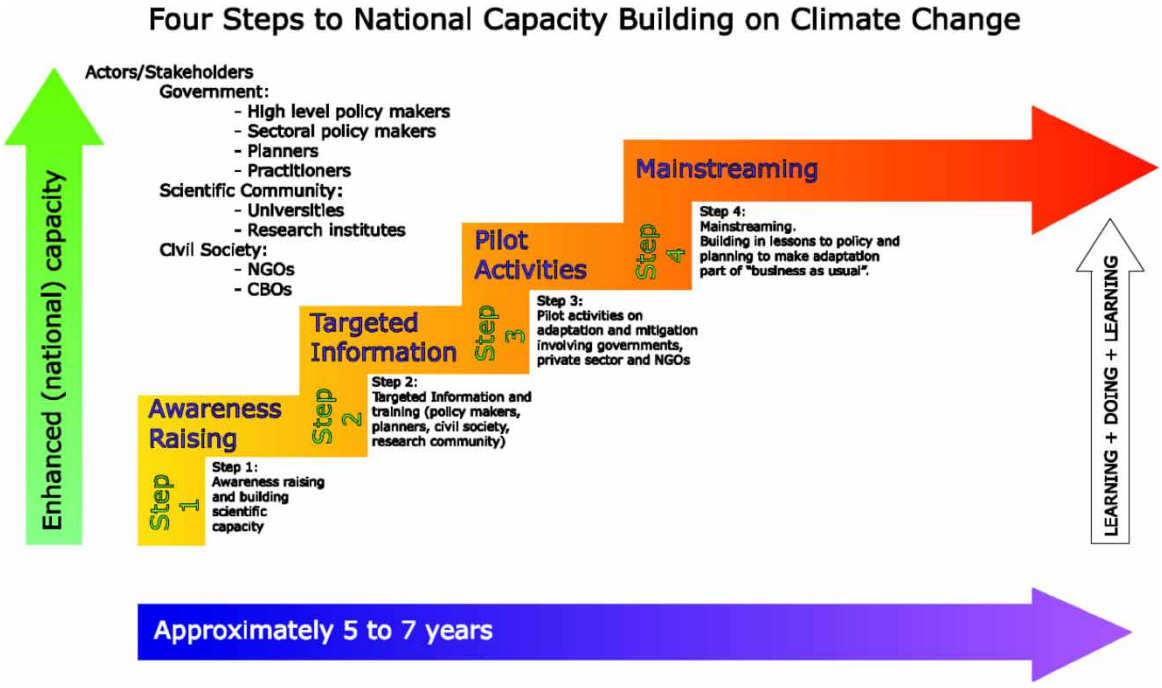

Figure 1. Four steps to building national capacity on climate change adaptation for mainstreaming. Source: Huq and Ayers (2008).

other guidance developed at this time, the context of the framework assumed the drive for mainstreaming would come largely through international cooperation, given that incentives for climate change adaptation planning at the time were generally externally driven (Ayers & Huq, 2009a). This paper revisits this framework in the context of Bangladesh in the light of experiences around mainstreaming since 2008.

The framework proposes a linear sequence of awareness and scientific capacity-building, targeted information and training of key stakeholders, which is followed up with pilot studies to inform policy-makers and generate incentives to incorporate lessons learnt into policy and planning (Lebel et al., 2012) (see Figure 1).

Step one describes awareness-raising on the relevance of climate change adaptation for development. This is the first step in any group of decision-makers adopting adaptation as a priority issue. If adaptation is to be integrated into planning in a sustainable way, demand needs to come from policy planners and implementers themselves, requiring decision-makers to recognize adaptation as not only applicable, but, in some cases, urgent.

The authors argue that critical to getting adaptation to be taken up by policy-makers is the generation of scientific evidence to support decision-making. Simply highlighting 'problems' is not useful for policy-making; evidence generated needs to demonstrate relevant, realistic, solutions (Anderson, Ayers, & Kaur, 2011). Information that is generated in-country is more likely to be relevant to the decision-making contexts of country decision-makers (Huq & Ayers, 2008).

This is challenging where impacts of climate change are highly uncertain, with uncertainty in climate change projections, and also because complex interactions between climate change and the social-development context determine how impacts will manifest. Much information around climate change impacts exists externally, in the realm of international bodies such as the IPCC. Thus, a first step is to invest in national-level capacity to generate locally appropriate evidence that can speak to policy decision-making forums. Supporting this step requires harnessing national-level expertise around vulnerability as well as building capacity around climate science, to ensure that adaptation priorities are country-owned and nationally responsive.

Step two describes how this information is made available to decision-makers across sectors and scales. First, there needs to be enough interest from decision-makers to demand and be receptive to climate vulnerability information. Second, information needs to be presented in a useable form, and capacity needs to be built to enable its use. Civil society plays a key 'boundary organization' role in translating scientific information into usable policy advice.

Step three describes the initial types of climate change adaptation responses, which tend to be isolated pilots and projectized interventions, often undertaken by NGOs. There has been criticism of the ways projectized adaptation

approaches fail to lead to long-term resilience-building (Boyd, Grist, Juhola, & Nelson, 2009; Dodman & Mitlin, 2011; Schipper, 2007). Schipper (2007) suggests that in a projectized approach, adaptation is automatically taken as an objective or outcome, rather than as a process. Adaptation as a 'process' involves building adaptive capacity by creating enabling conditions for adaptive activities to take place. Nevertheless, this step has proved important for countries to learn about what adaptation might 'look like', to inform mainstreaming and build capacity.

Step four involves full integration of climate change adaptation into policy and planning across different sectors and scales, requiring a shift from 'business as usual' to investment and planning that is not only climate-proof, but also explicitly seeks to build resilience amongst the climate-vulnerable poor. It is this stage where Government stakeholders become fully engaged in adaptation planning. Critically, this means not just environment agencies, but planning and finance ministries who can drive integration of climate change adaptation priorities into broader development priorities.

4. The need for mainstreaming adaptation into development in Bangladesh

Bangladesh is frequently cited as one of the most vulnerable countries to climate change (Huq, 2001; Huq & Ayers, 2008; Rahman & Alam, 2003; UNDP, 2007) both because its geography makes it physically exposed to climatic hazards and also because of the socio-economic factors that make people vulnerable. Social vulnerability often drives physical exposure, which in turn can exacerbate social vulnerabilities.

Located on the Bay of Bengal with a flat and low-lying topography, Bangladesh is exposed to major storm and cyclones as well as flooding. Most of Bangladesh is less than 10 m above sea level, with almost 10% of the country below 1 m. Between 1960 and 2002, Bangladesh experienced over 40 cyclones with up to half a million human casualties per event (Huq & Khan, 2006).

Further, Bangladesh is one of the largest deltas in the world, formed by a dense network of the tributaries of the Ganges, Brahmaputra and Meghna Rivers. Eighty per cent of land is floodplain, so the majority of Bangladesh (with the exception of the far west 'highlands') is prone to flooding at least part of the year (MOEF, 2005). Many of the projected impacts of climate change are expected to exacerbate these existing environmental hazards: increasing intensity of cyclones and extreme events; exacerbating flooding and salinity intrusion.

The development characteristics of Bangladesh make it particularly vulnerable and limit adaptive capacity. Bangladesh is defined as one of the 'Least Developed Countries', with a GDP per capita (PPP US$) of 1241; a life expectancy at birth of 67.5 years; and an adult literacy rate of 53.5% (UNDP, 2009). Furthermore, Bangladesh is particularly vulnerable due to dependency on agriculture. Two-thirds of the population is engaged in farming (although more than three-quarters of export earnings come from the garment industry) (Huq & Ayers, 2008).

Everyone in Bangladesh is not equally vulnerable to climate change. Reid and Simms (2007) suggest that the urban poor are especially vulnerable, because of the fragility of infrastructure in slums, and lack of employment security. In rural areas, those with insecure land tenure, particularly the lower Adivasi castes, are particularly vulnerable. Inherent gender inequalities in various social, economic and political institutions make women particularly vulnerable. Land access is particularly problematic for women because it is often obtained on a limited usufruct basis through marriage, which can leave women landless on divorce, and denies them collateral (Reid & Simms, 2007).

The combination of physical and social vulnerability means that in Bangladesh, climate change adaptation and development must be tackled together. Managing physical climate hazards without also addressing factors related to underdevelopment means that people would remain vulnerable. Only addressing development without taking into account existing and anticipated climate hazards means that development interventions are likely to prove unsustainable and possibly maladaptive in the long term.

5. Progress towards mainstreaming in Bangladesh

Bangladesh has approached adaptation mainstreaming both from a climate change perspective, through development of climate change specific plans, programmes and institutions that address developmental aspects of vulnerability, and also from a development perspective, integrating climate risk into development programmes and policies to help build broader cross-sectoral resilience.

In terms of climate-specific planning, Bangladesh was one of the first countries to develop its NAPA, in 2005. The NAPA proposed 15 projects that would contribute towards meeting Bangladesh's 'urgent and immediate' adaptation needs (MOEF, 2005). To date, one NAPA project has gone forward for implementation with funding from the Least Developed Countries (LDCs) Fund: 'Coastal Community-Based Adaptation to Climate Change through Coastal Afforestation in Bangladesh' (MOEF, 2008). The NAPA was updated in 2009, presenting nine short-term projects and nine medium-term projects. Although the NAPA is generally well regarded, it has faced criticism for adopting a relatively 'stand-alone' approach to adaptation through targeted climate change adaptation projects. Further, the process was developed in response to international policy and financial incentives under the UNFCCC, rather than being a product of national political will (COWI/IIED, 2009).

The National Capacity Self-Assessment (NCSA) for implementing the provisions of multilateral agreements, including the UNFCCC, was launched in 2007, and capacity-building for climate change received high priority. The Capacity Development Action Plan of NCSA identified a package of 15 actions for climate change, including capacity-building of relevant ministries and agencies for adaptation and mitigation.

Following the NAPA, the Government of Bangladesh, with support from development partners including the UK DFID, instigated the Bangladesh Climate Change Strategy and Action Plan (BCCSAP). Updated in 2009, the BCCSAP is now the main national planning document for climate change action in Bangladesh. The BCCSAP is widely regarded as having built on progress made under the NAPA, taking forward the research and recommendations into a more integrated and strategic planning framework. The BCCSAP is a 'pro-poor' climate change management strategy which prioritizes adaptation and disaster risk reduction, and also addresses low carbon development, mitigation, technology transfer and mobilization of international finance. The BCCSAP (MOEF, 2009) has six pillars:

(i) Food security, social protection and health,
(ii) Comprehensive disaster management,
(iii) Infrastructure,
(iv) Research and knowledge management,
(v) Mitigation and low carbon development,
(vi) Capacity-building and institutional strengthening.

There are 44 programmes under the BCCSAP. A 2.5 million USD Technical Assistance programme is being implemented by ADB to support BCCSAP implementation, including capacity-building of the Ministry of Environment and Forests (MOEFs) as well as other ministries involved in implementation.

There are two main trust funds to support implementation of the BCCSAP. One is funded by the Government of Bangladesh – the Bangladesh Climate Change Trust Fund (BCCTF), at a size of 100 million USD. More than 100 projects have been approved under the BCCTF (Pervin, 2013). The second is funded by several donors, the Bangladesh Climate Change Resilience Fund (BCCRF), with over 170 million USD to date. This dual approach is a resolution resulting from tensions over fund management control between the Government of Bangladesh and international agencies concerning fiduciary risk (Hedger, 2011). Projects submitted to either fund must conform to the needs and priorities identified in the BCCSAP.

Figure 2 presents the institutional arrangements supporting climate change in Bangladesh. The 2010 Climate Change Trust Fund Act provides guidance on how BCCTF funds can be disbursed and the supporting national institutional arrangements. The Climate Change Act established:

- A Technical Committee, chaired by the Secretary of MOEF with multi-stakeholder membership including from civil society. The Technical Committee reviews and evaluates project proposals to the National Trust Fund. There are subcommittees with key experts related to each pillar of the BCCSAP.
- The Trust board, which has the ultimate decision on applications to the BCCTF. Membership comprises 10 ministries and 17 members. The Technical Committee makes recommendations to the Trust Board, which often then requests further information before making a decision.

The MOEF is the focal ministry providing coordination and technical leadership on climate change, having led development of both the NAPA and BCCSAP. MOEF is considering the creation of a Department of Climate Change. There are Climate Change Cells within each ministry to mainstream climate change across all sectors. A Climate Change Unit has been established under MOEF to coordinate the various Climate Change Cells and build capacity across ministries.

An All-Party Parliamentary Group (APG) on Climate Change and Environment was established in 2009. It is a cluster of 121 MPs and is the largest APG representing all major Parties. Non-government institutions also play a key role in both climate risk management planning and implementation. For example, the working groups responsible for preparing the BCCSAP and NAPA had membership from and in some cases were led by national NGOs. National NGOs will also play the role of implementing entities under the BCCRF and BCCTF.

Climate change adaptation is also being integrated into general development planning. Vision 2021 and the National Perspective Plan set the development targets for Bangladesh up to 2021. Vision 2021 lays down a development scenario where citizens will have a higher standard of living, with better education, improved social justice, a more equitable socio-economic environment; and sustainability of development will be ensured through better protection from climate change and natural disasters. Implementation of Vision 2021 will be done through two medium-term development plans, the first (the sixth five-year plan) spanning 2011–2015. All three documents – Vision 21, the National Perspective Plan and the 6th 5-Year Plan – have chapters on climate change. The National Planning Commission is integrating climate change into the Annual Development Programme, which involves mainstreaming climate change into 28 projects in four sectors: agriculture, transport, rural development and water (IIED, 2011). The Planning Commission is currently reviewing

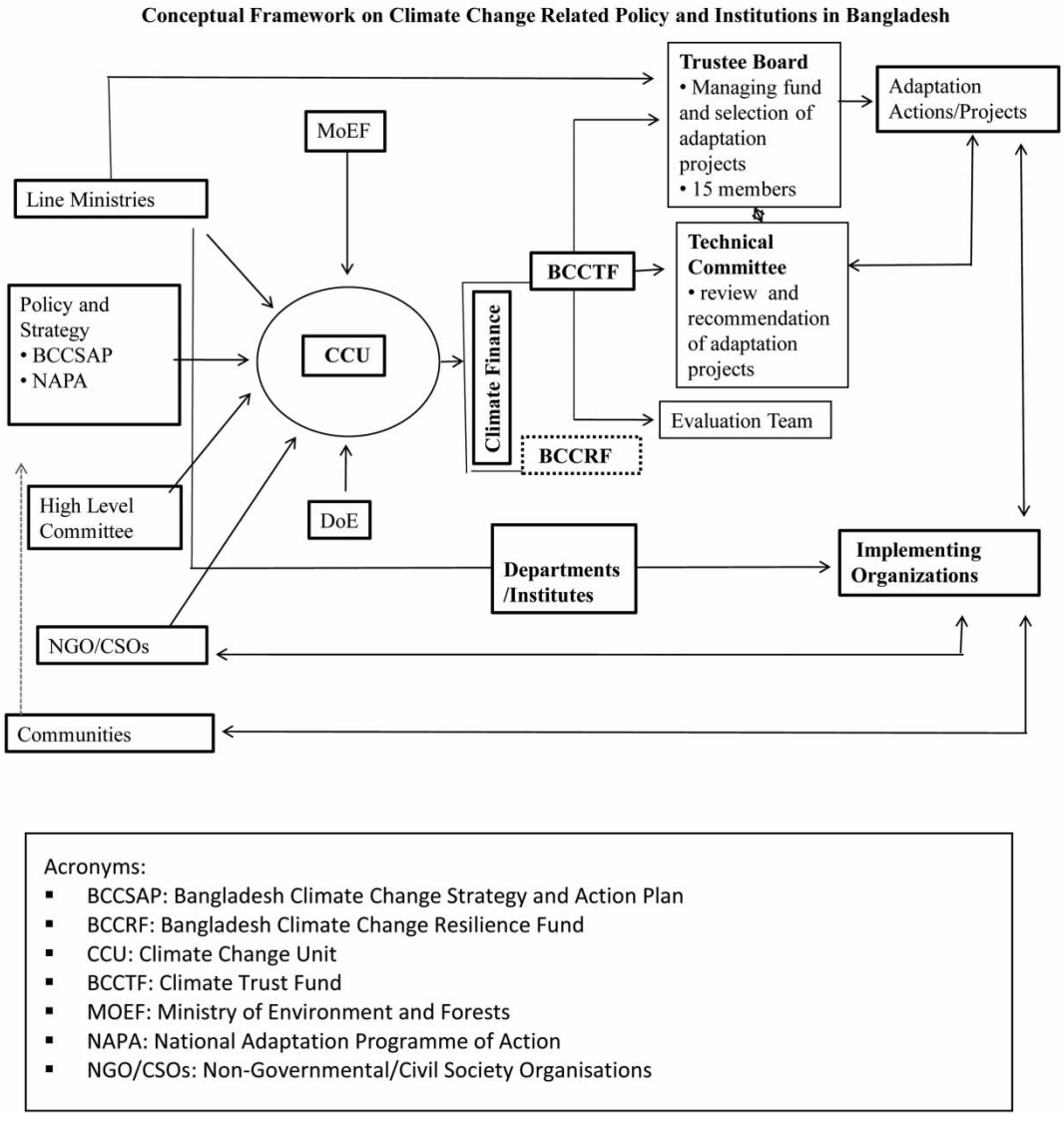

Figure 2. Conceptual framework on climate change-related policy and institutions in Bangladesh.
Source: Huq and Rabbani (2011).

all existing policies from ministries to assess whether they conflict with climate change issues, and will then advocate changes if conflicts are identified (Pervin, 2013).

Climate change has also been integrated across relevant sectors in Bangladesh. In agriculture, climate risks are highlighted in agricultural planning documents including the National Agricultural Policy (2010). Bangladesh also leads the way on agricultural research programmes related to drought and saline-tolerant rice varieties, seen as key adaptation options (Agrawala et al., 2003; IIED, 2011). Recommendations from the World Bank on the impacts of climate change have been incorporated into coastal zone management programmes, in the preparation of disaster preparedness plans and in the 25-year water sector plan. Climate change is recognized by the National Water Management Plan (2001) as one of the factors determining future water management. Many of the Plan priorities are synergistic with adaptation, such as the recommendation for early warning and flood-proofing systems.

6. Lessons from Bangladesh: progress against the four steps

How do the experiences above relate to the framework for mainstreaming? What can we learn about the 'four steps' proposed?

First, the experience of Bangladesh demonstrates significant progress against each of the four steps. Under step one of using scientific capacity and knowledge generation, Bangladesh has built up a significant body of national-level expertise around climate change and adaptation options. Bangladesh has a relatively long history of

engagement in climate change studies and adaptation interventions compared to other LDCs (Ayers & Huq, 2009b). As a result, there are a large number of organizations and agencies with knowledge, tools and capacity to assess climate-related impacts. In addition, Bangladesh has also long been the 'face of climate vulnerability' to the international community. This, coupled with its long history of engagement in international climate change fora, has made Bangladesh the focus of many international studies on climate change impacts (ibid). Therefore climate data and expertise available for and in Bangladesh are considerable and growing. For example, research being conducted in Bangladesh around drought-, flood-, and saline-tolerant rice varieties is considered cutting-edge globally (IIED, 2011).

In relation to step 2, targeted information-sharing, training and capacity-building have been central to almost all of the climate change planning activities and investments in Bangladesh. For example, the NAPA involved several cross-country workshops at sub-national level to raise awareness on climate impacts. The ADB is working with the Government of Bangladesh as part of the Pilot Programme for Climate Resilience (PPCR) on a significant capacity-building and knowledge management programme. This supports generation, dissemination and application of information and knowledge products as the means to influence policies and address the impacts of climate change. It intends to result in improved knowledge management systems and institutions, and enhanced capacities of government institutions to make climate-resilient decisions (climateinvestmentfunds.org, 2011). Bangladesh is also home to the International Centre for Climate Change and Development (ICCCAD), which conducts training for government and non-government stakeholders on climate and development issues. In 2011, ICCCAD conducted a course for international Government stakeholders, including several from Bangladesh, on climate change mainstreaming (see centers.iub.edu.bd/icccad).

There has also been significant experience around pilot and projectized interventions in Bangladesh in line with step 3. The Bangladesh NAPA process identified 18 projects for short- and medium-term investment (see above). The BCCRF and BCCTF have now approved projects towards implementation of the BCCSAP. Bangladesh also has a significant number of community-based adaptation (CBA) projects largely implemented by NGOs. Learning from these projects for informing wider scale adaptation planning has been promoted through engagement in the International CBA Conferences which have taken place annually (Bangladesh hosts biannually) and which increasingly attract government stakeholders (IIED, 2013).

These projectized approaches to adaptation have faced some criticism for not sufficiently engaging with longer term policy and institutional frameworks that would enable sustainable mainstreaming of climate change adaptation at higher levels (Ayers, 2011; Dodman & Mitlin, 2011). For example, a review undertaken by COWI/IIED of the Bangladesh NAPA in 2009 suggested that there were inadequate mechanisms for comprehensive multistakeholder participation; and a capacity deficit to manage adaptation projects and investments (COWI/IIED, 2009). This echoes more general criticisms of project-based approaches to adaptation. For example, Schipper (2007) suggests that in taking a projectized approach to adaptation, adaptation is automatically taken as an objective or outcome, rather than as a process. This contradicts a vulnerability-based perspective on adaptation, which involves a process of building adaptive capacity by creating the enabling conditions for adaptation to take place. Indeed, the notion of meeting 'urgent and immediate' needs reveals that adaptation is something that can be done in the short term, and not part of a longer term planning process. As noted by Schipper, from a vulnerability perspective,

> Adaptation to climate change is not as simple as designing projects, drawing up a list of possible adaptation measures and implementing these. It requires a solid development process that will ensure that the factors that create vulnerability are addressed. (Schipper, 2007, p. 6)

However, Bangladesh has done much to move beyond an isolated approach to adaptation project planning towards step 4 in the framework. For example, the wider knowledge generation and capacity-building benefits of undertaking the NAPA process contributed to both the political will and capacity underpinning the development of the nationally driven BCCSAP climate change funding streams (COWI/IIED, 2009). The CBA conference in 2013, hosted in Dhaka, focused on 'mainstreaming CBA', outlining the need to integrate projectized approaches into existing planning systems (IIED, 2013), while the 2011 CBA Conference, also in Dhaka, focused on 'Upscaling CBA'.

Finally, the BCCSAP is widely regarded as a comprehensive and integrated example of adaptation planning. The Plan itself has elements of 'climate-proofing', but also explicitly recognizes the need for a more integrated, development-first approach to adaptation planning. For example, the plan does not only look at the impacts of climate change on agriculture, but also the role of agriculture and food security in building longer term adaptive capacity (MOEF, 2009). This is exemplified by the prioritization of pillars of social protection and health. The plan intends to cut across all sectors, with 44 programmes so far identified within six thematic areas, including emphasis on strengthening human resources and institutional capacity (MOEF, 2009). The fact the plan was nationally driven and is being funded in part by national funding demonstrates the political will and ownership of

the Government to managing climate risks in an integrated way.

Further, the integration of climate change adaptation in national and sectoral development strategies demonstrates commitment to ensuring that development is both 'climate-resilient' and also builds climate resilience. Climate resilience is being integrated into 'business as usual' planning systems.

7. Moving beyond the four steps

Despite this progress, feedback from those engaged in climate change planning in Bangladesh revealed many challenges in implementing these four steps. Challenges listed by interviewees included inadequate coordination mechanisms among various ministries and line agencies, limited coordination capacity of the MOEF and other implementing agencies, losses of institutional memory in relevant agencies and 'brain drain' of trained officials, leading to delays in knowledge generation and maintenance. Projects often emerged in an ad hoc manner, and programme cycles were affected by interruptions in the flow of climate funds, delays in procurement and disbursement, unavailability of qualified staff, and the overburdening of the limited number of technical staff that did exist. Finally, full integration of climate change into national development planning is entirely dependent on strong political commitment. In Bangladesh, interviewees suggested that a turbulent political system with frequent changes of the ruling party manifesto or development agenda has led to erratic and unpredictable progress in mainstreaming adaptation.

These challenges suggest the need to move beyond this four-step model of mainstreaming climate change. Firstly, experiences suggest that the process of mainstreaming is not linear, with each step building on the last. For example, while undertaking adaptation projects did result in generation of knowledge and capacity that could be built under the BCCSAP, projects continue to be implemented alongside more integrated approaches and do hold value in their own right. Furthermore, the line between 'projects' and 'mainstreamed plans' is not distinct, as projects themselves can be mainstreamed into existing planning processes. The Community Climate Change Programme (CCCP) under the BCCRF supports CBA projects as outlined in the BCCSAP, implemented by NGOs (CCCP, 2013).Thus, while Bangladesh reflects all four proposed 'steps' towards mainstreaming adaptation, it also shows that, in practice, the pathway to mainstreaming is not linear. It is made up of a patchwork of processes, stakeholders and approaches that converge or coexist.

Second, while information or evidence is often perceived as a prerequisite for decision-making, experience in Bangladesh demonstrates that a lot of decision-making around climate change adaptation takes place in the face of uncertainty. A study by IIED on climate change decision-making in Bangladesh showed that where

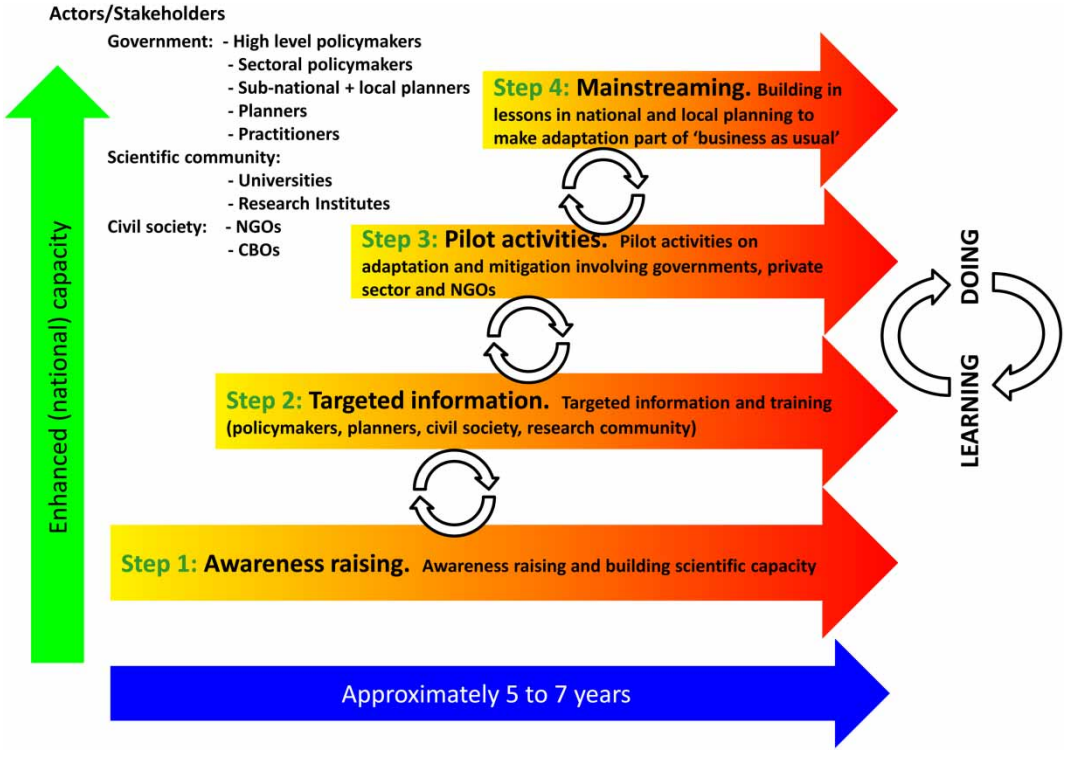

Figure 3. Revised framework for building national capacity on climate change adaptation for mainstreaming.

evidence on climate change impacts was lacking, alternative sources of information can be used stemming from 'non-scientific' arenas, such as community-based knowledge about climate trends and adaptive responses. Further, most decision-making is not neutrally 'evidence-based', but based on a complex set of political drivers that influence not only the way information is used, but also how that information is generated in the first place (Anderson et al., 2011; IIED, 2011).

Third, Bangladesh is showing that information around climate change can be generated from a diverse set of stakeholders, not necessarily only 'climate experts'. Extensive consultations were involved in development of the BCCSAP with a variety of stakeholder groups, especially development planners and cross-sectoral experts. Further, the BCCSAP is taken as a 'living document' – it can be updated in response to new information and emerging priorities.

Furthermore, while the four-step framework emphasizes national-level institutions, it could perhaps be enhanced by elaborating in the final step how adaptation is taken up by planners and decision-makers at sub-national and local levels to achieve effective national mainstreaming of adaptation (see Figure 3). In order to effectively build the resilience of the climate-vulnerable poor at local levels, there is further need for capacity-building of local-level institutions (Christensen et al., 2012).

8. Conclusions

Given the links between adaptation and development, it makes sense to address the two in an integrated way, through 'mainstreaming'. But mainstreaming has many different interpretations – it can mean integrating adaption into development planning, or development into adaptation planning. It can mean managing climate risks in to development, or finding more transformational ways of dealing with vulnerability to both climate and other risks. There are also a number of options for operationalizing the concept, depending on how mainstreaming is interpreted, and also what the target of planning is – whether we think of 'development' as international development investments, or national development planning strategies and budgets. This paper has suggested that for mainstreaming to be sustainable, the object of mainstreaming should be national and sub-national institutions and processes. It has also shown that there is no single 'best' approach to doing mainstreaming – mainstreaming emerges as a patchwork of climate-proofing and more integrated strategies that all contribute to building climate resilience in interconnected ways.

This paper has also shown that the four-step framework for mainstreaming is useful in presenting some of the prerequisites for enabling mainstreaming to take place in principle. However, in practice, we have shown that mainstreaming is not linear (see revised Figure 3). In Bangladesh, mainstreaming has emerged in a number of different guises, all involving a blend of information, capacity building, resource-mobilization and governance changes, underpinned by political will. Different sets of stakeholders have been engaged, from both Government and non-government sectors, and within these groups, some have moved faster than others. This is perhaps no great surprise, and indeed other scholars have pointed to the role that different policy stakeholders can play in driving differential policy change processes (see Huitema & Meijerink, 2010).

In the light of the experience of Bangladesh, we therefore suggest that while the four-step framework could be used alongside the various other 'how to' guides in understanding some of the activities that mainstreaming entails, we recommend further research into the conditions that give rise to effective mainstreaming in different contexts. For example, while projectized approaches undertaken during the NAPA and other CBA activities in Bangladesh were indeed early stage and perhaps not sustainable in their own right, they led to the building of experience, expertise and, critically, agency that enabled more integrated planning through the BCCSAP. Such experiences built formal and informal networks of subnational, national and international stakeholders across different agencies that later came together to promote integrated national planning. Further work on capturing the matrix of activity in different countries that builds the will, momentum, expertise and networks to achieve integrated planning is critical for informing future sustainable mainstreaming. Once identified, work to strengthen such preconditions is critical, such as fostering national expertise through training, and nurturing networks through formalized deliberative platforms and conferences. Linear models and 'how-to' frameworks can only be useful as a way of guiding, or perhaps reviewing, what is essentially a messy organic process of integrated policy-making. Instead, further efforts should focus on identifying and cultivating the roots of effective mainstreaming.

References

Adger, N., Huq, S., Brown, K., Conway, D., & Hulme, M. (2009). Adaptation to climate change in the developing world. In L. Schipper & I. Burton (Eds.), *The earthscan reader on adaptation to climate change* (pp. 295–312). London: Earthscan.

Adger, N., & Kelly, P.M. (1999). Social vulnerability to climate change and the architecture of entitlements. *Mitigation and Adaptation Strategies to Global Change*, *4*, 253–266.

Agrawala, S., Ota, T., Uddin Ahmed, A., Smith, J., & van Aalst, M. (2003). *Development and climate change in Bangladesh: Focus on coastal flooding and the Sundarbans*. Paris: OECD.

Anderson, A. (2011). Climate change and poverty reduction. Climate and development knowledge network Policy Briefing, August 2011. Retrieved from http://cdkn.org/resource/climate-change-and-poverty-reduction/?loclang=en_gb

Anderson, S., Ayers, J., & Kaur, N. (2011). *Evidence paper 1 prepared for the South Asia Climate Resilience Alliance scoping phase*. Unpublished, IIED, London.

Ayers, J. (2011). Resolving the adaptation paradox: Exploring the potential for deliberative adaptation policy-making in Bangladesh. *Global Environmental Politics*, *11*(1), 62–88.

Ayers, J., & Dodman, D. (2010). Climate change adaptation and development I: The state of the debate. *Progress in Development Studies*, *10*(2), 161–168.

Ayers, J., & Huq, S. (2009a). Supporting adaptation to climate change: What role for ODA? *Development Policy Review 27*(6), 675–692.

Ayers, J., & Huq, S. (2009b). The value of linking mitigation and adaptation: A case study of Bangladesh. *Environmental Management*, *43*(5), 753–764.

Ayers, J., Kaur, N., & Anderson, S. (2011). Negotiating climate resilience in Nepal. *IDS Bulletin*, *42*(3), 70–79.

Barnett, J., & O'Neill, S. (2010). Maladaptation. *Global Environmental Change*, *20*(2), 211–213.

Blaikie, P.M., Cannon, T., Davis, I., & Wisner, B. (1994). *At risk: Natural Hazards, people's vulnerability and disasters*. London: Routledge.

Booth, C., & Bennett, C. (2002). Gender mainstreaming in the European Union: Towards a new conception and practice of equal opportunities? *European Journal of Women's Studies*, *9*(4), 430–46.

Boyd, E., Grist, N., Juhola, S., & Nelson, V. (2009). Exploring development futures in a changing climate: Frontiers for development policy and practice. *Development Policy Review*, *27*(6), 659–674.

Burton, I. (2004). *Climate change and the adaptation deficit. Adaptation and Impacts Research Group Occasional Paper 1*. Quebec: Environment Canada.

Burton, I., Diringer, E., & Smith, J. (2006). *Adaptation to climate change: International policy options*. Arlington, VA: PEW Centre on Global Climate Change.

Burton, I., Huq, S., Lim, B., Pilifosova, O., & Schipper, E.L. (2002). From impacts assessment to adaptation priorities: The shaping of adaptation policy. *Climate Policy*, *2*(2–3), 145–159.

Burton, I., & Van Aalst, M. (2004). *Look before you leap: A risk management approach for incorporating climate change adaptation in world bank operations*. Washington, DC: World Bank.

Cannon, T. (2000). Vulnerability analysis and disasters. In D.J. Parker (Ed.), *Floods* (pp. 43–55). London: Routledge.

CCCP. (2013). *Community climate change project website*. Retrieved from http://www.pksf-cccp-bd.org/

Christensen, K., Raihan, S., Ahsan, R., Uddin, A.M.N., Ahmed, C.S., & Wright, H. (2012). *Financing local adaptation: Ensuring access for the climate vulnerable in Bangladesh*. Dhaka: ActionAid Bangladesh, ARCAB, BCAS, and ICCCAD. Retrieved from http://www.actionaid.org/sites/files/actionaid/financing_local_adaptation.pdf

COWI/IIED. (2009). *Evaluation of the operation of the least developed countries fund for adaptation to climate change*. Copenhagen: Ministry of Foreign Affairs of Denmark.

Dalal-Clayton, B., & Bass, S. (2009). *A Guide to Environmental Mainstreaming (Rough First Draft)*. IIED, UK. Retrieved from www.environmental-mainstreaming.org/

Dodman, D., Ayers, J., & Huq, S. (2009). Building resilience. In Worldwatch Institute, 2009 (Ed.), *State of the world 2009: Into a warming world* (pp. 151–168). Washington, DC: Worldwatch Institute.

Dodman, D., & Mitlin, D. (2011, February). Challenges to community-based adaptation. *Journal of International Development*. doi:10.1002/jid.1772

Ford, J. (2008). Emerging trends in climate change policy: The role of adaptation. *International Public Policy Review*, *3*(2), 5–16.

Gupta, J. (2009). Climate change and development cooperation: Trends and questions. *Current Opinion in Environmental Sustainability*, *1*(2), 207–213.

Gupta, J., & Van Der Grijp, N. (Eds.). (2010). *Mainstreaming climate change in development cooperation: Theory, practice and implications for the European Union* (pp. 303–341, 1st ed.). Cambridge: Cambridge University Press.

Hedger, M. (2011). *Climate finance in Bangladesh: Lessons or development cooperation and climate finance at the national level. EDC 2020 Policy Brief*. Retrieved from http://www.edc2020.eu/fileadmin/publications/EDC_2020_-_Policy_Brief_no_14_-_Climate_Finance_in_Bangladesh.pdf

Huitema, D., & Meijerink, S. (2010). Realizing water transitions the role of policy entrepreneurs in water policy change. *Ecology and Society*, *15*(2), 26–36.

Huq, S. (2001). Climate change and Bangladesh. *Science*, *294*, 1617–1617.

Huq, S., & Ayers, J. (2007). *Critical List: The 100 nations most vulnerable to climate change. Sustainable development opinion*. London: IIED.

Huq, S., & Ayers, J. (2008). Streamlining adaptation to climate change into development projects at the national and local level. In European Parliament (Ed.), *Financing climate change policies in developing countries* (pp. 52–68). Brussels: European Parliament.

Huq, S., & Khan, M. (2006). Equity in national adaptation programs of action. In N. Adger, J. Paavola, S. Huq, & M.J. Mace (Ed.), *Fairness in adaptation to climate change* (pp. 131–153). Cambridge: MIT Press.

Huq, S., & Rabbani, G. (2011). Climate change and Bangladesh: Policy and institutional development to reduce vulnerability. *Journal of Bangladesh Studies*, *13*(1), 1–10.

Huq, S., Reid, R., Konate, M., Rahman, A., Sokona, Y., & Crick, F. (2004). Mainstreaming adaptation to climate change in least developed countries (LDCs). *Climate Policy*, *4*(1), 25–43.

IIED. (2011). *Policy discourse analysis report, Bangladesh. Unpublished scoping study to inform the design of the South Asia Alliance on Climate Resilience (SACRA)*. London: IIED.

IIED. (2013). *Community based adaptation: Mainstreaming CBA into national and local planning*. IIED and BCAS. Retrieved from http://pubs.iied.org/pdfs/G03616.pdf?

IPCC. (2007). Summary for policymakers. In M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden, & C.E. Hanson (Eds.), *Climate change 2007: Impacts, adaptation and vulnerability. Contribution of working group II to the fourth assessment report of the intergovernmental panel on climate change* (pp. 7–22). Cambridge: Cambridge University Press.

Kelly, P.M., & Adger, W.N. (2009). Theory and practice in assessing vulnerability to climate change and facilitating adaptation. In L. Schipper & I. Burton, (Eds.), *The earthscan reader on adaptation to climate change* (pp. 161–186). London: Earthscan.

Klein, R.J.T. (2008). Mainstreaming climate adaptation into development policies and programmes: A European perspective. In European Parliament (Ed.), *Financing climate change policies in developing countries* (pp. 38–50). Brussels: European Parliament.

Klein, R.J.T. (2010). Mainstreaming climate adaptation into development: A policy dilemma. In A. Ansohn & B. Pleskovic

(Ed.), *Climate governance and development* (pp. 35–33). Washington, DC: World Bank.

Klein, R.J.T., Eriksen, S.E.H., Naess, L.O., Hammill, A., Tanner, T.M., Robledo, C., & O'Brien, K.L. (2007). Portfolio screening to support the mainstreaming of adaptation to climate change into development assistance. *Climatic Change*, *84* (1), 23–44. doi: 10.1007/s10584-007-9268-x

Klein, R.J.T., Schipper, L., & Dessai, S. (2003). *Integrating mitigation and adaptation into climate and development policy: Three research questions*. Tyndall Centre Working Paper 405. Tyndall Centre.

Lebel, L., Li, L., & Krittasudthacheewa, C. (2012). *Mainstreaming climate change adaptation into development planning*. Bangkok: Adaptation Knowledge Platform and Stockholm Environment Institute, pp 32.

LEG. (2002). *Annotated guidelines for the preparation of national adaptation programmes of action*. Least Developed Countries Expert Group, Bonn: UNFCCC.

Levina, E. (2007). *Adaptation to climate change: International agreements for local needs*. Document prepared by the OECD and IEA for the Annex I Expert Group on the UNFCCC. Paris: OECD/IEA.

McGray, H., Hammill, A., & Bradley, R. (2007). *Weathering the storm: Options for framing adaptation and development*. Washington, DC: World Resources Institute.

Ministry of Environment and Forest Government of the People's Republic of Bangladesh (MOEF). (2008). *NAPA project document: Community-based adaptation to .Climate Change through coastal afforestation in Bangladesh.* Project ID: PIMS 3873. Dhaka: MOEF/UNDP.

MOEF. (2005). *Bangladesh national adaptation programme of action (NAPA)*. Bonn: UNFCCC, Ministry of Environment and Forest Government of Bangladesh.

MOEF. (2009). *Bangladesh climate change strategy and action plan*. Ministry of Environment and Forests, Government of Bangladesh. Retrieved from www.moef.gov.bd/climate_change_strategy2009.pdf

OECD. (2005). *The Paris declaration on aid effectiveness and the Accra agenda for action*. Paris: OECD.

OECD. (2009). *Integrating climate change adaptation into development co-operation: Policy guidance*. OECD Publishing. doi:10.1787/9789264054950-en

Olhoff, A., & Schaer, C. (2010). *Screening tools and guidelines to support the mainstreaming of climate change adaptation into development assistance – a stocktaking report*. New York, NY: UNDP.

Pervin, M. (2013). *Mainstreaming climate change resilience into development planning in Bangladesh*. Country report. London: IIED.

Rahman, A., & Alam, M. (2003). *Mainstreaming adaptation to climate change in least developed countries (LDCs)*. IIED Working Paper2. London: IIED.

Reid, H., & Simms, A. (2007). *Up in smoke? Asia and the Pacific*. Up in Smoke Working Group on Climate Change and Development. London: New Economics Foundation.

Ross, A., & Dovers, S. (2008). Making the harder yards: Environmental policy integration in Australia. *Australian Journal of Public Administration*, *67*(3), 245–260.

Schipper, L. (2006). Conceptual history of adaptation in the UNFCCC process. *RECIEL*, *15*(1), 82–92.

Schipper, L. (2007). *Climate change adaptation and development: Exploring the linkages*. Tyndall Centre Working Paper Series 107. Tyndall Centre for Climate Change Research.

Seballos, F., & Kreft, S. (2011). Towards an understanding of the political economy of the PPCR. *IDS Bulletin*, *42*(3), 33–41.

Sen, A.K. (1999). *Development as freedom*. Oxford: Oxford University Press.

Smit, B., & Wandel, J. (2006). Adaptation, adaptive capacity and vulnerability. *Global Environmental Change*, *16*, 282–292.

Sperling, F. (2003). *Poverty and climate change: Reducing the vulnerability of the poor through adaptation*. Washington, DC: World Bank.

Tanner, T. (2008). *Climate risk management: Adapting development cooperation to climate change*. IDS Working Paper Wp2008–20.

UNDP. (2007). *Country-in-focus: Bangladesh*. UNDP-RCC web bulletin, 2.

UNDP. (2009). International human development indicators: Bangladesh. Retrieved April 2, 2013, from http://hdrstats.undp.org/en/countries/profiles/BGD.html

UNDP-UNEP. (2011). *Mainstreaming adaptation to climate change in development planning: A guidance for practitioners*. Nairobi, Kenya: UNDP/UNEP Poverty Environment Initiative.