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Adaptation to Climate Change in Poverty Reduction Strategies

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**HUMAN DEVELOPMENT REPORT 2007
CLIMATE CHANGE AND HUMAN DEVELOPMENT – RISK AND
VULNERABILITY IN A WARMING WORLD**

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**ADAPTATION TO CLIMATE CHANGE IN POVERTY REDUCTION
STRATEGIES**

Abstract

Climate Change presents a major challenge for development and poverty eradication. There is a relation between poverty in low-income countries and economies heavy dependent on weather-sensitive resources, such as agriculture. Millions of poor people in developing countries are vulnerable to extreme weather events and climate change impacts on ecosystems, water and agriculture. This report looks at nineteen countries and their Poverty Reduction Strategy Papers (PRSP) and National Adaptation Programmes of Action (NAPA) by assessing criteria such as: a) the consideration of climate change scenarios and the vulnerabilities of the country; b) the analysis of poverty-climate links; and c) the climate change institutional framework of the country. It is important to acknowledge that the assessment does not provide a quantitative assessment. It assesses the integration of adaptation to climate change and climate risks management within a subjective qualitative framework. The results show that most countries have a low incorporation of adaptation to climate change into PRSP. But, that by incorporating NAPAs a better performance is shown. The best practices study cases present: Bangladesh successful approach to mainstream natural disaster management, which facilitated the evolution to incorporate climate change into PRSP. Mexico's Interministerial Climate Change Commission is presented as a good example of cross-sectoral institutional integration. The paper illustrates that natural hazards mainstreaming into PRSP and the development of NAPAs are a step forward into the establishment of an institutional process to incorporate climate change into national policies. The World Bank and the UNFCCC should coordinate efforts to support developing countries in their efforts to incorporate adaptation to climate change in PRSP. Countries need to strength the coordination, networks and information flows between ministries, different levels of government and civil society to have a more efficient integration of climate change variables into poverty reduction and development strategies.

1. Introduction

The objective of this report is to assess nineteen countries and their PRSPs and NAPAs, if available, by assessing criteria such as: a) the consideration of climate change scenarios and the vulnerabilities of the country; b) the analysis of poverty-climate links; and c) the climate change institutional framework of the country. The assessment provides an overview of the integration of adaptation to climate change and climate risks management within a subjective qualitative framework. The report asks if by

incorporating NAPAs a better country performance is shown. The section of best practices study cases has the objective to show that a cross-sectoral institutional integration is a step forward to mainstream climate change into national policies. The report aims to find links between climate change and poverty reduction strategies and to provide recommendations to enhance the coordination of these agendas.

There are about 70 low-income countries involved at a certain stage of the PRSP process, which is a requirement for receiving debt relief under the enhanced Heavily Indebted Poor Countries (HIPC) Initiative and concessional assistance from the World Bank and International Monetary Fund (IMF) (World Bank 2007).

Research indicates that over the past three decades more disaster prone, low-income countries that are based on simple economies have experienced a much slower pace of economic development than their less disaster-prone counterparts (World Bank 2006). The Intergovernmental Panel on Climate Change (IPCC) indicates that is very likely that hot extremes, heat waves, and heavy precipitation events will continue to become more frequent (Working Group I of the IPCC 2007). The world is already likely to fall short of the Millennium Development Goals for 2015 in many countries. Climate Change threatens the long-term sustainability of development progress. In particular those communities who are already living at or close to the margins of survival will experience a disproportionately harmful effect (Stern 2006). There is a relation between poor communities and economies heavy dependent on weather-sensitive resources, such as agriculture, in low-income countries. Climate change will expose millions of vulnerable poor people in developing countries to more frequent extreme weather events and climate change impacts on ecosystems, water and agriculture.

At the national level, PRSPs can act as a key instrument to link poverty and climate change agendas. PRSPs provide a framework for domestic policies and programs, as well as for foreign assistance, with the overall aim of reducing poverty. PRSPs are written by the countries and are comprehensive and result-oriented documents (Bojo 2004).

This report assesses seventeen full PRSPs, four PRSPs Progress Reports, one Interim Report, one national development plan (for the case of India) and eight NAPAs. Table 1 presents the selected countries, their documentation, and year of publication for the assessment. The selection considered first the full PRSP, if available, and / or its latest document related to their stage on the PRSP process. The NAPA is introduced into the assessment to identify if there is a clear National Institutional Framework that considers climate change into national policies and if NAPA, as a process, influences the incorporation of climate change into the PRSP process.

The Sub-Saharan region is represented by nine countries; the Middle East & North of Africa by two countries; South Asia by four countries; East-Asia by one Country; and Latin America & the Caribbean by three countries.

Table 1 Countries and their PRSP and NAPA Assess (year of publication)

Country	I-PRSP	PRSP	PRSP Progress Report	NAPA
Bangladesh		(2005)		(2005)
Bhutan		(2004)		(2006)
Bolivia		(2001)		
Comoros	(2005)			(2006)
Djibouti		(2004)		(2006)
Ethiopia		(2002)	(2005)	
Honduras		(2001)	(2005)	
India¹		(2002)		
Kenya		(2004)		
Madagascar		(2003)	(2006)	(2006)
Malawi		(2006)		(2006)
Mauritania		(2006)		(2004)
Mozambique		(2006)		
Nicaragua		(2005)		
Niger		(2002)	(2006)	(2006)
Pakistan		(2003)		
Tanzania		(2005)		
Vietnam		(2006)		
Yemen		(2002)		

The next section “Methods of Assessment” shows the rationale behind the criteria selected, the boundaries of the research and defines the scoring system. It is followed by a section describing results of the assessment. A section with study cases shows a deeper analysis of the Bangladesh PRSP and climate change. And a description of Mexico's institutional framework to climate change. The final section gives conclusions and recommendations.

2. Method of Assessment

This report provides a subjective qualitative framework that looks at the integration of adaptation to climate change and climate risks management into poverty reduction and development strategies. It assumes that PRSPs and NAPAs are the best source of official information provided by countries to make a coherent assessment.

Another important assumption for this report is based on how the IPCC defines the time scales of climate variability and change, which require consideration of both natural and human-induced variability and change and tended to focus on clearly discernable anthropogenic influences on climate, be it significant changes attributable to human influence or signals apparent in projections some decades into the future (Washington 2006).

It is important to acknowledge the temporal boundaries of the assessment. PRSPs and NAPAs are ongoing processes. Adaptation to climate change is just in the recent years

¹ India poverty reduction strategy and development strategy is embodied in its India's Tenth Five Year Plan (2002-2007) developed by the National Development Council.

playing a key role in the international agenda at the UNFCCC and in the development community. This report considered those PRSPs and NAPAs that have been available through the websites of the World Bank and the UNFCCC through the end of March 2007.

It could be the case that countries are integrating adaptation to climate change and climate risk management by a different national process, without a NAPA, and that the process has not been reflected in their PRSP.

The assessment framework used in the report built on previous work and ideas on mainstreaming the environment in PRSP (Bojo 2004). The term “mainstreaming” is used to describe the three main criteria:

- a) The consideration of climate change scenarios and vulnerabilities for the country;**
- b) The analysis of poverty-climate links; and**
- c) The climate change institutional framework of the country.**

These criteria are broken into five variables that assessed each country and their respective PRSPs and NAPAs, if available. A description of these variables is provided below.

a) The consideration of climate change scenarios and vulnerabilities for the country:

1. **Mention of Climate Change:** recognition of climate change as a policy challenge or threat for development and/or the incorporation of climate change in a national programme or project.
2. **National Climate Change Scenarios:** description of national climate change scenarios and/or the use of climate change models for describing national vulnerabilities.
3. **Regional Climate Change Scenarios:** the use of regional models or the downscaling of GCM at a regional scale. They are used to have a greater resolution for climate change scenarios at the regional scale.
4. **Identification of Sector/Community Vulnerabilities:** issues related to a clear identification of vulnerable communities or sectors to climate change.
5. **Research Gaps and Needs:** identification of research priorities in modeling, analysis of vulnerabilities and adaptive capacity.

b) The analysis of poverty-climate links:

1. **Mention of Poverty-Climate link:** identification of climate as a risk for the eradication of poverty and development goals.
2. **Identification of a particular Poverty-Climate problem:** identify any issue related to climate variability or extreme weather events with a negative impact on poverty eradication or development. Attention was given to events such as droughts/aridity, erratic rainfall, floods, sea level rise, tropical cyclones, extreme heat and extreme cold.
3. **General Analysis of a Climate-Poverty problem:** to give a general analysis of how droughts/aridity, erratic rainfall, floods, sea level rise, tropical cyclones, extreme heat and extreme cold affects a vulnerable community or sector.
4. **Solution identification in a Sector/Community:** identify any programme, project or policy that help reducing present or future vulnerability to

droughts/aridity, erratic rainfall, floods, sea level rise, tropical cyclones, extreme heat and extreme affecting a vulnerable community or sector.

5. **Gaps and Needs:** identification of clear gaps and needs in current programmes, projects and policies related to human and scientific resources in relation to climate-poverty links.

c) The climate change institutional framework of the country:

1. **Mention of Climate Change Institutional Framework:** identification of a climate change constituency.
2. **NAPA:** identification or development of a NAPA.
3. **National Institutional Framework:** issue related to a national multisectoral climate change institutional mechanism. In some countries an Interministerial Commission has been established.
4. **Regional/Local Institutional Framework (Civil Society):** to have a regional or local permanent and solid institutional framework that allows the interaction between authorities at the national, regional, state and local level and with local civil society.
5. **Adaptation Projects:** identification of a set of adaptation projects priorities and a coherent institutional capacity for the implementation phase.

Scoring System

The assessment of the countries and their PRSPs and NAPAs across the 15 variables is based on a qualitative judgment. All variables received a score with respect to each country's:

0 = not mention or not elaborated

1 = mention, identification or elaboration of the concept.

For each criterion the country could score a range of 0-5 depending on the level of attention given to the criteria. In total each country could score 15.

Though the assessment does not intend to be scientifically precise is a good indication of the level of integration of adaptation to climate change and climate related risk management into the national development policies. The interpretation of the scores is as follow:

0-5 = Little or no progress in the integration of adaptation to climate change and climate risk management

5-10 = Awareness of needs. The country has a growing level of awareness and understanding of the value and requirements of mainstreaming, and recognizes the need for action. It may also have decided to take action.

10-15 = Development of Institutional response and solutions. It refers to an intermediate stage, where the country is developing plans and tools to address the requirements of mainstreaming adaptation to climate change and where climate risk reduction is address within an institutional natural disaster management and under the national development process.

It is important to consider that the results can have a different interpretation by considering a) the level of vulnerability to climate variability, extreme weather events and

climate change of a country as an incentive to invest in the integration of adaptation to climate change and climate risks management into poverty reduction and development strategies; and b) the resources of a particular country to address these issues. This report does not provide an assessment of the country's efficiency or quality in the implementation of adaptation projects, or the role of governance for managing the vulnerability to climate change or the adaptive capacity of the countries in the face of climate change.

When we talk of the vulnerability of a country to climate change we are therefore talking about the vulnerability of that country to a variety of different hazards associated with climate change. Assessments of vulnerability and adaptive capacity for individual countries will be most useful when they consist of assessments of generic vulnerability and adaptive capacity, followed by assessments of vulnerability and capacity to adapt to the specific hazards that pose the greatest threat to human welfare and national economic development for a particular country. Such assessments may be broken down by sector, region or population group (Adger 2004).

3. Results of the Assessment

This section presents a cross-country comparison of the penetration of climate change variables, first into the PRSP process and, second, into the assessment of both the PRSP and NAPA for those countries that already have developed a NAPA, at the moment just eight out of the nineteen.

Table 2 shows the resulting scores by country of their PRSP assessment. It demonstrates that governments have made little progress in incorporating climate change into their PRSPs. The only exception, among the countries assessed is India scoring 13 out 15, Bangladesh 12, followed by Malawi and Yemen with 7 points. The rest of the countries have a poor scoring in the variables assessed.

Nevertheless, most countries showed a better performance in the criteria b) Poverty-Climate links. This criteria refers to climate variability or extreme weather events that have been identified to have a negative impact on poverty eradication such as droughts/aridity, erratic rainfall, floods, sea level rise, tropical cyclones, extreme heat and extremes affecting vulnerable communities or sectors. All these factors are usually covered by the countries in their natural hazards management plans, which have been mainstreamed into their PRSPs in most of the selected countries. Usually, countries that are frequently impact by natural hazards are better scored. Such are the cases of the next three examples:

Honduras hit by Hurricane Mitch in 1998, where it is estimated that 35,000 houses were destroyed, and 50,000 partially damaged as a result of Hurricane Mitch (Government of Honduras 2001).

Bangladesh considered by the UNDP publication "Disaster Profiles of the Least Developed Countries" one of the most adversely affected countries by natural hazards. Moreover, the history of natural hazards for the last one hundred years or so as obtained

from the international disaster-database of the Louvain Catholic University, Brussels reveals that the frequency of natural hazards within what are now the boundaries of Bangladesh has been increasing during recent years. Bangladesh is among the most hazards-prone countries in the world and the death tolls from cyclones and floods are among the highest (Government of the People's Republic of Bangladesh 2005).

Ethiopia has experienced severe droughts and famine hazards in recent history. Its PRSP claims that droughts occur far too often and food security in all its dimensions could not be sustained. In any one-year, more than 4 million people on average face food shortage and need relief assistance, since about 42 percent of the population in Ethiopia falls below the food poverty line (Federal Democratic Republic of Ethiopia 2002).

There are two main reasons to consider climate variability and extreme weather events for the assessment. One is that it is widely recognized that to enhance resilience to present climate variability and extreme weather events is an important step forward to integrate climate change into national policies. And, second, an assessment of the relationship between Poverty-Climate Change links (Appendix A, Table 1) shows that only India, Bangladesh, Yemen and Pakistan include the concept of linking climate change and poverty into their PRSP.

Most countries have little recognition of climate change in their PRSP, indeed just twelve out of the nineteen countries mention climate change in their entire PRSP document. Countries like Nicaragua, Niger, Madagascar, Bhutan, Comoros, Tanzania and Kenya do not mention climate change in their PRSP at all. The absence of the language is important to recognize the low awareness of the implications of climate change into poverty reduction strategies.

Bangladesh and Malawi are the only countries that scored on the variable "Adaptation Projects" in their PRSPs. Bangladesh recognizes the direct links between poverty and vulnerability to natural hazards. The Comprehensive Disaster Management programme (CDMP) has the goal of mainstreaming disaster management and risk reduction into national policies, institutions and development processes and to facilitate management of long-term climate risks and uncertainties (Government of the People's Republic of Bangladesh 2005). The project process includes application of hazard management; climate change; risk management; and incorporate climate change risk reduction and adaptation into national disaster risk reduction activities through CDMP, NAPA and other linkages (Government of the People's Republic of Bangladesh 2005). Also through the enhancement of professional skills and knowledge of key personnel on risk reduction, preparedness, warning and forecasting system, climate change risk reduction and post-disaster activities (Government of the People's Republic of Bangladesh 2005).

In the case of Malawi climate change is integrated as one of the drivers for their irrigation and water development. The long-term goal is to ensure that water resources are well protected and managed to meet agricultural, domestic and industrial demands and in the medium term, it is expected that Malawi will have increased access to water resources averaging a distance of 500m from communities (Government of Malawi 2006).

Table 2 Adaptation to Climate Change in PRSP

Country	Climate Change in PRSP (0-5)					Poverty-Climate link (0-5)					Climate Change Institutional Framework (0-5)					Total Scoring (0-15)
	Mention of Climate Change	National Climate Change Scenarios	Regional Climate Change Scenarios	Identification of Sector / Community Vulnerabilities	Research Gaps and Needs	Mention of Poverty-Climate link	Identification of a particular problem	General Analysis	Solution identification Sector/ Community	Gaps and Needs	Mention of Climate Change Institutional Framework	NAPA	National Institutional Framework	Regional / Local Institutional Framework (Civil Society)	Adaptation Projects	
India	X	X	X	X	X	X	X	X	X	X	X		X		X	13
Bangladesh	X			X	X	X	X	X	X	X	X	X	X		X	12
Malawi	X			X		X	X	X			X				X	7
Yemen	X	X		X		X	X	X	X							7
Mozambique	X			X		X	X	X	X							6
Bolivia	X					X	X	X	X							5
Djibouti	X					X	X	X			X					5
Ethiopia	X					X	X	X	X							5
Honduras	X					X	X	X	X							5
Mauritania	X					X	X	X	X							5
Pakistan	X					X	X	X	X							5
Vietnam	X					X	X	X	X							5
Tanzania						X	X	X	X							4
Nicaragua						X	X	X	X							4
Niger						X	X	X	X							4
Madagascar						X	X	X								3
Bhutan						X	X									2
Comoros						X	X									2
Kenya						X	X									2

India is the only country that scored under “Regional Climate Change Scenarios” it showed comprehensive technical and scientific capacities to provide such scenarios under its Tenth Five Year Plan. The Indian Earth Observation Programme framework will support disaster management programme drawn up by the Indian Space Research Organisation. The programme, with special focus on the India northeastern region involves: mapping and monitoring support; creation of thematic and cartographic information database for flood-prone and cyclone-prone areas and ortho-photomaps of earthquake-prone areas; demonstration of the applicability of GIS-based decision support system for disaster management; infrastructure, including networking facilities (India National Development Council 2002). And the National Centre for Medium Range Weather Forecasting will be further strengthened and encouraged to meet the ever-growing demands of weather forecasting through appropriate communication infrastructure for reaching out to the user community. The India Meteorological Department new programmes will undertake the establishment of a satellite based network of 1,000 stations for automatic collection of meteorological data for assimilation in numerical models in near-real-time and pursuance of scientific work to develop improved climate prediction models (India National Development Council 2002).

Table 3 shows the introduction of NAPAs. A significant improvement can be seen for those countries that have proceeded to develop their NAPAs, countries like Madagascar, Djibouti, Mauritania, Niger, Bhutan and Comoros.

NAPAs provide a process for Least Developed Countries (LDCs) to identify priority activities that respond to their urgent and immediate needs with regard to adaptation to climate change. In order to address the urgent adaptation needs of LDCs, a new approach was developed in the NAPAs by enhancing adaptive capacity to climate variability, which itself would help address the adverse effects of climate change. The NAPA takes into account existing coping strategies at the grassroots level, and builds upon that to identify priority activities, rather than focusing on scenario-based modeling to assess future vulnerability and long-term policy at the state level. In the NAPA process, prominence is given to community-level input as an important source of information, recognizing that grassroots communities are the main stakeholders (UNFCCC 2007).

We have to consider related financial problems to develop the participatory approach of NAPA above described. The Regional Workshop on National Adaptation Programmes of Action (NAPAs) for Least Developed Anglophone African Countries in 2003 raised concerns among participants by questioning the funding for carrying out public consultations. The GEFs US\$200,000 allocation may not be sufficient to meet the needs in every country. A participant who had worked in Samoa, for example, said that the costs to conduct participatory approaches are high because of the time it takes to travel through the islands. And in some of the larger, poorer countries like Bangladesh where the complexity and scale of adaptation issues might be greater than in Samoa, the allocation simply doesn't cover the costs of carrying out a full NAPA investigation (UNITAR 2003).

The influence of NAPAs to integrate climate change into the PRSP process is at the moment difficult to assess. Most NAPAs for the countries assessed have been published in the year 2006 (6 out of 8) and there is no evidence to claim that the NAPAs are helping to mainstream climate change into the PRSPs. The only country that has recognition of the NAPA process in the PRSP is Bangladesh. In contrast Mauritania, first country to develop a NAPA in the year 2004, has not incorporated any mention of NAPA or a Climate Change Institutional Framework in its PRSP published in the year 2006. We can consider that Mauritania's recognized obstacles to the implementation of NAPA are also the main obstacles for a general consideration of the NAPA in their PRSP:

- The absence of an institutional framework specific to the implementation of NAPA benefiting from operational support; the bodies National Centre for Development and Environment, Technical Centre for Development and Environment, Regional Centre for Development and Environment and others bear witness to a lack of driving force;
- The obsolete nature of the laws which exist on the environment in relation to the conventions (MEA);
- The as yet informal nature of the project as perceived by the decision-makers in general;
- The diversity of the mechanisms engaged at national level in the area of the environment without any obvious connecting relationship, which necessarily weakens the Department of the Environment (Islamic Republic of Mauritania 2004).

Nevertheless, PRSPs have certain influence in the NAPAs of the countries assessed. The NAPAs consider poor vulnerable communities and their countries PRSP into their strategies. In their process NAPAs include synthesis of available information, participatory assessment of vulnerability to current climate variability and extreme events and of areas where risks would increase due to climate change, identification of key adaptation measures as well as criteria for prioritizing activities, and selection of a prioritized short list of activities (UNFCCC 2007). As an example, Niger overall objective of the NAPA is to contribute to the alleviation of the adverse effects of climate variability and changes on the most vulnerable populations with the prospect of a sustainable development. In this area, some adaptation measures, consistent with the orientations of the PRSP contained in the Rural Development Strategy, were identified (Republic of Niger 2006). The Bhutan Poverty Reduction Strategy Paper (BPRSP) and Millennium Development Goals both emphasize on eradicate extreme poverty and hunger by year 2015 by building infrastructure and access to remote communities and villages; to achieve universal primary education; reduce child mortality; improve maternal health and ensure environmental sustainability. The strategy identifies several cross-cutting issues relevant for NAPA including empowerment of the most vulnerable and remote sectors of society, by provision of access roads, electricity, free health care and education, and decision making powers at the village and block levels through a process of decentralization. The NAPA project via its wide ranging consultations and efforts of the task force representing key sectors has assessed the main vulnerabilities of eight sectors (Agriculture, Forestry, Livestock, Health, Trade and Industry, Biodiversity, Water, Roads and Infrastructure) resulting in 9 urgent and immediate adaptation projects:

1. Disaster Management Strategy – planning for food security and emergency medicine to vulnerable communities
2. Artificial Lowering of Thorthomi Lake
3. Weather Forecasting System to Serve Farmers and Agriculture
4. Landslide Management & Flood Prevention (Pilot Schemes in Critical Areas)
5. Flood Protection of Downstream Industrial and Agricultural Areas
6. Rainwater Harvesting
7. Glacial Lake Outburst Floods Hazard Zoning (Pilot Scheme – Chamkhar Chu Basin)
8. Installation of Early Warning System on Pho Chu Basin
9. Promote Community-based Forest Fire Management and Prevention (Government of Bhutan 2006).

The focus of NAPAs is on urgent and immediate needs, those for which further delay could increase vulnerability or lead to increased costs at a later stage (UNFCCC 2007). NAPA includes short profiles of projects and/or activities intended to address urgent and immediate adaptation needs. Its focus is to address the use of existing information, where no new research is needed. NAPA is an action-oriented, country-driven and flexible process based on national circumstances (UNFCCC 2007). It is a crucial step to coordinate the UNFCCC and the World Bank to support countries to integrate their NAPAs process into their PRSPs and development strategies. This process could enhance a cross-sectoral cooperation between the environmental and development communities in order to tackle the challenges of climate change to poverty reduction and development.

Table 3 Adaptation to Climate Change in PRSP and NAPA

Country	Climate Change in PRSP/ NAPA (0-5)					Poverty-Climate link (0-5)					Climate Change Institutional Framework (0-5)					Total Scoring (0-15)
	Mention of Climate Change	National Climate Change Scenarios	Regional Climate Change Scenarios	Identification of Sector / Community Vulnerabilities	Research Gaps and Needs	Mention of Poverty-Climate link	Identification of a particular problem	General Analysis	Solution identification Sector / Community	Gaps and Needs	Mention of Climate Change Institutional Framework	NAPA	National Institutional Framework	Regional / Local Institutional Framework (Civil Society)	Adaptation Projects	
Bangladesh	X	X		X	X	X	X	X	X	X	X	X	X		X	13
Madagascar	X	X		X		X	X	X	X	X	X	X	X		X	12
Djibouti	X	X		X		X	X	X		X	X	X	X		X	11
Mauritania	X			X	X	X	X	X	X		X	X	X		X	11
Niger	X	X		X		X	X	X	X		X	X	X		X	11
Bhutan	X			X	X	X	X	X	X		X	X			X	10
Malawi	X			X		X	X	X	X		X	X			X	9
Comoros	X	X		X		X	X	X			X	X			X	9

Table 4 PRSP Scores (left) – PRSP / NAPA Scores (right) Scores 0-15 (15 is the best)

Country	Climate Change in PRSP (0-5)	Poverty-Climate link (0-5)	Climate Change Institutional Framework (0-5)	Total Scoring (0-15)	Country	Climate Change in PRSP / NAPA (0-5)	Poverty-Climate link (0-5)	Climate Change Institutional Framework (0-5)	Total Scoring (0-15)
Bangladesh	3	5	4	12	Bangladesh	4	5	4	13
Madagascar	0	3	0	3	Madagascar	3	5	4	12
Djibouti	1	3	1	5	Djibouti	3	4	4	11
Mauritania	1	4	0	5	Mauritania	3	4	4	11
Niger	0	4	0	4	Niger	3	4	4	11
Bhutan	0	2	0	2	Bhutan	3	4	3	10
Comoros	0	2	0	2	Comoros	3	3	3	9
Malawi	2	3	2	7	Malawi	2	4	3	9

A comparison between countries scores taking into account the assessment just for PRSP and also the assessment for PRSP/NAPA combined is shown in Table 4. The exercise is relevant to describe the positive relation of the development of NAPAs for those 8 countries with a NAPA document (Bangladesh, Madagascar, Djibouti, Mauritania, Niger, Bhutan, Comoros and Malawi) and its better performance in the scoring system of the variables assessed.

Madagascar and Niger presented their PRSP Progress Report during 2006, the same year of their NAPAs publication. There is a considerable difference in scores between the assessment of their PRSP process and the scores considering PRSP/NAPA. This tells us that that PRSP Progress Report, where Governments can make changes to the content of a PRSP and assess the progress toward PRSP goals and intended policy/program reforms, are not mainstreaming the NAPA process or at least not in the case of Madagascar and Niger.

It is important to examine those variables where there is an overall poor scoring even for those countries that have developed PRSP and NAPA. The variables where countries scored less than 5 points are the following:

- **Regional Climate Change Scenarios:** are not present in any of the countries assessed, excluding India. Most countries use GCM to describe National Climate Change Scenarios. India showed comprehensive technical and scientific capacities to provide regional scenarios under its Tenth Five Year Plan through the India's Earth Observation System framework, India's National Centre for Medium Range Weather Forecasting and India Meteorological Department.
- **Research Need and Gaps in Climate Change:** most countries do not assess what are their priorities into research in terms of modeling, analysis of vulnerabilities and adaptive capacity. Bangladesh and India are the only exceptions. India focused part of its research on the organization of multi-disciplinary monsoon and climate management in different agroclimatic zones in order to help in maximizing the benefits of good monsoons and minimizing the adverse impact of aberrant monsoons. And considering also as an aim to take proactive action against potential adverse changes in temperature, precipitation and sea levels as a result of global warming (India National Development Council 2002).
- **Gaps and needs in Poverty-Climate link:** most countries do not assess gaps and needs (human and scientific resources) in current or future programmes or projects where there is a link between climate and poverty.
- **Regional / Local Institutional Framework (Civil Society):** countries assessed do not have a permanent solid climate change institutional framework working at the regional or local level and integrating local civil society.

4. Best Practices in Developing Countries on Mainstreaming Adaptation to Climate Change

Bangladesh Evolution of Mainstreaming Natural Hazards into Mainstreaming Adaptation to Climate Change

It is well recognized that Bangladesh is one of the most adversely affected countries to

climate change. Bangladesh has a vulnerable economy, low resource base, an extremely high population density, and high incidence of natural disasters. Climate change and related extreme events are recognized as major impediments to growth (Government of the People's Republic of Bangladesh 2005). The history of natural disasters for the last one hundred years or so as obtained from the international disaster-database of the Louvain Catholic University, Brussels reveals that the frequency of natural disasters within Bangladesh has been increasing during recent years (Government of the People's Republic of Bangladesh 2005).

Bangladesh has learned because of its particular circumstances to mainstream disaster risk management and has achieved to integrate it within development activities. The policy objective is to try to avoid or minimize the impact of disasters through increased coping capacity at various levels, within the nation but also globally and regionally. This is possible with proper institutionalisation backed by adequate and regular provision of resources for preparedness against hazards. This preparedness implies the following: (i) an effective early warning system to predict the onset of disaster; (ii) an institutionalized triggering mechanism for response during and after the disaster; (iii) networking among public institutions, non-government organizations, the community and individual household for integrated planning and coordination but decentralized responsibility for implementation of actions by these actors before, during and after a disaster; and (iv) proper development and deployment of institutional, logistics and human capacity and skill through training, research, up-gradation and regular maintenance of facilities for mitigation of damages (Government of the People's Republic of Bangladesh 2005). The Comprehensive Disaster Management towards the PRSP has recognized NAPA as an activity to address some of the pertinent climate change issues.

The experience and pressure made by natural hazards and the awareness of climate change by the government of Bangladesh has allowed establishing an inter-ministerial committee on climate change headed by the Minister for Environment and Forest and with representation from relevant government ministries and departments as well as key NGOs and research institutions. Climate change has been integrated into developed policy documents such as Coastal Zone Policy and National Water Policy (Government of the People's Republic of Bangladesh 2005).

This report shows that Bangladesh has the most coherent integration of adaptation to climate change and climate risk management into its PRSP according to the variables assessed. This evolution may come as a response to one of the highest vulnerabilities to natural hazards and as a strategy to survive more frequent extreme hazard events with climate change.

Nevertheless, the institutional capacity including human resource quality is weak and needs substantial improvement if the challenges of climate change are to be faced (Government of the People's Republic of Bangladesh 2005). Finally, this report does not provide an assessment of the efficiency or quality of the countries in the implementation of adaptation projects, or the role of governance or adaptive capacity of the countries in the face of climate change.

Adaptation in Mexico's Interministerial Climate Change Commission

Mexico established in the year 2005 an Interministerial Climate Change Commission (ICCC) to coordinate national policies and actions of different agencies in mitigation efforts to reduce greenhouse gases emissions and adaptation to climate change. The Commission is chaired by the Ministry of Environment and Natural Resources and composes the Ministers of Foreign Affairs; Social Development; Energy; Economy; Agriculture, Livestock, Rural Development, Fisheries and Food; and Communications and Transportation. And the Minister of Finance and Public Credit is invited to participate in the Commission's meetings on a permanent basis (Comisión Intersecretarial de Cambio Climático 2006).

The ICCC started moving from a stronger emphasis on the mitigation to a more balance agenda by establishing a Working Group on Adaptation in October 2006. The National Institute of Ecology (INE) of the Ministry of Environment responsible for the production of scientific knowledge to support decision-making is under the coordination of the Working Group. It is expected that the Working Group will stress crosscutting issues in public policies and coordinate actions among the federal, state, and municipal governments and with private sector, civil society organizations, and research centers (Comisión Intersecretarial de Cambio Climático 2006) .

The observed greater intensity of hurricanes in the Caribbean region and the Gulf of Mexico in the 2005 hurricane season, the most active ever recorded, with hurricanes Stan and Wilma causing damages of about \$3, 000 million USD influenced the Mexican Government to take stronger actions on adaptation to climate change. The ICCC stated that climate change is a matter of strategic national security which involves the safety of human beings and the security of their material possessions and cultural wealth, as well as the integrity of infrastructures for energy production and distribution, communications, urban and industrial services and, in general, the safety and security of human settlements.

A Special Climate Change Program within the framework of the National Development Plan 2007-2012 will start building the development of a national adaptation strategy with the aim to open participation spaces for social and productive sectors, all ministries, and the three levels of government (SEMARNAT 2007). This program will integrate synergies with greater global attention on adaptation incorporated in the agendas of the UNFCCC, the World Bank and the United Nation Development Programme (UNDP).

5. Conclusions and Recommendations

Managing hazard risks establishes mechanisms and creates capacities for future climate risk management by integrating hazard management strategies in development a cross-over benefits in building national and local adaptive capacities for long term climate change and variability. The World Bank has been moving from post-disaster reconstruction to pre-disaster mitigation and preparedness as a critical dimension of its poverty agenda (World Bank 2006). There are clear elements of hazard risk management in some of the countries PRSPs, but emphasis tends to be on early warning and post-

disaster response rather preventive and mitigation strategies. It is important to continue the mainstreaming hazard management as a first phase and incentive an evolution to mainstream adaptation to climate change in PRSP.

Most countries that experience frequent natural hazards, as in the case of Bangladesh, have more experience to integrate climate change adaptation into national policies. In Honduras, Hurricane Mitch had a strong impact on the living conditions of people, increasing poverty nationally, and the percentage of poor households increased from 63.1% in March 1998 to 65.9% in March 1999. The Honduran PRSP considers as one of the main elements the reduction of ecological vulnerability and the establishment of an effective program of disaster prevention and mitigation, as well as risk management (Government of Honduras 2001). But Honduras has not evolved into integrating climate change into a NAPA document.

The ability to handle current climate variability is a vital and prime, if not a sufficient, requirement for managing a future changed climate; handling current climate variability further is directly achievable and provides immediate production and capacity benefits. Understanding how to manage the consequences of climate variability in the context of the many other influences on social, economic, and natural systems will clearly provide useful experience when considering strategies for handling future climate change (Washington 2006).

The experienced obtained during the elaboration of NAPA shows that the foreseen strategies in the face of climate are inter- sectoral (Union of the Comoros 2006). Mexico and Bangladesh have moved already in this direction and it is important to follow their processes and learn from their experiences in the coming years. However, climate change, in most countries assessed in this report, is under the responsibility of the Ministry of Environment. As stated by Comoros, usually the environmental sector lacks the human and financial means and the necessary influence to engage the necessary sectoral reforms, because of the lack of support through an inter-sectoral coordination mechanism (Union of the Comoros 2006). It is a crucial step to coordinate the UNFCCC and the World Bank to support countries to integrate their NAPAs process into their PRSPs and development strategies. This process could enhance a cross-sectoral cooperation between the environmental and development communities in order to tackle the challenges of climate change to poverty reduction and development.

Most of the countries assessed in the report, low-income countries, have a clear dependency on agriculture, a weather-sensitive resource and limited economical resources. Yet evidence from traditional societies demonstrates that the capacity to adapt in many senses depends more on experience, knowledge and dependency on weather-sensitive resources. Uncertainties in adaptive capacity are profound. Recognition of the nature of this uncertainty, portrayed through a traceable theoretical account, is an essential starting point for use of information for decision-making in this area (Adger 2005).

One important question is why most of the countries have not incorporate adaptation into

their PRSPs and planning. For countries in Africa climate is often seen at the national level as a lesser priority compared to other spending needs, and the case for higher investment has not been accepted in all countries (Washington 2006).

The low and diverse degree of incorporation of adaptation to climate change in the assessed countries in the report suggests the following recommendations:

- The World Bank and the UNFCCC should coordinate their effort in supporting those countries that have an interest in mainstreaming adaptation to climate change into their PRSP.
- The World Bank and the UNFCCC should coordinate to further support the development of NAPAs in the rest of the low-income countries.
- Special attention should be given to concerns about the NAPAs financial problems to meet the needs of every country for carrying out sufficient public consultations.
- Research should look at quantifying the contribution of climate variability to the achievements of the MDGs. According to Washington et. al no attempt has been made to quantify the actual contribution that climate variability makes to the achievement of the MDGs (Washington 2006).
- The UNDP, UNFCCC and the World Bank should enhance financial support and advise on the integration of national interministerial climate change commissions. It is important to enhance cross-sectoral flow of information and coordination to address adaptation to climate change.
- Countries should developed regional and local climate change institutional frameworks to strength the coordination, networking and information flows with different levels of governments and local civil society to have better response to poverty eradication and climate change.
- Investment on regional climate change modeling is important in order to reduce uncertainties and help to advise in the decision-making process. At the moment, regional climate change models are not present in the regions assessed, excluding the case of India.

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7. Appendix

Table 1 Poverty-Climate Change link

Country	Poverty-Climate Change link (0-5)					Total Scoring (0-5)
	Mention of Poverty-Climate Change link	Identification of a particular problem	General Analysis	Solution identification Sector / Community	Gaps and Needs	
India	X	X	X	X	X	5
Bangladesh	X	X	X			3
Yemen	X	X	X			3
Pakistan	X		X			2
Bhutan						0
Bolivia						0
Comoros						0
Djibouti						0
Ethiopia						0
Honduras						0
Kenya						0
Madagascar						0
Malawi						0
Mauritania						0
Nicaragua						0
Niger						0
Vietnam						0