**FACT SHEET: embargoed until November 27th, 2012, 7.30 am CET**

# Pioneering study shows evidence of loss & damage today from the front lines of climate change: Vulnerable communities beyond adaptation?

**What is loss and damage?**

As 'Loss and damage' is a new concept in climate change research there is no commonly accepted definition yet. For the current report the research team used the following working definition of loss and damage, which includes the inability to respond to climate stresses and the costs associated with adaptation and coping measures themselves:

*Loss and damage refers to negative effects of climate variability and climate change that people have not been able to cope with or adapt to.*

**Why is loss and damage important now?**

Today loss and damage is already a reality for vulnerable communities. Climate change is intensifying and the limits of adaptation are increasingly being realized. Failure to address loss and damage now will compromise sustainable development and ensure that vulnerable countries that have contributed least to global greenhouse emissions will continue to suffer disproportionately.

**What is particular about the report?**

The case study research takes a people's perspectives on loss and damage by illustrating how real communities adapt to and cope with adverse impacts of climate change and the consequences when those measures fail. It examines a broad range of extreme weather events as well as slow onset climatic changes.

**What countries were surveyed and why?**

Bangladesh, Bhutan, The Gambia, Kenya, and Micronesia were surveyed as part of the report. These regions were chosen because they are especially vulnerable to loss and damage due to climate change.

**Climate stressors and societal impacts**

| Country | District/Region | Climate threat | Impact |
|---|---|---|---|
| Bhutan | Punakha | Changing monsoon | Rice production |
| Micronesia | Kosrae | Coastal erosion | Housing |
| Bangladesh | Satkhira | Salinity intrusion | Rice + drinking water |
| The Gambia | North Bank | Drought | Millet production |
| Kenya | Budalangi | Flooding | Crops, livestock + fish |

A project of: UNITED NATIONS UNIVERSITY, UNU-EHS Institute for Environment and Human Security; MCII Munich Climate Insurance Initiative; GERMANWATCH; ICCCAD International Centre for Climate Change and Development at Independent University, Bangladesh in partnership with BCAS and IIED

Supported by: CDKN

## What is the key research question?

Each case study attempted to answer the same central research question, while focusing on different climatic stressors and societal impacts. Climatic stressors include both extreme weather and slow onset climatic events (e.g. cyclones and sea level rise). Societal impact involves loss of physical assets, negative effects on livelihood sources and other aspects of human well-being, such as housing and health.

> **Central question**
> How does the impact of [climate variable] on [societal impact] lead to loss and damage among households in [location]?

## What is the aim of the study?

To support Least Developed Countries (LDCs) in the climate negotiations at COP 18 by providing compelling real life narratives of loss and damage and new policy and practice solutions.

## What is the research goal?

1. Determine how loss and damage is incurred by households based on the interaction between climatic and household factors (e.g. livelihoods, health, social/physical aspects).
2. Understand how loss and damage will manifest itself in the future.
3. Understand what combinations of polices can reduce loss and damage, and improve resilience of vulnerable countries to adverse impacts of climate change.

## What was the methodology?

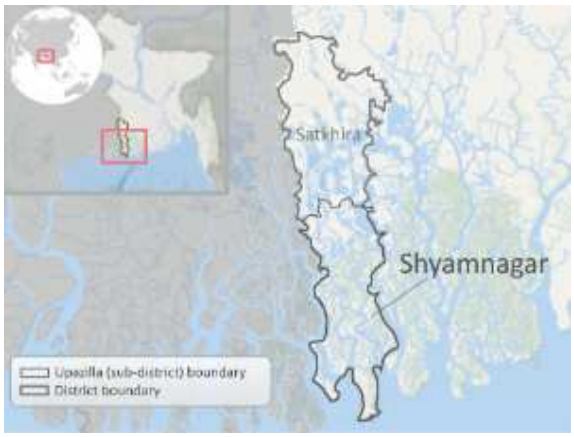
The case studies used a mixed-method approach, combining qualitative research tools (focus group discussions and in-depth interviews) with a questionnaire survey (for individual households). In preparation for each case study, a desk-study was conducted to collect and analyze literature and secondary data that informed final decisions about research design and selection of climate threats and impact sectors.

## What are the limitations of the research at hand?

The research results presented here were generated from local case studies. The study faced limitations in assessing potential future impacts and how to deal with them, and relied on household responses (perceptions and expectations) and interpretations of the analysis about the present as an early indicator of the future. The case studies should be treated as points of departure for further research. Furthermore, the extent to which local climatic changes and extreme events be attributed to climate change is an issue beyond the scope of this research.

# Bangladesh: Shyamnagar Sub-district

Satkhira, a coastal district in Bangladesh, faces the threat of sea-level rise and cyclones. Both result in saltwater intrusion, which severely impacts rice cultivation, the mainstay of the local economy and the principal source of food. Eighty-one per cent of respondents reported high salinity levels in their soils, compared to just 2% 20 years ago. To adapt, farmers have planted new saline tolerant-rice varieties. This worked until 2009, when cyclone Aila hit and caused a sudden and drastic increase of salt content in the soil. Almost all farmers lost their complete harvest that year. Two years later, rice yields were still extremely poor. From 2009-2011 the total loss of rice harvest was US$1.9 million for just the four villages surveyed. These findings exemplify a case where seemingly successful measures to adapt to slow-onset processes are not strong enough to avoid loss and damage when the situation is aggravated by an extreme weather event.

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|---|---|
| **Households interviewed** | 360 |
| **Experienced medium or high soil salinity** | Yes: 99%; No: 1% |
| **Impact on household economy?** | Yes: 99%; No: 1% |
| **Impact per sector** | Rice production: 98%;<br>Drinking water: 90% |
| **Adopted adaptation/coping measure?** | Yes: 81%, No: 19% |
| **Coping/adaptation measure to deal with stressor** | Salt tolerant varieties: 39%; Migration: 29%;<br>'Wash' rice field to reduce salinity: 27%;<br>Seek non-farm income: 60% |
| **Suffered adverse effects despite coping/adapting** | 70% |
| **No measures adopted, why not?** | Lack of knowledge/skills: 68%;<br>Lack means/resources: 30% |

## Overview of Region

| | | | |
|---|---|---|---|
| ***Population*** | *265 004* | ***Trend in crop production*** | |
| | | **Decrease** | 75.9 |
| ***Household economic activities (%)*** | | **Increase** | 22.5 |
| **Crop cultivation** | 98.3 | | |
| **Livestock keeping** | 94.2 | ***Education household head (%)*** | |
| **Non-farm activity** | 64.7 | **None** | 39.1 |
| | | **Literacy** | N/A |
| ***Main Purpose crop production (%)*** | | **Primary** | 23.9 |
| **Household consumption** | 85.1 | **Secondary/Tertiary** | 36.7 |
| **Sale** | 14.9 | | |

# Bhutan: Punakha district

Changing monsoon patterns are affecting the livelihoods of small-scale farmers in Bhutan who depend on these rains to irrigate their rice fields. Ninety per cent of respondents indicated that the amount of rainfall has been decreasing over the last two decades. Respondents try to adapt to the changes in water availability in a variety of ways, including shifting crops, developing water-sharing mechanisms, and intensifying the maintenance of irrigation channels. However, these measures are mostly considered insufficient and come with additional monetary and non monetary costs. For instance, water-sharing arrangements have led to increased tensions between households and villages, and shifting to non-irrigated crops can result in an income per acre up to eight times lower than rice.


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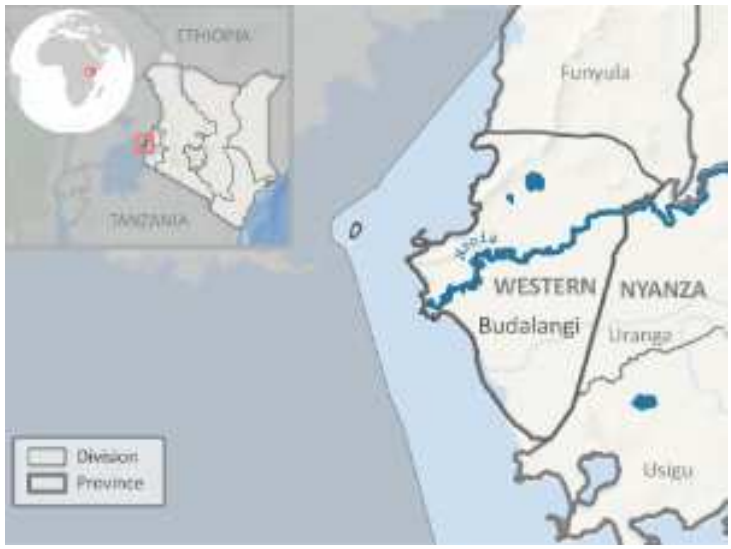
| **Households interviewed** | 273 |
| **Experienced changes in monsoon patterns** | Yes: 91%; No: 9% |
| **Impact on household economy?** | Yes: 89%; No: 11% |
| **Impact per sector** | Crops: 97%; Livestock: 12%; Tree crops: 23% |
| **Adopted adaptation/coping measure?** | Yes: 88%, No: 12% |
| **Coping/adaptation measure to deal with stressor** | Perform rituals: 71%; Adjust water sharing: 48%; Better maintenance of irrigation channels: 37%; Changes in crop mix: 30% |
| **Suffered adverse effects despite adapting** | 87% |
| **No measures adopted, why not?** | Lack of knowledge/skills: 68%; Lack means/resources: 16%; Not my task: 4%; No priority: 12% |

## Overview of Region

| | | | |
|---|---|---|---|
| ***Population*** | *25 650* | ***Trend in crop production*** | |
| | | **Decrease** | 30.0 |
| ***Household economic activities (%)*** | | **Increase** | 34.5 |
| **Crop cultivation** | 93.2 | | |
| **Livestock keeping** | 80.2 | ***Education household head (%)*** | |
| **Non-farm activity** | 60.7 | **None** | 84.1 |
| | | **Literacy** | 1.9 |
| ***Main Purpose crop production (%)*** | | **Primary** | 7.4 |
| **Household consumption** | 76.9 | **Secondary/Tertiary** | 5.6 |
| **Sale** | 10.9 | | |

# Kenya: Budalangi Division in Bunyala District

In December 2011, River Nzoia in Western Kenya broke its dykes and wreaked havoc in Budalangi Division. Crops were washed away, livestock drowned, houses were severely damaged and there was an outbreak of waterborne diseases. This low-lying area on the shores of Lake Victoria is prone to periodic flooding. However, over 96% of respondents indicated that floods have become more frequent and intense over the past decades. The case study in Kenya focused on coping strategies in the aftermath of the December 2011 floods. While the majority of respondents received relief aid, this was often not enough. To cope, many sold critical property and assets (e.g. draught animals), which had severe implications for future livelihood security.

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| **Households interviewed** | 400 |
| **Climate stressor** | Flood in 2011 |
| **Impact on household economy?** | Yes: 98%; No: 2% |
| **Impact per sector** | Crops: 98%; Food prices: 95%; House/properties: 66% |
| **Adopted adaptation/coping measure?** | Yes: 93%, No: 7% |
| **Coping/adaptation measure to deal with stressor** | Reliance on aid: 91%; Migration and move to camps: 64%; Alternative income to buy food: 39%; Ask relatives for assistance: 37%; Sell assets to buy food: 22% |
| **Suffered adverse effects despite coping** | 72% |
| **No measures adopted, why not?** | Lack of knowledge/skills: 40%; Lack means/resources: 31%; Not my task: 10%; No priority: 4% |

## Overview of Region

| | | | |
|---|---|---|---|
| ***Population*** | *53 356* | ***Trend in crop production*** | |
| | | **Decrease** | 77.7 |
| ***Household economic activities (%)*** | | **Increase** | 19.1 |
| **Crop cultivation** | 98.3 | | |
| **Livestock keeping** | 83.0 | ***Education household head (%)*** | |
| **Non-farm activity** | 68.8 | **None** | 13.8 |
| | | **Literacy** | 14.3 |
| ***Main Purpose crop production (%)*** | | **Primary** | 44.4 |
| **Household consumption** | 93.8 | **Secondary/Tertiary** | 26.0 |
| **Sale** | 6.2 | | |

# Micronesia: Kosrae State

As a Small Island Developing State (SIDS) the island of Kosrae in the Federated States of Micronesia are particularly vulnerable to climate change as the rising sea level is expected to exacerbate coastal erosion, storm surge, and other coastal hazards. Sea-level rise in the Federated States of Micronesia is 10mm a year, compared to the global average of 3.2mm. Communities adopt many measures against coastal erosion, such as building sea walls and planting trees along the shore. However, they are not sufficient and some have additional costs. For example, cultural values and heritage are being lost as ancient ruins are being dismantled and used to build seawalls. As individual households are largely left to their own devices to combat as pervasive a problem as coastal erosion most adopted measures are insufficient.


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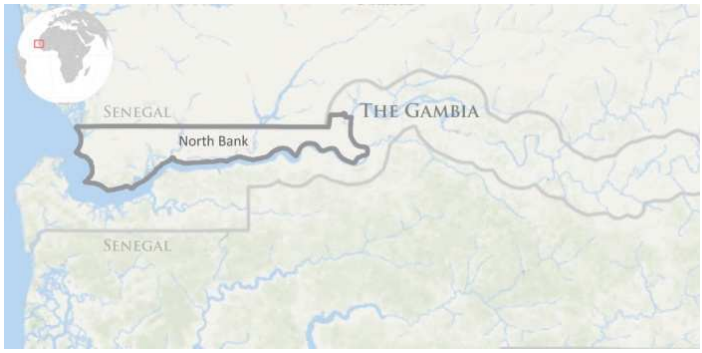
| **Households interviewed** | 363 |
| **Experienced coastal erosion** | Yes: 87%; No: 13% |
| **Impact on household economy?** | Yes: 80%; No: 20% |
| **Impact per sector** | Crops: 69%; Tree crops: 70%; Housing: 53% |
| **Adopted adaptation/coping measure?** | Yes: 60%, No: 40% |
| **Coping/adaptation measure to deal with stressor** | Build sea walls: 29%; 'Landfill to fortify coast: 29%; Plant trees along coastline: 15%; Elevate house:11% |
| **Suffered adverse effects despite adapting** | 92% |
| **No measures adopted, why not?** | Lack of knowledge/skills: 47%; Lack means/resources: 74%; Not my task: 3% |

**Overview of Region**

| | | | |
|---|---|---|---|
| ***Population*** | *6 616* | ***Trend in crop production*** | |
| | | **Decrease** | 40.0 |
| ***Household economic activities (%)*** | | **Increase** | 13.0 |
| **Crop cultivation** | 70.5 | | |
| **Livestock keeping** | 67.5 | ***Education household head (%)*** | |
| **Non-farm activity** | 68.4 | **None** | 0.0 |
| | | **Literacy** | 0.0 |
| ***Main Purpose crop production (%)*** | | **Primary** | 5.0 |
| **Household consumption** | 94.9 | **Secondary/Tertiary** | 95.0 |
| **Sale** | 4.7 | | |

# The Gambia: North Bank Region

The North Bank Region of The Gambia has a history of recurrent droughts, which have been increasing in frequency. Rainfall levels in the last three decades are over 35% lower than previous decades. In 2011, the region experienced a severe drought that affected 98% of the respondents, many of whom lost their entire harvests. In addition to receiving food aid, people coped by looking for additional income (e.g. sale of property) to buy food. Despite this, 63% still had to modify their food consumption, for example by changing from three to two meals a day. This suggests that coping measures were insufficient, as one of the most basic human needs was still compromised.




| | |
|---|---|
| **Households interviewed** | 373 |
| **Climate stressor** | Drought in 2011 |
| **Impact on household economy?** | Yes: 97%; No: 3% |
| **Impact per sector** | Crops: 98.6%; Livestock: 73.6%; Food prices: 88.5% |
| **Adopted adaptation/coping measure?** | Yes: 93%, No: 7% |
| **Coping/adaptation measure to deal with stressor** | Alternative income to buy food: 58%;<br>Sell assets to buy food: 58%;<br>Ask relatives for food or money for food: 57%;<br>Reliance on aid: 55%; Displacement/migration: 23% |
| **Suffered adverse effects despite coping** | 66% |
| **No measures adopted, why not?** | Lack of knowledge/skills: 58%;<br>Lack means/resources: 28% |

**Overview of Region**

| | | | |
|---|---|---|---|
| ***Population*** | *172 835* | ***Trend in crop production*** | |
| | | **Decrease** | 87.7 |
| ***Household economic activities (%)*** | | **Increase** | 10.7 |
| **Crop cultivation** | 98.9 | | |
| **Livestock keeping** | 100 | ***Education household head (%)*** | |
| **Non-farm activity** | 66.9 | **None** | 20.4 |
| | | **Literacy** | 59.5 |
| ***Main Purpose crop production (%)*** | | **Primary** | 10.7 |
| **Household consumption** | 84.3 | **Secondary/Tertiary** | 9.3 |
| **Sale** | 15.7 | | |

**What products are available?**

- Policy report with case study findings and policy reflections
- Fact sheet (for media)
- Background / primer paper on loss and damage

**Who are the partners involved and what is the Initiative for?**

The Loss and Damage in Vulnerable Countries Initiative was initiated by the Government of Bangladesh (GoB) and motivated by the need to understand more about this emerging issue. In order to move forward the debate on loss and damage for the benefit of the least developed countries (LDCs) and other vulnerable countries, the GoB requested assistance from the Climate and Development Knowledge Network (CDKN) to help build a common understanding around loss and damage and provide in- sight into what it entails for vulnerable countries. CDKN has appointed a consortium of organizations, which includes Germanwatch, United Nations University-Institute for Environmental and Human Security (UNU-EHS), International Centre for Climate Change and Development (ICCCAD) and Munich Climate Insurance Initiative (MCII) to carry out this work.

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