

CASE STUDY

Climate variability and change: adaptation to drought in Bangladesh

A resource book and training guide



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Acronyms

ADPC	Asian Disaster Preparedness Center
BARI	Bangladesh Agricultural Research Institute
BRII	Bangladesh Rice Research Institute
CDMP	Comprehensive Disaster Management Programme
CDP	Coastal Development Partnership
CSO	civil society organization
DAE	Department of Agricultural Extension
DMC	Disaster Management Committee
DoF	Department of Fisheries
DoL	Department of Livestock
DRR	Directorate of Relief and Rehabilitation
ENSO	El Niño/southern oscillation
FAO	Food and Agriculture Organization of UN
GCM	general circulation model
GDP	gross domestic product
HYV	high-yielding variety
IPCC	Intergovernmental Panel on Climate Change
LU	learning unit
MoEF	Ministry of Environment and Forests
MoFDM	Ministry of Food and Disaster Management
NGO	non-governmental organization
NTIWG	National-level Technical Implementation Working Groups
OECD	Organization for Economic Co-Operation and Development
SRI	system of rice intensification
SWC	Storm Warning Centre
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UTIWG	<i>Upazilla</i> Technical Implementation Working Groups

Bangla terms/crops

<i>aus</i>	a rice crop coinciding with late dry and early monsoon season
<i>Barind</i>	undulating uplands with red/yellow clay soils of Northwest Bangladesh
<i>bhiga</i>	equals one third of an acre
<i>boro</i>	dry season rice, grown from December to April
<i>chini atap</i>	<i>local fine rice variety</i>
<i>jujubi</i>	<i>zuzuphus mauritania</i> fruit tree commonly known as <i>ber</i>
<i>khari</i>	traditional irrigation canals
<i>kharif I</i>	season typically from March to June
<i>kharif II</i>	season typically from July to October
<i>monga</i>	seasonal famine condition
<i>pre-kharif</i>	a season before <i>kharif II</i> typically from March to June
<i>rabi</i>	dry season, typically from November to February
<i>t.aman</i>	transplanted <i>aman</i> rice typically from July to October
<i>t.aus</i>	transplanted <i>aus</i> rice, typically grown from March – June/July
<i>upazilla</i>	subdistrict

Preface

In Bangladesh where agriculture is the largest sector of the economy, agricultural production is under pressure from increasing demands for food. A large percentage of the population is already vulnerable to a range of natural hazards with increasing climate variability and climate change expected to aggravate the situation further by causing more frequent and intense droughts and increasing temperatures. General Circulation Model (GCM) data project an average temperature increase in Bangladesh of 1.0°C by 2030 and 1.4°C by 2050.

Within this context, FAO and the Asian Disaster Preparedness Center (ADPC) are guiding an assessment of livelihood adaptation to climate variability and change in the drought-prone areas of Northwest Bangladesh. The project, implemented under the Comprehensive Disaster Management Programme (CDMP) and in close collaboration with the Department of Agricultural Extension (DAE), is specifically designed to characterize livelihood systems, profile vulnerable groups, assess past and current climate impacts, and increase understanding of local perceptions of climate impacts, coping capacities and existing adaptation strategies.

The initiative has guided development of a good practice menu of adaptation options that is being evaluated and field tested in partnership with local communities. As part of this initiative, a series of capacity-building and training activities on “climate change impacts and adaptation to drought” has been undertaken for national and local-level technical working group members, disaster managers and community representatives. The working group members are drawn from key research and extension organizations in Bangladesh including the DAE, Directorate of Relief and Rehabilitation (DRR), Department of Livestock (DoL), Department of Fisheries (DoF), Bangladesh Rice Research Institute (BRRI) and Bangladesh Agricultural Research Institute (BARI).

This resource book, *Climate variability and change: Adaptation to drought in Bangladesh*, has been prepared as a reference and training guide for building the capacity of agricultural extension workers and development professionals to deal with climate change impacts and adaptation, specifically targeting drought-prone areas of Bangladesh. It also presents suggestions for a three-day training course that would be readily adaptable for any areas of Bangladesh affected by climate-related risks. The information presented on climate change adaptation would enable participants to prepare, demonstrate and implement location-specific adaptation practices and, thus, to improve the adaptive capacity of rural livelihoods to climate change in agriculture and allied sectors.

Contents: Based on an initial needs assessment and feedback from the national and local-level technical working group members, the manual is presented as a series of modules containing background information as well as suggestions for application of the information. Technical definitions are drawn from the “*Climate Change 2001 Synthesis Report*” of the Intergovernmental Panel on Climate Change (IPCC).

In the background sections, Module 1 describes the basics of climate variability and change in Bangladesh; Module 2 identifies types of droughts, their underlying causes and their impacts in Bangladesh; and Module 3 builds on this to describe the impact of climate variability and change

in drought-prone areas of Bangladesh. In the application sections, Module 4 introduces participatory tools and methods for undertaking community-level climate risk assessment in the agriculture sector.¹ Module 5 offers guidance for developing agricultural adaptation options to manage climate variability and change in drought-prone areas. Module 6 identifies the existing weather and climate forecast products available in Bangladesh and explains their utility for improving the adaptive capacity of rural livelihoods to reduce the impact of climate variability and change.

Who benefits from this training guide: This guide can serve as background resource material for training programmes on climate change impact and adaptation in the agriculture sector. Though designed and tested by project-based technical working group members representing extension, research and development organizations, it also can be used by other training facilitators or self-learners. However, it is strongly recommended that training participants and self-learners already have some basic knowledge of climate science and agriculture in Bangladesh.

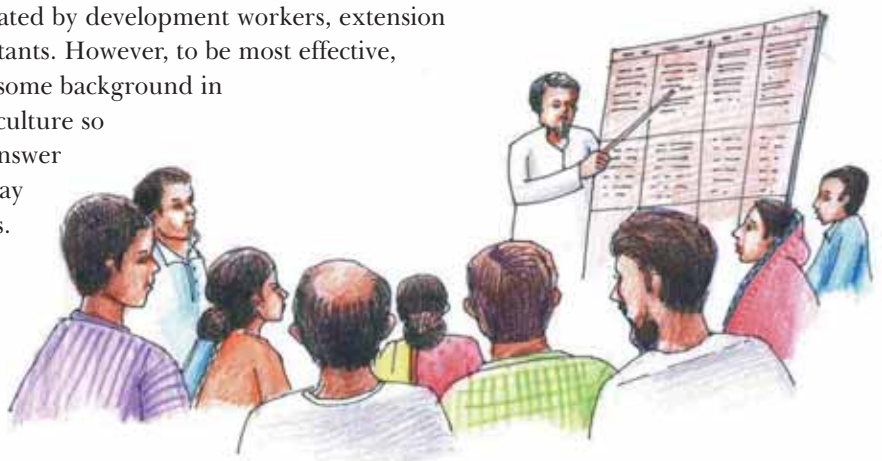
How to use this book: The training programme suggested here is designed to be flexible so base information can be tailored to participants' needs. This flexible training strategy is highly recommended over a step-by-step prescribed approach. The overall format of each module consists of sections on:

- setting goals and learning objectives,
- defining and highlighting key words and terminology,
- presenting principles and background information on individual topics, and

Each module also contains suggested training activities with LUs and exercises based on that module's content. The exercises expose the participants to new concepts and skills, current risk management practices and future adaptation practices. The training activities include suggestions for supplementary handouts as well as guidance for preparing:

- interactive lectures
- review sessions
- individual exercises
- group exercises and presentations

The training can be facilitated by development workers, extension officers or national consultants. However, to be most effective, they should already have some background in both climatology and agriculture so they will be prepared to answer technical questions that may arise from the participants. Training facilitators and participants are requested to follow the training strategy to ensure that they capture the key aspects of the module.



¹ For additional guidelines on risk assessment in a cross-sectoral and multi-hazard perspective see: *A facilitator's guidebook for conducting community risk assessment* by Directorate of Relief and Rehabilitation (DRR), Ministry of Food and Disaster Management (MoFDM), Bangladesh.