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# Climate Change in the Forest of Bengal Duars

Response of Life and Livelihoods

 Springer

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*Dedicated to Professor Sunando  
Bandyopadhyay*

# Preface

Presently, climate change is a stark reality associated with vulnerability faced by living beings all around the world and therefore has gained importance in the field of scientific research. The Eastern Himalayan mountain ecosystem is fragile in nature, and the phenomena of climate change have imposed extra vulnerable conditions in this unique landscape. Adjacent to the Eastern Himalaya, the foothill landscape is also hazard-prone. The present study area is the Bengal Duars region—a foothill landscape of the Eastern Himalaya. The book will focus on the climate change and ‘struggle for existence’ issues facing the forest villagers to the changing climatic situation.

This book encompasses seven chapters. Each chapter starts with an abstract describing, in brief, the theme of the chapter. Chapter 1 provides an overview about the study, including a review of the literature, significance, objectives, and methodology of the research. Chapter 2 illustrates the study of the area with its unique physio-social characteristics. Chapter 3 describes the forestry of Bengal Duars. Chapter 4 estimates present and future climate change in the context of the Bengal Duars region. Both temperature and rainfall are taken under consideration to identify more than 100 years’ climatic trends and oscillations. Chapter 5 evaluates the spatial vulnerability of forest from the villages in Bengal Duars in continuation with the climate change under the domain of sensitivity, exposure, and adaptive capacity. Chapter 6 assesses ground observation of the forest villager’s perception and responses about changes and impacts that they have faced. Analytical techniques are applied for critical evaluation and assessment of livelihood crises. Chapter 7 evaluates adaptive attitudes of the forest villagers in order to judge their resilience capability. In this regard, a conceptual model has been developed by interlinking their concern, household profile, livelihood assets with potential, and actual adaptation attitudes. Finally, Chapter 8 illustrates recommendations and suggestions for the restoration of this unique landscape.

West Bengal, India

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Koyel Sam  
Namita Chakma

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# Abbreviations

AHP	Analytical Hierarchy Process
APL	Above poverty level
BPL	Below poverty level
BTR	Buxa Tiger Reserve
CMIP5	Coupled Model Inter-comparison Project Phase 5
CWC	Central Water Commission
FAO	Food and Agriculture Organization
FPC	Forest Protection Committees
FRL	Forest Reference Level
FSI	Forest Survey of India
GCMs	General Circulation Models
IMD	India Meteorological Department
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
JFM	Joint Forest Management
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MODIS	Moderate Resolution Imaging Spectroradiometer
MoEFCC	Ministry of Environment, Forest and Climate Change
NAPCC	National Action Plan on Climate Change
NCEF	National Clean Energy Fund
NFMS	National Forest Monitoring System
NS/AC	National Strategies/Action plan
PCA	Principle component analysis
RCMs	Regional climate models
REDD	Reducing emission from deforestation and forest degradation
ROAM	Restoration Opportunities Assessment Methodology
SIS	Safeguard Information System
SOI	Survey of India
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme



UNFCCC	United Nations Framework Convention on Climate Change
WMO	World Meteorological Organization
WRI	World Resources Institute

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