



palgrave▶pivot

**Climate Change
Adaptation**
Traditional Wisdom and
Cross-Scale Understanding

Edited by
Nalini Bikkina
Rama Mohana R. Turaga

palgrave
macmillan

Climate Change Adaptation

Nalini Bikkina · Rama Mohana R. Turaga
Editors

Climate Change Adaptation

Traditional Wisdom and Cross-Scale Understanding

palgrave
macmillan

Editors

Nalini Bikkina
GITAM School of Humanities
and Social Science
Visakhapatnam, Andhra Pradesh,
India

Rama Mohana R. Turaga
Public Systems Group
Indian Institute of Management
Ahmedabad
Vastrapur, Gujarat, India

ISBN 978-981-97-1075-1 ISBN 978-981-97-1076-8 (eBook)
<https://doi.org/10.1007/978-981-97-1076-8>

© The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer
Nature Singapore Pte Ltd. 2024

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Cover illustration: © Melisa Hasan

This Palgrave Macmillan imprint is published by the registered company Springer Nature Singapore Pte Ltd.

The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

Paper in this product is recyclable.

*To
Amma & Nanni
With Love
—Nalini Bikkina*

FOREWORD

“Over the past three months, a heat wave has devastated North India and neighboring Pakistan. Temperatures surpassed 110 degrees Fahrenheit. It is so hot that overheated birds fell out of the sky in Gurgaon, India, and a historic bridge in northern Pakistan collapsed after melting snow and ice at a glacial lake released a torrent of water.” (<https://www.nytimes.com/2022/06/02/briefing/climate-change-heat-wave-india.html>; retrieved on June 24, 2022).

These shocking narratives of the devastating impacts of climate change are increasingly common in both media and public discourses. These heat waves have severely affected farmers’ income, impacted food supply, and increased the already growing costs of living for communities across India and across the world. In addition to rising temperatures, climate change has led to frequent floods, soil erosion, and rising sea levels (Dubey et al. 2021). As this excellent compendium that follows this foreword shows, climate hazards have particularly increased the vulnerabilities of coastal communities in India who are often at the frontlines of climate hazards leading to displacements, forced evacuations, and frequent disruptions to the lives of local communities.

While loss of life from climate hazards have been lessened by disaster preparedness through technologies for tracking and warning, such initiatives alone cannot create sustainability among coastline communities. Rebuilding the economies and infrastructure after a disaster requires cooperation and engagement with locals and their traditional systems of

indigenous knowledge. Such cooperation will allow policy makers and scientists to leverage indigenous knowledge and anchor their disaster management projects in collective local knowledge systems. It will also require equitable sharing of scientific knowledge through local participation and continued nurturing of “citizen scientists” who may facilitate knowledge sharing between local communities, scientists, and policy makers (Ottinger, 2010; Dawson et al., 2020).

The selection of papers for this compendium eloquently makes the case for leveraging indigenous knowledge and participation in science and policy making for climate change. Several climate concerns are discussed and critically reviewed, including the need to disseminate climate information through storytelling, situating climate discourse within the framework of justice and equity that includes a clear-eyed assessment of class and gendered nature of climate impacts (Rice et al., 2022; Smith et al., 2019; Chu et al., 2018). Others discussed the importance of collection and dissemination of long-term data on climate change and health as well as revisiting the role and impact of the Forest Department in climate discourses. Several papers also identified the need for better information flow between community-driven conservation efforts and scientific and agricultural research as well as the need to listen carefully to grassroots impacts of climate hazards and how locals themselves may identify and adopt the tools needed for building resilient communities.

This is the crux of the matter in debates over building resilient communities imbued with the capacity to absorb ecological disturbances and reorganize itself to its previous state (Popke et al. 2016; Griffin et al. 2017). Yet, effective resilience requires further action and clearer response to critical questions: How can climate policy link resilience with recognition? What steps can be taken to ensure promotion of justice and equity in climate resilience initiatives? And how can we leverage and include lived experiences of communities in building resilient infrastructures? This compendium offers an important roadmap to answer these questions as we seek to build a sustainable future.

Fort Collins, USA

Damayanti Banerjee

REFERENCES

- Chu, E., Michael, K. 2018. "Recognition in Urban Climate Justice: Marginality and Exclusion of Migrants in Indian Cities." *Environment and Urbanization*. 31(1): 139–156.
- Dawson, T., Hambly, J., Kelley, A., Lees, W., Miller S. 2020. "Coastal heritage, global climate change, public engagement, and citizen science." *Proceedings of the National Academy of Sciences*, 117(15): 8280–8286.
- Dubey, A. K., Lal, P., Kumar, P., Kumar, A., & Dvornikov, A. Y. 2021. "Present and future projections of heat wave hazard-risk over India: A regional earth system model assessment." *Environmental Research*. 201: 111573.
- Griffin, L., Khalil, D., Allen, A., & Johnson, C. 2017. "Environmental justice and resilience in the urban global South: an emerging agenda." In *Environmental justice and urban resilience in the global South*, Pp. 1–11, Palgrave Macmillan, New York.
- Ottinger, G. 2010. "Buckets of resistance: Standards and the effectiveness of citizen science." *Science, Technology, & Human Values*, 35(2): 244–270.
- Popke, J., Curtis, S., & Gamble, D. W. 2016. A social justice framing of climate change discourse and policy: Adaptation, resilience and vulnerability in a Jamaican agricultural landscape. *Geoforum*, 73: 70–80.
- Smith, J., & Patterson, J. 2019. "Global climate justice activism: "the new protagonists" and their projects for a just transition." In *Ecologically Unequal Exchange*. Pp. 245–272. Palgrave Macmillan, Cham.
- Rice, L. J., Long, J., & Levenda, A. 2022. "Against climate apartheid: Confronting the persistent legacies of expendability for climate justice." *Environment and Planning E: Nature and Space*, 5(2): 625–645.

Damayanti Banerjee is a faculty research affiliate at the Department of Sociology at Colorado State University. She received her MA and MPhil in sociology from Jawaharlal Nehru University, India, and her PhD in Environmental Sociology from the University of Wisconsin Madison. Her research and teaching interests are at the intersections of environmental justice, climate change and energy policy, and environmental governance. Dr. Banerjee has conducted in-depth field research on the role of culture and place-making in environmental justice movements, specifically studying how communities' perception of injustices inform key strategies of protests and how successful mobilization strategies are determined by political alliances, social relations, economic preconditions, and cultural contexts.

PREFACE

This book is the documentation of the proceedings of a seminar conducted virtually during 11–15 February 2021. The seminar was organized by GITAM Deemed-to-be University, Visakhapatnam with funding support from the United States-India Educational Foundation (USIEF) through the Fulbright Alumni Award to Nalini Bikkina (the lead editor of this book).

THE SEMINAR

The choice of the theme for the Seminar, Traditional Wisdom and Cross-Scale Understanding, evolved from the lead editor's work with the tribes' people across several locations in India and in the Nebraska state of the United States of America, as part of her Fulbright Academic and Professional Excellence grant. In an effort to connect this work to sustainability (one of the themes of the call for proposals for the Fulbright Alumni Award), the idea of climate change emerged as a relevant area.

The lead editor, in her work with the tribes' people, had studied tribal farming practices, particularly with reference to chemical-free farming that uses traditional practices passed on to them through oral traditions over generations. Considering the complexity of traditional wisdom and its cross-sectionality with the science of climate change, it was felt that a seminar bringing together several voices, stakeholders, and communities onto a single platform would be a suitable format.

The original proposal involved a multi-site format for the seminar, wherein the deliberations were to partly take place on the University campus and partly located in a vulnerable community situated at the foothills of the Eastern Ghats. The idea was to locate the discussion in-situ and to bring in the voices from the community to the deliberations.

However, the COVID-19 pandemic created constraints for the Seminar and did not allow us to take the seminar to the local communities. When USIEF allowed us to do the seminar virtually, our plan was to bring in these local voices live to the session. But then, the communities have expressed difficulties with reference to connectivity.

Despite the difficulties of accessing these community members in person due to COVID protocols, we reached out to a few communities and conducted interviews. We video recorded the interviews and played them in the final sessions of the virtual seminar for discussion.

We rethought the format for the seminar in this context in an attempt to bring diverse, interdisciplinary voices representing multiple stakeholders. We reformatted the deliberations to involve four sessions portraying the work and voices of senior academicians working in the area of climate change in India, young researchers bringing narratives from the field, practitioners and policy makers facilitating adaptation at the community level, and voices from the grassroots. We identified the speakers appropriate for each session by tapping into Fulbright networks, the departments of social sciences and management in Indian universities, civil services, and the Royal Society of Arts (RSA). Thus the selection of the speakers for the sessions was by invitation as opposed to an open call for contributions. The Seminar was scheduled across four sessions—Academic Speak, Research with the Community, Facilitating Adaptation, and From the Grassroots.

In addition to these four sessions, the seminar also featured a keynote speech on the first day by S Palagummi, who is an award-winning journalist, working on a wide range of social issues in the rural parts of India. He has worked extensively in research and documentation of climate change issues at the community level in several parts of India through People's Archive of Rural India (PARI).

THIS BOOK

This book is an effort to disseminate the proceedings of the seminar. Unlike typical conference proceedings, the book is not a collection of a select set of full papers presented at the seminar; it is simply the documentation of stories—unfiltered—that each author brought to the seminar, reflecting on their experiences working in the field.

The process of putting this book together is as follows. We have recorded the online presentations of the authors, transcribed them, and edited them for language and coherence. The initial draft was shared with each author, who further edited the chapters, if necessary, before finalizing them. Communicating climate change using stories and narratives is increasingly considered an effective tool to mobilize action from important stakeholders and in that spirit we hope that the stories in the book will inspire a few. We hope that the book will be of interest to both academics and practitioners alike.

Visakhapatnam, India
Vastrapur, India

Nalini Bikkina
Rama Mohana R. Turaga

ACKNOWLEDGMENTS

This volume and the seminar on which it is based are but a new beginning of networks, associations, deep friendships, and a more rigorous academic commitment to climate change adaptation. In the journey of three years working to bring this volume together amidst unprecedented hurdles, we wish to share the credit for the successful completion of the manuscript with a team of people who supported us unconditionally.

We are grateful to the United States-India Educational Foundation for funding the project through the Fulbright Alumni Award. Suranjana Das of USIEF had been a constant go-to person for me in liaising with the USIEF and the Fulbright Association.

At GITAM, we received wholehearted support from the leadership. We are beholden to President Sribharat for his consistent encouragement. He walked the talk by chairing the Keynote Address and had been a pillar of strength and support throughout.

We also take this opportunity to extend our heartfelt gratitude to the authors. What is common to all of them is their deep immersion on the ground. Their humility in accepting to be a part of this modest effort is heartwarming. As each one of them confirmed their participation in the Seminar and the subsequent contribution of chapters to the manuscript, it propelled us to work that much harder to make this manuscript meaningful. Thanks are also due to Prof. Vaibhav Bhamoriya of IIM Kashipur who connected us to several experts in the field.

CONTENTS

Introduction	1
Rama Mohana R. Turaga, Nalini Bikkina, and Haritha S. Narayanan	
Learning Climate Change Adaptation from Traditional Communities	15
Sainath Palagummi	
Ethical Adaptation to Climate Change and People-Centered Development	29
Sunil D. Santha	
Farmer Knowledge and the Politics of Climate Resilience	39
Marcus Taylor	
Of Climate, Communities and Commons: A Gendered Perspective	49
Smriti Das	
Tribal Communities of the Northern Eastern Ghats: Forest Dependence in the Context of Changing Climate	59
Vikram Aditya	
Forest Rights and Climate Change: Conservation Through Indigenous Knowledge	71
Bijayashree Satpathy	

Integrating Decarbonization with Adaptation Measures Suman Chandra	81
Impact of Climate Change on Forest Dwelling Communities and the Role of Forest Department in Mitigation A. Rama Mohana Reddy	87
Leveraging Human–Natural World Intersections for Climate Change Adaptation Priya Tallam	95
Listening to Locals Carolyn Cobbold	109
Climate Change Adaptation: A Thematic Analysis of Narratives of Fisher Folk and Tribal Farmers Satya Kishan Kumar Namala and Nalini Bikkina	117
Bibliography—Traditional and Local Knowledge	131
Index	147

NOTES ON CONTRIBUTORS

Vikram Aditya is Principal Scientist, Wildlife Hunting and Trade Program at the Centre for Wildlife Studies. He was a postdoctoral research associate at the Ashoka Trust for Research in Ecology and the Environment, Bangalore in the National Mission on Biodiversity and Human Well-being. He has a PhD in wildlife conservation biology. His research focused on mammal diversity patterns and landscape change in and around the Papikonda National Park, located in the Northern Eastern Ghats of India. He is currently working on hunting practices of the tribal communities across the Eastern Ghats. He has worked previously with WWF-India and as a ‘National Geographic Young Explorer Grantee’.

Nalini Bikkina Currently Professor at GITAM School of Humanities and Social Sciences, Nalini has been an ICSSR Doctoral Fellow. With an interest in Psychology and Public Policy, she worked on interdisciplinary research projects funded by various national agencies like the UGC, ICPR, NCRI, and the Ministry of Education. She was a Fulbright Academic and Professional Excellence Fellow at the University of Nebraska at Omaha, a College of Arts and Letters Fellow at James Madison University, Virginia and a Fellow of the Royal Society of Arts, London. She also received the Fulbright Alumni Award.

Suman Chandra is an Indian Administrative Service Officer and was the district collector of Buldhana, Maharashtra. She has been tendering to the needs of environmental justice among the worst hit rural poor. Besides,

she evolved a framework suggestion to the appellate courts for the conservation of the rare Lonar Lake in Buldhana. She led one of the largest livelihood missions of India as the CEO of the Maharashtra Rural Livelihoods Mission. She is also a Limca Book of Records holder for her water conservation campaign in the drought prone district of Osmanabad in Maharashtra. In her ten years in governance and public policy implementation, she has addressed myriad issues related to climate change and has a Master's in Environmental Studies from Yale University through a Fulbright Fellowship.

Carolyn Cobbold is a Research Fellow, investigating food in the nineteenth and twentieth centuries. She completed a history of science PhD at Cambridge University after an early career in journalism. She has also been actively involved in community work, including leading a groundbreaking coastal-planning partnership. Dr. Cobbold was elected a Fellow of the Royal Society of Arts in 2016 for her work on climate change mitigation and community engagement.

Smriti Das is an Associate Professor of Strategic Studies, XLRI Delhi and was earlier in the Department of Policy Studies at TERI-SAS. Her research and scholarship are focused on areas at the interface of environment and development at local and regional scale. She specifically engages with topics such as environmental policy, processes and politics, forest policy and governance, institutional analysis, sustainable livelihoods and communities, decentralized governance, gender, and resource politics. She is working on unpacking the concept of community in forest governance; mainstreaming climate change in local governance and planning.

Satya Kishan Kumar Namala Currently a Doctoral Fellow in Development Studies from GITAM School of Humanities and Social Sciences, his research interests focus on Climate Change Adaptation and Resilience. He completed his Masters in Development Studies from the Indian Institute of Technology, Mandi, and was an Academic and Research Assistant at the Indian Institute of Management, Visakhapatnam.

Haritha S. Narayanan served as an Academic Associate within the Public Systems Group at the Indian Institute of Management, Ahmedabad. She completed her postgraduate studies in Politics and International Relations