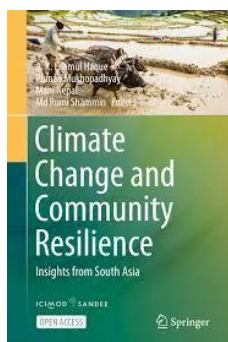


BOOK REVIEW



A. K. Enamul Haque,
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Mani Nepal, and Md Rumi
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INTRODUCTION

Climate Change and Community Resilience: Insights from South Asia is an informative and eye-opening book that delves into the challenges faced by South Asian communities in the wake of climate change. The book, skilfully edited by A. K. Enamul Haque, Pranab Mukhopadhyay, Mani Nepal, and Md Rumi Shammin, presents a collection of stories and case studies that shed light on the importance of community-based adaptation in order to build climate resilience in communities in South Asia and others. The book is structured into six thematic areas with 29 chapters in 460 pages, each addressing critical aspects of climate change adaptation in South Asia. These sections cover concepts and models, traditional knowledge and sustainable agriculture, technology adoption, disaster risk reduction, urban sustainability, and alternative livelihoods. The authors provide an excellent snapshot of all six thematic areas that motivate readers to read this book.

The first chapter, “Climate Resilience at the Community Level,” begins with the global effort to address the issues related to climate change. While the authors of the chapter acknowledge the Paris Agreement as a landmark effort by the international community to address this crisis, it reminds us that the impact of climate change is already felt worldwide, with extreme events causing significant human and economic losses. Then, the authors recognise South Asia as a climate change hotspot, and a significant focus of the book is given to South Asia’s vulnerability to climate change, with its densely populated region facing various threats, such as floods, cyclones, and rising sea levels. The authors provide a comprehensive account of South Asia’s challenges, even if the Paris Agreement’s goals are met. The chapter also shows that developed countries are

well prepared to assist; however, developing countries need more financial and technical assistance. This issue has been recognised in the international dialogue. However, the public focus has been given to the economic centres, while the people living away from the centres are left out of the assistance. This chapter also highlights the importance of local engagement, traditional knowledge, and grassroots initiatives in facing the uncertainties of climate change. They emphasise that we can reduce reliance on external support by empowering local institutions and communities in South Asia.

ANALYTICAL REVIEW

Concepts and Models

The first theme, Concepts and Models, is divided into four chapters, numbered 2 through 5, which span pages 11 through 69. It covers topics pertaining to fostering resilience at the local level. In chapter two, the authors begin by defining key concepts and illustrate the interconnectedness of the impacts of climate change on the environment and society, particularly in less developed regions. The authors construct a holistic approach for community-based adaptation (CBA) that incorporates sustainable development goals (SDGs), resilient principles, and disaster risk reduction initiatives (DDR) as a promising solution for empowering local populations and enhancing resilience. The proposed CBA framework presents a well-structured approach to addressing climate-related challenges and offers a valuable roadmap for future adaptation efforts. It provides a comprehensive, holistic, and community-driven climate resilience and adaptation perspective.

The thematic area one also provides a thorough and well-structured overview of community-based adaptation (CBA), highlighting its core properties, academic and grey literature evolution, barriers and challenges, practical applications, and the evolving landscape beyond 2020. The emphasis on the bottom-up, participatory nature of CBA is commendable, underscoring the importance of engaging local communities in climate adaptation efforts. The exploration of CBA in academic and grey literature, along with practical case studies, adds depth to the discussion, offering a holistic view of CBA's evolution and real-world application. The challenges and barriers presented, supported by academic and grey literature, effectively illustrate the complex landscape of CBA initiatives. Therefore, Chapter Three is a valuable resource for understanding the past, present, and future of community-based adaptation efforts in developing countries.

The factors influencing farmers' firm-level adaptation strategies are essential to reducing possible harm. In order to close a significant research gap, this theme provides a thorough analysis of the factors influencing adaptation at the farm level in India. Therefore, this thematic area offers a systematic review of farm-level adaptation determinants in India, addressing a critical research gap. Using the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) method in the methodology ensures the review's rigour and relevance. The categorisation of factors influencing farmers' adaptive

behaviour, supported by quantitative and qualitative papers, provides a comprehensive understanding of the complexities involved in climate adaptation in Indian agriculture. Chapter four concludes with valuable insights, pointing to areas for further research and policy development, making it a significant contribution to the literature on climate change adaptation in India.

This theme ends with chapter five and confers an engaging and informative exploration of the Mangroves for Future (MFF) initiative in Shyamnagar, shedding light on the unique challenges and opportunities for climate resilience in this region. The Resilience Analysis Protocol (RAP) is a comprehensive tool for understanding the intricate relationship between communities and ecosystems, offering valuable insights into climate change adaptation. The successful outcomes of the MFF initiative underscore the effectiveness of community-driven, nature-based solutions for addressing climate vulnerabilities. The lessons and forward-looking approach presented in Chapter Five significantly contribute to the field of climate resilience and nature-based adaptation strategies for the rest of the vulnerable countries.

Traditional Knowledge and Sustainable Agriculture

The application of traditional and indigenous knowledge to overcome various natural obstacles is the subject of this theme. This section, which spans five chapters from chapters 6-10, starts out by demonstrating how knowledge of traditional agriculture may be viewed as an integral component of efforts to build resilience. Useful case studies from Bhutan, Pakistan, India, and the Maldives are included in the section on Traditional Knowledge and Sustainable Agriculture. The case study of Bhutan integrated into chapter six provides a valuable contribution to understanding how traditional agricultural practices help mitigate the impacts of climate change, bringing in examples of adopting traditional rice varieties. The study's robust methodology and well-justified variables for measuring resilience offer a sound foundation for the research. The results are particularly insightful, showing that both adopters and non-adopters of traditional rice varieties achieve comparable outcomes in terms of food security, income, and rice production. This identification underscores the importance of preserving and promoting traditional agricultural knowledge for climate resilience in small-scale farming in Bhutan.

Floods are one of the most common natural hazards that farmers confront as a result of climate change. The case study in chapter seven covers the application of local knowledge to mitigate flash floods and build resilience in Pakistan. It addresses the critical issue of farm-level adaptation to monsoon flooding in Nowshera, Pakistan, which is a timely and essential topic given the increasing frequency of climate-induced natural disasters. The research methodology, including primary surveys and logistic regression analysis, is well-suited for understanding the factors influencing adaptation decisions among farm households. The empirical results provide valuable insights, particularly emphasising the role of vulnerability, knowledge, communal learning, and past experiences in shaping

adaptation choices. These findings are crucial for informing targeted policy interventions to enhance disaster resilience in flood-affected regions.

This section also presents a well-structured exploration of community resilience to climate stresses, emphasising the critical role of state interventions and collective action. The case studies from Kerala, India, integrated into chapter eight, effectively illustrate the distinction between rapid disaster responses and slower, more insidious climate change impacts, shedding light on the varying challenges posed by these different scenarios. The discussion on water scarcity, unsustainable practices, and the influence of public and political attention on state responses offers valuable insights into the complex dynamics of climate resilience. Overall, the chapter underscores the importance of government involvement in resource management to enhance community resilience, whether in the face of sudden extreme events or long-term climate challenges.

Developing climate change policy and adaptation measures requires an appreciation of local knowledge, community experience, and social capital, especially in Small Island Developing States (SIDS) such as the Maldives. The writers skilfully draw attention to the Maldives' exceptional vulnerability to the effects of climate change in the ninth chapter, particularly with regard to temperature variations, sea level rise, and extreme weather. It sheds light on the challenges the Maldivian agriculture sector faces due to its small size and low-lying geography. The chapter rightly emphasises the critical role of social capital and farmer cooperatives in enabling adaptation and building resilience in these communities. Furthermore, it underscores the urgent need for policies that address the lack of technical knowledge and information among farmers to promote sustainable agriculture in the Maldives. Overall, it offers valuable insights into the complex interplay of environmental, social, and economic factors in climate adaptation.

The section on Traditional Knowledge and Sustainable Agriculture concludes by emphasising that farmers must adopt water sustainability practices in order to safeguard their revenue. The tenth chapter explores the critical issue of groundwater management in the context of climate change and its impact on agriculture in South India. The comprehensive econometric analysis provides valuable insights into the relationship between climate variables, cropping patterns, and groundwater levels, shedding light on the multifaceted challenges involved. Identifying the negative consequences of well density beyond a certain threshold on farm income emphasises the importance of regulating well sinking and electricity subsidies. The chapter's policy recommendations, which include removing electricity subsidies and promoting sustainable groundwater management through alternative incentive structures and investments in recharge systems, provide a clear roadmap for addressing this pressing issue. This study offers a robust analysis of the climate-groundwater-agriculture nexus and valuable policy insights for sustainable water resource management.

Technology Adoption

The book's third theme discusses technology adaptation, which is crucial in addressing the risks associated with climate change. This theme examines indigenous knowledge and contemporary technology in the context of adapting to climate change in chapters eleven through fifteen. Since rainfed agriculture is more vulnerable to climate change, it is essential to adopt rainwater harvesting technologies.

The eleventh chapter provides a valuable and in-depth analysis of the challenges and opportunities related to rainwater harvesting in Nepal's rainfed agriculture context. The authors effectively underscore the critical importance of this adaptation strategy, especially in the face of water scarcity driven by climate change. The emphasis on the role of training, extension services, and government support in increasing adoption rates is well-founded, and the discussion of the potential income diversification benefits for farmers is particularly insightful. However, to enhance the chapter, it would be beneficial to include more concrete examples or case studies to illustrate the real-world impacts of rainwater harvesting in Nepal. Additionally, a deeper exploration of this approach's potential environmental implications and sustainability would further enrich the analysis.

This section also attempts to answer local climate adaptation strategies in Bangladesh and the multifaceted challenges communities face, including forest depletion, riverbank erosion, and waterlogging, and how they proactively respond to these issues. The cases presented in chapter twelve highlight the significance of community engagement and collaborations with external organisations, such as the UNHCR, government, and NGOs, in building climate resilience. Moreover, this chapter effectively conveys the importance of grassroots adaptation strategies in tackling climate change, advocating for innovative, community-driven solutions as essential components of climate resilience efforts. However, a more in-depth exploration of the challenges and scalability of these strategies would further enrich the discussion.

Technology adaptation towards cleaner and more efficient energy sources is vital to reducing emission intensity and increasing the forest and tree cover. Chapter thirteen comprehensively examines the factors influencing rural households in India to transition to cleaner cooking fuels, particularly LPG. It highlights the crucial importance of such a shift in achieving national and international sustainability goals, including climate mitigation, improved health, gender equality, and reduced environmental impact. The discussion on the adverse effects of traditional biomass fuels on human health, particularly among women and children, underscores the urgency of the transition. Furthermore, the chapter offers valuable policy implications to promote the use of cleaner fuels as part of India's efforts to meet its SDGs. However, it would be beneficial to delve deeper into rural households' specific barriers and challenges in adopting LPG to provide a more comprehensive understanding of the issue.

The Technology Adoption section also highlights the importance of the adoption of Solar Home System technology for energy resilience in traditional and rural communities. In chapter fourteen, the authors effectively demonstrate how solar solutions can empower local communities, advance multiple SDGs, and enhance resilience by ensuring access to energy, especially during natural disasters in Bangladesh. The discussion also focuses on the need to reduce these systems' costs and increase awareness to make them accessible to low-income households. Furthermore, the chapter emphasises the value of proactive initiatives that connect solar solutions with SDGs early in program development and suggests that international climate funds and carbon markets can play a pivotal role in this context. Overall, this chapter effectively communicates the potential of solar energy to drive a just, equitable, and sustainable future while addressing climate change and improving the livelihoods of some of the world's most marginalised populations. It serves as a valuable resource for policymakers, practitioners, and researchers interested in renewable energy solutions for climate resilience and development.

In this section, the authors recognise the traditional village tank system as an adaptation mechanism for climate variability. Chapter fifteen provides valuable insights into the significance of Small Tank Cascade Systems (STCS) in Sri Lanka's Dry Zone as a climate change adaptation mechanism. It highlights the historical neglect of these systems due to a lack of understanding of their ecosystem values and the fragmented approach to their management. The chapter effectively emphasises the importance of viewing STCS as functional units rather than isolated tanks. It brings attention to the economic and ecological benefits these systems offer to local communities, extending beyond irrigation. The inclusion of community participation and free labour in restoration projects showcases the willingness of farmers to contribute to the sustainable management of STCS. This chapter strengthens a comprehensive view of STCS, its restoration, and its role in enhancing climate resilience, making it a valuable resource for policymakers and researchers interested in sustainable water management and adaptation strategies.

Disaster Risk Reduction

A major consequence of climate change is disaster. Chapters sixteen through twenty cover the efforts made by communities across various South Asian countries to mitigate the effects of natural disasters. Chapter sixteen explores disaster management's extensive experience in dealing with climate change-related extreme events in Bangladesh. It effectively emphasises the link between climate change and natural disasters and provides evidence of its impact on specific weather events, particularly cyclones. The inclusion of on-ground perspectives and case studies from the government, local NGOs, and international organisations adds depth to the discussion. The experience of Bangladesh in creating a framework that unites stakeholders horizontally and government institutions vertically is discussed in this chapter. Those who reside in Bangladesh's coastal regions have also used the assistance of NGOs to create a strong community. Moreover, the chapter successfully conveys the importance of disaster management as an essential

component of adapting to a rapidly changing climate and unforeseen events such as the COVID-19 pandemic. It offers valuable insights and lessons that could be applied not only to other South Asian countries but also to developing nations globally, emphasising the need for continuous innovation in disaster management strategies. The chapter serves as a valuable resource for understanding the complex interplay between climate change, vulnerability, and effective disaster risk reduction measures.

The case study of Odisha in India, reported in chapter seventeen, quantifies the protection service value of mangroves in cyclone-prone areas. It provides a compelling argument for the conservation of mangroves as a means to build coastal resilience and protect against storm damage, as demonstrated by the data from the October 1999 super cyclone in Odisha. The valuation of storm protection services offered by mangroves is presented clearly, showing their significant economic and social benefits in preventing loss of life and property damage. The findings emphasise the importance of preserving mangroves in the face of climate change and increasing vulnerability to natural disasters, and the policy implications for promoting awareness among the community in vulnerable areas and conservation efforts are well-drawn. This chapter makes a strong case for mangrove ecosystems' economic and ecological value in enhancing resilience in coastal areas.

Seasonal climate forecasts (SCF) play a critical role in reducing risks in rainfed agricultural systems affected by climate variability. Chapter eighteen effectively emphasises the importance of such forecasts in mitigating the adverse impacts of changing weather patterns, including floods, droughts, and disease outbreaks, on crop production. It discusses the challenges and complexities involved in generating, disseminating, and utilising SCF, especially the need for locally specific, participatory, and user-tailored approaches to communication. It is clear that SCF can significantly benefit the agricultural value chain by supporting decision-making and enhancing food security, but it also emphasises the importance of considering potential negative consequences and competitive engagements among various stakeholders. Overall, the chapter provides valuable insights into utilising climate information for building resilience in smallholder agriculture, offering a comprehensive perspective on the opportunities and challenges involved.

This section also delves into another important area, which is the farmers' adaptation to climate variability through soil conservation practices. Chapter nineteen explores the decline in forest cover, decreasing rainfall, and rising temperatures, which are exacerbating challenges such as water scarcity, loss of biodiversity, and unpredictable weather patterns. The chapter provides valuable scientific data and aligns it with the perceptions of local farmers, emphasising the urgency of addressing climate change impacts. Moreover, it underlines the importance of implementing reforestation and afforestation programs, policies to reduce emissions, and improved energy efficiency as global strategies for mitigating these issues. Additionally, the chapter delves into soil erosion, revealing the direct and indirect factors contributing to this problem and

exploring the adoption of soil conservation measures among farmers. The chapter sets out the determinants of farmers' willingness to adopt soil conservation practices and the associated costs. Overall, the chapter comprehensively explains the complex challenges facing the Samanalawewa catchment in Sri Lanka and underscores the need for proactive and sustainable solutions.

The Disaster Risk Reduction section ends up providing a valuable analysis of how social heterogeneity and location-specific factors influence the adaptation strategies of coastal households in Bangladesh, especially in the face of increasing climate risks. It effectively addresses essential questions related to the impact of government-sponsored climate resilience programs, asset ownership, access to financing, remittances, and proximity to natural forests on private defensive strategies against major storm events. Chapter twenty offers critical insights for policymakers aiming to create effective coastal adaptation strategies and climate-resilient programs in Bangladesh and other vulnerable regions. The emphasis on mangrove conservation and coordination with local communities to impart knowledge on storm-resistant home construction highlights the importance of proactive and community-driven climate mitigation efforts.

Urban Sustainability

The sustainability of urban areas has become a challenge due to climate change. The sustainability of the urban sector is an important area to be considered in the context of climate change, as many people migrate to the urban sector. Further, urban sustainability is also important due to the fact that many people are poor, living in slums and flood-prone areas in urban. In this context, this section, through chapters twenty-one, twenty-two, and twenty-three, probes into approaches to water and wastewater management in urban areas as a climate adaptation measure. The Urban Sustainability section starts by addressing the critical issue of urban waste management and drainage, shedding light on the challenges many developing cities face. Chapter twenty-one effectively highlights the intricate relationship between proper solid waste management and flood prevention, especially in the context of climate change in Nepal. By emphasising the need for both physical infrastructure improvements and community involvement, this chapter underlines the significance of a holistic approach to tackling urban waterlogging and flooding. The insights presented on cleaner neighbourhoods, willingness to pay for improved services, and potential revenue sources provide valuable guidance for policymakers and urban planners seeking sustainable solutions to enhance urban resilience and adapt to the changing climate.

This section also highlights the importance of climate change adaptation through informal urban settlement. Chapter twenty-two explores the crucial issue of climate adaptation in urban informal settlements in India, where a significant portion of the population faces the dual challenges of informal housing and climate vulnerability. Further, it explores the role of community-based organisations, specifically women's community action groups

(CAGs), in enhancing climate awareness and promoting adaptive measures within these marginalised communities. The chapter provides valuable empirical evidence that CAGs can indeed raise awareness about climate change and facilitate the implementation of adaptation strategies, particularly among their members. Moreover, this chapter highlights the importance of these organisations in engaging with local governments, potentially leading to more inclusive and effective climate risk reduction efforts. It also acknowledges the need for ongoing engagement and sustainable capacity building within these communities, which is a critical point for further research and development in this field.

Urban sustainability needs to ensure sustainable drinking water. Therefore, chapter twenty-three attempts to answer the critical issue of ensuring sustainable drinking water supply in the Himalayan region. The authors effectively highlight the challenges related to water scarcity in these areas due to factors like rapid urbanisation, climate change, and the lack of attention to water source protection in existing projects. The concept of 'Payment for Ecosystem Services' (PES) is introduced as a potential solution to incentivise ecosystem managers, particularly the upstream communities, to engage in practices that protect water sources. This chapter emphasises the need for context-specific design and the active involvement of local authorities, service providers, and service users to make PES schemes implementable and sustainable. In addition, it offers a practical approach to addressing the water shortage issues in the Himalayan towns and serves as a valuable reference for regions facing similar challenges.

Efficient waste management in urban areas is imperative, especially in the context of climate change and the increased risk of waterlogging and flooding in many cities worldwide. Chapter twenty-four makes a compelling case emphasising women's critical role in waste management, shedding light on their often-under-recognised responsibilities in this domain in Bangladesh. Furthermore, this chapter reveals that the effectiveness of motivational approaches targeted at women, such as social and moral persuasion, significantly improves waste management in urban settings. Overall, chapter twenty-four underscores the necessity of integrating waste management as part of urban adaptation policies and highlights the potential for resilient, climate-friendly cities through community engagement in waste management.

Alternative Livelihood

This section, consisting of four chapters from chapters twenty-five to twenty-eight, highlights the alternative livelihood option of using natural capital to diversify the income of vulnerable communities threatened by climate change. This part highlights the need for alternative livelihoods, particularly for rural households whose primary income is agriculture, because they are more likely to be affected by climate change. Chapter twenty-five comprehensively explores community-based tourism in Bhutan and its role in building climate resilience within rural communities. The discussion around the strict

regulations governing tourism in Bhutan and its alignment with the Gross National Happiness framework is enlightening. The focus on the importance of community involvement in tourism initiatives for both economic and environmental benefits is a crucial point, highlighting the potential to diversify income sources away from agriculture and reduce reliance on climate-threatened activities. Using propensity score matching to analyse the impact on household wealth indicators is a strong methodological approach, demonstrating the positive outcomes associated with community tourism. This chapter offers valuable insights into the multifaceted benefits of community-based tourism in Bhutan and its contribution to climate resilience.

This section also highlights the importance of providing education for youth in remote rural areas, as it helps them to find alternative livelihood opportunities available outward, which helps to reduce ecological stress. The twenty-sixth chapter explores the Sundarbans, a vital ecological region shared between India and Bangladesh, and the challenges it faces due to climate change. The in-depth discussion of the geography, ecology, and livelihoods of the local population provides valuable insights into the complexities of this region. This chapter effectively highlights the impact of climate change, such as increasing cyclonic storm frequency and shifting river dynamics, on both the ecosystem and the communities living in the Sundarbans. The focus on livelihood dynamics and labour outmigration in response to these challenges adds an important dimension to understanding the resilience of local populations, and the role of education in influencing livelihood choices and its potential to reduce anthropogenic stress on the ecosystem is particularly noteworthy. This chapter is a valuable addition to the literature on climate change and its implications for both human and ecological systems in the Sundarbans.

This section further sheds light on the adaptation practices of the agricultural sector, which is inherently vulnerable to climate change. Chapter twenty-seven delves into an essential aspect of climate change's impact on agriculture, specifically focusing on up-country vegetable farmers in Sri Lanka. This chapter is a valuable addition to the existing literature as it explores farmers' perceptions of climate change, their current adaptation practices, and the factors influencing their adaptation choices. The identification of commonly used adaptation options and the drivers behind these choices provides insights that can inform policy interventions. In addition, this chapter explains the significance of information availability, educational levels, access to credit, and extension services in promoting effective adaptation. It highlights the need for government support, regulatory measures, and knowledge sharing to enhance resilience in up-country vegetable farming communities facing climate change challenges.

The Alternative Livelihood section finally turns on and unfolds another important area of the agriculture sector in the context of climate change and recognises crop diversification as a potential strategy to enhance community resilience to climate change impacts. In chapter twenty-eight, the authors critically examine the issue of climate change's impact

on agriculture, focusing on Pakistan, which is among the countries most affected by extreme weather events. The chapter explores the importance of crop diversification as an effective risk management strategy in the agriculture sector, particularly in the context of climate change. This chapter explores how past exposure to extreme weather events, farmer risk attitudes, and various socio-economic factors influence farmers' decisions regarding crop diversification in Sindh province. Further, it provides valuable insights into the determinants of crop diversification in a vulnerable region, highlighting the significance of factors such as farm size, risk attitude, and previous exposure to climate-related events.

Moving Forward

This book proposes a way forward that suggests ensuring successful adaptation to climate change by accounting for different diversities in the South Asian region. Pointing out success as well as failure in climate adaptation efforts in the South Asian region, the way forward emphasises a holistic approach that involves many parties rather than a single mechanism for optimal community adaptation to climate change. It addresses the extent of addressing climate change and the importance of adaptation in the face of impending environmental challenges. The reference to the IPCC's sixth assessment report underscores the severity of climate change impacts that nations must confront. The last chapter underlines the need for mitigation and adaptation, focusing on the vital role of communities and non-government stakeholders in achieving climate goals. It also discusses the challenges faced by communities, such as water scarcity and unsustainable resource depletion, which can be exacerbated by climate change and government policies. In essence, the chapter calls for a more comprehensive integration of environmental concerns within the field of economics, recognising the significant impact climate change has on human well-being, especially in developing nations.

CONCLUSIONS

In conclusion, this book offers a comprehensive exploration of climate change adaptation strategies, focusing on various regions and their unique challenges. It provides valuable insights into the complex web of factors influencing adaptation decisions, emphasising the need for local community involvement, sustainable practices, and policy support. I extend my heartfelt thanks to the editors and authors for providing this opportunity to review their work. Their dedication to shedding light on the critical issue of climate change adaptation is commendable, and their research serves as a valuable resource for scholars, policymakers, and anyone interested in addressing the impacts of climate change. I appreciate the chance to engage with this insightful content and contribute to the ongoing discussion on this pressing global challenge.