

EDITORIAL

Shifting Sands and Dynamic Borders: Resilience at the Human–Nature Interface

Pranab Mukhopadhyay *

Amitav Ghosh, in his book *The Hungry Tide*, describes the Sundarbans as a space where “... there are no borders to divide fresh water from salt, river from sea, even land from water. The settlers of the Sundarbans believe that anyone without a pure heart who ventures into the watery labyrinth will never return” (Ghosh 2004). This encapsulates, in many ways, the essence of life at the margins—not only of humans but also of the shifting boundaries between land and water, and between rivers and seas—an interface that transcends human administrative boundaries and barriers. Three Himalayan river systems—the Indus, Ganges, and Brahmaputra—span multiple countries, terrains, and landscapes. Of the three, the Brahmaputra, often described as a braided river, is the longest and carries the largest sediment load. The combined Ganges–Brahmaputra–Meghna delta is the largest and most populous delta system in the world. Borah, in his article, “Fluid Histories and Unruly Waters: The Brahmaputra River System, Political Ecology, and the Making of Pre-Colonial Assam”, describes how, over centuries, the river has defined the region’s geography, culture, demography, and politics. He also records the historical resilience of the people who engaged with the river’s behaviour, constantly reorienting their lives, economies, and politics. For our current times of climate change, Borah provides recommendations on how to build resilience and navigate nature’s unpredictability in a riverine landscape.

* Senior Professor in Economics, Goa Business School, Goa University, Taleigao Plateau, Tiswadi, Goa 403206, India; [pm\[at\]unigoa.ac.in](mailto:pm[at]unigoa.ac.in)

Copyright © Mukhopadhyay 2026. Released under Creative Commons Attribution NonCommercial 4.0 International licence (CC BY-NC 4.0) by the author.

Dates: 30 Jul 2026 (submission), 30 Jul 2026 (acceptance), 31 Jul 2026 (publication)

DOI: <https://doi.org/10.37773/ees.v9i2.2201>

Published by Indian Society for Ecological Economics (INSEE), c/o Institute of Economic Growth, University Enclave, North Campus, Delhi 110007.

ISSN: 2581–6152 (print); 2581–6101 (web).

This theme resonates with Guha's book, *Ecologies of Empire in South Asia, 1400–1900*, which Suresh reviews in this issue. It provides insights into how historical ecological practices have shaped current environmental challenges. From a different angle, Mishra explores the interplay of popular environmental consciousness and majoritarian political processes in the context of Sharma's book, *Green and Saffron: The RSS, Modi, and Indian Environmental Politics*.

The role of communities in navigating various crises has been studied across multiple contexts, including forestry, irrigation, and catastrophic events. This theme is explored in the context of Kerala's coastal fishery by Haridas and Prathap, who analyse the results of a primary survey covering three districts with different levels of composite vulnerability: Kozhikode (high vulnerability), Thiruvananthapuram (moderate vulnerability), and Ernakulam (low vulnerability). Using a stratified random sampling framework, they approached 600 respondents across 5 villages in each of the three districts. Then, they quantified community resilience by constructing a relative importance index. They find that both institutional factors (including social networks) and household characteristics (education and income diversity) significantly affect household resilience. These findings could help coastal communities build resilience to climate change shocks.

Threats to the livelihoods of nature-dependent communities increasingly come from anthropogenic pressures and ecological degradation. There has been growing recognition that biodiversity, by itself, is a natural asset with sustainability and livelihood implications, as highlighted by the Dasgupta report on biodiversity (Dasgupta 2021). This is evident at Loktak Lake, Manipur, where Singh and Mistri note that communities reliant on the lake for water and fishing face increasing risks to their livelihoods due to the deterioration of the lake's ecological status. This wetland is significant because it is the largest freshwater lake in north-eastern India and is probably the only floating national park in the world. It provides the last known natural habitat for the state's brow-antlered deer. Based on the lake's ecological importance, it was elevated to Ramsar site status in 1990. Drawing on a primary survey of 600 households across 12 villages in the wetland, the study identifies the major concerns of farmers regarding the loss of fish diversity. It emphasizes the need for a wetland resource management strategy to conserve the biodiversity and productivity of Loktak Lake and support local livelihoods.

Apart from anthropogenic pressures on wetlands, Manipur is also amidst a development transition in which energy plays a central role. There is a large body of literature on household energy choices, especially among rural

households in developing countries (see, for example, Das *et al.* 2023). The choice of fuel by such households is influenced by both individual and social factors, including information and income (at the individual level) as well as environmental and climate concerns (at the social level). Monica, Adaina, and Rassendren contribute to this debate with a study also set in Manipur. Using primary data from about 500 households in Tamenglong district, the study finds that adoption of liquefied petroleum gas is significantly influenced by energy costs, ease of availability, and deterrence stemming from the region's cultural practices.

Given the critical role that air quality plays in respiratory health and, consequently, wellbeing, there is a need for better information campaigns to help households and decision-makers make suitable choices. Technology can play a key role in this effort. Pathak and Jadhao argue in their review essay that combining technologies such as the Internet of Things, big data analytics, and machine learning can help researchers acquire, analyse, and predict pollution trends to support better decision-making. Their essay speaks to civil engineers, who play a crucial role in creating and altering the built environment, emphasizing the potential of emerging data technologies to improve air quality.

The Indian Society for Ecological Economics (INSEE) held its 13th Biennial meeting on the theme “Ecological Restoration for a Resilient Society: Economics, Policies, and Institutions” at the Indian Institute of Technology Mandi (IIT Mandi), Himachal Pradesh, India, from 12 to 14 January 2026, supported by the International Development Research Centre (IDRC Canada), the Foundation for Ecological Security (FES), and the Indian Council for Social Science Research (ICSSR). As part of its capacity-building mandate, it also held a pre-conference workshop on “Tools and Methods for Decision-Making on Ecological Restoration” and a post-conference fieldwork exercise. Dasgupta and Purushothaman summarize the discussions and takeaways from this conference. At the conference, INSEE conferred the title of INSEE Fellow on two of its founding members, C K Varshney and Jyoti Parikh.

Richa, Hingne, Jyothi prakash and Golechha summarize the proceedings of the workshop held on April 25, 2025 organized by the World Resources Institute, Delhi, at the Indian Institute of Technology, Delhi, to deliberate on the impact of low-carbon strategies for India. The deliberations offered valuable pathways forward for India to achieve its Nationally Determined Contribution (NDC) targets and beyond.

Among the book reviews in this issue are discussions by Wighmal on Angus' *Metabolic Rifts: Capitalism's Assault on the Earth System*, Venkatachalam

on Franco and Missemmer's *A History of Ecological Economic Thought*, and Patel on Banzhaf's *Pricing the Priceless: A History of Environmental Economics*, Kumar on Satheesh's *Labour, Nature and Capitalism: Exploring Labour-environmental Conflicts in Kerala, India*, Dhavala on Mohanty and Sarkar's edited volume, *Financing Climate Action: India in a Global Context*, and Sierra-Porta on Ritchie's *Not the End of the World: How We Can Be the First Generation to Build a Sustainable Planet*. Wighmal, Patel, Kumar, and Venkatachalam's comments point to the extractive nature of economic production, the historical evolution of critical assessments of human–nature interactions, distributional issues, and valuations of nature. Dhavala reminds us of the urgent need for climate finance in India and Sierra-Porta leaves us with hope that there is scope for balancing the anthropogenic pressures on nature.

These collectively represent the duality of the human–nature interface that Dasgupta integrates into his macro model. In one avatar, humans are embedded in nature; in another, their survival depends on the extraction of natural resources. Dasgupta, in a brief, simple exposition, proposes a macro model that captures this complex duality and offers a way to conceive of the embeddedness of humans in nature alongside the conventional extractive production function approach. The dynamic model he provides allows us to address sustainability from both a democratic behavioural framework and a command-and-control approach aimed at achieving a policy target. This provides a pathway to a new genre of macro models that allows nature to serve both as hosts and providers for humans.

REFERENCES

- Das, Ipsita, Thomas Klug, P P Krishnapriya, Victoria Plutshack, Rajah Sapparapa, Stephanie Scott, Erin Sills, Njeri Kara, Subhrendu K Pattanayak, and Marc Jeuland. 2023. "Frameworks, Methods and Evidence Connecting Modern Domestic Energy Services and Gender Empowerment." *Nature Energy* 8 (5): 435–449. <https://doi.org/10.1038/s41560-023-01234-7>.
- Dasgupta, Partha. 2021. *The Economics of Biodiversity: The Dasgupta Review*. His Majesty's Treasury.
- Ghosh, Amitav. 2004. *The Hungry Tide*. Ravi Dayal Publisher.