
Economic Perspectives on the Environment and Climate Change

ACHIN CHAKRABORTY

There was a time when the challenges of economic development were considered far more important than the threat of climate change. Going against this dominant view, Rabindra Nath Bhattacharya (RNB, as his students fondly refer to him) took teaching environmental economics in his stride and played a pioneering role in introducing the subject to several universities in West Bengal. Until then, very few university departments in India had it in their curricula. *Environmental Economics in Developing Countries: Issues and Challenges* is a fitting tribute to RNB, a committed teacher and researcher who spent his entire academic life popularising environmental economics as an important field of study in India. As a resource person for South Asian Network for Development and Environmental Economics (SANDEE) for 10 years, he helped young workshop participants from South Asia imbibe the importance of studying environmental economics to understand the real-world problems of the environment. His passion for teaching and research drew a good number of students towards him for academic interaction and research guidance. The contributors to the present volume are all well-known scholars in the field of environmental economics and been associated with RNB through the research network they were part of. Partha Dasgupta in his *Foreword* has touched upon his long association with RNB.

The book has 15 chapters divided into four sections, besides the editor's introduction. There are quite a few distinctly identifiable features that make the volume useful for researchers and teachers. Most of the chapters aim at providing comprehensive accounts of the state of knowledge on certain topics. They make a good balance between the style of a technical journal paper and that of an

BOOK REVIEWS

Environmental Economics in Developing Countries: Issues and Challenges by Achiransu Acharyya, London and New York: Routledge, 2023; pp 369 + xxxv, ₹1,595 (hardcover).

advance graduate textbook. While in some chapters rigorous quantitative techniques have been applied to find associations between various aspects of the environment, some other chapters provide overviews of the state of knowledge on different topics in a narrative style. Evidently, the editor of the volume had to struggle hard to categorise the chapters to fit them neatly into sections with appropriate heads, which is quite common for most edited volumes. While the tone of some of the chapters is overwhelmingly normative, that is, ethical concerns springing from the issues of environmental degradation and their possible consequences, while that of others is positive-analytic in which the issue of incentives and optimality of a policy is analysed based on a model of human behaviour. This methodological diversity is likely to make a wide group of readers interested in the book.

Most of the models of growth, environment, and poverty nexus are based on some kind of conflict in achieving optimal exploitation of natural resources as found in the tragedy of the commons, the prisoner's dilemma, or the logic of collective action. After discussing critically this dominant orthodoxy, M N Murty goes on to discuss what he calls "a new paradigm of growth, environment and poverty nexus." The key idea here is "environmental entitlement." Poverty in this approach is to be viewed in the wider institutional context that shapes the relationship between the poor and environmental resources, rather than as

a measure based on income or consumption of the household. Murty argues that the supposed trade-off between environment and income growth, as the environmental Kuznets curve suggests, may disappear once we view poverty in this way. He provides illustration in support of this interesting idea, but to establish this proposition on a firmer ground an attempt could be made to develop a formal model and test it. There are at least three chapters which take COVID-19 as the point of interest and seek to situate the pandemic in the wider context of sustainability and development.

The chapter by Pushpam Kumar, Amelia Holmes and Samia Islam provides a good review of the interdisciplinary research which demonstrates that changes in the global environment, including biodiversity loss, habitat fragmentation, land-use change, and domestication of animals—all lead to increasing incidence of emerging zoonotic diseases, the burden of which is higher in tropical and subtropical regions. Wildlife, livestock, and people are demonstrably linked through various anthropogenic drivers. The chapter is woven around COVID-19 as the pandemic wakes us up to the challenges thrown up by anthropogenic interventions. Ramprasad Sengupta and Chetana Chaudhuri present results of a couple of cross-country multiple regressions which show that the cases of infection and fatality are associated with the share of urban population, international tourist arrivals, etc, but not with population density.

The results of this limited empirical exercise, according to the authors, fail to support the conjecture that COVID-19 could be viewed as a "Malthusian check" on population growth. However, the neo-Malthusian view that the population size would exceed the carrying capacity of the ecosystem—if not its narrower version, that is, the capacity to produce enough food—is not to be thrown away for obvious reasons. Events like COVID-19 seem to indicate complex bidirectional causality which is difficult to establish. While changes in the ecosystem increase the likelihood of a pandemic of zoonotic diseases and other disasters, the disasters

themselves disrupt the ecological balance between human appropriation of biosphere resources and biocapacity of the ecosystem. The focus of the chapter by Jyoti K Parikh is also the recent global pandemic. She identifies certain supply-side and demand-side changes due to the pandemic, which have positive consequences such as energy efficiency, penetration of transformative technologies, and others.

Incentive-Compatibility of Policies

The microeconomic logic of incentives and how they inform policies is the key idea in several chapters. E Somanathan's chapter delves into incentive-based approaches to understand the policy perspective on conservation of biodiversity through such policies as a declaration of "protected areas." These areas are essentially "fragments" surrounded by landscapes which are generally hostile to preservation. Somanathan discusses five classes of incentives. First, direct restriction on land use or activities that harms biodiversity by declaring certain forest areas protected, which is the dominant approach in India now, may be necessary but by itself is insufficient to do the job. Second, as a total ban is sometimes considered unnecessary, taxes or fees on activities that potentially harm biodiversity may be tried. Imposing a high enough toll on the use of a road that has passed through an animal corridor, for example, may deter heavy traffic of vehicles. Third, the allocation of rights to local residents to share revenue streams from biodiversity may be another alternative, provided there is an efficient local government in place to manage the system with participation from local residents. Joint forest management, which is now the practice in most of India, falls in this category. Fourth, subsidies on activities may be given to promote biodiversity, a good example of which is subsidies on cooking gas. Finally, direct payments to private landowners and communities for the ecosystem services which they provide by maintaining natural vegetation, for example, may be considered. Monitoring costs may turn out to be higher in some cases than others.

R David Simpson casts his eye on an interesting issue in forest policy which is

supposed to meet multiple goals like carbon sequestration and other ecosystem services. There is a conflict here. While carbon sequestration happens in growing forests, ecosystem services are provided more by grown forests. The crucial question is, what would be the optimal strategy for reforestation and harvesting? He develops a simple model to explore the conditions under which rotational harvesting or no harvesting at all will be the optimum. The crucial parameter is the "pickling rate" which refers to the rate at which carbon is stored in harvested forest products. The establishment of secondary forests and tree cover has recently been the focus in India to reduce pressure on native forests. Stella Z Schons and her co-authors identify factors that are likely to influence the choices to plant trees on family farms in select districts of Andhra Pradesh. It turns out that the most important positive drivers are total land area, years of land tenure, and off-farm labour opportunities. However, the availability of irrigation, average travel time to the managed plot, etc, are important negative influences.

Road improvement projects in tropical forest areas, which seem necessary for people's welfare, may come in conflict with the goal of biodiversity conservation. Susmita Dasgupta and David Wheeler have developed a spatially explicit model that links road upgrading to forest clearing and biodiversity loss and estimate it using data from Bolivia, Cameroon, and Myanmar. The methodology could be used to carry out similar exercises with data from other countries as well, which would provide the necessary input to environmentally sensitive infrastructure planning in those countries. The book includes several other important case studies of specific policy intervention contexts in other countries, such as the issue of gender in waste management strategy in Nepal (Mani Nepal et al in *Environmental Economics in Developing Countries: Issues and Challenges*) or fabricated electric fencing to reduce crop damage by animals in Bhutan (Jamyang Choda et al in *Environmental Economics in Developing Countries: Issues and Challenges*).

Large-scale changes in meteorological variables like temperature, precipitation, etc, as a result of climate change, affect the frequency of occurrence of extreme events, such as floods, droughts, heat waves, etc. Anil Markandya and his co-authors present a comprehensive account of climate vulnerabilities in South Asia. Achiransu Acharyya reviews the possibility of climate-smart agriculture in developing countries. Adaptation to climate change may take different forms: innovation and adaptation of new technologies, migration, changes in agricultural activities, and so on. To what extent adaptation to climate change will occur depends on the existing institutions. It is challenging to reform inefficient institutions for local cooperation or land tenure. One might also doubt if Acharyya's suggestion to engage the private sector to facilitate climate-smart agriculture would produce the desired results.

With the growing literature on the positive-analytic and normative aspects of the environment and climate change, one should expect to see an increasing trend in informed policy decisions in India. Kanchan Chopra's review of environmental policies in India indicates otherwise. There have been forward-looking acts like the Forest Rights Act, 2006 and policy statements like the "National Environmental Policy 2006," but the long lag between the acceptance of ideas from scientific research and their incorporation into policies continues. The policy falls far behind scientific knowledge. The most important observation that Chopra makes in this context is that a major reason for the poor design and implementation of intervention strategies is inequality among the citizens with respect to wealth, power, and knowledge. This takes us to the realm of political economy of policymaking and policy implementation. The success or failure of specific strategies depends crucially on inequality and polarisation across groups of people, which goes beyond the economics of the environment. The book just stops short of that as it chooses to confine itself to the realm of environmental economics, which is clear from its title.

Achin Chakraborty (achinchak@gmail.com) teaches economics at the Institute of Development Studies, Kolkata.