

Book Reviews

Ecosystem Valuation: Theory, Analytical Methods and Applications, D. Suresh Kumar and P. Indira Devi, Scientific Publishers, Jodhpur, 2022. Pp. ix+237.

Ecosystem services refer to the benefits that humans receive from natural ecosystems including forests, water bodies, wetlands, grasslands and other natural landscapes. These benefits include things like air/water purification, climate regulation, soil fertility, pollination and biodiversity conservation. These services can be broadly categorised into provisioning services, regulatory services, supporting services and cultural services. Although these services are highly essential for human well-being, but they are often undervalued and threatened by anthropogenic activities. The preservation and restoration of ecosystems are critical to ensure continued provision of its services. The absence of markets for ecosystem services or the market failures in pricing the services flowing out of an ecosystem very often led to the exclusion of these services among the economic performance indicators. The market failure associated with under-pricing or non-pricing of environmental services is considered the major reason for natural ecosystem deterioration. Valuation of ecosystem services is crucial for promoting sustainable development and ensuring the continued provision of essential benefits to human well-being. Institutions can make policy decisions based upon costs and benefits of different actions. For example, valuing the carbon sequestration benefits of forests can help determine the economic benefits of forest conservation compared to other land-uses. It guides us in the prioritization of conservation efforts and resource allocation. Valuation creates an economic incentive for conservation and facilitate negotiations between stakeholders with conflicting interests, e.g., it may resolve conflict between developers and conservationists of wetlands for flood control and water purifications. Policy makers have recognised the importance of ecosystem services and their valuation in developmental processes only recently.

This understanding justifies that the selection of the theme of this book is highly appreciable and hold immense value in present days wherein sustenance of agrarian economy has to be ensured within the environmental concerns. Authors have beautifully brought out these important issues in the form of a book and structured the entire content into few chapters.

This book is an outcome of number of research studies conducted at various locations. It envisages the theories relating to ecosystem values and valuation, analytical methods that could be employed for the valuation of varying type of ecosystem services and the way these methods could be put in to application. These valuation methods could be broadly categorised into Revealed Preference and Stated Preference. This book has been divided into ten chapters; of these first two chapters

give a comprehensive description of various ecosystem service, their values and justified the need for their valuation; another seven chapters speak about various specialised methods for the valuation of specific ecosystem services and illustrates their application with real time data, and the final chapter open up the directions and needs beyond the described methods.

Chapter I gives the background of the concept and theoretical basis of ecosystem, ecosystem services and values associated with ecosystem and built up an argument for the need of valuation of ecosystem services. This chapter concluded with the statement that the evaluation of ecosystem is critical to take appropriate environmental policy & decision making. Apparently ecosystem services with their true economic value and their quantified impacts would be a viable instrument for achieving development objectives. Chapter II based upon various services flowing from an ecosystem, gave a description of various ecosystem valuation methods including market based, non-market based and benefit transfer-based methods of valuations. This chapter gives an account of various methods from simple to advance for the valuation of ecosystem services though this chapter could have been improved by bringing in coherence and avoiding repetition. Further this chapter should have been put in different sections with numbering to ensure “one section one concept”. By and large the core concepts in the chapter have been well addressed. These two chapters clearly brought out that there are a set of methods for the valuation studies, however, the selection of a proper method for a specific service is a problem and has been dealt with in other chapters of the book.

The third and fourth chapter of the book demonstrates the kind of ecosystem services flowing out of water ecosystem and how these services are valued. Chapter III traces how the role of tanks has evolved over the years not only as a source of irrigation water but also in the creation of ecosystem with the provision of multiple services including creation of micro-climate, etc. It has defined the application of tools for the valuation of these services to make an argument for the sustainable management of tank irrigation. The Economic Surplus Approach is an advanced approach to see the socio-economic gains from an intervention and authors have applied this methodology for the valuation of ecosystem services including ground water recharge, irrigation, fodder development, community contribution, etc. associated with the various activities of a watershed in Chapter IV.

The authors have built an agreement on the Payments for the Creation of Services from the effective management of forest ecosystem. Application of market-based, non-market based and replacement costs methods have been illustrated for the valuation of forest-based ecosystem services in Chapter V. Substantiated with the literature, the authors have made an attempt to justify why the valuation of services in eco-tourism is imperative in sixth chapter of the book. Authors have perused the primary data to exemplify the application of Travel Cost Method in the estimate of value of environmental benefits associated with the econ-tourism. Chapters VII and VIII of the book are devoted to the assessment of Demand and Supply of Ecosystem

services with the application of Contingent Valuation Method and Choice Experiment. The authors have very beautifully discussed the application of various qualitative measures including Ecosystem Index, Ecosystem Valuation Index, Environmental Risk and Value Mapping in the ninth Chapter of the book.

All the sections of the book have been summed up in the final chapter. It describes the various challenges in the implementation of various ecosystem valuation methods. The study emphasized upon the understanding of the linkages between ecological functions, nicely conceived framework for the ecosystem valuation, substitute of ecosystem services, selection of right approach, and the identification of use indicators for the sophistication of valuation process. Authors advocated the need for a proper multidisciplinary institutional mechanism for the maintaining and management of services.

In the wider background a good effort has been made by the authors to deliberate upon the methodological issues relating to the valuation of ecosystem services. The book provides a deeper insight into many methodologies for the valuation of ecosystem services and have generously substantiated theories with illustration of each method with real time representative data in their domain areas. They have meticulously illustrated the application of various models while taking care of location-specificities at the same time. To sum up this book is an addition to the existing literature on the subject and would certainly be of interest to students, and beginners in research to understanding various methods and to choose among them for their area of interest. Of course, there are scopes for improvement by bring in the coherence across the text, like issues could be discussed at one place and repetitions could be resolved.

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