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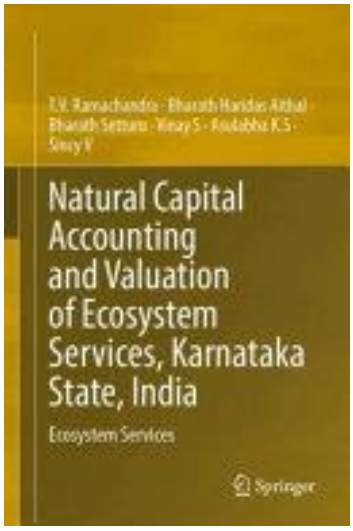

Natural Capital Accounting and Valuation of Ecosystem Services, Karnataka State, India

Humans depend on ecosystems for their basic needs, such as food, fuel, minerals, water, air, etc. All forms of interaction between ecosystems and people, including in situ and remote interactions, are often referred to as ecosystem services. The supply of an ecosystem service is associated with an ecosystem structure or process or a combination of ecosystem structures and processes that reflect the biological, chemical, and physical interactions among ecosystem components. Ecosystem services are broadly categorized as (i) provisioning services are those ecosystem services representing the contributions to benefits that are extracted or harvested from ecosystems, (ii) regulating and maintenance services are those ecosystem services resulting from the ability of ecosystems to regulate biological processes and to influence climate, hydrological and biochemical cycles, and thereby maintain environmental conditions beneficial to individuals and society, (iii) cultural services are the experiential and intangible services related to the perceived or actual qualities of ecosystems whose existence and functioning contributes to a range of cultural benefits.

India is attempting to accelerate economic growth and relax environmental laws, and there is tremendous pressure to divert natural systems to other uses. Hence, there is a pressing need to undertake the natural capital accounting and valuation of the ecosystem services, especially intangible benefits, provided by ecosystems. The value of all ecosystem services, including the degradation costs, needs to be understood for developing appropriate policies for the conservation and sustainable management of ecosystems. Scientific efforts during the past decade have refined the understanding of ecosystem function and demonstrated the links between

functions and the provision of ecosystem services. This knowledge needs to be communicated effectively to decision-makers and the public, which will lead to the development of policies that adequately consider the trade-offs between the conservation of ecosystems and natural resources and economic growth.

There is an urgent policy need for more comprehensive assessments of the natural capital of ecosystems, which will aid in comparing these aggregate values with the opportunity cost of this land. Policymakers need such information to gain support for conservation funding, engage local communities, and develop market-based instruments for conservation, which necessitates accounting for the natural capital found in ecosystems and incorporating their economic worth added to the measurement of the wealth of a region.

Ecosystem accounts make the value of ecosystem services visible, allowing them to be internalized into decision-making. Accounting of ecosystem services enables an assessment of trade-offs between economic development and environmental conservation and restoration, resulting in better-informed decisions. It also allows strengthening the economic case for conserving forests in states in India and developing countries where there can be tremendous pressure to relax forest laws and divert forests to non-forest uses without proper consideration of the sustainability of such actions.

United Nations (UNSD and UNEP) developed the System of Environmental-Economic Accounting (SEEA) framework for natural capital accounting and valuation of ecosystem services (NCAVES) by integrating economic and environmental data and provided a comprehensive and multipurpose view of the interrelationships between the economy and the environment and the stocks and changes in stocks of environmental assets, as they bring benefits to humanity. Karnataka state was chosen by UNSD (**SSFA/2019/1502)**, to pilot the compilation of selected ecosystem accounts in physical and monetary terms based on policy priorities and to contribute to policy mainstreaming.

The research focussing on natural capital accounting and valuation of ecosystem services was carried out by the Energy and Wetlands Research Group at CES, Indian Institute of Science, in collaboration with the United Nations Environment Programme (UNEP), United Nations Statistics Division (UNSD), the Ministry of Statistics and Programme Implementation (MoSP), Government of India and the ENVIS division, The Ministry of Environment Forests and Climate Change (MoEFCC), Government of India and Ranbir and Chitra Gupta School of Infrastructure Design and Management (RCG SIDM), Indian Institute of Technology Kharagpur (IIT-KGP) as part of the international, EU-funded Natural Capital Accounting and Valuation of Ecosystem Services (NCAVES) project.

This book describes the valuation of services of ecosystems (forests, agriculture and aquatic) for Karnataka State, India, as per the validated statistical framework for natural capital accounting – SEEA: System of Environmental-Economic Accounting (SEEA.un.org). According to SEEA protocol, ecosystem services are defined as the contributions of ecosystems to the benefits that are used in economic and other human activities. The valuation of ecosystem services (VES) provides an unbiased framework to value unaccounted ecosystem benefits and helps in developing

meaningful policy interventions. The approach allows for adjusted regional or national accounts which reflect the output of ecosystem services as well as the depletion of natural resources and the degradation costs (externalized costs of the loss of ecosystem services) of ecosystems in economic terms.

Appraisal of ecosystem services (ES) allows for adjusted national accounts which reflect the output of ecosystem services as well as the depletion of natural resources and the degradation costs (externalized costs of the loss of ecosystem services) of ecosystems in economic terms, which will help raise awareness and provide a quantitative tool to evaluate the sustainability of policies toward prudent management and conservation of fragile livelihood supporting ecosystems. The monetary valuation of ecosystem services can help in building a better understanding of their influence on well-being and can further facilitate information-driven decisions and policy reforms that align with the Sustainable Development Goals (SDGs) through the wise use of natural resources. The natural capital accounting research, involving the quantification of services provided by ecosystems (terrestrial and aquatic), and the insights of economic values, would help in devising prudent policies for ecosystem restoration, conservation, and management. This will, in turn, aid in the development of a region through the wise use of natural resources to ensure sustainable development.

In this perspective, the current publication, focusing on the natural capital accounting and valuation of ecosystem services in Karnataka, India, will help raise awareness and provide a quantitative tool to evaluate the sustainability of policies.

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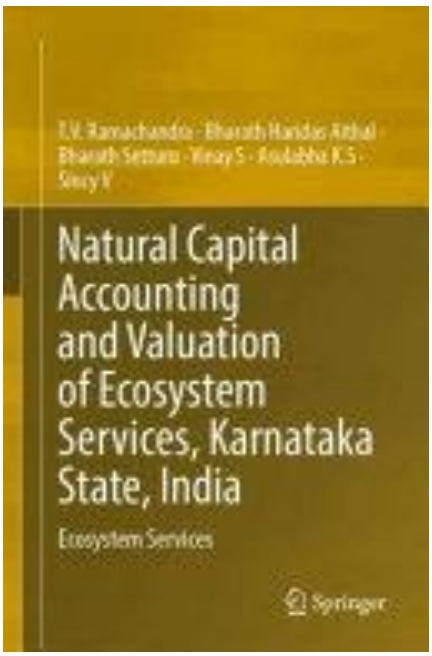
https://books.google.co.in/books/about/Natural_Capital_Accounting_and_Valuation.html?id=bD2t0AEACAAJ&redir_esc=y



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