

# India's efforts in enhancing the consideration of Natural Capital

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## Abstract:

*Countries across the world have realised that discussions on economic development cannot be devoid of the considerations of the environment. An environment accounting framework can help understand the checks, balances and trade-offs, leading to decisions enabling sustainable development. Like the advanced economies, developing countries like India are also undertaking several measures to enhance natural capital in economic decision-making. The paper chronicles some efforts made by India in the implementation of the System of Environmental-Economic Accounting, which is well-recognised as a statistical standard for integrating concerns of the environment and economy. It also brings to light the need to harness and leverage the technological advancements and data revolution to capture information on the different aspects of environmental accounting and encourage innovative solutions to address the data challenges.*

## Introduction

1. India, recognised as a mega-diverse country, has a wide variety of ecosystems such as hot and cold deserts, highlands, tropical and temperate forests, grasslands, swamplands, mangroves, coral reefs and plains, to name a few. India can be demarcated into ten distinct bio-geographic zones, with further variation in agro-climatic areas, extending from the Himalayan peaks in the North, through the arid and semi-arid central region, to tropical rain forests in the South and a lengthy coastline.

2. India attaches much importance to the environment, as evidenced by the fact that environmental issues are embedded in India's Constitutional guidelines adopted in 1950. The Directive Principles of State Policy, given in the Constitution of India<sup>1</sup>, contain provisions, which reflect the commitment of the State to protect the environment, including forests and wildlife, and which enjoin upon the citizens of India the responsibility to protect and improve the environment.

3. 'Environment' is not a distinct subject for legislative and administrative purposes, and various statutes address the problem of the environment. India, having a federal government system, has a distribution of legislative and other powers between union and state. Article 245 empowers the parliament to make laws for the whole country, whereas the state

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legislatures can legislate for their respective states. Article 246 distributes the subject matter of legislation between the parliament and the state legislatures based on three lists Union, State and Concurrent as given in the VII schedule to the constitution. Parliament has exclusive power to legislate on any matter in Union List, state legislatures can enact the law on any matter in State List, and both have competence on matters in the concurrent list. In respect of the environment, the Union List consists of matters having an inter-territorial environmental impact, the State List has those having a local environmental impact, and the Concurrent List contains matters having both local as well as a national bearing. Therefore, land and water are state subjects, forests and wildlife are concurrent, and environment, in general, is a residuary subject, where the powers rest with the Centre.

4. In line with these distributed responsibilities, the different Line Ministries of the Government of India and the State and Local Governments generate statistics on various environmental aspects. The Ministry of Statistics and Programme Implementations (MoSPI) under the Government of India is mandated to serve as the nodal agency for planning and facilitating an integrated development of the statistical system in the country. It lays down and maintains norms and standards in official statistics, evolving concepts, definitions, classifications and methodologies. It also coordinates statistical activities amongst Ministries /Departments of the Government of India and the State Governments to improve the quality of statistical processes and products and renders the necessary advisories on statistical matters. In respect of statistics on various environmental aspects, to provide easy access to these statistics, MoSPI has been producing Compendium of Environment Statistics<sup>2</sup>, consolidating all the relevant facts and figures about the environment since 1997 based on the United Nations Framework for Development of Environment Statistics (FDES), 1984.

5. MoSPI constituted a Technical Working Group on Natural Resource Accounting (NRA) in 1997 to guide the transformation of these statistics to environmental accounts, and a study was conducted on NRA in 1999-2000 in one of the provinces of India. The study's findings generated much discussion among the academics and the official system. In order to develop sector-specific uniform methodologies for natural resource accounting, MoSPI then commissioned a set of State-level studies on land, forests, air, water, and sub-soil resources<sup>3</sup>.

6. In order to help the development of environmental-economic accounts, a high-level Expert Group under the Chairmanship of Prof. Sir Partha Dasgupta,

Frank Ramsey Professor Emeritus of Economics, University of Cambridge, United Kingdom, was constituted by MoSPI in 2011 with the mandate of developing a framework for Green National Accounts of India and preparing a roadmap to implement the framework. The Expert Group submitted its report titled "Green National Accounts in India-A Framework<sup>4</sup>" in 2013, and recommended compilation of the accounts envisaged in the System of Environmental-Economic Accounting (SEEA).

## **The Framework**

7. The growth of a region is usually assessed with the help of the headline indicators such as GDP and other macro-economic aggregates. It is essential to supplement this information with that on the status of natural capital like the biotic and abiotic resources and the ecosystems to enable decision-making for attaining sustainable development. The benefits derived from the environment range from the raw materials for production, the dependence on environmental conditions for production, to the benefits derived from being able to enjoy nature. The interdependency between the environment and the economy is crucial for the policymakers while framing the policy for growing the economy to ensure sustainable use of natural resources.

8. To provide this comprehensive picture, an internationally agreed consistent and coherent framework has been developed by the United Nations - the System of Environmental-Economic Accounting (SEEA)<sup>5</sup>, which provides a conceptual framework for understanding the linkages between the environment and the economy. The SEEA aims to describe all three forms of interdependence between the economy and the environment - environmental burden, the environmental state and environmental measures. The description of these interdependencies is based on the fact that a national economy uses labour, capital and nature for its growth.

9. The SEEA allows examining a range of issues at the macro level, such as resource efficiency and productivity, through techniques such as decomposition analysis, structural input-output analysis and general equilibrium modelling. SEEA comprises of two main parts:

(A) SEEA-Central Framework (SEEA-CF)<sup>6</sup>: was adopted by the UN Statistical Commission as an international standard for environmental-economic accounting in 2012. The Central Framework considers the "individual environmental assets", such as land, water resources and energy resources, and the flows between these assets between the environment and the economy.

(B) SEEA-Ecosystem Accounting (SEEA-EA)<sup>7</sup>: Adopted by the UN Statistical Commission in March 2021, it is a coherent framework for integrating an assessment of the ecosystems and the flows of ecosystem services with measures of economic and other human activity.

10. The SEEA-CF and the SEEA-EA, together with other associated guidance material on applying the framework to specific thematic areas, form the basis for building linkages of the environment with the economy and providing necessary input to policy. Adding another dimension to the policy framing are the multilateral environmental agreements (MEA). The multilateral environmental agreements complement the national legislation and bilateral or regional agreements and form the overarching international legal basis for global efforts, framed as conventions, to address particular environmental issues. An essential aspect of the endorsement of these MEAs is its reporting and monitoring. Each MEA involves indicators addressing various aspects of it. The SEEA framework, designed to support mainstreaming the environment into economic and development planning, can also support reporting for the MEAs.

11. Since the compilation of SEEA-compliant accounts, as recommended by the Expert Group, entails rich datasets across multiple domains, especially for the compilation in monetary terms and final integration with national accounts, an Inter-Ministerial Group (IMG) constituted by MoSPI in 2016 facilitates the assessment of datasets for the compilation of these accounts and makes the recommendations for the line of action. The Ministries of Environment, Forests and Climate Change; Water Resources, River Development & Ganga Rejuvenation; Agriculture and Farmers Welfare; Mines; Coal; Petroleum and Natural Gas; New & Renewable Energy; Power as well as Department of Land Resources, Comptroller & Auditor General of India and the National Remote Sensing Centre are represented in this Group and provide the impetus for the compilation of these accounts.

12. India has a long history of research on environmental aspects across different ecosystems, ranging from theoretical concepts to practical application, both inside and outside the official domain. The studies covered a full range of issues – from the application of economic principles and tools to environmental management in India for policies related to pollution control, modelling, resources management and biodiversity conservation and from quantifying the resourcefulness of India to highlighting the economic consequences of the loss of biological diversity and the associated decline in ecosystem services. Though rich in information, these research studies could

not culminate in a full-fledged national account due to a lack of comparability in the methods and definitions used in these studies, which limited their aggregation.

### **Current accounting initiatives**

13. Realising the need to adopt a common framework for international acceptability, the Ministry of Statistics & Programme Implementation initiated the compilation of environmental accounts in the SEEA framework in 2018. Some of the accounts of the SEEA Central Framework were released in the publication titled "EnviStats-India".

14. The EnviStats India Series consists of two issues produced on an annual basis. Volume I<sup>8</sup> deals with the various dimensions of the Statistics related to the environment and aligns with the UN Framework for the Development of Environment Statistics (FDES) 2013<sup>9</sup>. FDES helps to provide indicators on the state of the environment, our dependence on it, our impact on the environment, the impact of the state of environment on human life and how we protect and manage it. The latest publication of 2021 provides information on 222 indicators of the FDES 2013.

15. EnviStats India Vol. II<sup>10,11</sup> presents environmental accounts in the SEEA framework that present a systematic glimpse of the State of the Environment in India regarding various assets and ecosystems. MoSPI has released the following accounts in the different issues of this publication to date:

Type of account	Topics covered (Year of publication given in parentheses)
Ecosystem extent	Change matrix of Land Use - Land Cover (LULC) from 2005-6 to 2011-12 and 2011-12 to 2015-16 (2018, 2020) Asset Account for Land Use Land Cover (LULC), 2005-06, 2011-12 and 2015-16 (2018, 2020) Land Degradation Account, 2005-06 and 2015-16 (2020) Wetland Extent Account, 2006-07 (2020)
Ecosystem condition	Soil nutrient indices (2019) Water quality accounts (2019) Forest condition account (2020) Cropland condition account (2020)
Ecosystem services	Crop provisioning services (monetary) (2019) Timber provisioning services (monetary) (2020) Non-Timber Forest Products (NTFP) provisioning

Type of account	Topics covered (Year of publication given in parentheses)
	services (monetary) (2020) Carbon retention services provided by forests (physical and monetary) (2020) Nature-based tourism (monetary) (2019) Soil erosion prevention services provided by croplands (physical) (2020)
Thematic Accounts	Biodiversity - The extent of protected areas (2020) State-wise floral and faunal species accounts (2020) Species Richness of IUCN Red List species (2020)
Individual environmental asset accounts (SEEA CF)	Forests - Growing Stocks of Timber and Carbon (2018, 2020) Water (2018)

16. The compilation of environmental accounts in India was accelerated by the Project on "Natural Capital Accounting and Valuation of Ecosystem Services (NCAVES)"<sup>12</sup>, funded by the European Union and implemented as a collaborative project by UNSD, UNEP, Secretariat of CBD and national partners. In India, the NCAVES project was implemented by MoSPI<sup>13</sup> in close collaboration with the Ministry of Environment, Forest and Climate Change, National Remote Sensing Centre and several other concerned agencies of the Government of India.

17. Under the NCAVES Project, a pilot study has been undertaken by the Indian Institute of Science, Bengaluru, in the Karnataka State of India. In this study, a suite of ecosystem accounts was developed, including ecosystem extent, a range of condition indicators and an extensive set of ecosystem services. These accounts have the potential to be applied in subsequent scenario analysis, assessing land use, conservation and afforestation policies.

18. A landscape assessment was also undertaken under the Project to review existing ecosystem accounting initiatives and literature in India. Further, an India - Environmental Valuation Look-up (India-EVL) Tool<sup>14</sup> was developed to ensure easy access to the existing research on the valuation of ecosystem services in India that emerged from the assessment. The tool provides an assessment of the quality and applicability, especially in the context of value transfer, for a set of valuation studies conducted in different

contexts and settings in India after the year 2000. The database structure and lookup format (user tool) with accompanying guidance will assist users to understand and compare findings across studies and to know the contexts in which benefits transfer could be applicable. The tool will also be a helpful input to the development of national ecosystem service accounts in India. The tool has a provision for adding more studies as and when these are received.

19. Apart from MoSPI, the Supreme Audit Institution of India, the Office of Comptroller and Auditor General of India has also started work on compiling information on the receipts and expenditure on exploitation of natural resources and related activities<sup>15</sup>. This will ensure that the SEEA accounts are aligned with the Government Budget Statements and the SNA, wherever applicable.

### **Opportunities and Challenges**

20. Data integration is key to the compilation of a good set of environmental accounts. Environmental accounts being susceptible to the spatial dimension, are also resource-intensive. Therefore, there is a need to supplement the traditional sources of data like administrative statistics. NSO India has initiated the first steps towards testing and integrating such datasets to compile the accounts. India, due to its comprehensive Space programme, has a good repository of remote-sensing datasets. These have been used by NSO India, together with administrative datasets, to make more meaningful interpretations. In some cases, global geospatial datasets, like those maintained by USGS and ESA, have been used. The InVEST<sup>16</sup> suite of models, developed by Stanford University, were used to understand the dispersion of values of nature-based tourism services across the length and breadth of the country.

21. An emerging opportunity for acquiring more relevant environmental information is corporate reporting. In India, the philosophy of responsible business was first embedded in the National Voluntary Guidelines on Social, Environmental and Economic Responsibilities of Business (NVEGs)<sup>17</sup> released in 2011 and later incorporated in the Companies Act, 2013 as the National Guidelines for Responsible Business Conduct<sup>18</sup> (NGRBC) in 2019. These guidelines envisage a company's broader responsibilities beyond its shareholders to its stakeholders – employees, community, and notably, the environment. The top 1000 companies, identified by market capitalisation, **are mandated**<sup>19</sup> to file Business Responsibility and Sustainability Reports (BRSR)<sup>20</sup> based on the guidelines with other listed entities also encouraged to

include the business responsibility reports and initiatives taken by these entities from an environmental perspective, in the format as specified by the Board from time to time. The format for this integrated reporting requires them to disclose their dependence on various forms of capital, including natural capital. The prescribed format of the BRSR requires the companies to, inter-alia, report on energy and water consumption and management of waste, waste-water and air emissions.

22. In line with these guidelines, several corporate sector entities in India<sup>21</sup> are already compiling voluntary or statutory sustainability reports for integrating environmental information alongside financial information. These have enabled organisations to identify, measure and value their direct and indirect impacts and dependencies on natural capital. A by-product of this reporting is the wealth of information, by type of industry, on the water, energy and residuals, which can be used to compile relevant SEEA-compliant accounts. However, since the incorporation of environment information in business accounting is evolving, it will take some more time to take the business accounts in India to be transformed into SEEA accounts.

23. In addition, there are examples of illustrative studies by industry associations<sup>22, 23</sup> that aim to emphasise the need for environmental conservation and restoration to ensure sustained growth of the corporate sector. These initiatives are intended to mainstream the considerations of the environment into corporate accounting across the value chain and business decision-making more generally.

24. Nevertheless, the use of these hitherto-untapped datasets mandates setting up several new processes. The quality assessment process revolves around discussions on whether or not the universe of study of these surveys is consistent with the statistical output requirements; the classifications, underlying concepts and measurement units are appropriate; the records are complete and up to date; the geographical coverage is complete. In addition, there is a need to ascertain the veracity and volatility of such data.

## **Conclusion**

25. There is a growing interest at the policy level in India about the felt need to conserve natural resources as the development goals can no longer be achieved without considering the environment. These policies, in turn, require adequate and quality data that are made available with a pre-defined time frame. Environmental accounts are a robust multipurpose information framework suitable for assessing sustainable development and many other

policy areas in the environmental sector. The SEEA framework facilitates the generation of a wide range of indicators and statistics to support decision-making. The SEEA compliant accounts have the advantage of presenting comparable information systematically, using standard definitions based on a sound conceptual framework. They encourage the development of comprehensive and consistent data and provide a platform for producing a range of reports and analyses, which are very beneficial from the policy perspective.

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## 1References:

(in order of their occurrence in the paper)

The Constitution of India, can be seen at: <https://legislative.gov.in/constitution-of-india>

2 Compendium of Environment Statistics (various years); can be accessed at: <https://www.mospi.gov.in/web/mospi/reports-publications>

3 Natural Resource Accounting Project, MoSPI; Reports can be accessed at: <https://www.mospi.gov.in/web/mospi/reports-publications/-/reports/view/templateTwo/6601?q=RPCAT>

4 Green National Accounts in India-A Framework, MoSPI, 2013; [https://www.mospi.gov.in/documents/213904/301563//Green\\_National\\_Accounts\\_in\\_India\\_1may131600241699282.pdf](https://www.mospi.gov.in/documents/213904/301563//Green_National_Accounts_in_India_1may131600241699282.pdf)

5 <https://seea.un.org/>

6 SEEA Central Framework; can be accessed at:

[https://seea.un.org/sites/seea.un.org/files/seea\\_cf\\_final\\_en.pdf](https://seea.un.org/sites/seea.un.org/files/seea_cf_final_en.pdf)

7 SEEA Ecosystem Accounting; <https://seea.un.org/ecosystem-accounting>

8 EnviStats India, Vol.I Environment Statistics (various years); can be accessed at <https://www.mospi.gov.in/web/mospi/reports-publications>

9 Framework for Development of Environment Statistics; <https://unstats.un.org/unsd/environment/FDES/FDES-2015-supporting-tools/FDES.pdf>

10 EnviStats India 2018, Supplement on Environment Accounts <https://www.mospi.gov.in/web/mospi/envistats-india-2018-supplement-on-environmental-accounts->

11 EnviStats India, Vol.II Environment Accounts (2019, 2020); can be accessed at: <https://www.mospi.gov.in/web/mospi/reports-publications>

12 Natural Capital Accounting and Valuation of Ecosystem Services Project; <https://seea.un.org/home/Natural-Capital-Accounting-Project>

13 Natural Capital Accounting and Valuation of Ecosystem Services Project in India; <https://www.mospi.gov.in/natural-capital-accounting-and-valuation-of-ecosystem-services-ncaves->

14 India Environmental Valuation Look-up Tool (EVL Tool)

<https://www.mospi.gov.in/web/mospi/india-evl-tool>

15 CONCEPT PAPER ON NATURAL RESOURCE ACCOUNTING IN INDIA - AN INITIATIVE OF GASAB; Can be accessed at: <http://gasab.gov.in/gasab/pdf/NR-Accounting.pdf>

16 InVEST Natural Capital Project;

<https://naturalcapitalproject.stanford.edu/software/invest>

17 Ministry of Corporate Affairs, Government of India, 2011, National Voluntary Guidelines on Social, Environmental and Economic Responsibilities of Business; [https://www.mca.gov.in/Ministry/latestnews/National\\_Voluntary\\_Guidelines\\_2011\\_12jul2011.pdf](https://www.mca.gov.in/Ministry/latestnews/National_Voluntary_Guidelines_2011_12jul2011.pdf)

18 Ministry of Corporate Affairs, Government of India, 2019, National Guidelines for Responsible Business Conduct;

[https://www.mca.gov.in/Ministry/pdf/NationalGuideline\\_15032019.pdf](https://www.mca.gov.in/Ministry/pdf/NationalGuideline_15032019.pdf)

- 19 Stock Exchange Board of India, Press Release, 15/2021;  
[https://www.sebi.gov.in/media/press-releases/mar-2021/sebi-board-meeting\\_49648.html](https://www.sebi.gov.in/media/press-releases/mar-2021/sebi-board-meeting_49648.html)
- 20 Stock Exchange Board of India, 2020, Consultation Paper on the format for Business Responsibility and Sustainability Reporting;  
[https://www.sebi.gov.in/reports-and-statistics/reports/aug-2020/consultation-paper-on-the-format-for-business-responsibility-and-sustainability-reporting\\_47345.html](https://www.sebi.gov.in/reports-and-statistics/reports/aug-2020/consultation-paper-on-the-format-for-business-responsibility-and-sustainability-reporting_47345.html)
- 21 WBSCD, 2018, Sustainability reporting landscape in India; can be accessed at: <https://www.wbcsd.org/contentwbc/download/5760/76829/1>
- 22 [https://sustainabledevelopment.in/publications/?intervention\\_areas=nature](https://sustainabledevelopment.in/publications/?intervention_areas=nature)
- 23 <http://www.ficci.in/sector-studies.asp?sectorid=14>