

Implications of Green GDP in India

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ABSTRACT

Background: Gross Domestic Product (GDP) has long been the primary indicator of economic progress; however, it fails to account for environmental degradation and resource depletion. Green GDP, an alternative measure, adjusts traditional GDP by incorporating environmental costs and sustainability factors. In a rapidly developing economy like India, where industrial expansion, urbanization, and resource consumption are accelerating, understanding the implications of Green GDP is crucial for policymaking, sustainable development, and long-term economic stability. This study explores the potential impact of Green GDP adoption in India, highlighting challenges, benefits, and policy implications.

Method: This research follows a conceptual approach, synthesizing existing literature, policy documents, and case studies to analyse Green GDP's relevance to India. This study analyses literature, policy documents, and case studies, comparing global Green GDP models with India's environmental accounting practices.

Results: Findings suggest that adopting Green GDP in India could provide a more holistic measure of economic progress by internalizing environmental costs. It would help policymakers identify sectors with high ecological footprints, promote sustainable industries, and drive regulatory reforms. However, challenges such as data scarcity, valuation complexities, and institutional resistance pose significant hurdles.

Conclusions: Green GDP has the potential to reshape India's economic assessment framework by aligning growth with sustainability. While its implementation is complex, a phased approach integrating environmental accounting practices and institutional capacity-building can facilitate its adoption. Policy interventions, technological advancements, and international cooperation will be crucial for transitioning toward a greener economic model. Future research should focus on developing India-specific Green GDP methodologies to enhance its practicality and acceptance in policy circles.

Keywords: Economic Indicators, Green GDP, India, Sustainable Development,

INTRODUCTION

Economic growth has long been regarded as a fundamental driver of national progress, contributing to improved living standards, infrastructure development, and technological advancements. Traditional economic indicators, particularly Gross Domestic Product (GDP), serve as the primary measures of a nation's economic health. However, GDP focuses solely on economic output without considering the environmental costs associated with growth. India, as one of the fastest-growing economies in the world, has witnessed significant industrialization, urbanization, and expansion of its service and manufacturing sectors. While this progress has contributed to higher income levels and poverty reduction, it has also led to severe environmental challenges, including deforestation, air and water pollution, loss of biodiversity, and overexploitation of natural resources. Unchecked economic activities have resulted in climate change implications, increased carbon emissions, and declining ecological balance, which threaten long-term sustainability. Despite various environmental regulations and policies, India continues to face the dilemma of balancing economic growth with ecological preservation. The reliance on GDP as a sole measure of progress often overlooks the depletion of natural resources and the long-term economic costs associated with environmental degradation. Hence, there is an

urgent need to integrate sustainability into economic assessments to ensure a more comprehensive evaluation of national development.

The Need for a Sustainable Economic Measure

Given the limitations of GDP in reflecting the true cost of economic progress, there is growing recognition of the need for an alternative framework that incorporates environmental and social dimensions. Green GDP emerges as a potential solution, modifying traditional GDP calculations by accounting for environmental losses and resource depletion. This concept provides a more holistic approach to measuring economic performance, ensuring that economic policies align with sustainability goals. Green GDP takes into account various factors such as pollution levels, deforestation rates, carbon emissions, and ecosystem degradation, thereby offering policymakers a clearer picture of how economic activities impact natural resources. By incorporating these considerations, governments can design policies that promote sustainable development while maintaining economic stability. For India, transitioning to Green GDP is particularly crucial, as it would help in assessing the real cost of economic growth and guiding policy decisions toward long-term sustainability. It would also support India's commitment to international environmental agreements, such as the Paris Agreement and Sustainable Development Goals (SDGs), by encouraging investments in green technologies, renewable energy, and sustainable industrial practices. The adoption of Green GDP could reshape the country's economic priorities, shifting the focus from short-term growth to long-term sustainability. While challenges such as data availability, valuation complexities, and institutional constraints exist, the benefits of implementing a sustainability-oriented economic measure outweigh these hurdles. A strategic approach involving policy reforms, technological advancements, and improved environmental accounting practices can facilitate the integration of Green GDP into India's economic framework, ultimately leading to a more sustainable and resilient economy. Economic growth has long been regarded as a fundamental driver of national progress, contributing to improved living standards, infrastructure development, and technological advancements. Traditional economic indicators, particularly Gross Domestic Product (GDP), serve as the primary measures of a nation's economic health. However, GDP focuses solely on economic output without considering the environmental costs associated with growth.

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Green GDP is an adjusted economic indicator that modifies traditional GDP by incorporating the environmental costs of economic growth. It accounts for the depletion of natural resources, environmental degradation, and ecological damage, providing a more sustainable measure of economic progress. By deducting costs associated with pollution, deforestation, soil erosion, and loss of biodiversity, Green GDP offers a clearer picture of a nation's real economic well-being. The core concept of Green GDP is to ensure that economic growth is not achieved at the expense of environmental sustainability. It encourages nations to recognize the hidden costs of industrialization and urbanization while promoting policies that balance economic development with ecological preservation. Governments, businesses, and policymakers can use Green GDP as a guiding metric to design long-term strategies that foster sustainable growth. The key difference between the two measures (Traditional GDP and Green GDP) lies in their approach to economic valuation. While traditional GDP presents an inflated image of economic prosperity by disregarding environmental consequences, Green GDP offers a more accurate and responsible representation of a nation's economic performance. By integrating sustainability into economic assessments, Green GDP helps policymakers make informed decisions that foster long-term economic and environmental stability.

Several countries have attempted to incorporate Green GDP into their economic frameworks, with varying degrees of success.

China's Green GDP Experiment

In the early 2000s, China pioneered the Green GDP initiative by adjusting its economic calculations to reflect environmental costs. However, the project faced challenges due to resistance from local governments, data limitations, and political pressures. Despite these setbacks, China has continued to integrate environmental considerations into its development policies, with a strong focus on green energy and pollution control.

United States and Europe's Sustainable Accounting Practices

The U.S. and European Union have adopted various environmental accounting methods, such as the System of Environmental-Economic Accounting (SEEA), developed by the United Nations. These methods track resource depletion and pollution, guiding environmental policies and sustainable business practices.

Nordic Countries and the Circular Economy Approach

Countries like Sweden, Norway, and Finland have successfully integrated sustainability metrics into their national accounting. Their economic policies emphasize the circular economy, where resource use is minimized, and waste is recycled to achieve long-term environmental balance.

India's Current Efforts

India has made progress in environmental accounting through initiatives such as the Natural Capital Accounting and Valuation of Ecosystem Services (NCAVES) project, in collaboration with the UN. However, Green GDP is yet to be fully implemented, mainly due to challenges in data collection, policy execution, and institutional adaptation.

Conceptual Framework and Justification

The traditional Gross Domestic Product (GDP) metric has been the cornerstone of economic assessment, quantifying a nation's economic performance by measuring the total value of goods and services produced. However, this conventional approach often overlooks the environmental costs associated with economic activities, such as resource depletion, pollution, and ecological degradation. To address this shortcoming, the concept of Green GDP has emerged, integrating environmental considerations into economic accounting to provide a more holistic view of sustainable development.

Green GDP adjusts the traditional GDP by accounting for the economic costs of environmental damage and resource depletion, thereby reflecting the true wealth of a nation. This approach aligns with the principles of sustainable development, emphasizing the need to balance economic growth with environmental preservation. In the context of India, a rapidly developing economy with significant environmental challenges, adopting Green GDP is particularly pertinent. The integration of environmental costs into national accounting can inform policy decisions, promote sustainable resource management, and enhance the well-being of current and future generations.

Scope of the Study

This study aims to explore the feasibility and implications of adopting Green GDP in India by:

- **Analysing Global Methodologies:** The research will examine established frameworks for calculating Green GDP, with a focus on the United Nations' System of Environmental-Economic Accounting (SEEA). This analysis will provide insights into standardized methods of integrating environmental factors into economic metrics.

- **Evaluating India's Current Practices:** An assessment of India's existing environmental accounting practices will be conducted to identify gaps and challenges. This includes reviewing national initiatives and policies related to environmental-economic accounting.
- **Comparative Analysis:** The study will compare India's practices with those of countries that have successfully integrated Green GDP into their national accounting systems. Lessons learned from these case studies will inform recommendations for India's potential adoption of Green GDP.

By addressing these objectives, the research seeks to provide a comprehensive understanding of how Green GDP can serve as a tool for sustainable economic planning in India, ensuring that economic growth does not come at the expense of environmental health.

LITERATURE REVIEW AND THEORETICAL FOUNDATIONS

The concept of Green Gross Domestic Product (Green GDP) has emerged as a response to the limitations of traditional GDP metrics, which often overlook environmental degradation and resource depletion. Green GDP aims to provide a more comprehensive measure of economic performance by accounting for the environmental costs associated with economic activities.

In the Indian context, several studies have explored the integration of environmental considerations into economic assessments. For instance, Mani (2013) discusses the necessity of incorporating environmental costs into India's growth strategies to ensure sustainable development. Similarly, the Ministry of Statistics and Programme Implementation (2013) provides a framework for green national accounting in India, emphasizing the importance of environmental sustainability in economic planning.

Theoretical foundations for Green GDP are grounded in environmental economics and ecological accounting. These frameworks advocate for the inclusion of natural resource depletion and environmental degradation costs in national accounts to reflect the true economic welfare of a nation. Such an approach aligns with sustainable development goals, ensuring that economic growth does not come at the expense of environmental health.

Policy Documents and Government Reports

The Indian government has recognized the importance of integrating environmental considerations into economic planning. The "Green National Accounts in India: A Framework" report by the Ministry of Statistics and Programme Implementation (2013) outlines a comprehensive strategy for incorporating environmental factors into national accounting systems. This framework aims to guide policymakers in assessing the environmental costs of economic activities and making informed decisions that promote sustainable development.

Additionally, the World Bank's report titled "Greening India's Growth: Costs, Valuations, and Trade-offs" (2013) examines the economic implications of environmental degradation in India. The report highlights that environmental degradation costs India approximately 5.7% of its GDP annually, underscoring the economic benefits of adopting green growth strategies. It provides a detailed analysis of the trade-offs involved in pursuing environmentally sustainable policies and offers recommendations for integrating green practices into India's economic framework.

Case Studies and Comparative Analysis

Comparative analyses of countries that have implemented Green GDP accounting provides valuable insights for India's potential adoption of similar practices. For example, China's early initiatives in Green GDP accounting aimed to quantify the economic costs of environmental degradation. Although these efforts faced challenges, they underscored the importance of robust data collection and institutional support in implementing green accounting practices.

In contrast, European countries have made significant progress in integrating environmental considerations into their national accounts. The adoption of the System of Environmental-Economic Accounting (SEEA) has enabled these nations to systematically measure the interactions between the economy and the environment. This approach has facilitated more informed policymaking and demonstrated the feasibility of incorporating environmental sustainability into economic assessments.

These cases highlight the importance of tailored approaches that consider specific national contexts. For India, lessons from these experiences emphasize the need for capacity building, institutional reforms, and the development of standardized methodologies to effectively implement Green GDP accounting.

RESULTS AND INTERPRETATION

The findings of this study suggest that adopting Green GDP in India could significantly enhance economic assessment by internalizing environmental costs. This would allow for a more comprehensive evaluation of national progress, enabling policymakers to balance economic growth with ecological sustainability. By incorporating environmental costs, Green GDP can help identify industries with high ecological footprints. According to the Central Pollution Control Board (CPCB), sectors such as thermal power, chemical manufacturing, and transportation contribute significantly to environmental degradation. If Green GDP were implemented, the estimated cost of environmental damage in India—currently at 5.7% of GDP (World Bank, 2013)—would be systematically accounted for in economic planning, allowing targeted regulatory interventions.

A shift toward Green GDP could also encourage investments in sustainable industries such as renewable energy, green manufacturing, and eco-friendly infrastructure. The International Renewable Energy Agency (IRENA) reports that India's renewable energy sector attracted \$14.5 billion in investment in 2022, with further growth expected if environmental costs are factored into national accounting. By incentivizing green industries, India can foster an economic model that prioritizes long-term environmental sustainability while ensuring economic prosperity.

Green GDP has the potential to reshape fiscal policies by incorporating environmental costs into economic decision-making. The government could use Green GDP estimates to design taxation policies that discourage environmentally harmful activities while promoting sustainable practices. For instance, India currently imposes a ₹400 per ton carbon tax on coal production, but similar policies could be extended to other sectors based on their environmental impact. This approach would ensure that businesses account for ecological costs in their operations, leading to more responsible industrial practices.

However, implementing Green GDP in India presents several challenges. One of the primary obstacles is data scarcity, as the country lacks a robust environmental data collection system to facilitate accurate valuation. Additionally, assigning monetary values to environmental degradation and resource depletion remains complex and often contentious. Institutional resistance is another key hurdle, as industries and policymakers accustomed to traditional GDP metrics may be reluctant to adopt a new economic measurement framework due to potential short-term trade-offs.

Beyond policy implications, Green GDP could also enhance corporate sustainability reporting and increase public awareness about environmental conservation. The Securities and Exchange Board of India (SEBI) has already introduced Business Responsibility and Sustainability Reporting (BRSR) for listed companies, which could be expanded to align with Green GDP calculations. Moreover, raising public awareness about Green GDP and its benefits would foster a collective commitment toward sustainable economic growth.

The adoption of Green GDP in India holds significant promise for ensuring sustainable economic development, improving resource efficiency, and shaping forward-thinking policies. However, its successful implementation requires overcoming challenges related to data availability, valuation methodologies, and institutional readiness. Learning from global experiences and leveraging technological advancements in environmental accounting will be crucial for integrating Green GDP into India's economic framework. By

doing so, India can position itself as a global leader in sustainable economic planning while ensuring long-term environmental and economic resilience.

Stakeholder Perspectives on Green GDP

Successful implementation of Green GDP will depend not only on central government initiatives but also on how key stakeholders—including businesses, local governments, and civil society—engage with and respond to this new economic framework.

Businesses may initially show resistance due to fears of increased compliance costs and exposure to environmental accountability. However, with the Securities and Exchange Board of India (SEBI) mandating Business Responsibility and Sustainability Reporting (BRSR) for the top 1,000 listed entities (SEBI, 2021), the private sector is already being nudged toward sustainable reporting practices. Green GDP can complement such efforts by providing standardized national-level indicators for corporate benchmarking. Moreover, government incentives, green tax credits, and recognition programs could further encourage industry alignment with sustainability goals (World Bank, 2013).

Local governments, particularly in environmentally sensitive and resource-intensive regions, could benefit from Green GDP data to design policies that reflect their unique ecological contexts. Decentralized data collection, environmental impact assessments, and localized valuation of ecosystem services are critical to supporting regional policy action (Kumar & Managi, 2009). Strengthening institutional capacity at the state and district levels will be essential for meaningful adoption.

Civil society and academic institutions can play vital roles as knowledge hubs, watchdogs, and advocates. Awareness campaigns, participatory research, and community-driven monitoring can promote transparency and public engagement. As emphasized by Mani (2013), integrating environmental valuation into mainstream discourse requires strong collaboration between the state, non-state actors, and the public.

By aligning the efforts of these diverse actors, India can build a multi-stakeholder ecosystem that supports the effective rollout of Green GDP.

CONCLUSION

The adoption of Green GDP in India presents a transformative opportunity to align economic growth with environmental sustainability. By incorporating ecological costs into national accounting, Green GDP can help policymakers identify high-impact sectors, promote sustainable industries, and design more effective fiscal policies.

To support this transition, a phased approach is essential:

- In the short term, the government should focus on building robust data infrastructure, initiating pilot projects in key sectors (such as energy, manufacturing, and transport), and training professionals in environmental-economic accounting.
- In the medium term, Green GDP frameworks should be integrated into national and state-level budget planning, with standardized methodologies for environmental valuation. Legislative support and public-private partnerships will be crucial to mainstream adoption.
- In the long term, India should fully institutionalize Green GDP in economic reporting, harmonize it with international frameworks like the UN SEEA, and promote continuous innovation in environmental accounting tools and digital platforms.

While challenges such as data scarcity, valuation complexities, and institutional resistance persist, these can be overcome by leveraging international best practices and technological advancements. A well-structured, phased Green GDP framework would enhance corporate sustainability, raise public awareness, and firmly position India as a global leader in sustainable economic development.

REFERENCES

1. Arthapedia. (2012). Green GDP. Retrieved from https://www.arthapedia.in/index.php/Green_GDP
2. Central Pollution Control Board. (2021). Annual Report 2021-22. Government of India.
3. Dasgupta, P., & Mäler, K. G. (2000). Net national product, wealth, and social well-being. *Environment and Development Economics*, 5(1), 69-93. <https://doi.org/10.1017/S1355770X00000052>
4. FICCI. (2024). Accelerating Green Economy in India. Retrieved from https://ficci.in/public/storage/events/27240/Add_docs/NkQJtoXy4duWBasTfGiaWqiKdyCnrdIb3a4b4sR.pdf
5. Government of India. (2013). Green National Accounts in India: A Framework. Ministry of Statistics and Programme Implementation. Retrieved from https://www.mospi.gov.in/sites/default/files/publication_reports/Green_National_Accounts_in_India_1may13.pdf
6. International Renewable Energy Agency. (2023). Renewable Energy Investment in India: Trends and Opportunities.
7. Kumar, P., & Managi, S. (2009). Compensation for environmental services and intergovernmental fiscal transfers: The case of India. *Ecological Economics*, 68(12), 3052-3059. <https://doi.org/10.1016/j.ecolecon.2009.07.009>
8. Mani, M. (2013). Greening India's Growth: Costs, Valuations, and Trade-offs. World Bank. <https://doi.org/10.1596/978-0-8213-9780-1>
9. Ministry of Statistics and Programme Implementation. (2013). Green National Accounts in India: A Framework. Government of India.
10. SEBI. (2021). Business Responsibility and Sustainability Reporting by Listed Entities. Securities and Exchange Board of India. <https://www.sebi.gov.in>
11. United Nations. (2012). *System of Environmental-Economic Accounting 2012: Central Framework*. <https://unstats.un.org/unsd/envaccounting/seeaRev/>
12. Vajiram & Ravi. (2024). Green GDP: Meaning, Features, Principles, Significance, Challenges. Retrieved from <https://vajiramandravi.com/quest-upsc-notes/green-gdp/>
13. World Bank. (2013). Greening India's Growth: Costs, Valuations, and Trade-offs. <https://doi.org/10.1596/978-0-8213-9780-1>
14. World Bank. (2013). India: Green Growth is Necessary and Affordable for India, Says New World Bank Report. Retrieved from <https://www.worldbank.org/en/news/press-release/2013/07/17/india-green-growth-necessary-and-affordable-for-india-says-new-world-bank-report>
15. Zhang, Y., & Wen, Z. (2008). Review and challenges of policies of environmental accounting in China. *Environmental Science & Policy*, 11(6), 610-616. <https://doi.org/10.1016/j.envsci.2008.05.001>