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Environmental Economics and Policy

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Abstract
Environmental Economics and Policy explore the economic principles and policy frameworks that guide sustainable environmental management and long-term economic development. This field focuses on understanding the economic values of ecosystem and it highlights their critical role in supporting human wellbeing and long-term economic stability. The paper examines the concept of green growth and sustainable investments as key strategies for achieving development while minimizing environmental degradation. It also discusses major environmental economic policies and decisions that the Government of India has taken. Policies such as carbon market initiatives, renewable energy promotion schemes and environmental taxation. Overall, the paper provides a comprehensive perspective on how economic tools and government policies can work together to achieve environmental sustainability, climate resilience and inclusive economic development in the Indian context.

Keywords: Environment; Economics; India; Policy

Introduction
This research adopts a descriptive research design to examine key issues related to Environmental Economics and Policy. The study focuses on understanding how environmental protection and sustainable development can be achieved through policy mechanisms. Since the objective is to analyze existing knowledge, trends, and policy frameworks, the study does not involve any field-based surveys, experiments, or census activities. Instead, it relies on already available information to interpret the economic value of ecosystem services, green growth strategies, carbon pricing mechanisms, and environmental governance systems. This design is suitable for gaining a comprehensive theoretical and policy-oriented understanding of environmental economics without engaging in primary data collection.

Materials and Methods
Sources of Data and Data Collection Method
The study is entirely based on secondary data, as no real ground-based survey or census has been conducted for this research paper. Nearly all information has been collected from reliable secondary sources (But there are few information/data which is taken from third party websites, etc.). These include reports from international organizations (such as UNEP, World Bank, etc.), government policy documents, textbooks, etc. Website-based information has been carefully selected to ensure accuracy. Secondary data related to the economic value of ecosystem services was used to understand how natural resources contribute to economic well-being. Information on green growth and sustainable investment was gathered from policy reports.

Data Analysis and Interpretation
The collected secondary data was analyzed using a qualitative content analysis method. This involved systematic reading, comparison, and interpretation of policy documents. The study examines how ecosystem services are valued economically, how green investments support sustainable development, and how carbon pricing tools help reduce emissions. Policy frameworks were compared to understand the effectiveness of governance mechanisms in environmental management. The analysis emphasizes identifying patterns, policy outcomes, and economic implications. Findings are interpreted in a logical manner, linking economic theory with environmental policy practice. This method ensures clarity, consistency, and relevance while addressing the research objectives.

Results
Economic Value of Ecosystem Services
The results indicate that ecosystem services play a crucial role in supporting economic activities and human well-being. Secondary data from environmental valuation studies show that natural ecosystems such as forests,

wetlands, and coastal systems provide essential services including water purification, soil fertility, and biodiversity conservation. These services, although often not priced in traditional markets, contribute significantly to economic stability.

Green Growth and Sustainable Investment

The findings related to green growth demonstrate that economic development and environmental protection are not mutually exclusive. As India accelerates its transition towards a sustainable future, its renewable energy (RE) sector has witnessed unprecedented growth. In 2024, the country made significant strides in solar and wind energy installations, policy advancements, and infrastructural improvements, setting the stage for ambitious targets in 2025. With a commitment to achieving 500 GW of non-fossil fuel-based energy capacity by 2030, India is emerging as a global leader in clean energy. As on 20th Jan 2025, India's total non-fossil fuel-based energy capacity has reached 217.62 GW.

During 2024–25, India's total electricity generation reached 1824.12 billion Units (BU), marking a substantial increase of 65.02% from 1105.38 BU of 2014–15. A key driver of this growth has been the rising share of renewable energy in the electricity generation which generated 403.64 BU, accounting for 22.13% of the total electricity generated in the country.

Carbon Pricing and Emissions Trading

Carbon pricing is a policy tool that puts a financial cost on greenhouse gas emissions, primarily carbon dioxide, to incentivize reductions in pollution and promote a shift towards cleaner energy sources. It works by making emitters pay for the environmental damage caused by their pollution, encouraging them to reduce emissions.

Country	ETS type	Coverage Sectors	Operational Status
India	Rate-based	G industrial sectors	Regulatory stage
China	Rate-based	Power, cement, steel, aluminum	Operational
Brazil	Cap-based	All sectors except agriculture	Law passed in Dec 2024
Indonesia	Rated-based	Coal/gas power plants	Operational

Carbon pricing mobilized over $100 billion for public budgets in 2024

The analysis of carbon pricing mechanisms shows that instruments such as carbon taxes and emissions trading systems contribute to reducing greenhouse gas emissions.

Environmental Policy and Governance

The results emphasize the importance of strong environmental policy and governance structures. Countries with clear environmental regulations, institutional accountability, and stakeholder participation demonstrate better environmental performance. The findings suggest that effective governance enhances policy implementation, ensures compliance, and supports sustainable resource management. Also, it shows that economic development and environmental protection are not mutually exclusive.

Discussion

Energy is the heartbeat of our planet, intricately linked to the climate challenge we face today. The rapid growth of the global population and advances in civilization have resulted in an exponential growth in energy demand. Despite the well-known environmental and health risks posed by fossil fuels, our dependence on them persists. To address the growing energy demand and mitigate climate change risks, transitioning from fossil fuels to renewable energy is crucial. To accomplish this objective, India's power sector is also undergoing a transformative journey, brimming with enthusiasm for tapping into Renewable Energy from diverse renewable sources. As on 31st March 2025, India's total installed power generation capacity reached to 475.21 GW, reflecting a substantial increase of 72.18% from 275.GG GW of 2014–15. A major highlight of this transformation has been the rapid expansion of installed capacity under renewable energy sources, which recorded a growth of 170.6G% over the decade.

Laws and programme

Pradhan Mantri Kisan Urja Suraksha s Uthhaan Mahabhiyan (PM-KUSUM)

Launched in 201G, PM-KUSUM aims to solarize the agriculture sector, a major energy-consuming segment in rural India. As of August 2023, about 2.46 lakh farmers had benefitted from the scheme. Total subsidy spends jumped to ₹2,680 crore.

National Bio-energy Programme

• Under the MNRE, the National Bio-energy Programme promotes biomass, biogas and waste-to-energy solutions. While detailed recent public data for this specific programme are less accessible.

Environment Protection Act, 1686
An Act to provide for the protection and improvement of environment and for matters connected to it.
Energy Conservation Act (2001)
Efficient use and conservation of energy in India. Created the Bureau of Energy Efficiency (BEE) at the center and at state levels.

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HK conceived the concept, wrote and approved the manuscript.

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