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Advancing Green Growth: Analysing India's Sustainable Development and Environmental Policy Frameworks

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Abstract: India faces the dual challenge of sustaining economic growth while ensuring environmental sustainability. This paper delves into the intricate interplay between India's sustainable development goals and its environmental policies. The paper assesses the effectiveness of sustainable development programs. Challenges such as regulatory enforcement, financial constraints, and the need for technological innovation are also discussed. The research underscores the importance of integrating traditional knowledge with modern practices to achieve a holistic approach to sustainability. Through a comprehensive analysis of policies and their outcomes, this paper provides insights into the successes and areas for improvement in India's journey towards sustainable development. The findings aim to inform policymakers, stakeholders, and researchers about the critical pathways for harmonizing development objectives with environmental stewardship in the context of a developing economy.

Keywords: Sustaining economy, environmental sustainability, sustainable development, policies, holistic approach

1. INTRODUCTION

India's commitment to environmental protection and sustainable development, has gained significant attention, especially following the Stockholm conference, a milestone event. In fact, India, under the leadership of Prime Minister Indira Gandhi, stood out as the pioneering nation in articulating a comprehensive framework for survival in the 21st century – widely recognized as the minimum requirements for progress. Prime Minister Modi, continuing this charge, passionately conveyed these objectives in a momentous speech, which later became the blueprint for action. This speech not only steered India towards sustainable development but also played a pivotal role in shaping global environmental discourse in recent years. Consequently, Prime Minister Modi seamlessly integrated these objectives into India's national policies, further reinforcing the nation's dedication to environmental preservation and sustainable progress. According to these views, the goals of economic and development have to be determined in terms of sustainability in the long run. The concept of sustainable development has its roots in the concept of sustainable yield, which says that replacement should not be less than the current stock. The 20th century has seen environmental damage at the cost of development with the fallacy of assuming that there can be a trade-off between ecology and economic development. This was indeed a false trade-off as damage to the environment has caused irreversible losses. For instance, lost species are lost forever. So, there cannot be a compromise either on the quality of the environment or the availability of resources for future generations.

2. BACKGROUND

With a history of colonial development and over fifty years of continuous planned development since the 1950s, India has employed diverse development strategies to foster economic growth. The nation has made significant progress in both social and economic spheres and is now on a trajectory toward higher growth. However, poverty remains a persistent issue within India's development discourse. Disparities in education, healthcare, child survival rates, access to clean water, and sanitation further exacerbate poverty levels. Another critical aspect of poverty is social exclusion, where individuals experience a sense of powerlessness, vulnerability, and lack of representation. These high poverty levels and associated deprivations have been a key driver behind India's development planning efforts. Over time, India's development strategies have evolved. Initially, economic planning prioritized heavy industrial growth, expecting that its benefits would trickle down to other sectors. However, this approach did not yield the desired outcomes, leading successive five-year plans to adopt new

strategies aimed at poverty alleviation and reducing regional disparities. During the 1980s and 1990s, India introduced economic reforms across various sectors, including industry, trade, and finance, shifting towards a market-driven approach for efficient resource allocation. Given these varied developmental experiences over the past five decades, planning and poverty alleviation remain central themes in India's economic development discourse

3. OBJECTIVES

The primary objective is to analyze India's energy policies and their impact on climate change mitigation. India's Intended Nationally Determined Contribution (INDC) framework has provided a basis for evaluating the effectiveness of government initiatives in achieving renewable energy and climate targets. As part of its INDC commitments, India has pledged to reduce the emissions intensity of its GDP by 33-35% by 2030 (compared to 2005 levels) and increase non-fossil fuel-based energy to 40% of its total installed power capacity. Government policies play a crucial role in determining whether India follows a carbon-intensive growth trajectory or shifts towards a more sustainable and resilient development model. This study assesses the alignment between India's energy policies and its climate goals, examining whether policy measures across different sectors are effectively steering the country toward its INDC targets. By conducting a comprehensive evaluation across various government sectors, this research provides valuable insights for policymakers on the effectiveness and coherence of India's climate strategies.

4. SCOPE OF ANALYSIS

This analysis focuses on Sustainable Development Goals (SDGs) and environmental policies in India. The country has made significant strides in environmental conservation and policy implementation. Historically, India has played a dual role in global environmental politics—initially as a critic of global environmentalism and later as an active participant in international environmental negotiations. Given the Indian government's strong support for the SDGs, it is crucial to examine how these global objectives align with existing environmental policies. India's environmental policies have primarily aimed at integrating environmental considerations into various sectoral policies. This alignment is critical, as the government assumes that the SDGs will not conflict with the nation's overarching goal of economic development. If contradictions arise between SDG commitments and existing policies, there is a greater likelihood that the government may hesitate to fully incorporate these goals into national laws and policies. Therefore, evaluating the relationship between SDGs, environmental goals, and their tangible impacts will provide valuable insights into how global commitments can be effectively incorporated into India's policy framework

5. SUSTAINABLE DEVELOPMENT GOALS (SDGS)

For India, achieving sustainable and inclusive development aligns with its broader worldview, as envisioned by Mahatma Gandhi. The country is committed to implementing the SDG agenda in accordance with its national policies, priorities, and institutional frameworks. India follows a holistic approach that ensures inclusivity and strives to "leave no one behind." This commitment is reflected in India's collaborative efforts with other nations, regional and international organizations, and UN agencies to foster a new era of global partnership for sustainable development. India also strongly supports the adaptation of implementation strategies to suit each country's unique needs and policy frameworks. The nation has actively worked to align its domestic policies and programs with international agreements. New policies and initiatives have been introduced with measurable indicators to assess the level of alignment between national actions and the SDG principle of inclusivity. Additionally, steps have been taken to strengthen collaboration between the government and non-governmental entities to enhance knowledge sharing and practical implementation.

6. OVERVIEW OF SDGS

The 2030 Agenda for Sustainable Development presents the Sustainable Development Goals (SDGs) as a global initiative to eradicate poverty, safeguard the environment, and promote peace and prosperity for all. India is dedicated to achieving all 17 SDGs and their 169 targets within the stipulated timeframe. As one of the 194 signatory nations, India has embraced this ambitious agenda and is committed to its implementation. A national-level action plan for SDGs is being developed, taking into account the country's current development status and past experiences. This approach is inclusive, ensuring that every citizen is involved, in line with the principle of "leaving no one behind."

The implementation of SDGs aligns with India's vision of "Sabka Saath, Sabka Vikas, Sabka Vishwas," focusing on collective growth and trust. These goals serve as a guiding framework to enhance the well-being of the population. Achieving the SDGs is closely linked to India's national priorities, including poverty eradication, reducing inequalities, and addressing regional disparities. India's development programs are aligned with these global objectives. The SDGs represent an international commitment to tackling global challenges stemming from globalization, addressing critical issues such as social inclusion, environmental sustainability, and regional imbalances.

Importance of SDGs for India

The SDGs adopt a systems-thinking approach that considers the complexity of development challenges, making them highly relevant for India. The interconnected nature of these goals provides a structured policy framework to overcome developmental barriers that have constrained the country's progress. The SDGs align with India's long-standing emphasis on holistic human well-being. From ancient values of respect and "sarvodaya" (welfare of all) to modern interpretations like "antyodaya" (upliftment of the most disadvantaged), India has always strived for inclusive development.

The Indian Constitution, formulated after independence, includes directive principles that, if effectively implemented, align with the SDG goal of "leaving no one behind." These principles emphasize social inclusion, rural livelihood promotion, and equal treatment under the law. India has already adopted a rights-based development approach through initiatives like the National Rural Employment Guarantee Scheme (NREGS). The SDGs provide India with an opportunity to showcase its leadership in sustainable development and demonstrate its successful path of economic growth and poverty reduction.

Progress and Challenges in Achieving SDGs

By the end of 2017, the Indian government had yet to establish specific indicators or concrete plans to measure progress toward the Sustainable Development Goals (SDGs). However, in a keynote address by Shri A. Marthanda Pillai, it was highlighted that even before the formal adoption of these goals, India had already implemented various provisions to align with them. These efforts included initiatives to enhance food security and nutrition for pregnant women and children,

universalizing the Integrated Child Development Services (ICDS) to improve preschool children's health, nutrition, and education, and promoting women's empowerment. Between 2005-06 and 2015-16, India witnessed improvements such as a reduction in child malnutrition and anemia among women and children, along with a rise in institutional deliveries. While these indicators indirectly reflect progress toward SDG targets, maintaining these achievements remains a challenge. The outcomes of these initiatives still need thorough assessment to track long-term progress. The SDGs offer an opportunity to build upon these efforts and enhance development outcomes.

Conversely, data from the National Family Health Survey (NFHS-4) 2015-16 indicates stagnation or regression in some health and education indicators. For instance, there has been an increase in cases of overweight children and Type 2 Diabetes (SDG 2), while children's learning levels have remained stagnant or even declined in certain areas. These disparities arise due to India's diverse socio-economic landscape, where states vary in their levels of development and demographic composition. Progress has been slow and uneven, with economic inequalities leading to better outcomes primarily for middle- and high-income groups, often at the expense of poorer communities.

7. ENVIRONMENTAL POLICIES IN INDIA

India's environmental policies have been characterized by well-defined goals but inconsistent implementation. The country's primary environmental concerns include issues that directly impact infrastructure and modern life, such as water pollution, lack of access to clean drinking water, air pollution, and land degradation. India is the largest consumer of fuelwood, agricultural waste, and biomass for energy, with traditional fuels like coal and biomass still widely used in both rural and urban households. While improved biomass-burning stoves have been developed to reduce smoke emissions, the excessive reliance on biomass contributes to approximately 80% of deforestation in the country. To address water-related issues, the Central Pollution Control Board (CPCB) introduced the National Water Policy in 2002, outlining the government's objectives for water resource management. However, the policy lacks concrete implementation strategies and is currently under review for updates. Despite its shortcomings, efforts are underway to develop action plans to meet the policy's goals.

8. KEY ENVIRONMENTAL POLICIES

Environmental policies in India aim to regulate human interactions with nature and establish public expectations to minimize ecological damage. Initially, environmental laws were focused on pollution control and protecting natural resources, such as air, water, and land. Over time, the scope expanded to cover forest conservation, wildlife protection, and ecosystem preservation. However, economic liberalization, while fostering economic growth, has negatively impacted environmental sustainability by accelerating resource extraction, increasing pollution levels, and causing biodiversity loss.

- The NEP identified several critical environmental challenges requiring immediate action:
- Governance reforms to integrate environmental considerations into policymaking.
- Managing fragile ecosystems, addressing issues like deforestation, mining, and their effects on rural communities.
- Urban and industrial pollution, which has significantly impacted public health and quality of life.

The policy proposes medium- to long-term strategies to address these concerns. While progress has been made in incorporating environmental issues into governance, challenges persist, particularly in policy implementation, inter-ministerial coordination, and awareness about environmental sustainability. A major obstacle is the economic trade-offs between development and environmental conservation. Moving forward, the NEP emphasizes the need to align economic objectives with sustainable environmental management, develop strategies to value and conserve natural resources, and ensure India's long-term ecological security.

9. IMPLEMENTATION AND IMPACT OF ENVIRONMENTAL POLICIES

In the same year, the government enacted the Water (Prevention and Control of Pollution) Act, which aims to prevent and control water pollution while maintaining water quality. The Act was strengthened through amendments in 1988, introducing stricter provisions and establishing Central and State Pollution Control Boards, granting them powers similar to those under the Environmental Protection Act. These boards coordinate efforts to develop and implement strategies to control pollution. The Air (Prevention and Control of Pollution) Act, introduced in 1981, focuses on air pollution prevention, control, and mitigation. It was amended in 1987 to include measures for ozone layer protection. One of the most significant environmental laws, the Environmental Protection Act of 1986, provides a framework for pollution control and enforcement. This legislation led to the creation of Central and State Pollution Control Boards, which are responsible for drafting regulations, advising the government, and imposing penalties for non-compliance.

Role of Stakeholders in Environmental Policy-Making: The success or failure of environmental policies in India largely depends on how well stakeholders are integrated into the decision-making process. Initially, environmental policies were heavily influenced by environmentalists, resulting in strict but poorly enforced laws. Industries were not actively involved in policy formulation, leading to widespread non-compliance, as enforcement agencies lacked the capacity to monitor and implement regulations effectively. For instance, the polluter pays principle and the Water and Air Acts were largely ignored by industries because they recognized the government's limited enforcement abilities. Similarly, when hazardous waste regulations were introduced in the 1980s, many stakeholders were unaware of their existence due to inadequate communication from the government. In fact, even representatives from the Central Pollution Control Board (CPCB) only became aware of these regulations in the 1990s. Stakeholders play a crucial role in ensuring environmental policies succeed, as their compliance is essential for implementation. Industries, in particular, often resist stringent policies that may increase operational costs. As a result, they employ various strategies to influence policymakers and dilute regulations. The significant role of industries in environmental degradation highlights the need for a more inclusive policy-making approach, ensuring that all stakeholders—industries, environmentalists, and the public—are actively engaged in the process.

Future Directions and Recommendations: To improve environmental policies in India, it is crucial to learn from past mistakes and adopt a more inclusive and participatory approach. Greater public awareness and involvement in policy-making and implementation will help hold industries and the government accountable. A more transparent judicial system that encourages public interest litigation can also play a vital role in enforcing environmental laws. Periodic policy reviews and modifications are essential to ensure their effectiveness. Additionally, promoting eco-friendly technologies through incentives and subsidies can drive sustainable development. Incorporating environmental education at all levels of the education system will also help instill a sense of responsibility toward environmental conservation.

Prioritizing environmental protection alongside development is crucial for India's long-term sustainability. Neglecting environmental concerns today will lead to greater costs and irreversible damage in the future. By

adopting preventive measures, India can minimize long-term development costs while maintaining a clean and healthy environment

Analysis: India has made significant efforts to address sustainable development challenges through various policies and strategies. Key areas of focus include poverty eradication, environmental protection, resource conservation, and promoting equitable economic development. However, while developed nations have played a significant role in contributing to environmental problems, their solutions must align with the needs and priorities of developing nations to be truly effective. One major concern is ensuring that the benefits of development reach the intended marginalized populations rather than disproportionately favoring wealthier urban groups. To achieve this, India must carefully balance environmental conservation and sustainable development, while strategically leveraging international resources and collaborations to address these challenges.

Assessment of India's Sustainable Development Goals and Environmental Policies: To evaluate India's progress on the Sustainable Development Goals (SDGs), it is essential to examine its environmental policies and sustainability efforts. India has demonstrated a strong commitment to climate change mitigation, particularly in the energy sector. Notably, the government has set ambitious goals to increase renewable energy capacity to 40% of total energy production, targeting 175GW of renewable energy. This aligns with the sustainable energy goal and has positive implications for climate action. However, there is a need for stronger environmental considerations across all policy areas, particularly in infrastructure development. Large-scale urbanization and infrastructure expansion place immense pressure on natural resources and land, leading to environmental degradation. If not managed sustainably, India's goal of doubling infrastructure development could pose a significant threat to its environment. To mitigate these risks, policies must be revised to integrate sustainability into infrastructure and urban development. A shift in funding priorities towards rural development—where environmental impacts are less severe—could also help balance development needs with ecological conservation.

10. CONCLUSION

Understanding the distinction between positive and negative environmental and health changes is crucial, especially considering the long-term and often subtle effects of environmental degradation on human health. Research indicates that even minor environmental changes—such as pollution of water sources—can have severe and costly health consequences. These costs can only be avoided if environmental factors are integrated into the development process rather than addressed through corrective measures later. The poor are the most vulnerable to environmental changes, as their livelihoods often depend on natural resources, and they lack the financial capacity to relocate to healthier living or working environments. Given this, India must prioritize achieving the health-related targets of the Sustainable Development Goals (SDGs). One example of an environmental factor with significant health implications is the prevalence of Severe Acute Respiratory Infections (SARI) in India. Data analysis has shown that using cleaner household cooking fuels significantly reduces the risk of SARI. This supports efforts to reduce both indoor and outdoor air pollution, aligning with the broader goal of improving public health. To achieve sustainable development and a healthy environment, it is essential to address poverty-related challenges alongside environmental concerns. A comprehensive evaluation of India's environmental policies and progress toward SDGs focused on three key interrelated themes: Health (Pollution Reduction) Water Quality and Availability Poverty Alleviation These issues are deeply interconnected, meaning that progress in one area can have a cascading effect on others. By analyzing India's current environmental situation and reviewing relevant case studies, it becomes clear that integrated and strategic measures are necessary to ensure sustainable progress toward achieving these goals.

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