



Examining India's environmental policies and their effectiveness in addressing climate change, with an emphasis on balancing economic development with environmental sustainability

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Abstract:-

India's rapid economic development, coupled with the challenges posed by climate change, has led to changes in its environmental policies. As one of the world's fastest-growing economies, India is at a crossroads in balancing economic growth with environmental sustainability, while also leading the way in efforts to combat climate change. This document evaluates the effectiveness of India's environmental policies in addressing climate change, with emphasis on key initiatives such as the National Action Plan on Climate Change (NAPCC), renewable energy strategies, urbanization policies, and sustainable agriculture practices.

In it, the success and failures of these measures are analyzed along with India's successes in developing its renewable energy potential, most notably through the country's National Solar Mission. The book also covers the intricacies of urbanization, highlighting the Smart Cities Mission and its relevance to sustainable cities. Additionally, the article discusses how industrial progress is linked to emissions, how long-standing agricultural practices have affected land use, and the challenges of transitioning to a low-carbon economy while maintaining energy supply for the impoverished.

The paper notes that India's environmental goals are still incomplete due to several obstacles, such as inadequate policy implementation, weak regulatory enforcement, and limited public understanding. It also studies the role of international cooperation, in particular commitments of India under the Paris Agreement, and how these global frameworks affect domestic environmental policies. This paper provides a comprehensive overview of India's environmental policies and their impact on the global sustainable development conversation, providing insights into how India can continue to move towards achieving economic prosperity while also upholding environmental sustainability.

Keywords:- Environmental policies, Climate change, Economic development, Sustainability, India, Renewable energy

I. Introduction:-

The widespread use of social media platforms has caused a significant shift in political discourse and electoral dynamics in India. The use of social media platforms like Facebook, Twitter and WhatsApp has transformed into a powerful tool for mobilizing people to vote and influence elections. In relation to the general elections of 2014 and 2019, this research paper examines the diverse effects of social media on India's democratic processes. It examines how political parties and candidates have used social media to craft narratives, communicate with voters, and disseminate information both true and false. The paper presents case studies of the 2014 and 2019 elections, exploring how social media has transformed traditional political campaigning into a more direct, personalized, and ubiquitous form. Additionally, the discussion centers on how social media influences the establishment of political agendas and their influence on electorate polarization.

The study emphasizes the dual-dimensional nature of social media's impact, as its democratization and democratic advancement have resulted in widespread misinformation and fake news, which can negatively impact electoral integrity. According to this study, the impact of social media on public opinion and election results in India is significant and growing, despite some challenges.

The paper concludes by examining the overall impact of these developments on the future of Indian democracy. The statement suggests that social media will remain a significant factor in elections, but there is heightened urgency for regulatory frameworks and digital literacy initiatives to mitigate its impact. In India, social media can be a powerful tool for democratic engagement without



being deemed sabotage in elections by addressing these issues.

II. Historical Background:-

The early legislative and environmental policies of India marked the beginning of a period of progress in environmental policy. Among the crucial laws in this area is the Environmental Protection Act of 1986. It was a landmark act of India's environmental policy, passed after the Bhopal Gas Tragedy of 1984. The occurrence highlighted the urgent need for an all-encompassing plan to prevent and tackle industrial pollution and environmental risks, leading to the implementation of the Environmental Protection Act under Article 253 of the Indian Constitution. This law grants Parliament the authority to pass laws to enforce international treaties, agreements or decisions.

The Environmental Protection Act of 1986 gave the central government extensive powers to establish emissions and discharge standards, regulate industrial areas, manage hazardous waste, and safeguard the public health and the environment. It was an umbrella legislation that merged many environmental laws which had been disbanded in other statutes. Initially, the act was designed as a cohesive system for environmental protection and control, emphasizing the importance of environmental factors in developmental planning.

Until this act, India's environmental governance was fragmented and frequently reactive. Early attempts to control pollution levels in the country were made through the Water (Prevention and Control of Pollution) Act 1974 and the Air (prevention & Control, Pollution?) Act of 1981. By establishing pollution control boards at the central and state levels, these acts provided the basis for more effective environmental management. However, these early laws were often narrow and unrefined, with limited scopes for enforcement and the broad impact needed to address increasing environmental problems caused by rapid industrialization and urbanization.

Therefore, the act of 1986 marked a significant shift towards more proactive and integrated approaches to environmental management. The aim was to fill the voids left by previous laws and present a comprehensive definition of the environment, which encompassed water, air, land, and their interdependence. The holistic approach played a vital role in addressing the intricate and interrelated environmental problems of India.

The environmental debate in India has been a persistent issue since the country gained independence, with economic growth being at odds

with environmental protection. With a large and expanding population, India has had to address both the challenges of poverty alleviation and natural resource conservation through economic development. An example of this tension is the Green Revolution, which began in the 1960s and 1970s to increase agricultural productivity by using high-yielding variety seeds, chemical fertilizers and irrigation. India's transition to a food-based economy and grain independence was made possible by the Green Revolution, but it also caused environmental issues such as soil contamination, water scarcity, and biodiversity loss. The extensive use of chemical inputs polluted water bodies and impaired soil fertility, leading to environmental challenges that affect India's agricultural sustainability.

India's economic liberalization in the 1990s led to a surge in industrialization and urbanization, which intensified discussions about development versus environment. This spurred economic expansion, which expanded industries, infrastructure and urban areas at the cost of forests, wetlands and other critical ecosystems. The environmental degradation and displacement of local communities have led to controversies surrounding major infrastructure projects, such as dams, highways or mining operations. The Narmada Dam's construction triggered widespread protests that highlighted the incompatibility of development goals with environmental and social justice objectives.

Despite these challenges, India has made significant progress in its development planning by considering environmental factors. The concept of sustainable development, which prioritizes social equity and environmental protection, has become a key policy issue in recent years. In 2008, India introduced the National Action Plan on Climate Change (NAPCC), which demonstrates its resolve to tackle environmental issues while prioritizing development objectives. The NAPCC's eight national missions are focused on addressing climate change adaptation, renewable energy, energy efficiency, and sustainable agriculture.

The government has taken steps in recent years to promote green growth, including the establishment of a National Green Tribunal (NGT) in 2010 to resolve environmental disputes as specialized courts. Environmental laws have been enforced through the NGT and development projects must meet environmental standards.

The conflict between development and environmental protection in India is still a topic of debate. The task of balancing economic growth with



environmental sustainability remains formidable. As India becomes a developing nation, the inclusion of environmental factors in policy and practice is essential for its transition to achieving livable and resilient times.

Major Environmental Policies in India

The National Action Plan on Climate Change (NAPCC) was introduced in 2008 as a comprehensive strategy to tackle climate change and promote sustainable development. Eight national missions are outlined by the NAPCC, each focused on a specific area of concern:

1. The Solar Mission's primary objective is to promote the advancement and dissemination of solar energy technologies throughout the nation. The goal is to boost solar energy production to reduce the reliance on fossil fuels, which are responsible for most of the greenhouse gas emissions. Its mission is focused on increasing solar capacity through large scale grid-connected projects, rooftop solar systems and off-grid applications to help contribute to renewable energy goals in India.

2. The National Mission for Enhanced Energy Efficiency targets energy efficiency in industry, transportation, and buildings. It encompasses programs such as the Perform, Achieve, and Trade (PAT) initiative, which aim energy-saving targets for sectors with high energy demands. Mission aims to reduce energy consumption and emissions, while also improving cost-effectiveness and competitiveness through increased energy efficiency.

3. It's time to move on. The Sustainable Habitat Mission is a national effort to promote sustainable transportation, urban planning, and building energy efficiency. By utilizing green building technologies, efficient waste management, and public transportation systems it seeks to create more sustainable and habitable cities. The mission aims to address the challenges of urbanization and climate change-related infrastructure development.

4. The management of water scarcity in India is a crucial concern highlighted by the "National Water Mission". The Water Missions goals are to enhance water efficiency, conserve resources, and ensure equal allocation of water. The focus is on managing surface and groundwater resources, collecting rainwater, and developing water-efficient technologies. Maintaining the health of rivers and other water bodies is also a key focus of the mission's objectives.

5. The following is a sample. The Himalayan ecosystem is a crucial part of India's environmental sustainability, providing water and biodiversity

support. This mission seeks to preserve the endangered Himalayan environment, protect its biodiversity, and address the effects of climate change on glaciers and mountain communities. Its objective is to encourage sustainable tourism and livelihoods in the region."

6. The Green India Mission is a national campaign to reduce India's forest cover and restore ecosystems that have been destroyed. It centers on the management of afforestation and biodiversity. Mission aims to increase the capacity of India's forests to sequester carbon, helping to mitigate climate change and supporting livelihoods that depend on forest resources.

7. The National Mission for Sustainable Agriculture highlights that agriculture is a vital sector in India's economy and one of the most susceptible to climate change. Sustainable Agriculture Mission promotes climate-friendly farming, including drought-resistant crop varieties, efficient water management, and better soil health. Mission: To improve food security and help farmers adapt to changes in the climate.

8. The National Mission on Strategic Knowledge for Climate Change is focused on advancing climate change research, gathering data, and disseminating relevant knowledge. Its objective is to establish a robust scientific and institutional framework for climate action. It also stresses public education on the issue of climate change and its implications for society.

Recent policies and initiatives have been evaluated in India to further its environmental goals, including the NCEF, which is funded by a carbon tax on coal for clean energy projects. Among the fund's primary purposes are to finance renewable energy projects, promote research and development in clean energy technologies, and support environmental protection initiatives. In 2014, the Clean India Mission was launched to promote better sanitation and waste management in the country. Open defecation, solid waste management, and public awareness of cleanliness and hygiene are the main objectives of the mission. The outcomes of sanitation infrastructure and public health have been significantly improved. In 2013, the NEMMP was introduced to promote the use of electric vehicles (EVs) in India. The aim is to decrease reliance on fossil fuels, lower greenhouse gas emissions, and improve urban air quality. It includes incentives for electric vehicle manufacturers and consumers, as well as investments in infrastructure and battery technology. India has been a significant player in global environmental agreements, and by the Paris Agreement (2015), it has committed to decreasing



its GDP emissions intensity by 33-35% by 2030. India has committed to increasing its renewable energy capacity to 175 GW by 2022, with a particular emphasis on solar power.

Incorporating climate action and development needs, the Intended Nationally Determined Contributions (INDCs) prioritize renewable energy production, energy efficiency, and sustainable land use. In 2016, India ratified the Kigali Amendment to the Montreal Protocol, which committed to reduce the use of hydrofluorocarbons (HFCs) in refrigeration and air conditioning. India's commitment to climate goals is in line with global efforts to reduce rising temperatures. India's involvement in these international accords demonstrates its commitment to sustainable development and the global environment. Both national and international policies are geared towards balancing environmental protection with economic development. India's progress towards a sustainable and resilient future depends on the inclusion of environmental sustainability in policy.

Analysis of Policy Effectiveness in India

The impact of India's environmental policies on progress in Renewable Energy, Afforestation, and Energy Efficiency has been significant. The renewable energy sector has been a noteworthy achievement. The National Solar Mission's ambitious goals have resulted in a significant increase in solar energy capacity, as part of the National Action Plan on Climate Change (NAPCC). By 2024, India had reached a milestone in terms of renewable energy capacity to reach 175 GW, with solar energy making significant contributions. By embracing renewable energy, India has become a global leader in addressing climate change and decreasing its dependence on fossil fuels. Apart from renewable energy, India's forestation programs have been highly productive. The NAPCC's Green India Mission is focused on enhancing forest cover and restoring degrading ecosystems. The planting of millions of trees during this mission has resulted in carbon sequestration, biodiversity conservation, and improved rural livelihoods. These programs have been successful due to the government's involvement in afforestation activities, which has helped to foster a sense of responsibility and ownership towards environmental conservation. The National Mission for Enhanced Energy Efficiency has enabled India to achieve greater energy efficiency through the implementation of the Perform, Achieve, and Trade (PAT) scheme. The PAT scheme has established energy-efficient targets for industries with high

energy demands, promoting the adoption of more efficient technologies and practices. Participating industries have experienced cost reductions, energy efficiency, and reduced greenhouse gas emissions due to the program. In a developing economy like India, the PAT scheme has demonstrated that energy efficiency can be improved by using market-based mechanisms. India's environmental policies are hindered by several obstacles, including inadequate implementation, federal disputes, and financial burdens. The implementation gap is a major concern. In India, comprehensive environmental laws and policies are implemented but often do not achieve them due to a lack of institutional capacity, resources, or corruption. This is particularly apparent in the areas of pollution control, land use regulation and waste management where regulatory frameworks exist but are not implemented properly. Another significant issue is the conflict between central and state governments regarding environmental management. In India, the federal system affords state governments significant autonomy in areas such as land use, natural resources, and industrial development. Central policies and state priorities often clash, particularly when state governments prioritize economic development over environmental protection. The initiation of major infrastructure projects, such as dams and mining operations, by state governments has often violated central environmental regulations, leading to environmental degradation and social turmoil. The economic costs of strict environmental laws are also a concern. Policies that prioritize pollution reduction, resource conservation, and sustainable practices can lead to costly consequences for businesses, particularly SMEs. Costs may involve observing environmental regulations, investing in advanced technologies, and being penalized for non-compliance. Environmental regulations in India, a developing country with significant economic growth and job creation prospects can create obstacles for industries and conflict between environmental and economic goals. India has developed a Balancing Act: Economic Growth and Environmental Sustainability program that incorporates environmental considerations into development planning, which is notable for its innovative initiatives to achieve this goal. In 2015, the Smart Cities Mission was launched as an example. The mission is focused on transforming the nation into 100 smart cities, emphasizing sustainable urban design, green infrastructure and energy efficiency. The Smart Cities Mission aims to promote sustainable urban areas by implementing energy efficiency, public



transportation efficiency and effective waste management systems. The promotion of sustainable employment through programs like the National Electric Mobility Mission Plan and the renewable energy sector is India's balancing act. New jobs in manufacturing, installation, maintenance, and research and development have been created due to the popularity of electric vehicles (EVs) and the growth of renewable energy. These green jobs not only support economic growth but also help India move towards a low-carbon economy, helping it meet its climate commitments under international treaties such as the Paris Agreement. The task of balancing economic growth with environmental sustainability is an ongoing and challenging endeavor. Through programs like the NAPCC, the Smart Cities Mission, and green job creation initiatives, government is demonstrating a commitment to incorporating environmental concerns into economic planning. The ongoing issues of implementation, federal disagreements, and economic expenses highlight the challenges of achieving this balance in a rapidly developing nation. Despite India's efforts to expand renewable energy, encourage deforestation, and enhance energy efficiency, the effectiveness of its environmental policies remains problematic due to gaps in implementation, federal disputes, or high costs associated with regulation. The country's efforts to achieve a sustainable future for all will require innovation, stricter enforcement, and greater cooperation between central and state governments.

III. Conclusion

India's environmental policy initiatives reveal the complex balance between economic development and environmental sustainability. From the Water Act of 1974 and the Air Act (1981) to the comprehensive Environmental Protection Act implemented in 1986, India has increasingly recognized the importance of addressing environmental concerns in its developmental policies.

India's strategic strategy is anchored by the National Action Plan on Climate Change (NAPCC), which comprises eight missions that focus on climate mitigation and adaptation. These missions, which include promoting solar energy, improving energy efficiency, and protecting the Himalayan ecosystem and agriculture, demonstrate India's comprehensive approach to climate action. Also, the National Clean Energy Fund, Swachh Bharat Mission and the national Electric Mobility Mission Plan are recent initiatives that highlight India's

commitment to "enhance energy efficiency, sanitation and promote sustainable mobility."

Although India's environmental policies are effective, they pose significant challenges. Lack of institutional capacity, resources and corruption continue to be critical gaps in the implementation of environmental regulations. Moreover, the federal system in India often results in conflicts between central and state governments, particularly when economic growth takes precedence over environmental protection at the state level. The high cost of complying with environmental regulations is a significant issue, as businesses, particularly small and medium-sized ones, must bear the financial burden of transitioning to cleaner technologies.

However, India has also made significant strides in renewable energy growth, deforestation and energy conservation. The swift expansion of solar power, the extensive afforestation initiatives under the Green India Mission, and the energy efficiency achieved through the Perform, Achieve, And Trade (PAT) program demonstrate that well-planned environmental policies can result in significant progress. Additionally, the Smart Cities Mission and promoting green jobs are prime examples of India's efforts to balance economic expansion with environmental conservation, resulting in highly dynamic and ecologically sound urban areas.

India's environmental policies are looking optimistic, but the future looks bright in terms of both global climate and domestic economic prospects. The Paris Agreement and the Kigali Amendment, among other international agreements, demonstrate India's proactive approach to addressing global climate issues. The country's Intended Nationally Determined Contributions (INDCs) are a combination of efforts to reduce emissions intensity and achieve ambitious renewable energy targets and sustainable development goals.

The economic trajectory of India, marked by rapid industrialization, urbanization and population growth, is causing pressure on natural resources and ecosystems. Nonetheless, the growing interest in sustainable development offers chances to balance economic expansion with environmental protection. Green growth can be attributed to the expansion of renewable energy infrastructure, advancements in energy-efficient technologies, and the green economy. The inclusion of climate resilience in infrastructure and urban planning is essential for curbing the effects of global warming. Technological innovation and digital transformation are the key drivers of India's environmental policies. Energy



security can be enhanced and greenhouse gas emissions can lower due to advancements in renewable energy technologies, smart grid systems, and electric mobility. Moreover, the application of data analytics and artificial intelligence can improve environmental monitoring, enforcement, and policy-making by filling in existing implementation gaps.

However, achieving this positive outcome will demand sustained political determination, better institutional capacity, and robust cooperation between central and state administrations. The current challenges will need to be tackled by strengthening regulatory frameworks, increasing green technology investment, and encouraging public-private partnerships. Furthermore, promoting inclusive approaches to environmental decision-making and empowerment of local populations can result in the implementation and social justice of policies.

Ultimately, India's environmental policies have made significant progress towards addressing both economic development and environmental sustainability. The country's sustainable development goals cannot be achieved without addressing the ongoing challenges of policy implementation, federal disputes, and economic costs, despite significant progress in renewable energy, forest fires, water conservation, etc. India is poised for a sustainable and resilient future, which is achievable through continued innovation, more stringent enforcement measures, and accelerated integration of environmental sustainability into its economic structure.

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