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Sustainable Development and Environmental Governance in India

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Abstract

India's development must address poverty, urbanisation, industrial growth, energy security, ecological degradation and climate risks simultaneously. This article analyses the evolution, structure and challenges of sustainable development and environmental governance in India through constitutional provisions, environmental laws, judicial decisions, government reports, the Sustainable Development Goals and national climate commitments. India has developed a substantial regulatory framework through pollution-control legislation, biodiversity and wildlife laws, environmental-clearance procedures and the National Green Tribunal. Its composite SDG score increased from 57 in 2018 to 71 in 2023–24. India's climate commitments for 2031–35 include reducing GDP emissions intensity by 47 per cent from 2005 levels, achieving approximately 60 per cent installed electricity capacity from non-fossil sources and creating a carbon sink of 3.5–4 billion tonnes of CO_2 equivalent. However, fragmented authority, weak enforcement, inadequate monitoring and limited community participation continue to hinder effective environmental governance.

Keywords: Sustainable development, environmental governance, climate change, environmental law, pollution control, biodiversity, environmental justice.

1. Introduction

Sustainable development emerged as a response to the assumption that economic growth and environmental protection are necessarily opposed. The Brundtland Commission described it as development that meets present needs without compromising the ability of future generations to meet their own needs. This definition connects development with intergenerational justice, but its practical implementation requires institutions capable of regulating competing demands over land, water, forests, minerals, energy and public finance.

The Indian context makes this task particularly complex. Economic development remains essential for reducing deprivation, expanding employment and providing housing, transport, electricity, healthcare and sanitation. At the same time, air pollution, water stress, land degradation, biodiversity loss, waste generation, extreme heat, floods and coastal risks threaten public health and livelihoods. Environmental policy cannot therefore be treated as an obstacle imposed after economic planning; it must become an integral element of the development process.

Environmental governance refers to the laws, institutions, procedures and social relationships through which environmental decisions are made and enforced. It includes ministries, pollution-control boards, courts, tribunals, local governments, businesses, scientific institutions and affected communities. Good governance requires reliable information, public participation, regulatory independence, accountability and accessible remedies.

India's overall Sustainable Development Goal score improved from 57 in the baseline 2018 index to 66 in 2020–21 and 71 in 2023–24. The national score for Goal 13, concerning climate action, increased from 54 to 67 between the 2020–21 and 2023–24 editions. These improvements show expanding policy attention, but national averages may conceal regional, social and ecological differences.

2. Objectives of the Study

The study has the following objectives:

1. To explain the meaning of sustainable development and environmental governance in the Indian context.
2. To examine the constitutional, statutory and judicial framework for environmental protection.
3. To analyse the role of major environmental institutions and regulatory procedures.
4. To assess current progress in climate action, renewable energy, forests and biodiversity.
5. To identify major weaknesses in environmental decision-making and enforcement.
6. To suggest reforms for accountable, participatory and ecologically sustainable governance.

3. Research Methodology

The article adopts a qualitative, doctrinal and analytical research design. Primary materials include the Constitution of India, the Environment (Protection) Act, 1986, the Water Act, the Air Act, the National Green Tribunal Act, judicial decisions, the Environmental Impact Assessment Notification and India's nationally determined contribution.

Secondary and statistical materials include reports of the Ministry of Environment, Forest and Climate Change, NITI Aayog, the Ministry of Statistics and Programme Implementation and the Ministry of New and Renewable Energy. The material has been analysed under the themes of constitutional responsibility, regulatory institutions, pollution control, environmental assessment, climate governance, ecological conservation, public participation and environmental justice.

No primary survey or field investigation has been conducted. Numerical information is drawn only from official sources, and the findings represent a legal and policy analysis rather than statistically tested causal conclusions.

4. Conceptual Dimensions of Sustainable Development

Sustainable development is sometimes interpreted narrowly as economic growth accompanied by pollution control. A broader understanding recognises at least four interconnected dimensions.

The first is **ecological sustainability**, which requires that extraction, production and consumption remain within the regenerative and absorptive capacities of ecosystems. Development that permanently damages water sources, soil fertility, forests or biodiversity may create short-term income while weakening the foundations of future prosperity.

The second is **social justice**. Environmental burdens are not equally distributed. Low-income communities, forest dwellers, farmers, fishers, informal workers, women and children may bear a disproportionate share of displacement, pollution and climate-related risk. Sustainable development must therefore consider who receives economic benefits and who bears environmental costs.

The third is **intergenerational equity**. Natural resources are not available exclusively for present consumption. Their use must preserve ecological options for future generations.

The fourth is **participatory governance**. Decisions concerning land, forests, mining, dams, industrial corridors and waste facilities affect local communities directly. Sustainable development loses democratic legitimacy when these communities receive information only after major decisions have effectively been finalised.

5. Constitutional and Judicial Foundations

The Constitution establishes environmental protection as a responsibility of both the State and citizens. Article 48A directs the State to protect and improve the environment and safeguard forests and wildlife. Article 51A(g) makes it a fundamental duty of every citizen to protect the natural environment, including forests, lakes, rivers and wildlife, and to show compassion for living creatures. These provisions were introduced through the Forty-second Constitutional Amendment.

Although the Constitution does not expressly place a freestanding environmental right in Part III, the Supreme Court has interpreted the right to life under Article 21 to include the right to a clean, safe and pollution-free environment. Recent judgments continue to recognise clean air and environmental protection as constitutional concerns connected with Articles 14 and 21.

Indian environmental jurisprudence has also adopted the principles of sustainable development, precaution, polluter pays, public trust and intergenerational equity. In *Vellore Citizens' Welfare Forum v. Union of India*, the Supreme Court held that the precautionary and polluter-pays principles are essential features of sustainable development and form part of Indian environmental law.

The precautionary principle requires preventive action even where scientific certainty about environmental damage is incomplete, particularly when the possible harm is serious or irreversible. The polluter-pays principle extends beyond monetary punishment: the polluter may be required to bear the costs of preventing, compensating for and restoring environmental damage.

These principles received statutory recognition in section 20 of the National Green Tribunal Act, 2010, which requires the Tribunal to apply sustainable development, the precautionary principle and the polluter-pays principle while deciding cases.

6. Legislative and Institutional Framework

India's environmental laws developed through a combination of sector-specific legislation and an umbrella regulatory statute.

The Water (Prevention and Control of Pollution) Act, 1974 seeks to prevent and control water pollution and restore the wholesomeness of water. It established the institutional foundation for the Central Pollution Control Board and State Pollution Control Boards.

The Air (Prevention and Control of Pollution) Act, 1981 empowers pollution-control boards to regulate emissions, declare air-pollution-control areas and supervise industrial compliance. The Environment (Protection) Act, 1986 provides the Central Government with broad powers to coordinate environmental regulation, establish standards, regulate hazardous substances, inspect facilities and issue binding directions.

Additional laws regulate forests, wildlife, biodiversity, hazardous activities and environmental liability. The Biological Diversity Act establishes mechanisms for conservation, sustainable use and equitable sharing of benefits arising from biological resources. Wildlife and forest legislation regulates protected areas, diversion of forest land and activities affecting habitats.

The National Green Tribunal was created in 2010 as a specialised forum for environmental disputes, compensation and restoration. Its combination of judicial and expert membership was intended to provide faster and technically informed adjudication. The Tribunal can hear matters arising under the principal environmental statutes and may order relief, compensation and restitution of damaged property or environments.

This legal structure is extensive, but responsibilities are distributed across Union ministries, state departments, pollution-control boards, municipal bodies, district administrations and specialised authorities. Coordination becomes difficult when pollution or ecosystem damage crosses administrative boundaries.

7. Environmental Impact Assessment and Development Approval

Environmental Impact Assessment is intended to identify likely environmental and social consequences before a project receives approval. Under the Environmental Impact Assessment Notification, 2006, Category A projects are considered at the Union level, while eligible Category B projects are appraised by State Environment Impact Assessment Authorities. The system generally involves screening where applicable, scoping, preparation of an assessment report, public consultation and expert appraisal.

Public hearings are ordinarily conducted through State Pollution Control Boards. They provide affected communities with an opportunity to raise concerns regarding land, water, livelihoods, pollution, disaster risks and rehabilitation. The PARIVESH portal has digitised applications and records relating to environmental, forest and wildlife clearances.

The effectiveness of assessment, however, depends on the quality and independence of the underlying studies. Project-specific assessment may fail to capture the cumulative effect of several

mines, roads, industries or hydropower projects operating within the same ecological region. Reports prepared in technical language may not be meaningfully accessible to local residents.

Post-clearance monitoring is equally important. Project proponents are required to submit periodic compliance reports, and expansion proposals may require certified compliance reports concerning existing clearance conditions. Yet documentary compliance cannot substitute for regular site inspection, independent monitoring and public access to verified data.

8. Climate Governance and Energy Transition

India's climate policy attempts to combine developmental expansion with lower emissions intensity, energy diversification and adaptation. Its updated nationally determined contribution for 2031–35, submitted in April 2026, aligns climate action with the national objectives of becoming a developed economy by 2047 and achieving net-zero emissions by 2070.

The new contribution commits India to reducing the emissions intensity of gross domestic product by 47 per cent from the 2005 level by 2035. It also aims to achieve approximately 60 per cent cumulative installed electric-power capacity from non-fossil-fuel sources and create a carbon sink of 3.5–4 billion tonnes of carbon-dioxide equivalent through forest and tree cover by 2035.

The submission reports that, as of 28 February 2026, non-fossil-fuel sources accounted for 52.57 per cent of India's installed electric-power capacity. It also states that the emissions intensity of the economy declined by 36 per cent between 2005 and 2020 and that an additional carbon sink of 2.29 billion tonnes of carbon-dioxide equivalent was created between 2005 and 2021.

Renewable-energy expansion has accelerated, with cumulative solar capacity reaching approximately 162.15 gigawatts by 30 May 2026. Nevertheless, installed capacity does not by itself guarantee a successful transition. Grid integration, storage, transmission, land requirements, recycling of solar and battery waste, and the future of workers and regions dependent upon fossil-fuel industries must form part of energy governance.

Climate governance must also give equal attention to adaptation. Agriculture, water resources, health systems, coastal areas, Himalayan ecosystems and disaster management are expressly identified as vulnerable sectors in India's current climate contribution. Adaptation planning must therefore be incorporated into state budgets, urban master plans, rural-development programmes and infrastructure design.

9. Forests, Biodiversity and Ecosystem Governance

Official Sustainable Development Goal data record forest cover at 21.76 per cent of India's geographical area in 2023. The proportion of geographical area under protected areas increased from 5.14 per cent in 2015 to 5.70 per cent in 2025. The proportion of total wetland area covered by Ramsar sites increased from 4.15 per cent in 2016 to 8.66 per cent by 2025–26.

These indicators demonstrate expansion in formal conservation coverage, but the ecological quality and connectivity of habitats remain as important as their recorded area. Fragmented forests may retain legal classification while losing biodiversity and capacity to support wildlife movement or local livelihoods.

India's biodiversity governance includes Biodiversity Management Committees, People's Biodiversity Registers and mechanisms for access and benefit sharing. The objective is to recognise that local communities are not merely beneficiaries of conservation; they are knowledge-holders and custodians of biological resources. Conservation strategies that exclude communities from customary access without fair participation may produce conflict and weaken long-term legitimacy.

Forest governance also intersects with climate policy because tree and forest cover serve as carbon sinks. Carbon-focused programmes should not encourage monoculture plantations at the expense of natural forests, grasslands, wetlands or community rights. Ecological restoration requires native diversity, landscape-level planning and long-term monitoring rather than the counting of planted saplings alone.

10. Pollution, Waste and Urban Governance

Pollution control remains one of the most visible tests of environmental governance. The national SDG data snapshot reports that 92.86 per cent of assessed industries complied with environmental standards in 2024, compared with 86.25 per cent in 2018. The same framework recorded the ratio of waste recycled to waste generated at 0.54 in 2023–24.

These indicators should be interpreted with caution. Formal industrial compliance does not necessarily capture pollution from small enterprises, transport, construction, agricultural burning, household fuels, sewage and informal waste processing. Monitoring quality also differs across regions and pollutant categories.

Urban environmental governance is divided among municipalities, development authorities, pollution-control boards, transport departments and utilities. Fragmentation can produce a situation in which each institution regulates a limited component while no authority remains accountable for cumulative environmental outcomes.

Waste regulation has increasingly adopted extended producer responsibility, under which producers share responsibility for collection and environmentally sound management of products after use. Effective circular-economy governance nevertheless requires traceable recycling, protection of informal waste workers, markets for recovered materials and prevention of false reporting.

11. Major Challenges

11.1 Weak and uneven enforcement

India has extensive environmental legislation, but enforcement capacity varies considerably among states. Pollution-control boards may face shortages of technical personnel, laboratories, field inspectors and legal staff. Consent and clearance systems cannot function effectively when monitoring depends mainly upon information submitted by regulated entities.

11.2 Fragmented institutional responsibility

Environmental problems rarely conform to departmental boundaries. A polluted river may involve municipal sewage, industry, agriculture, groundwater extraction and solid waste. Climate-related flooding may involve drainage, wetland loss, construction permissions and disaster management. Fragmented responsibility makes it difficult to identify a single accountable institution.

11.3 Limitations of project-based assessment

Conventional environmental assessment focuses on individual projects. It may underestimate cumulative and regional impacts where several projects affect the same river basin, coastline, forest landscape or airshed. Strategic environmental assessment is needed for policies, plans, industrial clusters and major development corridors.

11.4 Inadequate public participation

Public consultation can become procedural rather than deliberative when information is inaccessible, technical documents are not available in local languages or community concerns are recorded without influencing the final decision. Participation must begin during project design rather than after the preferred location and technology have already been selected.

11.5 Environmental injustice

Polluting industries, mines, landfills and environmentally risky infrastructure are often located near communities with limited political and economic power. Compensation for land acquisition may not reflect loss of common resources, cultural relationships, health or long-term livelihood security. Environmental governance must recognise distributional and procedural justice, not merely aggregate economic benefit.

11.6 Climate-development conflict

Renewable-energy projects, transmission lines and climate-resilient infrastructure can themselves affect land, habitats and communities. Labelling a project “green” should not exempt it from environmental assessment and social safeguards. A low-carbon transition must also be ecologically responsible and socially just.

12. Recommendations

Environmental institutions must be strengthened through adequate staffing, modern laboratories, continuous monitoring and independent technical capacity. Regulatory vacancies and inspection backlogs should be disclosed publicly.

Environmental information should be made available through interoperable public databases. Clearances, compliance reports, emissions, water quality, inspection findings and restoration orders should be searchable by location and project.

India should expand cumulative and strategic environmental assessment. River basins, coastal zones, airsheds, forest corridors and industrial clusters should be evaluated as integrated ecological systems rather than as collections of isolated projects.

Public participation must become meaningful. Environmental reports and executive summaries should be available in local languages, hearings should be accessible to women and marginalised groups, and authorities should publish reasoned responses to major objections.

Post-clearance governance should receive the same institutional attention as project approval. Independent environmental auditors, community-based monitoring and remote-sensing evidence can supplement official inspection, but final accountability must remain with statutory regulators.

Environmental compensation should be based on the scale, duration and reversibility of harm. Collected amounts must be used transparently for ecological restoration and affected communities rather than remaining unspent or being treated as ordinary revenue.

Climate adaptation should be integrated into district and municipal planning. Heat-action plans, wetland protection, water security, resilient agriculture and disaster-risk reduction require regular funding and measurable local targets.

Finally, environmental education and Mission LiFE-type behavioural initiatives should complement, not replace, regulation. Individual responsibility is valuable, but major environmental outcomes depend upon industrial standards, infrastructure, public investment and institutional accountability.

13. Major Findings

The study finds that India possesses a broad constitutional, statutory and institutional framework for environmental governance. Judicial doctrine and the National Green Tribunal have incorporated sustainable development, precaution and polluter-pays principles into domestic law.

India has made measurable progress in Sustainable Development Goal performance, non-fossil electricity capacity, renewable energy, protected areas and climate commitments. However, policy ambition is not consistently matched by implementation capacity.

The principal governance problem is not the absence of law but the gap among approval, enforcement, monitoring and ecological restoration. Sustainable development will require environmental institutions that are scientifically capable, publicly accountable and responsive to local communities.

14. Conclusion

Sustainable development in India cannot be achieved by treating environmental protection as a separate sector operating after economic decisions have been made. Environmental considerations must influence the selection, location, design, financing and monitoring of development projects from the beginning.

India's constitutional principles, environmental statutes and judicial decisions provide a strong normative foundation. The expansion of renewable energy, improving Sustainable Development Goal indicators and enhanced 2035 climate commitments demonstrate growing institutional ambition. Yet ecological outcomes ultimately depend upon implementation at state, district and municipal levels.

Future environmental governance must move beyond clearance-oriented administration toward continuous ecological accountability. It must evaluate cumulative impacts, strengthen pollution-control institutions, protect vulnerable communities and ensure that environmental compensation results in actual restoration.

Development and environmental protection are not opposing objectives when development is understood as the long-term improvement of human well-being. Clean air, safe water, stable ecosystems, climate resilience and biological diversity are not luxuries to be pursued after economic

prosperity. They are essential foundations of public health, livelihood security and durable economic development.

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