AIR POLLUTION REGULATION IN INDIA: LEGAL FRAMEWORK CHALLENGES, AND REFORMS

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ABSTRACT

Air pollution has become one of India's major environmental and public health problems, with major cities consistently ranked among the worst in the world in terms of pollution. Despite having a relatively robust legal and regulatory framework dealing with air quality management, primarily in the form of the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and various rules, regulations and notifications laid down thereunder, implementation gaps remain that adversely impact effective air quality management. The present paper seeks to analyse India's legal framework applicable to air pollution, including statutory provisions, regulatory agencies and the growing role of the judiciary, especially the National Green Tribunal. The paper brings to light significant issues of weak enforcement, poor monitoring infrastructure, industrial non-adherence, vehicular pollution, stubble burning, lack of inter-state co-ordination and the like. The paper further analyses, in detail, landmark Supreme Court and NGT judgments which have influenced India's jurisprudence on air pollution. The paper ends by proposing reforms in the form of stronger enforcement, improved air quality monitoring stricter pollution standards, the adoption of clean energy technologies and better governance based on the principle of co- operative federalism. The paper concludes by urging that while the legal foundation in India is strong, the political will, scientific capacity and policy integration across sectors required to achieve clean air will have to be managed.

Introduction

One of the most important environmental issues facing India today is air pollution. The nation's ambient air quality has been severely deteriorated by rapid industrialization, urbanization, an increase in the number of vehicles, and unrestrained developmental activities. The severity of the problem is demonstrated by the fact that a number of Indian cities often rank among the world's most polluted urban areas, according to recent surveys. Air pollution is a major threat to public health, economic productivity, and general quality of life, making it more than just an environmental problem. Air pollution is a quiet but deadly public health catastrophe, as the World Health Organization has repeatedly emphasized that prolonged exposure to polluted air contributes to respiratory ailments, cardiovascular diseases, and premature deaths.

To control air pollution, India has created a thorough legal and policy framework. The country's air quality management is based on important laws including the Environment (Protection) Act of 1986 and the Air (Prevention and Control of Pollution) Act of 1981. These laws give regulatory bodies, namely the State Pollution Control Boards (SPCBs) and the Central Pollution Control Board (CPCB), the authority to enforce compliance, monitor emissions, and establish standards. By issuing directives, examining policies and guaranteeing accountability, the judiciary---particularly the Supreme Court and the National Green Tribunal (NGT)-has strengthened environmental governance throughout time.

There are still enduring problems in spite of these attempts. Air quality I continues to deteriorate due to weak enforcement, inadequate monitoring infrastructure, industrial noncompliance, vehicle emissions, and seasonal factors like burning agricultural residue. Furthermore, air pollution is a complicated, multifaceted problem due to the fragmented character of governance and the ineffective cooperation among states. This essay assesses Important judicial interventions, identifies significant implementation issues and critically examines India's legal system managing air pollution. In order to increase institutional capacity, promote policies that support sustainable and clean development, and improve regulatory processes, it concludes with changes.

I. Legal Framework Governing Air Pollution In India

India's statutory regime for air quality management has developed over a good number of years due to constitutional provisions, parliamentary statutes, administrative policies, and judicial

inputs. These instruments together provide the regulatory regime for the monitoring, control and prevention of air pollution in the country.

Constitutional Provisions

The Constitution of India contains the bedrock of environmental protection within it Article 48-A[1], introduced by the 42nd Constitutional Amendment, enables the State to "protect and improve the environment and to keep the forest and wildlife of the country unimpaired." In a similar vein Article 51-A(g)[2] provides for a duty on every citizen to protect and improve the natural environment including air, water and forest. This alone provides the constitutional foundation for legislative and judicial action with respect to matters governing environmental law.

Air (prevention and control of Pollution) Act, 1981

The main law governing air pollution in India is the Air Act, 1981[3]. The Act which was passed in response to India's obligations under the Stockholm Conference, gives the State Pollution Control Boards (SPCBs) and Centra Pollution Control Board (CPCB) the authority to:

- Establish criteria for ambient air quality
- Keep an eye on industrial emissions
- Give and withdraw permission for industrial operations
- Apply sanctions for noncompliance

The Act also gives the government the authority to designate regions for ait pollution control, where more stringent regulations and standards may be implemented. The Act's efficacy frequently hinges on state enforcement capabilities, despite its robust legal foundation.

Environmental (Protection) Act 1986

The Environment (Protection) Act (EPA), 1986, which offers a broad framework for

[1] Constitution of India, art. 48A.
[2] Constitution of India, art.51A(g).
[3] Air (Prevention and Control of Pollution) Act, No.14 of 1981,INDIA CODE.

environmental regulation, was passed by Parliament in the wake of the Bhopal tragedy. The EPA gives the federal government the authority to:

- Establish regulations governing emissions from power plants, automobiles, and businesses Implement the National Ambient Air Quality Standards (NAAQS)
- Conduct inspections and apply sanctions
- Send legally binding orders and notices

The Air Quality Standards, Vehicular Emission Standards (Bharat Stage standards), Solid Waste Management Rules, and Construction and Demolition Waste Rules are important regulations set forth by the EPA that have air impact on air quality management.

National Clean Air Programme (NCAP). 2019

India's main national strategy for reducing air pollution is the NCAP[4]. In 131 non-attainment cities, it seeks to lower particulate matter (PM2.5 and PM10) concentrations by 20-30%. The focus of the program is:

- bolstering networks for monitoring air quality.
- Encouraging environmentally friendly transportation.
- Reducing emissions from industry Cutting down on burning crop residue.
- Promoting public awareness and involvement.

NCAP offers a strategic plan for long-term pollution reduction, but it is not legally binding.

Role of the Central and State Pollution Control Boards

The main implementing organizations in charge of the following are CPCBs and SPCBs:

Granting licenses Observing the quality of the air Performing examinations Taking violators to court Creating reports on air quality. However, their practical efficacy is weakened by a lack

[4] Ministry of Environment, Forest and Climate Change, National Clean Air Programme (NCAP) (2019)

of personnel insufficient funds, and overlapping jurisdiction.

II. Key Challenges in Air Pollution Regulation in India

India has a robust institutional and legal structure, yet air pollution is nevertheless a persistent and expanding issue. The efficient application of air quality regulations is hampered by a number of administrative, structural, and socioeconomic issues.

Weak enforcement and compliance Mechanisms

The inadequate enforcement of current legislation is a significant problem Despite the strict regulatory authorities granted by the EPA and the Air Act Pollution Control Boards frequently lack the authority, personnel, and technical know-how necessary to guarantee compliance. Industrial facilities often underreport data, operate without the required authorization, or circumvent pollution regulations. The Air Act's penalties are frequently insufficient to discourage infractions, fostering a culture of careless compliance.

Inadequate Air Quality Monitoring Infrastructure

The coverage and quality of India's air quality monitoring network are restricted. Continuous ambient air quality monitoring stations (CAAQMS) are absent from many districts and smaller cities. When they do occur, old equipment, calibration problems, and data gaps lower accuracy. Regulatory bodies struggle to identify hotspots, enforce standards, and create evidence- based mitigation measures in the absence of trustworthy real-time data.

Vehicular Emissions And Transport Sector Issues

Urban air pollution in India is largely caused by the country's fast growing car population. Pollution levels are still being exacerbated by issues including old cars, low-quality gasoline, a lack of public transportation, and traffic congestion, despite the government's introduction of Bharat Stage emission standards and encouragement of electric mobility. Regulatory efforts are made more difficult by the unequal shift to greener fuels and technology.

Industrial pollution and lack of Technological Upgradation

Large amounts of hazardous gasses and particulate matter are released by building sites, power stations, brick kilns, and industrial clusters. Numerous industries use antiquated equipment

with insufficient pollution control mechanisms. Although there are pollution-control technologies, adoption is hindered by their expensive installation and maintenance costs, especially for small and medium-sized businesses.

Crop Residue Buring and Seasonal Pollution

Farmers' stubble burning continues to be a significant seasonal source of air pollution in northern India. Farmers continue the practice despite laws, prohibitions, and fines due to socioeconomic limitations, a lack of alternatives, and a lack of government assistance. This is a major factor in the high levels o winter pollution, particularly in Delhi and the surrounding states.

Fragmented Government and Lack of Inter State Condition

Political boundaries are irrelevant when it comes to air pollution. However, state-to-state coordination is still lacking, Effective air quality management is hampered by overlapping jurisdictions, inconsistent regulations, and a lack of cooperative federalism. For instance, Delhi's actions could be neutralized by neighbouring states' policies. There is frequently a lack of a cohesive regional strategy.

Public Awareness and Behavioural Barries

There is little public involvement in pollution control. Individuals and communities are unable to adopt pollution-reducing behaviours due to low awareness, apathy, and financial constraints. The channels for public engagement often underutilized even in cases when there are legal requirements for them.

III. JUDICIAL ROLE SUPREME COURT AND NATIONAL GREEN TRIBUNAL IN AIR

POLLUTION REGULATION

India's air pollution jurisprudence has been significantly shaped by the judiciary. The Supreme Court and the National Green Tribunal (NGT) 2010[5] have improved environmental governance, increased regulatory responsibility, and enforced standards where executive action

[5] National Green Tribunal Act, 2010, No.19, Acts of Parliment,2010(India).

has been insufficient through Public Interest Litigations (PILs) and proactive judicial intervention.

SUPREME COURT'S PIONEERING ROLE

In the past, the Indian Supreme Court has spearheaded air pollution control initiatives, frequently bridging legislative and administrative gaps. The Court began interpreting Article 21 of the Constitution to encompass the right to a clean and healthy environment in the 1980s. The Court was able to provide broad directives on air quality management because of this constitutional foundation.

Cases of M.C. Mehta

M.C. Mehta v. Union of India,(1998)[6] India's environmental jurisprudence was greatly influenced by the PILs filed by environmental lawyer M.C. Mehta. The Supreme Court mandated the use of compressed natural gas (CNG) for public transportation in Delhi in a number of historic rulings. Controlling industrial activities close to residential areas. directing the phase-out of outdated commercial vehicles and keeping an eye on vehicle emissions.

Standards for Vehicle Emissions

The Supreme Court has consistently advocated for better fuel quality and emission standards. It mandated the phase-out of leaded gasoline and backed the adoption of Bharat Stage standards. India's shift to greener fuels and more stringent pollution regulations was expedited by the Court's directives.

The National Green Tribunal's (NGT)

The National Green Tribunal Act of 2010[7] established the NGT, which is now the main court that handles environmental issues. It is essential to the regulation of air pollution because it specializes in technical issues and makes decisions that must be made quickly.

Strict Adherence to Air Pollution Regulations the NGT has issued multiple directives aimed at: Dust from construction Emissions from industry Waste burning Brick kiln pollution

[6] M.C. Mehta v. Union of India, (1987) 6 SCC 63 (CNG Vehicles Case).
[7] National Green Tribunal Act, No.19 of 2010, INDIA CODE.

Firecrackers' noise and air pollution Additionally, it has instructed local authorities to carefully enforce pollution standards and penalized violators.

Action Plan for Graded Response (GRAP)

The implementation of GRAP in Delhi-NCR, which classifies pollution levels and recommends escalating measures--from limiting diesel generators to closing schools- depending on air quality, was approved and overseen by the NGT. GRAP is becoming a key instrument for controlling extreme pollution incidents.

Cases of Stubble Burning

State governments have been frequently directed by the NGT to limit the burning of crop residue and to offer farmers alternatives. NGT interventions have brought attention to the necessity of coordinated action among states despite the fact that implementation is still uneven.

Judicial Intervention's Effect

The results of judicial actions have been inconsistent. On the one hand, air pollution regulation is now more accountable, transparent, and urgent thank to the Supreme Court and NGT. However, frequent court interventions draw attention to administrative shortcomings and give rise to worries about judicial overreach. However, the court still plays a crucial role in promoting environmental compliance in the absence of strong administrative actions.

IV. REFORMS AND WAY FORWARD

India's air pollution situation necessitates extensive reforms that go beyond current legislation and concentrate on enhancing institutional capacity, technology uptake, and governance, Enhancing enforcement by giving Pollution Control Boards more personnel, resources, independence, and harsher sanctions to discourage infractions is a top goal. By adding more continuous monitoring stations, utilizing satellite-based technologies, and guaranteeing that the general public has access to precise real-time data, India must also upgrade and grow its network for monitoring air quality. Reducing emissions at the source requires technological changes, such as the use of renewable energy, better industrial machinery, and quicker promotion of electric vehicles. Improving public transportation, lowering traffic, enforcing

building dust rules, and encouraging non-motorized mobility are all crucial aspects of urban planning changes. Providing farmers with inexpensive crop residue management methods, financial incentives, and coordinated support across states like Punjab, Haryana, UP, and Delhi is necessary to address seasonal pollution. India must improve interstate cooperation through regional clean air commissions, standardized emission limits, and integrated action plans under cooperative federalism because air pollution transcends national boundaries. To promote behavioural change, public participation should be increased through environmental education, citizen monitoring technologies, and awareness campaigns. Lastly, in order to bring India's regulatory structure into line with contemporary scientific and policy concerns, legislative reforms are required. These include amending the Air Act, making the National Clean Air Programme legally obligatory, and establishing more robust accountability systems. When taken as a whole, these changes offer a road map for creating a future for the nation's air quality that is healthier, cleaner, and sustainable,

Conclusion

Despite the establishment of a comprehensive institutional and legal framework, air pollution continues to be one of India's most pressing environmental and public health issues. Pollution was intended to be controlled by laws like the Air (Prevention and Control of Pollution) Act, 1981, The Environment (Protection) Act, 1986[8], and programs like the National Clear

Air Programme (NCAP), but significant progress is still hampered by implementation gaps. India's air quality is declining due to a number of factors, including weak enforcement, a lack of monitoring capacity, rapid urbanization, vehicle emissions, industrial non-compliance, and seasonal, sources such burning agricultural residue,

The National Green Tribunal and the Supreme Court in particular have been instrumental in bolstering the administration of air pollution. The courts have forced authorities to regulate companies, enforce emission standards, and act quickly during extreme pollution episodes through historic rulings and ongoing oversight. However, without political commitment and administrative efficiency, court intervention by itself cannot bring about long-term benefits. India needs to take a comprehensive, multi-sectoral approach going forward Important reforms include bolstering Pollution Control Boards, growing air quality monitoring networks,

[8] Environment (Protection) Act, No. 29 of !986, INDIA CODE.

encouraging clean technology, enhancing public transportation, and providing farmers with alternatives to stubble burning Since air pollution is a transboundary problem that calls for regional solutions promoting interstate coordination is equally crucial. To guarantee collective accountability, public knowledge and citizen participation must also be increased.

In conclusion, strong legislation, efficient enforcement, scientific competence cooperative federalism, and active community involvement are all necessary to achieve clean air in India. India may advance toward a time where everyone's constitutional right to clean and healthy air is realized with persistent reforms and concerted action.

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