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Evolution of Air pollution management policies in INDIA

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ABSTRACT

In India Air pollution is serious environmental issue. Air pollution in India is one of the highest in the world, posing a serious threat to the country's health and economy. The issue of air pollution has always been a matter of great concern but it was only in recent decades that these issues were taken up by policy makers. India has failed to improve its toxic air quality as the number of cities plagued by smog has increased since a national plan launched to tackle the problem. According to a report by the Centre for Energy and Clean Air Research, 132 cities now have pollution levels below national standards, up from 102 when the National Clean Air Program began in 2019.

The Air (Pollution Prevention and Control) Act was enacted in 1981 to regulate air pollution, but poor enforcement of the regulation failed to reduce it. It was the first legislation to tackle air pollution in India. Moreover, India's air pollution is finally being recognized as a public health threat not only in urban areas but across the country, with more than 99.9% of the population exposed to levels of PM2.5 that exceed WHO standards. The most significant step was the announcement of the National Clean Air Program (NCAP) for Indian Cities in 2019. The plan obliges 122 cities with high levels of pollution to prepare city-specific action plans with the overall goal of reducing PM2.5 emissions. By 2024, to 20-30 percent compared to the 2017 level. Some of the remarkable schemes include implementation of BS-VI emission standard for motor vehicles, National E-Mobility Plan 2020, energy efficiency labels on energy intensive home appliances and the Ujjwala Mission to boost LPG penetration in households.

The purpose of this article is to provide information on the development of air quality management policies in India. This is an attempt to discuss various aspects of India's air pollution and regulatory laws, focusing on history, current scenarios, international conventions, loopholes and shortcomings. The review also presents the legislative controls that accompanies court responses to certain landmark rulings related to air pollution.

INTRODUCTION

Air pollution has been a challenge in India for nearly century. However, the past few decades air pollution have been increased, largely due to rapid population growth, unplanned urbanization and industrialization. It's ironic that we pollute the air we breathe, but our work towards progress and development makes air pollution an inevitable danger. While both population and economic development have grown rapidly in India over the last 70 years, air pollution has reached a stage where many Indian cities are among the most polluted cities in the world. The 2019 Global Burden of Disease Study (Lancet, 2020) estimates that air pollution is responsible for 17.8% of all deaths in the country. Most of these deaths were exacerbated by particulate matter (PM) and household air pollution. India is experiencing one of the most severe and large-scale events in past two decades, making air pollution a major concern for regulators. Air quality assessment and management relies on legislative frameworks, appropriate monitoring networks, and the identification of emission sources and their exposure assessment. 42 years ago India passed the Air (Pollution Prevention and Control) Act. This is the first major law to tackle India's air pollution problem. At the time it came into force, air pollution in India's major cities had just been recognized as a credible threat and was being fully tracked to industry and transportation sources.

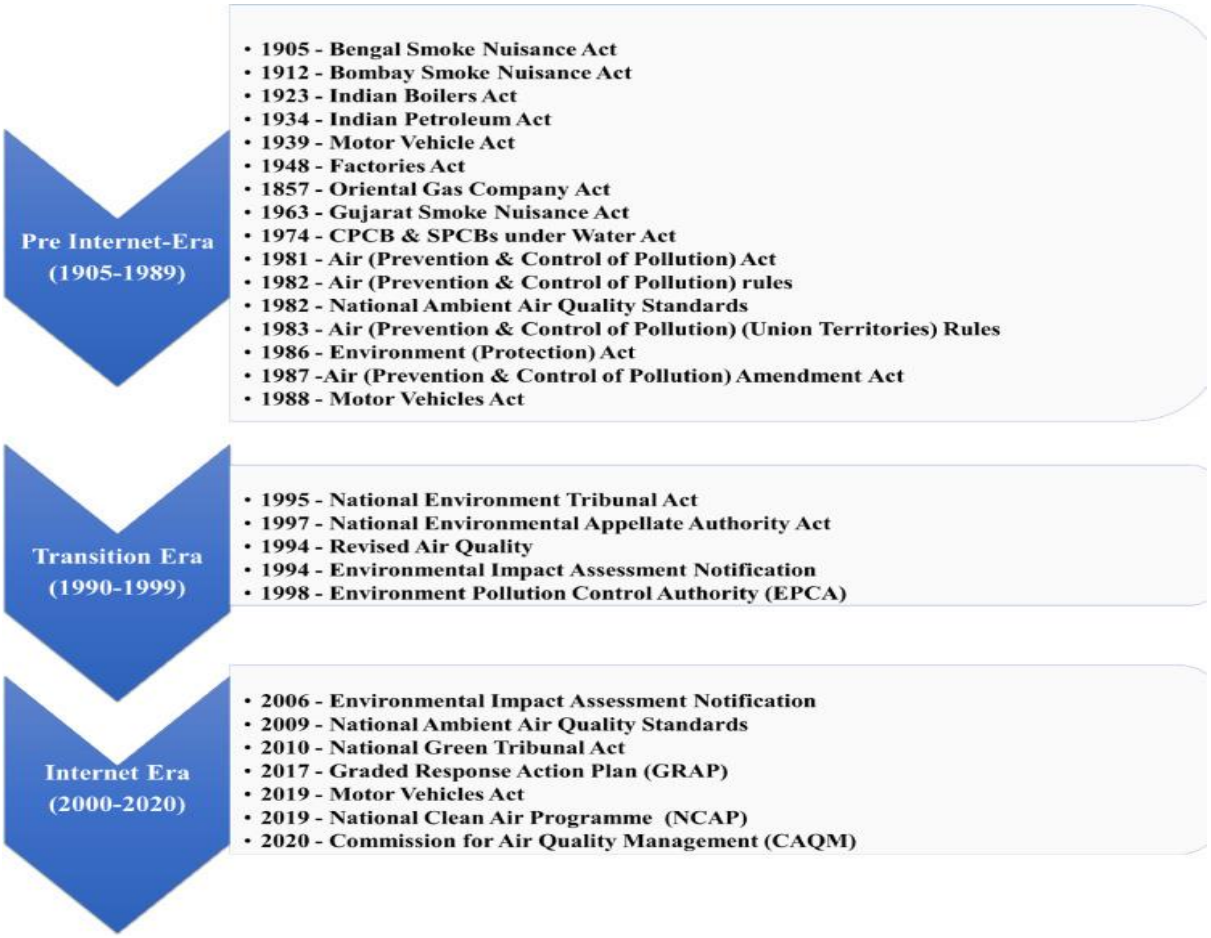
In recent years, policy makers have paid more attention to the increase in air pollution. The National Air Quality Standard was established in 1982 and is updated regularly to specify a reasonable level of air quality and provide a consistent basis for assessment at the national level. The National Air Quality Monitoring Program (NAMP) is implemented to determine the status of air quality and monitor compliance with prescribed standards. Perhaps the most significant step was the announcement of the National Clean Air Program (NCAP) in 2019 for Indian cities. Various central ministries also have programs to promote clean technology in various areas. Some notable programs include BS-VI emission standards for automobiles, the National Electric Mobility Plan 2020, energy efficiency labelling for energy-intensive appliances, and Ujjwala yojana aimed at promoting widespread adoption. of LPG in households. However, despite these plans, the World Air Quality Report 2021 found that air pollution in India is worsened in 2021, with average PM2.5 levels of about 58.1 micrograms per cubic meter, compared to World Health Organization estimates (WHO) estimates that it is more than 10 times higher than the guidelines.

Air Pollution Legislation and Regulations in India

Various laws have been introduced in India to control air pollution since pre-independence times. India's first air pollution reduction law introduced in Bengal. It was then introduced to Bombay (now Mumbai). The Bengal Smoke Nusiance Act 1905 aims to eliminate the nuisance of smoke from stoves and chimneys in the towns and suburbs of Calcutta and Howrah. Similarly, the Bombay Smoke Nuisance Act of 1912 was drafted to address similar concerns in Maharashtra. Then, in 1939, the Motor Vehicle Act was enacted, containing provisions to regulate motor vehicle pollution. The Factory Act of 1947 was then enacted to cover all these industrial issues. This was a national law covering the control of activities involving dust and smoke from industrial complexes. In late 1963, the Smoke Nuisance Act was introduced in Gujarat.

After the June 1972 United Nations Conference on the Human Environment in Stockholm, India experience a pivotal moment in its commitment to environmental issues. The CPCB was established in 1974 under section 3 of the Water (Prevention and Control of Pollution) Act 1974 to monitor and prevent water pollution. However, the commission's mandate was later expanded to include control and prevention of air pollution in boards power. As a result, the Air (Prevention and Control of Air Pollution) Act 1981 (Air Act, 1981) was passed to regulate and reduce air pollution. In addition, the Air Act of 1981 was amended in 1987 to empower central and state environmental protection agencies to deal with serious air pollution emergencies. The 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro was another international call for environmental protection. The conference called on governments to enact national legislation on pollution liability and compensation for victims of environmental damage.

This created the National Environmental tribunals (by the National Environmental tribunal Act 1995 (NETA)) with the task of determining strict liability for damage caused by accidents related to the handling of hazardous materials. In 1997, the National Environment Appllate Authority (NEAA) Act was enacted to create the NEAA to handle complaints related to environmental approvals in exclusion zones. Then, under Article 21 of the Indian Constitution, the National Green Tribunal (NGT) Act, 2010 clarified the right to live in a clean and safe environment, effectively repealing his two laws above. The NGT Act established courts to expedite the resolution of environmental petitions. Under the various provisions of these laws, various regulations and notices for effective air quality management and sustainable economic growth were also adopted, such as the 2017 Action Plan and the 2019 National Clean Air Program. In Delhi, EPCA is now replaced by commission for Air Quality management.



Action plan to improve Air quality

1. **Air quality monitoring** - Nearly 200 monitoring- and assessment-related research studies from 1983 to 2019 have been compiled in the IndAIR repository**.** These studies include assessment of contamination levels using manual and real-time data. Enhanced monitoring networks and related research studies have confirmed that particulate matter is a major pollutant in India**.**
2. **Emission inventory-** Emission Factors (EF) are fundamental tools in developing national, regional, state, and local emissions inventories to make air quality management decisions and develop control strategies. The earliest studies on emission factors were conducted in 1985 on particulate matter emissions from thermal power plants.
3. Another administrative action by the Indian government is to provide subsidies for the purchase of electric vehicles (EVs).
4. The central government has established the National clean Air Program under the central sector's "pollution control" scheme as a long-term and time-bound strategy at the national level to comprehensively and targetedly address the air pollution problem of the country as a whole. (NCAP) has started. Reduce concentrations of PM10 and PM2 Level .5 by 20% to 30% by 2024, maintaining the 2011-2015 comparison period and WHO report 2014/2018 with 2017 as the base year. City-specific action plans were approved for local implementation in all 102 unreachable cities.

5. The central government notified the Comprehensive Action Plan (CAP) in 2018 to set timetables and implementing agencies for air pollution prevention, control and mitigation measures in Delhi and NCR.
6. The Graded Response Action Plan (GRAP) was notified on 12th January 2017 to prevent, control and reduce air pollution in Delhi and NCR. It identifies the four categories of AQI: Moderate to Poor, Very Poor, Severe and Severe + or step-by-step actions and implementation agencies to respond to emergencies.
7. Within the industrial sector, measures have been taken such as the introduction of zig-zag technology for chimney emissions from brick kilns, online monitoring of emissions with the Online Continuous Emission Monitoring System (OCEMS), and the installation of high-altitude webcams in polluting industry.
8. To address the issue of open burning of garbage and household waste, door-to-door separate waste collection was introduced and several compost pits were set up in urban areas.
9. Various strategies have been used over the years to control fine dust (PM) and dust particle concentrations, including: green buffer around the city, maintaining 33% green space around the city, installing fountains in the city, etc.

Several steps have been taken to raise public awareness.
These steps are:

- The SAMEER app was launched to make air quality information available to the public and facilitate the registration of complaints about air pollution activities.
- Air quality information is collected and distributed from a central location. Provide real-time air quality status to all stakeholders.
- Dedicated media corners, Twitter and Facebook accounts have been set up to provide a platform for accessing air quality information and for the public to file complaints.
- Crowdsourcing of innovative ideas/suggestions/suggestions from the public will be done through the CPCB website to enhance Delhi NCR's air quality improvement efforts.
- The Ministry of Environment, Forests and Climate Change conducts environmental education, awareness and training programs with the aim of raising environmental awareness and encouraging people's participation in environmental protection in all sectors of society. Under the ministry's National Green Corps (NGC) program, about 1,000 schools have been certified as eco-clubs, and about 30,000 students have actively participated in various environmental and conservation activities, including those related to air pollution.
- Use of Compressed Natural Gas (CNG) as an alternative fuel, even and odd measures implemented in Delhi, introduction of Bharat Stage VI vehicle and fuel standards, various initiatives such as Pradhan Mantri Ujwala Yojana (PMUY) and National Clean Air Programme (NCAP) is an example of this effort.

Judicial Responses for Environmental Issues

Judgments on air pollution issues have given a lot of momentum to improve air quality.

Several policies and interventions that aim to reduce the level of air pollution have been framed as a result of judicial guidance. These include:

1. Interventions in support of petitions M.C. Mehta filed with the Hon. Supreme Court of India.
    A. Control measures for air pollution from industry and other sources in the Taj Trapezium Zone (TTZ).
    B. Numerous management initiatives and strategies were developed to address air pollution in Delhi NCR.
2. NGT oversees the execution of air quality management plans for cities that have been notified as non-attainment, or those that have not met the annual average NAAQS for PM10. The National Clean Air Programme (NCAP) is responsible for carrying out the actions outlined in these action plans. It incorporates multi-sector measures to actively manage the country's air quality.

Taj Trapezium Case, Agra:

Taj Pollution Issues:

M.C. Mehta vs. UOI and Orus. W.P.(C) No. 13381/1984

This petition was submitted by M.C. Mehta. regarding pollution caused to the Taj Mahal in Agra. Air pollution was especially caused by iron foundry, ferrous alloy industry, rubber processing, lime processing, mechanical engineering, chemical industry, Brick kilns, refractory units, automobiles, especially bracelets in Mathura Refinery and Ferozabad bangles and the glass industry. Acid rain falls in this area. Corrosion effect on shiny white marble. As a result of the examination by the Supreme Court, Report from National Environmental Engineering research institute, Varadarajan committee. Central Pollution Control Board (CPCB) and Uttar Pradesh (U.P.) Board, on December 31, 1996, directed that the industries in the Taj Trapezium Zone (TTZ), were the Active contributor of air pollution. All 292 industries had to approach GAIL for authorization for industrial gas connections or to U.P. Government for allocates outdoor alternative land outside TTZ or stop using coke/coal.

Constitution of the Mahajan Commission:

The Supreme Court ordered Mahajan committee on 30th August 1996 to Review progress Greenbelt Development and Taj Trapezium Zone pollution(Prevention and Control) Authority to monitor the implementation of various schemes.

Pollution from industries in Delhi:

M.C. Mehta vs. India Orus Coalition. Petition (Civil) No. 4677/1985

This petition was filed in his 1985 by M.C. Mehta regarding pollution in Delhi. From industries in residential areas of Delhi. After considering the following matters, the Supreme Court, Report submitted by CPCB and Delhi Pollution Control Committee finally orders Various Orders dated 8 July 1996, 6 September 1996, October 10, 1996, November 26, 1996, December 19, 1996. order includes:

168 industries that fall under the Ha and Hb categories, which are hazardous, heavy industries, and large-scale industries, 513 industries that fall under the H category, 43 industries that fall into hot mixing plants, 246 industries that fall into the "H" category of brick kilns, and 246 industries that fall under the "H 21 categories under the Delhi Master Plan (MPD-2001) under the Delhi Master Plan (MPD-2001) have been ordered to shut down and cease operations and operations within the Union Territory of Delhi. However, these industries may relocate to other industrial regions within NCR, or switch technologies to cleaner ones.

M/s Navin Chemical Manufacturing & Trading Co., Ltd.

Initially sued two defendants, the Okhla Industrial Development Authority and M/s. Detchem Mineral Corporation In case of Navin Chemical Manufacturing and Trading Co., Ltd. In case of Okhla Industrial Development Authority, Supreme Court instructs Uttar Pradesh Pollution Control Board to inspect industrial sites for suspected air pollution and ordered to take actions against industries causing pollution by grinding stones.

ACHIVEMENT UNDER AIR ACT

This act helped to develop a framework to regulate air pollution. Establish mechanisms to monitor pollutants, set emitter standards, develop clean air plans, and create PCBs enforcement mechanisms. When the Air Act was passed, state governments can declare any area of the state as a "air pollution control area" for the purposes of the Act. However, in the mid-to-late 1980s, state governments began designating entire states as air pollution control area. In 1984, the CPCB implemented the first national program to monitor air pollutants under the National Ambient Air Quality Monitoring (NAAQM). At the moment, the program was broadcast only in 7 stations in Agra and Ampara. It was later renamed the National Air Monitoring Program and now has nearly 800 stations in 344 cities.

The Air Act also provides a regulatory mechanism that requires polluting industries to obtain approval from the relevant SPCB before operating. Industry operations depend on meeting pollution reduction obligations imposed by the SPCB. These consents may be renewed from time to time, and information about consents must be made public by law. Accordingly, any person who has been prejudiced by the issuance of such a consent, or who has doubts about compliance with the terms set out in the consent, may apply to the Appellate Authority established under the Air Act. Using its authority under the Air Act, the CPCB has developed "National Air Quality Standards" for 12 parameters including SOx, NOx, Particulate Matter and Ozone. Compliance with these standards is a mandatory requirement for most consent applications and may be the basis for directives issued by PCBs under section 31A of the Act. For example, the Delhi Pollution Control Board enacted a law banning the launching and sale

of fireworks to prevent air pollutants from exceeding prescribed limits. Similarly, to prevent solid waste burning, implement plans such as the Graded Response Action Plan (GRAP), and ensure resolution of complaints about non-compliance with air quality.

New program by central government to reduce air pollution

Recently, the center set a new goal of reducing particulate matter concentrations in cities covered under the National Clean Air Programme (NCAP) by 40 percent by 2026, surpassing the previous goal of a 20-30 percent reduction by 2024.

- It was launched in January 2019 by the Ministry of Environment, Forests and Climate Change (MoEFCC).
- This is the country's first attempt to establish a national air quality management framework with time-bound reduction targets.
- The goal is to reduce the concentration of coarse particles (particles less than 10 microns in diameter, abbreviated PM10) and fine particles (particles less than 2.5 microns in diameter, abbreviated PM2.5) by at least 20%. % will decrease over the next 5 years. 2017 is used as the base year for comparison.
- This includes 132 cities that have not met the targets set by the Central Pollution Control Board (CPCB).

OBJECTIVE

- Expansion and further development of an effective and capable national air quality monitoring network.
- Efficient data distribution and public relations mechanisms for timely action to prevent and control air pollution.
- Develop a viable management plan to prevent, control and reduce air pollution.

Some of the Gaps/Drawbacks:

Technical

- Appropriate and efficient technology is not available Vehicle emissions Depending on available technology Not very efficient and economical, but very convenient Difficult to control and prevent vehicles pollution.

- Economic losses due to air pollution are not considered No policy was formulated on this basis in policy making Economic loss due to air pollution. every law Consider only one goal at a time, such as land use patterns, health conditions, etc.

- In India, laboratory facilities for analyzing these chemicals/pollutants are very limited.

- There are no data on agriculturally sensitive areas. some of Agricultural plant species (crops) are sensitive Air pollution. These are nowhere considered in policy making. damage to plants there Increased food and food-related biological losses economic loss as well.

- Indoor Air Pollution Some International Studies documented indoor air pollution as the culprit 400,000-550,000 premature deaths in India Acute Lower Respiratory Tract Infection and Chronic Obstructive pulmonary disease. that is It turned out that the regulator failed to do so focus there

Non- technical

- Public awareness and participation in legislation In some of the countries people make government to develop the policies but in India policy comes first then people get to know about it.

- Some of the reasons are lack of willingness of authorities, lack of community awareness, geographic, cultural and economic differences public participation, etc.

- Time consumption of judicial responses The judicial responses to environmental issues discussed above conclude that time consumption is a major concern in such PILs. Many of India's environmental laws and regulations are the result of a reactive approach to the public interest litigation, international treaties, and interest groups. Proactive and participatory behavior is essential. A time-bound decision-making system to address environmental issues in India is needed.

Conclusion

Despite significant advances in air pollution control and management technology, we are still far from achieving the desired results. Therefore, there is a need to enhance available policies and technologies to fill the identified research gaps related to air pollution aspects in India. Furthermore, the identified gaps can be categorized into three areas: research, policy and scale of economy. First, a coordinated management system based on data generated from an extensive nationwide network to take legislative action to promote development and growth in the air quality management sector while addressing common gaps. A research bottleneck was identified that required Second, the review also identifies a policy imperative that the country's national air quality standards need to be reviewed in the face of rising background concentrations of pollutants. The review highlights that the sector has all three identified gaps, setting region-specific vehicle emission factors and assessing vehicle emissions in real time to strengthen regulatory action suggests that further research is needed.

The Air Act, in its current form, no longer serves its original purpose. However, recent developments in air quality management give reason to expect targeted action by legislation. In early 2021, there was news of plans to amend India's three main environmental laws and enact a unified "Environmental Management Act." This provides a potential opportunity to institutionalize elements that are currently lacking in aviation law: an airshed approach, effective penalties mechanisms to deter offenders, and elements that give PCBs proper powers. It is something to do. In summary, India's air pollution is now a bigger battle than air laws is equipped to handle.

India faces serious air quality problems in many urban areas. Aside from much-discussed big cities like Delhi, various reports suggest that some medium-sized cities are similarly affected by polluted air. Adverse impacts can adversely affect human health, and in the long term can affect biodiversity, other life forms, cultural heritage, cultural buildings and even climate. The time has come for the government to support the development of urban infrastructure and treatment facilities. India should take a holistic approach to tackle rising air pollution. The management approach should not be limited to research studies highlighting sources and their contributions, but should be comprehensive, encompassing all key components of the AQMP.

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