

FROM PLANNING TO POLLUTION: ENVIRONMENTAL DEGRADATION CHANDIGARH

by

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ABSTRACT

Environmental degradation has increasingly become a serious concern as it act as direct threat to the fundamental right of the dignity of life guaranteed under Article 21 of the Constitution of India, where it has been interpreted to include the right to a healthy environment. The guarantee under Article 21 is supplemented by the directive principles enshrined in Article 48 and 48A, which mandate the State to take steps to protect and improve the environment, and Article 51A(g), which mandates citizens to be concerned about conserving the natural resources.

The aforementioned constitutional provisions have found expression in the form of the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, and the Environment (Protection) Act, 1986. This research project aims to study the state of the environment in Chandigarh, which can be called a microcosm of environmental issues associated with cities.

Chandigarh is known as a planned city. However it , still faces a number of environmental challenges that affect the wellbeing of the population and even institutions. Environmental problems that should be studied include insufficient waste management facilities, poor quality of the drinking water supply, and worsening levels of air pollution amid the loss of greenery.

Keywords: Green Cover Loss; Heat Stress; Air Pollution Exposure; Drinking Water Quailty and Environmental Law.

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I. INTRODUCTION

As per historical facts, Chandigarh has always been noted for its exceptional architecture along with plenty of green areas. However, in recent years, the city suffers from various environmental hazards due to rapid urbanization and growth of its population. Due to an increase in road construction, building up commercial complexes, housing projects, institutions, deforestation takes place, and there is a decline in the number of open areas. Moreover, water bodies like Sukhna Lake and Dhannas Lake are also facing increasing pollution and sedimentation. While development is important to advance economically, it must be done without harming the environment.

One of the problems of inadequate environmental protection in Chandigarh is poor waste management including lack of segregation of the waste and overloading of land filling sites, especially at Dadumajra as it operates over capacity. Poor landfill management causes the formation of toxic leachate, release of foul smell from the landfill, landfills on fire, and emission of greenhouse gases, which lead to the contamination of soils and groundwater.

Despite ranking among top Indian cities concerning improvements in air quality management, air quality in Chandigarh often falls within the category of poor or even unhealthy and exceeds the threshold of 150 AQI (Air Quality Index). Such changes are explained by emissions of pollutants caused by vehicular emissions, construction work, and crop residue burning in neighboring territories².

Another growing concern is a loss of green spaces in Chandigarh. There is a lot of concern about the current health state of trees in the area. Since many trees suffer from *termite infection*, they become weakened due to damaged roots and trunks and thus become unstable. Therefore, they can easily be fallen by stormy weather and cause serious harm to people and cars. It reflects not only poor management of urban greenery but also contributes to environmental and safety issues in Chandigarh. A tragic illustration of this risk occurred in July 2022, when a heritage peepal tree at a school in Sector 9-B split and fell during a storm, killing a sixteen-year-old student and injuring

² Chandigarh Air Quality Index (AQI) | Air Pollution, AQI.IN, <https://www.aqi.in/in/dashboard/india/chandigarh/chandigarh> (last visited Aug 13, 2026).

several others; a subsequent inspection found the tree heavily infested with termites. Following the incident, a residents' welfare federation formally flagged the wider threat that termite infestation, concretisation and unscientific paver-block laying pose to tree health across the city, including around Sukhna Lake and the Dhanas green belt.³

Additionally, the challenge is Noise pollution in Chandigarh frequently exceeds the permissible limit of 65 dB in busy traffic and commercial areas due to heavy vehicles and honking. Continuous exposure to such high noise levels causes stress, sleep disturbances, and other health issues, making it a serious environmental concern in the city⁴.

The Constitution of India under Articles 21 and 48A emphasizes the protection of the environment, making it the duty of both the State and citizens to safeguard natural resources⁵. Therefore, Chandigarh must adopt sustainable development practices that balance growth with environmental conservation to preserve its identity as the “City Beautiful” for future generations. This article will focus on exploring the conditions of environmental degradation in Chandigarh. It will critically examine the major factors contributing to ecological imbalance and assess their impact on public health and sustainable development in the region.

II. FROM LEGISLATURE TO LANDFILL: A GOVERNANCE COLLAPSE

Waste, often seen as something unpleasant, especially when found near the landfill or drainages, triggers an instinctive repulsion response from people: tightening of facial muscles, averting of gaze, and covering of noses to avoid the smell. Such a waste or garbage or sewage is clearly recognizable as something unpleasant. However, in the today's urban lifestyle many people throw away numerous things which do not carry any obvious bad smell or offensive content. This has

³ Dushyant Singh Pundir, "2 'Termite-Infested' Heritage Trees to Be Axed in Chandigarh, UT Gets into Action" The Tribune (Chandigarh, 11 July 2022) <<https://www.tribuneindia.com/news/chandigarh/2-termite-infested-heritage-trees-to-be-axed-in-city-ut-gets-into-action-411553>> accessed 21 August 2026; 'Chandigarh: FOSWAC Flags Threat to Trees by Termites, Paver Blocks' The Tribune (Chandigarh, 13 July 2022) <<https://www.tribuneindia.com/news/chandigarh/foswac-flags-threat-by-termites-paver-blocks-411849>> accessed 21 August 2026.

⁴ Saurabh Parashar, Explained: The Noise Pollution Rules of Chandigarh and How They Are Skirted, The Indian Express (Aug. 21, 2022), <https://indianexpress.com/article/explained/explained-the-noise-pollution-rules-of-chandigarh-and-how-they-are-skirted-8102334/>.

⁵ India Const. arts. 21, 48A.

made the determination of what can be called 'waste' quite difficult. In simple terms, waste can be understood as anything that a person no longer finds useful it may be perfectly serviceable without being damaged, old or worn out because of such reasons. Instead, people dispose of things simply because they have lost interest in them. Thereby, problem is not waste generation, but how it is managed.

There is nothing fixed about 'waste': there are different kinds of it. Moreover, waste may be classified in a number of ways depending on physical and chemical properties of waste products or their geographical origin. As per the objectives of this paper, it should be emphasized that no matter what kind of waste it is, its disposal will only aggravate problems in the current systems of waste management. No matter whether waste is of biological or non-biological nature and regardless of its geographical origin, waste ends up in three traditional places: landfills, waters and air.

A. Landfills

Waste management is among the integral aspects of urban environmental policies. Due to increasing urbanization, population growth, changing consumption trends and many other reasons, urban areas witness increasing volumes of municipal solid waste. The MSW system in Chandigarh is quite well-developed administratively but faces serious problems at the operational level. *Municipal solid waste* is collected through daily street sweeping and door-to-door collections from 6:00 am to 4:00 pm and transported to sectoral *Sehaj Safai Kendras* set up in 35 out of total 56 sectors in the city⁶. While the Bin-Free Collection initiative is believed to contribute to. A parallel governance gap is visible in construction and demolition (C&D) waste: as of mid-2026 the Municipal Corporation reported that Chandigarh generates roughly 13,285 metric tonnes of C&D waste annually against a processing and disposal capacity of 45,000 metric tonnes, yet residents and elected representatives have continued to report debris left uncleared for months after

⁶ Suman Mor, Kamalpreet Kaur & Ravindra Khaiwal, SWOT Analysis of Waste Management Practices in Chandigarh, India and Prospects for Sustainable Cities, 37 J. Env'tal Biology 327 (2016). https://www.jeb.co.in/journal_issues/201605_may16/paper_01.pdf.

demolition drives. This disjunction between stated capacity and ground-level outcomes mirrors the pattern seen in municipal solid waste collection.⁷

Still collection efficiency to nearly 90%, compliance remains uneven, and non-participation by certain households undermines segregation goals. Overflowing bins, foul odour, and pest breeding persist despite available storage capacity largely due to poor route planning, shortage of trained manpower, and irregular vehicle availability⁸.

B. Solid Waste

Solid waste includes all kinds of disposed materials from residences, businesses, educational institutions, agriculture, industries, and which the owner considers unnecessary. These include biodegradable waste like leftover food and garden trash, as well as recyclable waste like papers, plastics, metals, glass. Hazardous and non-biodegradable waste also make up part of solid waste. In rapidly developing urban areas, solid-waste generation is directly linked to the rate of urbanization, consumerism, lifestyle changes, and economic development. Solid waste mismanagement scientifically means that solid waste contributes significantly towards environmental degradation through soil pollution, water pollution, air pollution, and the emission of greenhouse gases. Therefore, solid-waste management is important not only for urban sanitation but also for maintaining ecological equilibrium and good health of people living in an area.

Being one of the best-planned cities of India, Chandigarh produces about 350-370 tonnes of municipal solid waste per day. Despite having proper planning for the city, Chandigarh faces several environmental problems due to deficiencies in the system of waste management. More than half of the waste produced is organic and undergoes anaerobic decomposition when disposed in landfills, producing methane gas. Some studies reveal that the municipal corporation allocates adequate funding for managing solid waste. However, a significant portion of the total budget is

⁷ '13,285 Metric Tonnes C&D Waste Generated Annually in Chandigarh, Processing Capacity at 45,000 Metric Tonnes' The Tribune (Chandigarh, 28 July 2026) <<https://www.tribuneindia.com/news/chandigarh/13285-metric-tonnes-cd-waste-generated-annually-in-chandigarh-processing-capacity-at-45000-metric-tonnes/>> accessed 21 August 2026.

⁸ S. Mor, K. Kaur & K. Ravindra, *Methane Emissions from Municipal Landfills: A Case Study of Chandigarh and Economic Evaluation for Waste-to-Energy Generation in India*, 6 *Frontiers in Sustainable Cities* 1432995 (2024), <https://doi.org/10.3389/frsc.2024.1432995>.

used for salaries, while a minute amount (7-8%) is allotted for improvement of the waste management process and for collection. Only about 70% of the waste is collected from those who are registered, whereas only 20% from slums and other places⁹.

These operational shortfalls have had measurable consequences for the city's official standing: Chandigarh's Garbage Free City rating under the Swachh Bharat framework was downgraded from three stars to one star after the integrated waste-processing facility repeatedly failed to operate at capacity, with a substantial share of daily waste redirected unprocessed to the Dadumajra dumping ground.¹⁰

The judicial pronouncements have established the mandatory nature of such statutory duties. For instance, in the case of *Vellore Citizens Welfare Forum v. Union of India*,¹¹ the Supreme Court expressly stated that industries and regulatory authorities must follow both the precautionary principle and polluter pays principle to prevent any environmental damage. Environmental legislation, according to the court, cannot be regarded as voluntary recommendations made by the administration but rather as compulsory and binding on all.

Similarly, in *M.C. Mehta v. Union of India (Taj Trapezium Case)*¹², the court laid down that in order to prevent any environmental degradation, adherence to environmental norms is mandatory for the administration. It is imperative for the authorities to take pro-active steps to enforce pollution control norms, which is relevant even in cases involving unregulated waste management.

Furthermore, in the case of *Bhopal Municipal Corporation v. Dr. Subhash Pandey*¹³, the Supreme Court noted that there is an inherent constitutional duty for the municipal authorities to undertake the proper waste management to ensure good health and hygiene of the citizens, in pursuance of

⁹ Pramod Kumar, Deval Jugraj Singh & Siby John, *Multi-Criteria Decision Support System for Sustainable Municipal Solid Waste Management: A Case Study of Chandigarh, India*, 55 *Environmental Development* 101228 (2025), <https://doi.org/10.1016/j.envdev.2025.101228>.

¹⁰ Chandigarh State of Environment Report 2021 (Department of Environment, Chandigarh Administration, 2021) 3.2 <https://chandigarhenviis.gov.in/sites/default/files/pdffiles/SoER_Chandigarh%202021-5.pdf> accessed 21 August 2026.

¹¹ *Vellore Citizens Welfare Forum v. Union of India*, AIR 1996 SC 2715.

¹² *M.C. Mehta v. Union of India (Taj Trapezium Case)*, AIR 1997 SC 772.

¹³ *Bhopal Municipal Corporation v. Dr. Subhash Pandey*.

Article 21 of the Constitution¹⁴. However, despite such clear judicial directions, effective waste management practices are still not uniformly implemented across India including Chandigarh.

Under *The Solid Waste Management Rules, 2016*¹⁵, waste must be segregated into four categories:

- *Biodegradable Waste*- This includes organic waste such as food scraps, vegetable peels, fruit waste, garden waste, and other compostable materials. It should be stored separately for composting or biological methanation.
- *Dry Waste (Recyclable Waste)* -This includes paper, plastic, glass, metal, cardboard, packaging materials, etc. These materials can be recycled and should be kept clean and dry.
- *Domestic Hazardous Waste*- This includes items such as sanitary waste, diapers, expired medicines, chemical cleaners, batteries, paint containers, and tube lights. These require special handling and disposal.
- *Construction and Demolition (C&D) Waste*-This includes debris from construction, renovation, or demolition activities such as bricks, concrete, soil, wood, and metal scrap. It must be disposed of separately as per C&D Waste Management Rules.

III. WATER BODIES/ WATER POLLUTION AND THE CHALLENGE OF SUSTAINABLE GOVERNANCE

Water bodies such as rivers, lakes, ponds, wetlands, streams, and reservoirs that play a vital role in maintaining ecological balance and supporting life. They provide drinking water, irrigation, habitat for aquatic species, and help regulate climate. The Constitution of India recognizes the importance of environmental protection through Constitution of India under Article 48A¹⁶, which directs the State to protect and improve the environment, and Article 51A(g)¹⁷, which imposes a

¹⁴ India Const. arts. 21.

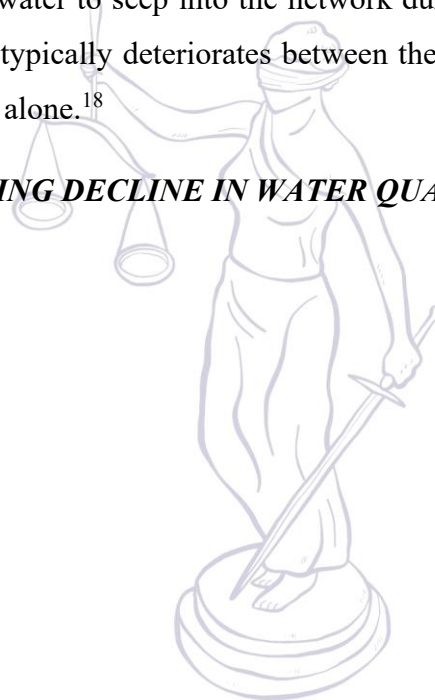
¹⁵ Solid Waste Management Rules, 2016, G.S.R. 451(E), Gazette of India, Extraordinary, Part II, § 3(ii) (Apr. 8, 2016) (India).

¹⁶ INDIA CONST. art. 48A.

¹⁷ INDIA CONST. art. 51A (g).

fundamental duty on every citizen to protect and improve the natural environment, including forests, lakes, rivers, and wildlife. Thus, both the State and citizens share a constitutional responsibility to conserve and safeguard water bodies for present and future generations. All in all, it raises serious concerns about sustainability. This local picture reflects a wider national pattern: assessments of urban water supply across India's state capitals have found that non-revenue water losses commonly exceed forty per cent and that ageing, poorly maintained last-mile pipelines allow contaminated groundwater to seep into the network during periods of intermittent supply, meaning that water quality typically deteriorates between the treatment plant and the household tap rather than at the source alone.¹⁸

A. INDICATORS SHOWING DECLINE IN WATER QUALITY IN CHANDIGARH¹⁹ :



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¹⁸ 'Quality of Water in India's State Capitals' (Observer Research Foundation, 8 July 2024) <<https://www.orfonline.org/expert-speak/quality-of-water-in-indias-state-capitals-58308>> accessed 21 August 2026.

¹⁹ Maansi, Rajinder Jindal & Meenu Wats, *Evaluation of Surface Water Quality Using Water Quality Indices (WQIs) in Lake Sukhna, Chandigarh, India*, 12(1) **Applied Water Science** 2 (2021), <https://doi.org/10.1007/s13201-021-01534-x>.

PARAMETER	OBSERVED RANGE	INDICATION	IMPACT ON WATER QUALITY
Dissolved oxygen (DO)	2.0-3.9 mg/L (low in several seasons)	Oxygen depletion	Stress on aquatic life
Electrical Conductivity	Up to 273 μ S/cm	High dissolved ions	Possible pollution load
Total Dissolved Solids (TDS)	Up to 177.4 mg/L	Increased salt concentration	Reduced water suitability
Chloride	Up to 87.4 mg/L	Anthropogenic contamination	Indicator of sewage / runoff
Total Alkalinity	Up to 290 mg/L	High buffering capacity	Mineral enrichment
Total Hardness	Up to 290 mg/L	High calcium & magnesium	Decline softness of water
Transparency	As low as 1–4 cm	High turbidity & plant on growth	Eutrophication risk

Though Sukhna Lake is not used as a source of drinking water for Chandigarh, variations in the concentration of pollutants, especially during times when there is a shortage of water, show the presence of pollution and imbalance in the environment. The figures show that there is a presence of polluted water flows and an imbalance in the environment in the ecosystem of Sukhna Lake. Being one of the largest sources of fresh water and an important resource of the environment in Chandigarh, the decline in the quality of water in Sukhna Lake highlights other problems, including urban drainage, industrial and domestic effluents, catchment destruction, and poor waste management practices in the area.

The deterioration in the quality of water suggests the applicability of the provisions of the Water (Prevention and Control of Pollution) Act of 1974. This law aims at preventing and controlling the pollution of water, and maintaining or restoring the wholesomeness of water. As per the provisions in Section 24, no person is allowed to cause or permit any poisoning, noxious, or polluting matter

to enter any stream or well. The pollutants from the discharges of waste from municipalities, surface runoff, or anthropogenic activities in Sukhna Lake can be construed as a breach of the above provisions²⁰.

Moreover, Sections 16 and 17 grant powers to both the central and state pollution boards to conduct monitoring of the quality of water, set standards, and take preventive actions. The continued decline in the physio-chemical characteristics necessitates strict enforcement of laws, regular monitoring, and regulation by the pollution control boards. Thus, the deterioration in water quality in Sukhna Lake requires the implementation of strict laws from the Water Act, 1974²¹.

Studies also show that: In Chandigarh, concerns regarding declining water quality may also have indirect implications for menstrual health. Exposure to hard water, heavy metals, or microbial contamination can contribute to general health issues such as gastrointestinal disturbances, hormonal imbalance, and dermatological problems, which may increase abdominal pain during menstruation. Poor water quality can further compromise genital hygiene, increasing the risk of reproductive tract infections that may intensify dysmenorrhea and pelvic discomfort²².

Moreover, chronic exposure to polluted water is associated with hair loss and other scalp diseases due to possible disturbances in mineral content and toxic substances present in the environment. Although several factors contribute to menstrual disorders, including nutritional deficiencies, mental stress, hormonal imbalances, and lifestyle practices, the environmental factors, especially the quality of water, cannot be disregarded. Thus, improved water testing and availability of clean water could possibly have an auxiliary function in promoting better adolescent well-being and lowering menstruation-related complications²³.

²⁰ Water (Prevention and Control of Pollution) Act, 1974, No. 6 of 1974, § 24 (India).

²¹ Water (Prevention and Control of Pollution) Act, 1974, No. 6 of 1974, § 16 & 17 (India).

²² Anuna Vinod, J.S. Thakur, Vineeth Rajagopal, Bushra Thasneem & P. Karthika, *Understanding Menstrual Health Perceptions, Practices, and Premenstrual Symptomatology Among College Girls in Urban Chandigarh: A Cross-Sectional Study*, 15(1) **Journal of Family Medicine & Primary Care** 299 (2026), https://doi.org/10.4103/jfmpe.jfmpe_1064_25.

²³ Id.

Kerala State Pollution Control Board v. Kerala Water Appellate Authority: it was Held that the State Pollution Control Board (SPCB) possesses the power to formulate more stringent environmental standards compared to those formulated by the Central Pollution Control Board (CPCB), as long as their objective is to prevent pollution. The notification of the Kerala State Pollution Control Board on maintaining a minimum 50-meter distance between the proposed location of the petroleum filling station and the nearest residential house (and not just the “residential area”) was valid under law²⁴.

This case highlights how environmental governance structures can act as preventive public health measures, stressing the significance of proper institutional implementation to reduce the health risks caused by localized sources of pollution.

Indian Council for Enviro Legal Action v. Union of India: it was held that-Industries causing toxic pollution were held liable for paying for their own cleanup activities. Absolute liability of hazardous industries was emphasized by the Court. This case Significantly highlights responsibility for pollution of groundwater and soil that poses risks to public health²⁵.

So, In that respect, the poor placement of India at number 120 out of 122 nations in *the Water Quality Index*, as reported by the Government of India in 2018²⁶ suggests that the nation is suffering from deteriorating water quality. The declining water quality will naturally have an impact on urban areas like Chandigarh²⁷.

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²⁴ Kerala State Pollution Control Board v. Kerala Water Appellate Authority, Appeal No. 53 of 2012 (N.G.T. India).

²⁵ Indian Council for Enviro Legal Action v Union of India, (1996) 3 S.C.C. 212 (S.C. India).

²⁶ Government of India, NITI Aayog, Composite Water Management Index: A Tool for Water Management (June 2018) 1 <<https://www.niti.gov.in>> accessed 21 August 2026 (the 120-of-122 country ranking originates from this report and has since been reproduced by World Population Review and other secondary sources, including that cited above).

²⁷ World Population Review, *Water Quality by Country*, <https://worldpopulationreview.com/country-rankings/water-quality-by-country> (last visited Mar. 2, 2026).

IV. FROM PLANNED CITY TO POLLUTED SKIES: EXAMINING AIR QUALITY TRENDS IN CHANDIGARH.

First and foremost, air is the basic element of life. However, it currently belongs to one of the most polluted components of the urban environment. According to definitions, air pollution means the contamination of the atmospheric air by hazardous substances, such as (PM2.5 and PM10) particles, harmful gaseous elements like sulfur dioxide, nitrogen oxides, carbon monoxide, etc., which can adversely affect human health and environment. The main causes of air pollution are transportation emissions, industrial activities, dust from the construction sites, burning of fossil fuels, and waste. Long exposure to polluted air results in the emergence of dangerous lung and heart conditions, weakens immunity, lowers people's longevity, and damages nature. Thus, air pollution can be considered as an important issue, which reflects poorly developed regulation and unsustainability of urban development in today's world.

The provision of fresh and safe air for citizens can be traced in different legal documents in India. Even though there is no "*right to a clean air*" specified in the Constitution, the Supreme Court interprets Article 21 (Right to Life) as a provision of environmental safety and absence of pollution in the surroundings²⁸. Moreover, according to Article 48A, it is the responsibility of the state to protect and improve the quality of environment, whereas Article 51A(g) requires citizens to preserve natural wealth²⁹. Next to the constitutional requirements, the Parliament adopted the Air (Prevention and Control of Pollution) Act, 1981, in order to ensure prevention, control, and reduction of air pollution³⁰.

This law establishes the role of the State Pollution Control Board that will be responsible for developing standards, conducting inspections, monitoring the state of the air, punishing the violators, etc. Compiling, these constitutional provisions and statutory enactments forms the legal basis for reducing air pollution in India, emphasizing both state responsibility and citizen inclusion for protecting the environment.

²⁸ Subhash Kumar v State of Bihar, (1991) 1 S.C.C. 598 (S.C. India).

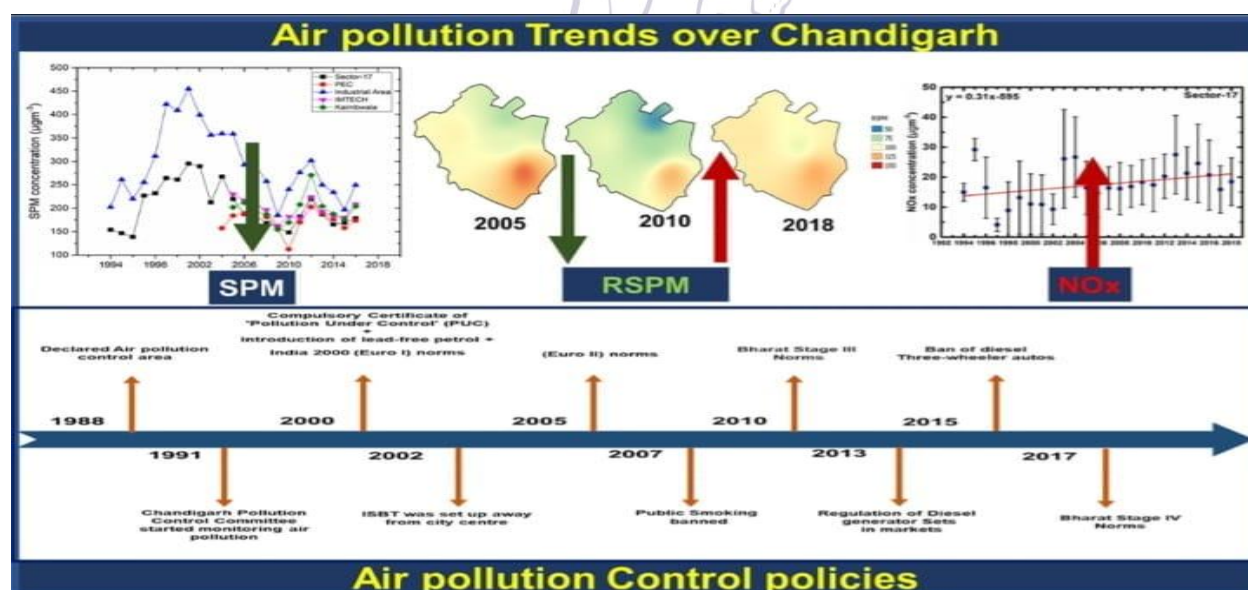
²⁹ India Const. arts. 21, 48A, 51A (g).

³⁰ Water (Prevention and Control of Pollution) Act, 1974, No. 6 of 1974, India Code (1974).

The city Chandigarh is situated in the Indo-Gangetic Plains, which is highly polluted by biomass burning, residue burning, and industrial pollution. Climate and geography play an important role in pollution in Chandigarh. Regional sources contribute up to 50-52% of air pollution in Chandigarh.

Vehicle-related greenhouse gas emissions in Chandigarh more than doubled between 2005 and 2011 and were projected to reach 4014 Gg by 2020.³¹ The study analyzes SPM, PM₁₀, NO_x, and SO₂ at five locations in Chandigarh. Annual, seasonal, and monthly trends are examined to understand pollutant variation. Seasonal patterns help identify baseline pollution levels and source contributions. The study evaluates the impact of air pollution mitigation strategies on long-term pollutant trends. Findings aim to support evidence-based policy formulation³².

A. This image below shows air pollution trends over Chandigarh in recent years :



Under Section 19, the State Government, in consultation with the State Pollution Control Board, may declare any area or areas as Air Pollution Control Areas. In such areas, stricter regulatory controls are imposed. Legal Effect: Prohibits industrial and polluting activities unless

³¹ Nitin Bhargava, BR Gurjar, Suman Mor and Khaiwal Ravindra, 'Assessment of GHG Mitigation and CDM Technology in Urban Transport Sector of Chandigarh, India' (2018) 25 Environmental Science and Pollution Research 15514 <<https://doi.org/10.1007/s11356-017-0357-8>> accessed 21 August 2026.

³² *Id.* at 21.

they comply with prescribed standards. Air (Prevention and Control of Pollution) Act, 1981, the & Chandigarh Pollution Control Committee (CPCC) has been empowered to address such challenges through several critical provisions. Section 19 allows the declaration of Air Pollution Control Areas, wherein stricter emission standards and regulatory oversight can be applied. Section 21 mandates prior consent from the CPCC for establishing or operating any industrial plant, while Section 22 prohibits the emission of air pollutants beyond the standards prescribed by the Board. In addition, Section 24-26 provides for inspection, monitoring, and sampling by the State boards concerned, which in this case would be the CPCC, while Section 31A enables the Committee to give binding directives, such as those concerning the closure of pollution-emitting units or traffic control.³³

Even in light of these powers, however, Chandigarh still experiences significant pollution problems, indicating weaknesses in enforcing these powers, poor controls over vehicle emissions, and lack of regional cooperation. The ongoing air pollution problems clearly indicate that there is an urgent need to implement the powers granted to CPCC under the act strictly, along with scientific monitoring of air pollution problems.

Mary Jose v. AIR (Prevention and Control of Pollution)³⁴, the Kerala High Court made an observation regarding the significance of procedural compliance within time in terms of the provisions of the Air Act 1981. From the decision, it is clear that non-compliance with the procedures may limit pollution control.

M.C. Mehta (Air Pollution) v. Union of India³⁵, the Supreme Court highlighted the constitutional duty of the State to protect citizens' right to clean air under Article 21. Both preventive and corrective measures were held to be essential to address air pollution in urban areas.

More recently, in Chandigarh, there have been spikes in pollution levels, especially in some specific sectors that witnessed very high AQI levels. Specifically, Sector 22 was found to witness the highest increase, with its AQI touching 413, which means the level of pollution in this sector was severe. However, there have also been some other sectors which have also seen a rise in AQI,

³³ Air (Prevention and Control of Pollution) Act, No. 14 of 1981, §§ 19, 21, 22, 24–26, 31A (India).

³⁴ Mary Jose v. Air (Prevention and Control of Pollution) Act, 2013 S.C.C. OnLine Ker 17246 (India).

³⁵ M.C. Mehta (Air Pollution) v. Union of India, (2020) 19 S.C.C. 152 (India).

such as Sector 25, which had AQI levels at around 359, and Sector 53, which saw an AQI level of about 345. This shows that pollution levels rose in more than one area during the evening hours.³⁶

Notably, this pollution burden persists despite Chandigarh possessing among the highest levels of urban tree cover of any Indian city; on at least one occasion its average AQI has been reported as the worst in the country even while trailing industrial centres such as Ludhiana in absolute emissions, indicating that green cover alone cannot offset the combined effect of vehicular density, regional stubble burning and construction dust.³⁷

In addition to that, the destruction of the tallest air purification tower in India, which was built at *Transport Chowk* in Chandigarh and was functional for four years, shows how technology-driven solutions have not worked in solving problems of urban air pollution. It did not work in enhancing the quality of ambient air; therefore, the authorities declared it a failure. This demonstrates the policy void that exists in dealing with air pollution, wherein the experimentations through infrastructure are preferred more to scientific and regulatory efforts aimed at the source of the problem. This assessment was subsequently borne out: an independent evaluation commissioned by the UT Administration found that the tower's benefit was confined to a very limited area around Transport Chowk, and in November 2025 the Chandigarh Pollution Control Committee directed the installing firm to dismantle the structure after more than four years of operation, with no similar towers now planned for the other five junctions originally earmarked under the pilot project.³⁸

V. THE JURISPRUDENCE OF SILENCE: REGULATORY STANDARDS AND ADMINISTRATIVE DETERRENCE (NOISE POLLUTION IN CHANDIGARH)

A. Legal Framework and Regulatory Standards:

The main legislative tool that controls the sound quality in India is the *Noise Pollution (Regulation and Control) Rules, 2000*, which have been promulgated by the Ministry of

³⁶ Times of India (2024) 413 at 7–9 pm: AQI takes 'severe' hit in Chandigarh. Available at: <https://timesofindia.indiatimes.com/city/chandigarh/413-at-7-9pm-aqi-takes-severe-hit-in-chandigarh/articleshow/126045243.cms> (Accessed: 1 Aug 2026).

³⁷ 'Chandigarh, with Max Tree Cover in India, Chokes under Worst Air Quality' The Tribune (Chandigarh) <<https://www.tribuneindia.com/news/chandigarh/chandigarh-with-max-tree-cover-in-india-chokes-under-worst-air-quality/>> accessed 21 August 2026.

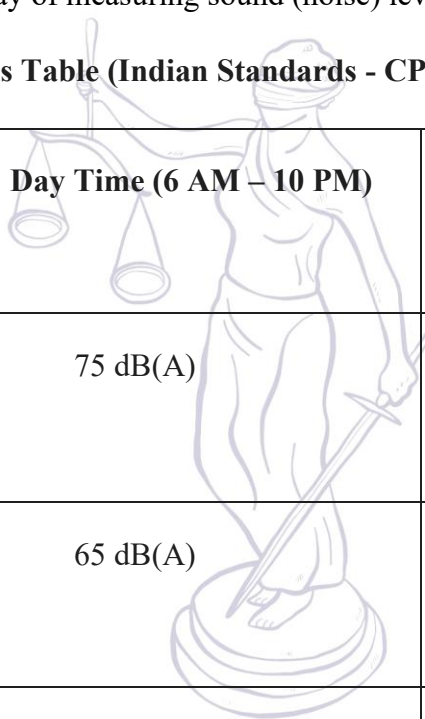
³⁸ 'Firm Told to Dismantle Transport Chowk Air Purification Tower in Chandigarh' The Tribune (Chandigarh, 17 November 2025) <<https://www.tribuneindia.com/news/chandigarh/firm-told-to-dismantle-transport-chowk-air-purification-tower-in-chandigarh/>> accessed 21 August 2026.

Environment and Forests on 14th February 2000. The rules were made under the Environment (Protection) Act of 1986 in an effort to counteract the adverse impacts of rising levels of ambient sound caused by industries, constructions, and commercial activities on humans.

B. Categorization and Ambient Standards

The legal framework mandates the classification of urban areas into four different zones in order to be able to enforce effective standards for noise. The time-weighted average of sound levels (dB(A)Leq) to a standard way of measuring sound (noise) levels.

C. Permissible Noise Levels Table (Indian Standards - CPCB)³⁹ :



Category of Area/Zone	Day Time (6 AM – 10 PM)	Night Time (10 PM – 6 AM)
Industrial Area	75 dB(A)	70 dB(A)
Commercial Area	65 dB(A)	55 dB(A)
Residential Area	55 dB(A)	45 dB(A)
Silence Zone	50 dB(A)	40 dB(A)

A Silence Zone is specifically defined as an area comprising not less than 100 meters around hospitals, educational institutions, and courts, as notified by the State Government.

D. Restrictions on Sound-Producing Instruments

³⁹ The Noise Pollution (Regulation and Control) Rules, 2000.

The Rules have imposed stringent restrictions on the usage of amplifiers and mechanical aids for the sake of protecting the ambient atmosphere:

- **Written Permission: Written Approval:** Loudspeakers/public address systems cannot be used without a prior written approval from the concerned "Authority," i.e., District Magistrate/Police Commissioner not below the rank of Deputy Superintendent of Police.
- **Restrictions at Night:** From 10 PM to 6 AM, any type of loudspeaker, musical instruments, and sound amplifiers are restricted except for closed places like auditoriums or in an emergency situation.
- **Cultural or Religious Occasions:** For the period of 15 days in a calendar year, the State Government may authorize the use of these systems up to 12 midnight on certain religious or cultural functions.
- **Boundary Limits:** When operating a loudspeaker at a public space, noise levels must not be more than 10 dB(A) above the ambient standard or 75 dB(A), whichever is lower. The upper limit for private sound systems is 5 dB(A) over the ambient standard.

E. Prohibitions in Residential and Silence Zones

In order to protect sensitive areas, the Rules clearly prohibit certain activities during night-time (from 10 P.M. to 6 A.M.) and silence zones:

- **Horns:** Horns cannot be used in silence zones and at night in residential zones, unless there is an emergency.
- **Firecrackers:** Firecrackers that emit sound cannot be burst in silence zones and at night-time in all zones.
- **Construction:** Residential areas and silent zones prohibit the use of sound-emitting construction equipment at night.

F. Enforcement and Grievance Redressal

The designated Authority is responsible for enforcing noise control measures and ensuring compliance with the standards. The legal framework empowers citizens to participate in enforcement through a formal complaint mechanism:

- **Right to Complain:** Any person may file a complaint with the Authority if the noise level exceeds ambient standards by 10 dB(A) or more, or if nighttime restrictions are violated.
- **Mandatory Action:** The Authority is legally bound to act on such complaints and take action against violators in accordance with the provisions of the Rules.
- **Power to Prohibit:** If satisfied that it is necessary to prevent annoyance or injury to residents, the Authority can issue written orders to prohibit or regulate vocal/instrumental music, sounds from loudspeakers, horns, or construction equipment.

G. Case Study: Administrative Deterrence and Enforcement (March 2025)

The issue of enforcing the standards regarding sound levels in Chandigarh took a significant turn for the better in the month of March 2025, showing how regulations move from theory to practice. The Chandigarh Department of Excise and Taxation decided to revoke the liquor license of eight popular nightclubs located in sectors 7 and 26 because of repeated violations of the noise standards⁴⁰. It is clear that this is an example of applying the "*Polluter Pays Principle*."

This crackdown was largely driven by a clear judicial intervention from the Punjab and Haryana High Court, that clearly stated that the *Right to Silence* is a fundamental component of the Right to Life under Article 21⁴¹. The Court established institutional accountability by ruling that top ranking officials, including the Deputy Commissioner and the Senior Superintendent of Police (SSP), could be held personally liable for failing to curb noise pollution within their jurisdictions. This case shows that the proper management of city noise requires a multi-agency approach.⁴²

It is worth noting that Chandigarh does not fall within the seven metropolitan cities covered by the Central Pollution Control Board's National Ambient Noise Monitoring Network, the continuous real-time monitoring infrastructure that has found roughly ninety per cent of monitored stations nationally exceeding permissible day and night noise limits; the city's enforcement therefore relies

⁴⁰ Hillary Victor, "Chandigarh cancels liquor licences of eight noisy nightclubs," Hindustan Times, March 25, 2025, available at [<https://www.hindustantimes.com/cities/chandigarh-news/chandigarh-cancels-liquor-licences-of-eight-noisy-nightclubs-101742842869015.html>] (last visited: 19 August 2026).

⁴¹ Re: Noise Pollution (V), (2005) 5 S.C.C. 733 (India).

⁴² Id. at 19.

more heavily on periodic drives and citizen complaints than on continuous automated data of the kind available in the seven networked metros.⁴³

H. Digital Governance and Grievance Redressal Mechanisms:

The Chandigarh administration has introduced a new-age approach to the implementation of acoustics standards, a dedicated "*Complaint Management Portal for Noise Pollution*." This system, created in collaboration with the office of the Deputy Commissioner, works as a single-point portal where complaints can be lodged and progress monitored using the official [chandigarh services.chd.gov.in](https://services.chd.gov.in) dashboard.⁴⁴ The system employs automation in its workflow in that once a complaint is logged by an individual, it is immediately sent to the concerned SDM and PCR. In order to maintain accountability in the process, the website issues an SMS alert that contains a reference number along with the name of the police officer who will deal with the complaint. While it is the responsibility of the PCR to control the noise pollution, the SDM has the authority to fine those at fault.⁴⁵ The implementation of this technology has helped rectify past inadequacies by putting everyone accountable in a process that has an audit trail.

I. Seasonal Enforcement and Student Welfare

Given the increased awareness necessary at these times, the Chandigarh Police has taken the necessary steps to protect the interests of students by issuing warnings. A special meeting was held between the Senior Superintendent of Police and Disc Jockeys, hotel administrators, and venue owners in February 2026 to ensure that rules are followed when it comes to noise restrictions during school examinations. This particular instruction ensures that there is an absolute adherence to the 10:00 PM deadline for the operation of sound and the need for permission for events.⁴⁶

⁴³ 'Noise Pollution Violations: New Fines Proposed by CPCB, Step in Right Direction' Down To Earth (New Delhi) <<https://www.downtoearth.org.in/pollution/noise-pollution-violations-new-fines-proposed-by-cpcb-step-in-right-direction-72415>> accessed 21 August 2026.

⁴⁴ Munieshwer A. Sagar, Chandigarh launches portal for noise pollution complaints, The Times of India (Mar. 28, 2025). <https://timesofindia.indiatimes.com/city/chandigarh/chandigarh-launches-portal-for-noise-pollution-complaints/articleshow/119612326.cms> (last visited April. 19, 2026).

⁴⁵ Id.

⁴⁶ Chandigarh Police issue noise advisory ahead of school exams, The Tribune (Feb. 13, 2026), <https://www.tribuneindia.com/news/chandigarh/chandigarh-police-issue-noise-advisory-ahead-of-school-exams/>. (last visited April. 19, 2026).

According to these seasonal guidelines, the police maintain a "zero tolerance" policy against violation of noise pollution in areas around residential complexes and schools, which have been marked as "silence zones" according to the guidelines of the year 2000.⁴⁷ By assigning responsibility to the managers of these venues and the DJs operating there, the government intends to ensure a "*disturbance free environment*"⁴⁸. This initiative of consultative involvement from the law enforcement authorities and the commercial sector marks an effort at taking a more preventive than reactive stance in noise control.

Noise management in Chandigarh has come to be characterized by active prevention through making business licensing conditional on environmental protection and holding individuals responsible. The Right to Silence has been upheld by the judiciary under Article 21, thus giving rise to the use of digital grievance portals and periodic guidelines that ensure effective implementation for the benefit of vulnerable groups such as students.⁴⁹ This makes it possible to turn statutory duties into institutional responsibilities.

In ***Balwinder Kaur v. State of Punjab*** ⁵⁰The National Green Tribunal solidified the mandatory nature of noise control by stating: "*Thus, noise free environment being part of right to life and binding statutory rules having been framed on the subject, violation of which is criminal offence and the High Court having given binding directions, no further adjudication is required. Only compliance is to be made by the concerned executive authorities.*"

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⁴⁷ See Noise Pollution (Regulation and Control) Rules, 2000, Rule 3(5) (defining silence zones around educational institutions).

⁴⁸ Chandigarh Police issue noise advisory ahead of school exams, *supra* note 37.

⁴⁹ Sagar, *supra* note 35; The Tribune, *supra* note 37.

⁵⁰ *Balwinder Kaur v. State of Punjab & Ors.* Original Application No. 121/2021 (PB).

VI. THE "ACTION-PARTICIPATION" GAP: A STUDY OF YOUTH ENVIRONMENTAL ADVOCACY IN CHANDIGARH (RESEARCH ANALYSIS)

A. Sample Size and Methodology:

The number of people used in this study is 72, which comprises mostly students living in the Chandigarh area. The data collection process was done by means of a Google Forms questionnaire to make sure that the data is easily accessible to the respondents. The participants included male, female, and other respondents to make sure that we have an inclusive gender perspective. Among the respondents, 54.2% were female while 45.8% were male.

The questionnaire *had 15 questions* about environmental law knowledge, climate change effects, and the presence of environmental regulators such as NGT and CPB.

B. Environmental Awareness and Perception of Climate Change:

An important outcome of this study is the acknowledgment of climate change by all subjects. 98.6% of the respondents agree that climate change influences their day-to-day life in Chandigarh. Amongst others, some of the major consequences observed by the students are as follows:

- Heat Waves (86.1%): Due to the urban heat island effect in Chandigarh.
- Air Pollution (61.1%): Seasonal phenomenon in the area.
- Waste Management Problems (50.0%): Indicating infrastructure issues within urban areas.

C. Legal Literacy and Institutional Visibility:

There is a very high amount of "theoretical legal literacy" among the participants.

- Constitutional Rights: The Right to a Clean Environment is guaranteed by Article 21 of the Indian constitution and this is recognized by 87.5% of the participants.
- Institutional Awareness: Though 84.7% know about the National Green Tribunal (NGT), awareness regarding the local body called Chandigarh Central Pollution Control Board

(CPB) was only at 62.5%. This implies that institutions operating at a national level have better branding than those working on a local level.

D. The "Action-Participation" Gap:

The most notable observation is perhaps the gap between legal awareness and legal action.

- **Grievance Redressal:** While 87.5% of students know about their legal rights, 90.3% of students have never lodged a grievance in regard to environmental issues. It suggests a possible absence of faith in the effectiveness of grievance redress mechanisms, or ignorance on how to raise such grievances.
- **Agency among Students:** Over half of the students surveyed, or 52.8%, think that students are not involved in making decisions about climate change and environmental conservation.
- **Habits:** Despite awareness about plastic pollution and climate change, usage of plastic is high; only 20.8% of the students surveyed "always" avoid using disposable plastic products.

This local action-participation gap mirrors a pattern documented at the national level: a 2026 industry survey found that although ninety-six per cent of Indians are now aware of climate change, only around ten per cent feel equipped to act on it, a readiness figure that has remained essentially unchanged since 2011 despite a marked rise in online climate discourse. The Chandigarh survey results therefore appear to be a local instance of a broader, well-documented national disconnect between awareness and action rather than an anomaly specific to the city's youth.⁵¹

E. The State of Campus Environments:

⁵¹ 'Climate Awareness Reaches 96% in India but Just 10% Act, Says Report' Outlook Business (27 April 2026) <<https://www.outlookbusiness.com/news/india-climate-awareness-96-percent-action-gap-report>> accessed 21 August 2026.

Environmental pollution at a local level is something that is evident in the academic environment. About 88.9% of respondents state that they encounter the presence of littering either "Often" or "Sometimes." There is thus an indication of a deficiency in managing wastes in educational institutions.

F. Legal Enforcement Perception:

The vast majority of participants in the survey (77.8%) feel that stringent enforcement of laws is necessary for combating environmental pollution. Such a view reflects the dependence of people on the deterrence theory in which it is believed that stringent enforcement measures and legislation are key instruments of stopping polluting activities. On the other hand, 15.3% are doubtful about this approach, implying that legislative measures by themselves are not sufficient to combat pollution as long as behavior at the grass-root level does not change accordingly.

G. Assignment of Responsibility for Climate Change:

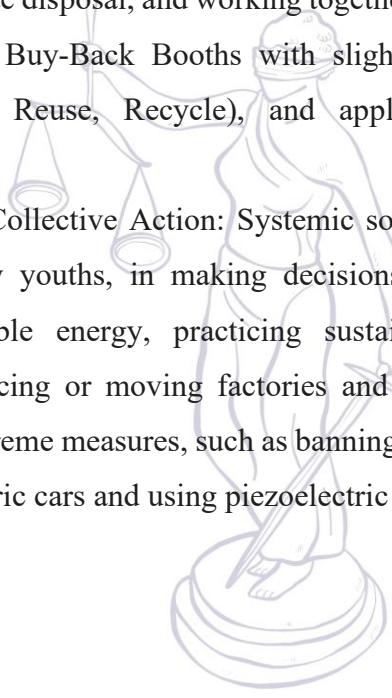
The results of the survey demonstrate a clear consensus on the necessity for shared responsibility. The overwhelming majority (90.3%) consider the key responsibility for climate change to belong to "*All of the above*," namely authorities, people, and industry. Thus, climate change is seen as a problem which can only be addressed by all parties. However, a very small percentage of students chose only authorities (5.6%) or only people (4.1%). It seems that although enforcement of the existing policies from above is anticipated, personal initiative is recognized as equally important.

H. Qualitative Data Synthesis (Possible Solutions):

Based on the suggestions provided by the respondents, the following key recommendations emerged:

- 1) **Strengthening Laws and Enforcing Them:** Suggestions made included the strengthening of laws relating to the environment as well as their strict enforcement. One of the suggestions made was that the enforcement of the Environment Protection Act (1986) should be strengthened through imposing stiffer penalties.

- 2) Awareness Campaigns and Education: The need for active awareness campaigns and environmental education was often cited as one of the possible solutions. This can include practical studies being conducted in schools and colleges, educating people about sustainable practices and innovations in this field as well as instilling good environmental etiquettes and civics among the masses, especially among children (as done in Japan)
- 3) Waste Management and Control: The respondents pointed out the need for waste management by using dustbins appropriately, regular cleaning, education on waste segregation and waste disposal, and working together. Some of the recommendations were establishing Plastic Buy-Back Booths with slight encouragement, following the 3Rs approach (Reduce, Reuse, Recycle), and applying the Producer Pays Principle.
- 4) Governmental and Collective Action: Systemic solutions included empowerment of the citizens, particularly youths, in making decisions regarding sustainability, expanding sources of renewable energy, practicing sustainable agriculture, increasing urban resilience, and reducing or moving factories and industrial zones to reduce pollution. Others asked for extreme measures, such as banning petrol and diesel automobiles in favor of hydrogen or electric cars and using piezoelectric materials in construction.



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VII. CONCLUSION

In conclusion, this analysis demonstrates the existence of an ironic contradiction in the city of Chandigarh, characterized by exceptionally high theoretical knowledge regarding legal matters among youth, despite their non-participation in environmentally relevant actions. In fact, while almost all students agree that they have been affected by global warming on a daily basis

and are familiar with their constitutional rights under Article 21 of India's Constitution, the overwhelming majority refuses to get involved in any activity, with only 7 out of the 72 respondents ever filing an environmental complaint, which represents 9.7%.

The identified "participation-action gap" results primarily from mistrust in the existing system of filing complaints about grievances and the belief that they have no power to contribute to decisions making on environmental policies in the region. Therefore, the findings imply that the protection of the "City Beautiful" requires not only the implementation of "policy on paper" but also a proactive strategy of strict adherence to environmental regulations based on increased institutional accountability and multi-agency coordination.

From the author's perspective, this gap reflects a wider contemporary issue where awareness does not lead to action. In Chandigarh, rising environmental degradation despite strong legal frameworks shows that effective change requires both active citizen participation and accountable governance.

This pattern is consistent with the Centre for Science and Environment's State of India's Environment 2026 report, which found that nearly eighty-eight per cent of young Indians surveyed nationally perceived the climate around them as changing and a majority described themselves as anxious about it, even as youth-led environmental protests grew in frequency; the report frames this eco-anxiety as widespread but not yet consistently channelled into sustained institutional engagement, a dynamic the Chandigarh findings reproduce at the city level.⁵²

⁵² 'Young People Are Anxious about Climate Change, Environment and Economic Insecurity; Protests by Youth on These Issues Are Increasing: State of India's Environment 2026 Report' (Centre for Science and Environment, 27 February 2026) <<https://www.cseindia.org/young-people-are-anxious-about-climate-change-environment-and-economic-insecurity-protests-by-youth-on-these-issues-are-increasing-state-of-india-s-environment-2026-report-13030>> accessed 21 August 2026.