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# Air Pollution in Delhi NCR: A Socio-legal Analysis of the Environmental Impact of Infrastructure Projects

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## ABSTRACT

*In 2018, the World Health Organization declared Delhi as one of the most polluted cities on the planet. Air Pollution in Delhi and the National Capital Region (NCR) has been a bone of contention for over a decade now. It was during the year 2015-2016 when Delhi was enveloped in the worst toxic smog, that various stakeholders such as media, civil society and citizen's groups started taking note of the precarious condition of air quality in the region, which was a result of the increase in the particulate matter (PM) concentration.*

*Every year starting late October, we see the governments in Delhi and the neighboring states of Punjab and Haryana engaging in a "blame game", as the Air Quality Index (AQI) drops from average to poor, to very poor, to severe. The narrative often shifts to seasonal activities such as 'stubble (paralli) burning' by farmers and even to bursting of crackers during the festivities. Although, these factors do contribute to the precarious condition in the region, the agencies and the masses fail to take into consideration factors which go beyond the season and contribute to the air pollution, throughout the year.*

*The back-bone of economic development is infrastructure. However, infrastructure development often comes at a heavy cost for the environment. Infrastructure development projects entail in essence construction, which if not properly checked and curtailed often leads to pollution. Thus, in the present context it is important to undertake a thorough study of the air pollution in the Delhi NCR region, especially taking into consideration the infrastructure projects and their implications and how the law fails to deal with it.*

**Keywords:** *Air Pollution, Environmental Impact, Infrastructure Projects, Delhi NCR, Analysis.*

## I. INTRODUCTION

In 2018, the World Health Organization declared Delhi as one of the most polluted cities on the planet<sup>2</sup>. Air Pollution in Delhi and the National Capital Region (NCR) has been a bone of

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<sup>2</sup> Tom Miles, *These are the world's most polluted cities*, WORLD ECONOMIC FORUM, (May 03, 2018),

contention for over a decade now. In the ever expanding lifestyle, infrastructure development forms one of the blocks of growth in the National Capital Region (NCR). However, unchecked construction sites coupled with the raw materials which go into the process, such as concrete, rubble, etc. form part of one of the prime contributors to the predicament of hazardous air quality index which is prevalent in the Delhi NCR region. It has been stated by the officials of Delhi Pollution Control Committee (DPCC) that “30 percent of air pollution is caused due to dust which emanates from construction sites”.<sup>3</sup> Furthermore, landlocked by treeless plains and deserts makes the national capital inherently dusty<sup>4</sup>.

Every year new policies are enacted to curb the problem of air pollution, however to no avail. It is pertinent to note that even when India has in place a dedicated legal framework to specifically tackle the problem of air pollution in terms of *The Air (Prevention and Control of Pollution) Act, 1981 (Air Act) and Environment (Protection) Act, 1986 (EPA)*, yet we have not been able to keep in check, much less curb the crisis of pollution in the National Capital Region.

Furthermore, it is interesting to note that ‘right to clean air’ is an extension of ‘right to clean environment’ which forms an inalienable facet of fundamental right under Art.21 of the Constitution of India, and the same has been time and again reiterated by the Supreme Court.<sup>5</sup> However, the real crux of the matter lies in the fact that the State’s responsibility to provide a clean environment to the citizens is a part of the Directive Principles of State Policy (DPSP), which are not enforceable in court of law, thus in effect giving a leeway to the State to get away with non-fulfilment of its responsibility.

### **(A) Objectives of Study**

The present study is aimed at analyzing the predicament of air pollution in Delhi NCR region in light of the infrastructure and development projects and their implications, from a legal perspective.

The proposed study would be an attempt towards answering the following questions:

- i. Whether there exists sufficient nexus between infrastructure activities and their effect in contributing to the problem of air pollution in Delhi NCR?

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<https://www.weforum.org/agenda/2018/05/these-are-the-worlds-most-polluted-cities>.

<sup>3</sup> Rashi Borana, *Pollution due to construction: is it solvable?*, AIRVEDA (Feb 18, 2019), <https://www.airveda.com/blog/Pollution-due-to-construction-Is-it-solvable>.

<sup>4</sup> Michael Safi, *Delhi's Deadly Dust: How Construction Sites Are Choking The City*, THE GUARDIAN, (Feb 18, 2017, 08.00 P.M.), <https://www.theguardian.com/cities/2017/feb/15/delhi-deadly-dust-how-construction-sites-choking-city>.

<sup>5</sup> Andhra Pradesh Pollution Control Board v. M V Nayudu, (1999) & Subhash Kumar v. State of Bihar, AIR 1991.

- ii. Whether the State is liable for providing 'clean air' as a facet of 'right to clean environment' under the constitution?
- iii. Do the existing laws provide for a check in specific context to the harm caused to the air, by way of infrastructure/development projects?

### **(B) Research Methodology**

The present research work is based on doctrinal approach of research and makes use of secondary sources such as journals, newspaper editorials, internet articles, etc. and collation of data and records regarding the effect of infrastructure projects on air pollution, found on various websites.

## **II. THE PREDICAMENT**

Non conformity to standard construction practices, coupled with bypassing industrial norms as a measure of cost cutting across hundreds of worksites, make the infrastructure activities (primarily construction and demolition work) the third-largest contributor of coarse pollutants which leads to hazardous condition, which is strongly linked to respiratory and cardiovascular diseases, as suggested in a study conducted in 2015<sup>6</sup>.

Not only is it the case of private contractors in the construction business, but even government contractors are openly flouting the rules while transporting construction materials, an example at this point being the road widening project of the National Highway 24. It was observed that "the dumpers and trucks carrying soil, sand and other construction material were spotted plying without any cover over raw materials. Water was not sprinkled on the top of the load, result of which dust particles from the construction material were mixing in the air. Dust from construction material causes itching in the eyes and other breathing issues".<sup>7</sup>

In 2015, India's environment court, the National Green Tribunal issued extensive regulations to clean up the city's construction industry. NGT went onto issue the following order, "*we direct that builders who keep their dust, sand, cement, brick and other construction materials on the public place and road, as per the directions of the tribunal already issued, would not*

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<sup>6</sup> *Higher Levels of Coarse Particles In The Air Associated With Increase In Same-day Cardiovascular Hospitalizations In Major Urban Areas*, JOHN HPKINS SCHOOL OF PUBLIC HEALTH, (Nov18, 2015; 11:41 P.M.), <https://www.jhsph.edu/news/news-releases/2015/researchers-find-link-between-air-pollution-and-heart-disease.html>.

<sup>7</sup> Abhishek Anand, *Construction dust chokes NCR, green rules up in smoke*, INDIA TODAY, (Oct 17, 2019; 04:45 P.M.), <https://www.indiatoday.in/mail-today/story/construction-dust-chokes-ncr-green-rules-up-in-smoke-1610140-2019-10-17>.

be permitted to do so”<sup>8</sup>. The bench headed by then NGT Chairperson Justice Swatanter Kumar further observed that “besides, seizing such materials under the provision of the Municipal Corporation Act of the Delhi, they would be liable to pay environmental compensation at the rate of Rs 50,000 per incident as already directed”.<sup>9</sup>

In the year 2017, the Report submitted by the EPCA for the Delhi NCR region provides that priority actions for control of pollution in winter consists of strict enforcement by GNCTD and municipal bodies of Hon’ble Supreme Court directives on control of dust pollution from construction activities and road through vacuum cleaning, etc.

<b>Pollution source and required action</b>	<b>Hon’ble Supreme Court directions</b>	<b>Status of Compliance</b>
<b>Dust from Construction and Demolition:</b>  Contributes 2% of PM 2.5.	SC order dated 16.12.2015 directing Delhi govt to ensure measures are taken to mitigate dust pollution from construction.	This is being monitored by Delhi and state governments. Clear guidelines have been given for dust control in construction project. Penalties have also been enhanced.  However enforcement is difficult given the scale of the problem.

**Table 1: “Summary of sources and required actions to combat air pollution, directions received from Hon’ble Supreme Court and status of compliance, by the EPCA”.**<sup>10</sup>

As evident from the table above, the key “challenge” in 2017, as is true for the year 2020 has been ‘effective enforcement’ of the compliance orders.

In the present context, the Supreme Court-approved graded response action plan (GRAP), has provided “that construction activities need to be stopped if the air quality index on a scale of 0 to 500 – touches severe plus (500+) or emergency category”<sup>11</sup>. This would mean that the PM 2.5 levels have crossed 300ug/m<sup>3</sup> or PM10 levels have crossed 500ug/m<sup>3</sup> continuously

<sup>8</sup> Builders to pay Rs 50,000 fine for dumping on road: NGT, ECONOMIC TIMES, (Dec 11, 2015; 10:18 P.M.), [https://economictimes.indiatimes.com/news/politics-and-nation/builders-to-pay-rs-50000-fine-for-dumping-on-road-ngt/articleshow/50142890.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](https://economictimes.indiatimes.com/news/politics-and-nation/builders-to-pay-rs-50000-fine-for-dumping-on-road-ngt/articleshow/50142890.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)

<sup>9</sup> Supra note 8.

<sup>10</sup> Report submitted by the EPCA for the NCR in 2017, to Hon’ble Supreme Court on air pollution sources and actions to be taken, directions till date and status of compliance in the matter of M. C. Mehta vs. UOI & Others, W.P. (C) No.13029 of 1985.

<sup>11</sup> Central Pollution Control Board Ministry of Environment, Forest & Climate Change, Govt. of India, *Graded Response Action Plan for Delhi & NCR*, [https://cpcb.nic.in/uploads/final\\_graded\\_table.pdf](https://cpcb.nic.in/uploads/final_graded_table.pdf).

for 48 hours or more. “The permissible limit for PM<sub>2.5</sub> in India is 60ug/m<sup>3</sup> and PM<sub>10</sub> is 100ug/m<sup>3</sup>”.<sup>12</sup>

The decision regarding GRAP measures is taken by the Environment Pollution Control Authority (EPCA) on the recommendation of the Central pollution control board (CPCB).

However, five years down the lane, from when the NGT first passed its order regarding strict compliance of norms set out for construction activities in the region of Delhi NCR<sup>13</sup>, the region is still suffering from a hazardous AQI and arguably, more so with AQI reaching as high as 999 in November, 2020.<sup>14</sup>

### What contributes to pollution at Construction Sites?

The chief contributors to pollution in construction and demolition activities are as follows<sup>15</sup> :

- **Dust from Construction:** Construction and demolition activities lead to airborne dust problems-which often remain suspended in the air in the surrounding area for weeks at times.
- The generators at construction sites running on **diesel engines** amongst other vehicles and heavy construction machinery add onto the levels of PM 2.5 in the air.
- **Noxious vapours** arising from the usage hazardous chemicals such as oils, thinners, paints, treated woods, plastics, etc. further add onto the air pollution.
- **Construction and Demolition (C&D) Waste:** “The waste comprising of building materials, debris and rubble resulting from construction, re-modelling, repair and demolition of any civil structure. Construction industry in India generates about 10-12 million tons of waste annually”<sup>16</sup>.

### Rules and clearances for Construction projects

As per the Report to Hon’ble Supreme Court on air pollution sources and actions to be taken, directions and status of compliance by the EPCA for the NCR in 2017:<sup>17</sup>

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<sup>12</sup> Risha Chitlangia, *Delhi: Poor air raises concerns of another construction ban, agencies say can't afford more delays*, HINDUSTAN TIMES (Oct 15, 2020; 10:10 P.M.), <https://www.hindustantimes.com/delhi-news/poor-air-raises-concerns-of-another-construction-ban-agencies-say-can-t-afford-more-delays/story-168kkkcuWKjcbY699gvLAI.html>.

<sup>13</sup> Supra note 7.

<sup>14</sup> Soumak Adhikari, *The AQI In Parts Of Delhi Was 999 Today. Paris Had Declared Air Emergency At 114*, INDIA TIMES, (Nov 10, 2020, 15:40 P.M.), <https://www.indiatimes.com/news/india/delhi-air-quality-going-bad-to-worse-amid-coronavirus-527222.html>.

<sup>15</sup> Rashi Borana, *Pollution due to construction: is it solvable?*, AIRVEDA (Feb 18, 2019), <https://www.airveda.com/blog/Pollution-due-to-construction-Is-it-solvable>

<sup>16</sup> Supra note 14.

<sup>17</sup> In the matter of M. C. Mehta vs. UOI & Others, W.P. (C) No.13029 of 1985.

*“The Delhi Pollution Control Committee (DPCC), under the Delhi government is responsible for ensuring that all construction projects meet the dust pollution norms as laid down by CPCB. EPCA has developed a guidance note for inspection of such sites, which will assist inspections and improve enforcement”<sup>18</sup>.*

- In 2016, MoEF & CC has issued the country’s first ever notification on construction and demolition (C&D) waste management. Up until now, C&D waste had found a brief mention in Schedule III in the Municipal Solid Waste (Management and Handling) (MSWM) Rules, 2000, which happened to be extremely inadequate. The new notification is, thus, a significant step forward. C&D waste is inert but bulky waste. It is either dumped in city landfills or in open spaces, water bodies and flood plains, choking up great chunks of urban land and water bodies.
- With the coming into force of this new notification, for the first time a proper framework has been created for recycle and reuse of C&D waste in the construction industry. These can substitute material mined from nature and prevent damage to water bodies, public spaces and green areas. As per these rules, local bodies will have to utilise 10-20 per cent of material from C&D waste in municipal and government contracts for construction. Every individual city requires to setup these facilities in a phased manner. All large generators of waste will have to pay charges for transportation, collection, processing and disposal. They shall be subject to specific obligations for separating construction and demolition waste before proper disposal. All large waste generators would need environment management plans.
- The Ministry of Environment and Forest has made it mandatory to obtain environmental clearances for construction projects having covered built-up area greater than 20,000 sq. m.<sup>19</sup>
- Further, construction material at the site and on the vehicles that carry them should be properly covered.
- Making sure that the construction sites are properly watered down so that the dust remains settle and is restricted from further spread.
- Setting barriers around construction site and covering mounds of sand with dust barrier sheets.

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<sup>18</sup> Supra note 14.

<sup>19</sup> Supra note 14.

- The construction companies are required to submit reports on the current status of construction and steps being taken by them to comply with the MoEF guidelines, 2010, for prevention of dust and garbage accumulation on their construction sites.
- “According to the C&D Waste Management Rules, 2016 the system should contain proper collection of segregated C&D waste from the generator, proper transportation of waste, storage of waste followed by proper processing of waste into recycled or reusable products that have market value and where minimal rejects are produced which get disposed in designated landfills.”<sup>20</sup>

Now in 2020, the big task that remains is the effective implementation and appropriate resource (financial and human power) allocation to local authorities. This will also require scaling up of the capacity building and recycling infrastructure. Unfortunately there is lack of adherence to these guideline and effective enforcement.

### III. ENVIRONMENTAL JUSTICE UNDER THE INDIAN CONSTITUTION

Originally the Indian Constitution of 1950 did not have explicit reference to environment protection; the Indian parliament passed a historic amendment -42nd Constitution Amendment Act, 1976. This amendment incorporated two significant articles i.e. Article 48A (Directive Principle of State Policy) and 51A (g) (Fundamental Duties) to protect and improve the environment.<sup>21</sup>

With changing times, the definition of the right to life has kept on changing. It has now evolved with time and to add on a newer perspective. Over the years, Supreme Court has evolved the sphere of ‘right to life’ as provided under Art. 21 of the constitution to include ‘right to clean environment’

“Right to life does not mean mere animal existence but living in better humanly living conditions with proper access to basic needs such as clean air and water”, this was held in the matter of *Andhra Pradesh Pollution Control Board v. M.V Nayudu*<sup>22</sup>, wherein Justice Jagannatha Rao placed the human rights issues and environmental problems on the same pedestal. He further observed that “environmental concerns arising in this Court under Article 32 or Article 136 or Article 226 in the High Courts are, in our view, of equal importance as Human Rights concerns. Both are to be traced to Article 21 which deals with the fundamental

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<sup>20</sup> Supra note 14.

<sup>21</sup> Jyoti Dharm, *Right to Live in a Pollution free Environment: a Critique*, 4 IJSR , 489, 489 (2015).

<sup>22</sup> *Andhra Pradesh Pollution Control Board v. M V Nayudu*, (1999) 2 S.C.C. 718 (India).

right to life and liberty”<sup>23</sup>.

There are a lot of judgments in which the Supreme Court has shown concern towards the jurisprudence of environmental matters. The apex court has also held that “in cases where a person's right to the enjoyment of pollution-free air and water is hampered, he can file public interest litigation for the same. This precedent was set forth in the case of *Subhash Kumar v. State of Bihar*”<sup>24</sup>.

#### **IV. HEALTH IMPLICATIONS OF AIR POLLUTION DUE TO INFRASTRUCTURE PROJECTS**

The year 2020 has been an unprecedented year in terms of the pandemic that the world is facing. India is no exception to this, with a staggering 8,911,576 cases<sup>25</sup> so far. At such an unforeseen turn of events, the rising pollution is only adding on to the woes of the people and the government. The condition of air pollution in Delhi NCR during the winter season is amongst the worst in the world.

With increasing construction activities in the city, pulmonologists concur that they are witnessing an increase in the number of respiratory cases over the years.<sup>26</sup> “Construction work releases a lot of chemicals that can enter the airways and exposure to such particles, cement and sand can lead to respiratory ailments.”<sup>27</sup>

##### **Carcinogenic chemicals**

Many chemicals like asbestos, silica, formaldehyde, di-isocyanates, flame retardants are used in construction work, and many of them are carcinogenic. “Particles less than 2.5mm can go deep into the lungs and cause inflammatory changes in the lungs. Silica exposure at sandblasts can cause fibrosis and breathing difficulty. People who are exposed regularly are also vulnerable to tuberculosis. At any quarries or digging work such silica particles are released”<sup>28</sup>.

#### **V. THE LOCKDOWN EFFECT ON AIR POLLUTION**

The sudden changes in the environment due to the current lockdown presented us with a

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<sup>23</sup> Supra note 21.

<sup>24</sup> *Subhash Kumar v. State of Bihar*, AIR 1991 S.C. 420 (India).

<sup>25</sup> *Corona virus Cases-India*, WORLDOMETER, (Nov 17, 2020; 06:45 P.M.), <https://www.worldometers.info/coronavirus/country/india/>.

<sup>26</sup> Surekha Santhanagopalan, *Construction dust: A major contributor to pollution*, DECAN HERALD (Oct 27, 2019), <https://www.deccanherald.com/city/construction-dust-a-major-contributor-to-air-pollution-771863.html>.

<sup>27</sup> Dr Sandeep H.S., Consultant Pulmonologist, Bangalore Institute of Respiratory Diseases and Sleep Disorders (BIRDS).

<sup>28</sup> Dr Sunil Kumar K, Consultant Interventional Pulmonologist, Aster CMI Hospital, Bangalore.

unique situation in terms of considerable reduction in the air pollution levels. Within two weeks into the initial 21-day lockdown Delhi's air quality status had already achieved the "satisfactory" (AQI 50-100) or "good" (AQI 0-50) category.<sup>29</sup> During this period construction activities were at a complete halt. In comparison presently, the state of air quality is between 'very poor to severe'.

It has been observed by the Central Pollution Control Board, that there was considerable improvement in air quality during the lockdown when construction activities were banned. The CPCB report also cited a study done by The Energy and Resources Institute (TERI) in 2018, saying that "during summers, dust and construction activities contribute to almost 38 to 42 per cent to the overall particulate matter in the air".<sup>30</sup> The findings further indicate that, during the period of total lockdown wherein, nonessential activities and construction work was at a complete halt, a considerable improvement was observed in the AQI as compared to the levels during the same period in the preceding year.

According to Delhi government, while also focusing on other aspects, the environment department will start monitoring construction sites early this year. This sector is a major contributor to air pollution in the national capital. "The monitoring of construction sites will be started earlier than usual. This is a priority of the government under the pollution action plan, an official informed. Reducing dust generated at construction sites is a priority under the government's action plan to tackle pollution".<sup>31</sup>

## VI. CONCLUSION AND SUGGESTIONS

In light of the present study, it becomes clear that infrastructure activities in terms of 'construction & demolition' activities is one of the key contributors towards the crisis of pollution in the region of Delhi NCR throughout the year is often overlooked as a prime factor in the fight against air pollution. And a further testament to this fact is the effect of lockdown on the air quality in the NCR region which went from a usual 'poor' to 'excellent' during the lockdown when construction activities were at a complete halt as compared to the month of August when the same were again allowed to take place.

It is not that the Indian legal framework does not account for the predicament of pollution due

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<sup>29</sup> Mahima Uttreja & Meena Sehgal, *Covid-19 lockdown: Cleaner air health and benefits*, TERI (May 07, 2020), <https://www.teriin.org/article/covid-19-lockdown-cleaner-air-and-health-benefits>.

<sup>30</sup> *Source Apportionment of PM2.5 & PM10 of Delhi NCR for Identification of Major Sources*, ARAI and TERI, Report No. ARAI/16-17/DHI-SA-NCR/Exec\_Summ, (Aug 2018).

<sup>31</sup> Siddhanta Mishra, *Early focus on construction sector to curb pollution in Delhi*, TOI, (Sep 26, 2020; 08:40 A.M.), <https://www.newindianexpress.com/cities/delhi/2020/sep/26/early-focus-on-construction-sector-to-curb-pollution-in-delhi-2202099.html>.

to infrastructure activities. There are specific guidelines even to account for the construction activities in the NCR region itself. From impositions by the NGT in 2015 to the issuance by MoEF & CC on the country's first ever notification on construction and demolition (C&D) waste management in 2016 to the Supreme Court-approved graded response action plan (GRAP). However, the crux of the problem lies in the effective enforceability of these norms and regulations. There exists a wide gap between what is tabled as a regulation or a guidance policy in our courts and houses of parliament and various other bodies vis-a-vis what is finally implemented on the ground level. Until effective implementation of the norms set forth regarding infrastructure activities in terms of construction and demolition management takes place the situation will remain grim as it presently is.

Further, the need of the hour is to also focus and bring the continual/perpetual sources of air pollution in the NCR region such as infrastructure activities into the mainstream debate rather than building the argument around seasonal challenges which only exist for a month or more and have limited effect when compared to the long lasting base which the continual sources of air pollution tend to yield.

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