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Policy Paralysis at the Dumping Grounds: Investigating State Inaction Amid Delhi's Escalating Landfill Catastrophe

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ABSTRACT
This paper is about the improper management of landfill sites in Delhi and how it has become a big curse for the people who are residing in the vicinity. The paper highlights the interconnection between government, environmental damage and social inequality. Despite having several international conventions and domestic laws State has failed in providing a safe and healthy environment to the people of the city. India's laws for managing garbage, which were established by the Environment Protection Act of 1986 and specific standards for municipal solid waste, plastics, bio-medical waste, hazardous waste, and e-waste, seem to be complete only on paper. The landfills at Okhla, Bhalswa, and Ghazipur have been overflowing for past so many years and are a grave threat to both human health and the environment. The uncontrolled production of leachate has led to severe contamination of groundwater and has put the lives of nearby residents at risk. Despite the Solid Waste Management Rules 2016 and other national and international policy goals, scientific landfill management and source segregation are still not widely used. More than 80% of municipal waste is being disposed of untreated. Who is responsible and answerable for this disaster? Urban planning bodies, municipal corporations, and pollution control boards or all of them? The paper will provide a deep insight into the reasons behind this problem. The paper highlights that the landfill disaster in Delhi projects failure on the part of the State. To resolve this crisis, a collaborative approach between different governmental agencies and departments, like CPCB, DPCC, etc., to be encouraged. The study highlights that mismanagement of landfills is a clear indicator of failure of governmental responsibility. The primary duty of the State is to protect the environmental health and physical health of its people, and to accomplish this goal, certain strict and effective measures to be adopted. The author highlights those mechanisms in the paper.

KEYWORDS
Landfills, Okhla, Municipal, Environment, State

I. Introduction

In the 21st century, waste is not only a by-product of consumption but also a legal, political and environmental issue.[1] The very concept of "waste" is, in a sense, a socio-legal construction: *what it is defined as determines what*

[1] Anouzla, Abdelkader, and Salah Souabi, editors. *Technical Landfills and Waste Management. Volume 1:*

materials count as waste, who is responsible for managing it, and what institutional arrangements oversee its regulation.[2] In India, this changing conceptualisation has nurtured a complex legal framework consisting of both generic environmental legislation and specialised waste-management regulations, each aimed at discrete streams of wastes: municipal solid waste, plastic waste, bio-medical waste, hazardous waste and electronic waste, to mention a few.[3] Although this patchwork of laws is sprawling on paper, in operation, it continues to be plagued by enforcement gaps and institutional inertia.[4]

The Central Government was authorized under the Environment Protection Act 1986 to enact subsidiary legislation dealing with specific categories of waste.[5] The Municipal Solid Waste (Management and Handling) Rules 2016 define municipal solid waste broadly as *"waste generated by households, including commercial and institutional waste, street sweepings, silt removed or collected from surface drains, horticulture waste, and treated bio-medical waste, excluding industrial waste, hazardous waste and e-waste."*[6] On paper, these rules require segregation at source and decentralized processing, thus breaking the antiquated approach of landfill-as-catch-all.[7] Likewise, the Plastic Waste Management Rules 2016 define plastic waste as any plastic product disposed of after consumption, with a difference varying from single sachets and thermocol to laminated packaging.[8] Significantly, these rules introduce the concept of Extended Producer Responsibility (EPR), which makes the manufacturers take prolonged responsibility for the post-consumer plastic waste generated by them.[9] The Bio-Medical Waste Management Rules 2016 specify strict procedures for managing waste from hospitals and clinics. Syringes, pathological materials, and soiled items must be segregated, treated, and, if required, incinerated to eliminate infectious hazards.[10] Additionally, the Hazardous Waste Management Rules 2016 and E-Waste (Management) Rules 2016 address industrial pollutants and out-of-date electronic gear, respectively, to acknowledge their potentially harmful impacts on human health and the environment.[11]

Landfill Impacts, Characterization and Valorisation. Springer, 2024.

[2] Pongrácz, Eva. *Re-defining the concepts of waste and waste management: Evolving the Theory of Waste Management*. University of Oulu, 2002.

[3] Hawkins, Richard GP, and Heidi S. Shaw. *The practical guide to waste management law*. Thomas Telford, 2004.

[4] Zhu, Da, et al. *Improving Municipal Solid Waste Management in India: A Sourcebook for Policy Makers and Practitioners.* The World Bank, 2008.

[5] Gunningham, Neil. "Environment law, regulation and governance: Shifting architectures." *Journal of Environmental law* 21.2 (2009): 179-212.

[6] Chandrappa, Ramesha, and Diganta Bhusan Das. *Solid Waste Management: Principles and Practice.* 2nd ed., Springer, 2024. *Environmental Science and Engineering* series, ISBN 978-3-031-50441-9

[7] Blair, John, and Sarath Mataraarachchi. "A review of landfills, waste and the nearly forgotten nexus with climate change." *Environments* 8.8 (2021): 73.

[8] Banerjee, Mrinalini, Abhay Singh, and Sanjeevi Shanthakumar. "India on Track to Plastic Waste Management–A Diversity of Challenges and Regulatory Innovations." *Proceedings of the NDIEAS-2024 International Symposium on New Dimensions and Ideas in Environmental Anthropology-2024 (NDIEAS 2024)*. Vol. 848. Springer Nature, 2024.

[9] Sevda, Surajbhan, and Garima Chauhan, editors. *Solid Waste Management. Volume 2: Biological/Biochemical Approaches.* CRC Press, 2024.

[10] Shivakumar, M. A. *Law relating to Bio-Medical Waste Management with Special Reference to Bangalore Urban City*. Blue Rose Publishers, 2023.

[11] Mohieli, Thakholi. *Improved e-waste management and potential for employment creation through the collection and recycling of e-waste: in the case of Maseru, Lesotho*. Diss. Stellenbosch: Stellenbosch University, 2022.

II. Landfill Status in Delhi

At the global level, India's legal framework is influenced partly by the Basel Convention of 1989, which deals with the transboundary movement of hazardous wastes.[12] This global instrument had an impact on India's following domestic legislation, thus accepting the fact that waste is no local nuisance but a transnational, systemic phenomenon.[13] Even with these elaborate codifications, however, India's record on enforcement continues to be lacklustre. In Delhi, for example, the three big landfill dumps, Ghazipur, Bhalswa and Okhla, have long surpassed their planned capacities.[14] Even after repeated instructions, these dumps persist as de facto open dumps, emitting methane, leaking poisonous effluent into groundwater and fueling public-health emergencies in nearby neighborhoods.[15]

Thus, *"waste" in India is in a contradictory place!* Stringently defined by law but hugely unregulated in practice. The problem is not simply one of proper categorisation or noise control, but really one of enforcement, responsibility and institutional competence. Waste has transformed from a small-town amenity to a defining litmus test for the competence of governance.[16] In Delhi, the inability to introduce scientific waste management despite judicial declarations, policy initiatives and fund assurances points towards the extensive gap between legislated mandate and lived experience.[17]

As Indian cities grow and consumption habits deepen, garbage has emerged as a fundamental governance issue.[18] In the past, garbage collection was the municipal authorities' default responsibility, a matter of primary sanitation and not an immediate environmental or public-health emergency.[19] But with high-speed urbanisation and increasing volumes of garbage, traditional collection-and-dump methods have been found wanting. City garbage is today inextricably interconnected with public health, land-use planning, environmental degradation and inter-agency coordination.[20] Waste management today engages several layers of the government: municipal corporations, state pollution control boards, urban development authorities, health departments and even the judiciary. Coordination among these institutions is poor, and strategic planning is barely done.[21]

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[12] Ahmed, Ishtiaque. "The Basel convention on the control of transboundary movements of hazardous wastes and their disposal: a legal misfit in global ship recycling jurisprudence." *Wash. Int'l LJ* 29 (2019): 411.

[13] Kumar, Surendra, and Harsh Vardhan Bhati. "Waste management to zero waste: Global perspectives and review of Indian law and policy." *Emerging Trends to Approaching Zero Waste* (2022): 79-101.

[14] Jolly, Stellina, and Nafees Ahmad. "The municipal solid waste disposal of Okhla landfill in Delhi: locating legal framework and institutional responses." *International Journal of Environment and Waste Management* 28.4 (2021): 487-505.

[15] Shaikh, Mustaq, and Farjana Birajdar. "Groundwater and Public Health: Exploring the Connections and Challenges." *International Journal for Innovative Science Research Trends and Innovation* 9.2 (2024): 1351-1361.

[16] Knox, Paul, and Heike Mayer. *Small town sustainability: Economic, social, and environmental innovation*. Walter de Gruyter, 2013.

[17] Mishra, Pallavi. "Unravelling the Environmental Challenges: a State-of-the-Art Review of the Legal Framework of Solid Waste Management in Metropolitan Cities of India." *Chinese Journal of Environmental Law* 1.aop (2024): 1-19.

[18] Doron, Assa, and Robin Jeffrey. *Waste of a nation: Garbage and growth in India*. Harvard University Press, 2018.

[19] Sullivan, Kathleen S., and Patricia Strach. "Ideas, Municipal Sanitation, and the Transformation of Public Health." *Urban Affairs Review* (2025): 10780874251332254.

[20] Raju, K. V., et al. "Urban Environmental Governance in India." *P. o. Springer International Publishing* (2018).

[21] Rondinelli, Dennis A., and Michael A. Berry. "Corporate environmental management and public policy: Bridging the gap." *American Behavioral Scientist* 44.2 (2000): 168-187.

In Delhi, policy scenarios have in mind decentralised composting, waste-to-energy plants and source segregation campaigns.[22] However, in reality, fewer than one in five households sort their trash out, and more than eighty per cent of municipal refuse continues to be shipped off to dumps.[23] Ghazipur, designed as a sanitary landfill that would reduce environmental damage, is today a 60-metre-high hill that often releases toxic fumes and has subsurface fires.[24] Bhalswa, located perilously close to the Yamuna floodplain, has seen recurrent fires and leachate contamination, while the Okhla site initially designated as a landfill became the home of a waste-to-energy plant that itself struggled with inefficiency and emissions.[25] These conditions starkly illustrate that Delhi's policy rhetoric remains disconnected from operational reality.

Beyond technical shortcomings, the crisis of waste in Delhi is also a social one.[26] Waste is not just understood materialistically (as rubbish) but socially who produces it, who disposes of it, and whose health is impacted by it. Wealthier, upper-income families and businesses usually produce the largest amount of non-biodegradable waste, plastics, packaging, and electronics, but are usually insulated from disposing of it.[27] Their responsibility stops at curbside dumping, and then they pretty much "disappear" from the waste stream. Conversely, the task of handling waste invariably falls on sanitation workers, informal ragpickers and waste pickers, many of whom belong to marginalised communities, notably Dalit, Muslim and migrant populations.[28] These individuals, lacking legal recognition and social security, toil in hazardous conditions without protective equipment or stable remuneration. Their labour is the backbone of Delhi's informal recycling economy, yet they remain largely invisible in official policy and planning.[29] This extreme social stratification of waste generation and handling reflects what environmental justice researchers call a waste hierarchy of human vulnerability.[30]

The spatial aspect of waste also deepens social injustice. Landfills are habitually located in poor neighbourhoods, areas with low land prices, and little political influence.[31] Residents in the vicinity of Ghazipur and Bhalswa endure chronic exposure to toxic fumes, volatile organic compounds and contaminated water, resulting in elevated

[22] Kushwaha, Pravin, et al. "Waste to Energy in Delhi." 2018,

[23] Youcai, Zhao, and Ziyang Lou. *Pollution Control and Resource Recovery: Municipal Solid Wastes at Landfill.* Butterworth-Heinemann, an imprint of Elsevier, 2017. ISBN 978-0-12-811867-2

[24] Yadav, Shilpi, and Mahabir S. Negi. "The Impacts on Environment and Health of Residents: A Case Study of Ghazipur Dumpsite (Landfill), East Delhi." *Population, Sanitation and Health: A Geographical Study Towards Sustainability*. Cham: Springer Nature Switzerland, 2023. 125-135.

[25] Ragazzi, Marco, editor. *Sewage and Landfill Leachate: Assessment and Remediation of Environmental Hazards.* Apple Academic Press, 2016. ISBN 978-1-77188-395-5.

[26] Randhawa, Pritpal, et al. "Pathways for sustainable urban waste management and reduced environmental health risks in India: winners, losers, and alternatives to waste to energy in Delhi." *Frontiers in Sustainable Cities* 2 (2020): 14.

[27] Mohanaprasadh, S. V., Pranshu Singh, and Kanchan Deoli Bahukhandi. "Disposal of non-biodegradable waste using eco-friendly methods." *Environmental pollution and natural resource management*. Cham: Springer International Publishing, 2022. 345-363.

[28] Khan, Sajedul Islam. "A study of the socio-political, caste and class factors in waste picking in Bangladesh: a thesis presented in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Social Work at Massey University, Albany, Auckland, New Zealand." (2023).

[29] Kornberg, Dana. *Reclaiming Waste, Remaking Communities: Persistence and Change in Delhi's Informal Garbage Economy*. Diss. 2020.

[30] Bell, Lucy. "Place, people and processes in waste theory: a global South critique." *Cultural Studies* 33.1 (2019): 98-121.

[31] Danthurebandara, Maheshi, et al. "Environmental and socio-economic impacts of landfills." *Linnaeus Eco-Tech* 2012 (2012): 40-52.

rates of respiratory illnesses, dermatological conditions and, in some instances, congenital disorders.[32] These communities often lack access to effective healthcare and remain underrepresented in local governance forums, leaving them powerless to influence decisions that directly affect their well-being. This environmental marginalisation pattern is not accidental but is indicative of waste governance that places economic cost-minimisation ahead of fair distribution of environmental risk.[33]

Globally, the intellectual framing of waste has seen a fundamental shift from a limited "disposal"-oriented perspective to a complete "management"-oriented focus, and more recently towards the principles of resource recovery and circular economy.[34] With the linear economy model, extraction, production, consumption, and landfill disposal, what was no longer useful was sent to these landfills as the ultimate destination. [35]But increasing evidence of groundwater pollution, greenhouse gases and land shortages has forced most countries to re-examine this pattern. Germany and Sweden, for example, have all but discarded landfill reliance through widespread recycling, composting and energy-recovery programmes.[36] The Netherlands' Lansink's Ladder ranks waste prevention, reuse, recycling and energy recovery over landfilling.[37] Rwanda's more recent pioneering move to ban plastic bags and neighbourhood-managed waste segregation also illustrates how policy measures combined with public acceptance can radically transform waste flows. India has, in principle, tried to follow suit.

The Solid Waste Management Rules 2016 marked a desire to break away from disposal-based paradigms by requiring source segregation, decentralized processing and scientific landfill management.[38] These rules integrate the waste hierarchy to prevent, reduce, reuse, recycle and compost before landfilling. Sadly, progress in implementing the same has been slow.[39] Delhi NCR's garbage-to-energy project ideas often fail, and large-scale composting is still a concept rather than a reality.[40] The outcome is that decades of policy development have not yielded substantial change on the ground, with legacy landfills left to grow unchecked and communities left to live with the resulting health and ecological consequences.[41] This essential misalignment between international

[32] Kumar, Vineet, et al. "Environmental impact, health hazards, and plant-microbes synergism in remediation of emerging contaminants." *Cleaner chemical engineering* 2 (2022): 100030.

[33] Chen, Guanyi, Ning Li, and Zhanjun Cheng, editors. *Solid Waste-Based Materials for Environmental Remediation.* CRC Press, 2025.

[34] Baskar, Chinnappan, et al., editors. *Handbook of Solid Waste Management: Sustainability through Circular Economy.* Springer Nature, 2022. ISBN 978-981-16-4229-6.

[35] Sariatli, Furkan. "Linear economy versus circular economy: a comparative and analyzer study for optimization of economy for sustainability." *Visegrad Journal on Bioeconomy and Sustainable Development* 6.1 (2017): 31-34.

[36] Baud, Isa, Johan Post, and Christine Furedy, editors. *Solid Waste Management and Recycling: Actors, Partnerships and Policies in Hyderabad, India and Nairobi, Kenya.* Kluwer Academic Publishers, 2004. ISBN 1-4020-1975-0.

[37] Mumba, Zh K. "Public private partnership in waste Management based on the theory of Lansink's Ladder." *Contemporary problems of social Work* 4.1 (2018): 20-28.

[38] Haq, Izharul, Ajay S. Kalamdhad, and Meena Khwairakpam, editors. *Advancement in Solid Waste Management and Treatment.* Springer, 2024. ISBN 978-3-031-64872-4.

[39] Awino, Florence Barbara, and Sabine E. Apitz. "Solid waste management in the context of the waste hierarchy and circular economy frameworks: An international critical review." *Integrated Environmental Assessment and Management* 20.1 (2024): 9-35.

[40] Kornberg, Dana. *Reclaiming Waste, Remaking Communities: Persistence and Change in Delhi's Informal Garbage Economy*. Diss. 2020.

[41] Escamilla-García, Pablo Emilio. "Landfills in developing economies: drivers, challenges, and sustainable solutions." *Technical Landfills and Waste Management: Volume 1: Landfill Impacts, Characterization and*

ambitions and local implementation serves to underscore that waste is not merely a technical or managerial issue but a profoundly political and institutional one.[42] Successful waste management requires more than technology and infrastructure; it requires strong legal frameworks, accountable governance, inter-agency coordination and, most importantly, social inclusion. [43]

In Delhi, the inability to rehabilitate old landfills, invest in segregation at source, or bring waste pickers into formal waste systems reflects a governance deficiency that transcends regulatory failures.[44] Fixing this will need not just regulatory changes but a change in how society understands, politicises and prioritises waste. In remaking waste management, it is imperative to acknowledge that waste is a powerful barometer of the state's ability and desire to care for the environment, public health and distributive justice.[45] When waste is permitted to back up in urban areas, it can disclose the limits of state responsibility and how far certain communities have been relegated to being expendable. By conceptualizing waste as a socio-legal construction, we escape from the limited thinking of disposal and into the realization that waste is an indicator of systemic neglect, institutional fragmentation and social inequality.[46] As we go on to explore the particular example of landfill sites in Delhi NCR, this section provides context by placing waste within its wider legal, environmental and social contexts.

In the following section(s), attention will be drawn towards a critical examination of how the State has succeeded or struggled in fulfilling its duties, deepening into the legal structure, institutional culture and human consequences involved with landfill management.

The concept and idea of landfills in urban India were traditionally viewed as large open lands located far away from residential areas, and garbage collected from these residential areas would then be disposed of on these lands. But what one sees now is that the landfills are more like dumping yards because the increase in population of urban India has led to this disaster. The distance between landfills and residential areas has decreased. Interestingly, landfills have a particular lifespan, and most landfills in Delhi have reached the end of their life. The ill-designed and haphazard trash disposal in these landfills has led to this catastrophe. Landfills release an uncontrolled amount of methane gas, which often causes fire, thus posing a serious threat to the environment. Apart from the excess release of methane gas, there is also the formation of leachate, which is the primary cause of groundwater contamination, collectively causing serious and irreversible damage to the environment and human health. Scientific landfills are the solution because they can treat garbage while it is being disposed of, making them extremely valuable in urban waste management. Unfortunately, Narela-Bawana remains the only scientific landfill in India, spread across 150 acres of land, double the size of Ghazipur landfill at 70 acres. The scientific landfill has the capacity to treat 2,000 tonnes of waste every day, generating 24 megawatts of electricity.

IV. Issues and Challenges posed by the Catastrophe

i. Crisis of Governance

The long-lasting spectacle of crumbling wastes at Ghazipur, Bhalswa and Okhla lays bare more than structural

Valorisation. Cham: Springer Nature Switzerland, 2024. 157-170.

[42] O'Neill, Kate. "Linking wastes and climate change: Bandwagoning, contention, and global governance." *Wiley Interdisciplinary Reviews: Climate Change* 10.2 (2019): e568.

[43] Honkonen, Tuula, and Sabaa A. Khan. *Chemicals and Waste Governance Beyond 2020: Exploring Pathways for a Coherent Global Regime*. Nordic Council of Ministers, 2017.

[44] Chan, Loritta Ying Ping. "Schooling access and urban livelihoods: children from waste picker families in Delhi." (2022).

[45] Sayers, Malcolm. *The Welsh Doughnut: a framework for environmental sustainability and social justice*. Oxfam GB, 2015.

[46] Sitakumari, T., and K. Sravani. "Waste Management and Public Health Concern: A Socio-Legal Study." *Issue 4 Int'l JL Mgmt. & Human.* 6 (2023): 2017.

failure; it betrays a breakdown in democratic governance. Landfills may be comprehended as markers of the intersection of power, policy and public interest[47] and not garbage cans for unwanted waste. In Delhi, while outsourcing the waste, no single agency takes total responsibility for its impact[48], and this lack of accountability turns legal responsibilities into paper responsibilities only.

Institutionally, the mechanisms of regulatory enforcement themselves are entangled in the web of procedural complexity.

ii. **The Invisibility of Landfills in Urban Policy**

The urgency of the crisis caused by landfills remains absent from the core discourse of urban policy in India. Urban planning reports, by the Delhi Development Authority (DDA) or state governments, predominantly address infrastructure development, housing plans, and commerce, marginalizing waste infrastructure as a low-level technical issue.[49] Its invisibility is neither deliberate nor random but rooted in a policy regime that treats waste as off-center to the project of modernization.

The Smart Cities Mission, a flagship urban regeneration program initiated in 2015, is a good example. Whereas it talks about *"clean cities,"* most proposals focus on digital administration, road expansion, and beautification initiatives, mostly confined to central urban areas. In Delhi NCR, all this has manifested in selectively tackling waste management, such as underground trash bins in Lutyens' Delhi or digital sensors in the New Delhi Municipal Council jurisdiction.[50] Landfill management, on the other hand, is left to under-resourced municipal authorities with minimal fiscal or technical support. This fragmentation supports the imagery of landfills as marginal sites, both spatially and bureaucratically.

A deeper examination of municipal budgets confirms this gap in prioritisation. A 2023 Delhi government audit report states that less than 4% of the overall municipal budget went towards solid waste management, with a minuscule portion for remediation of landfills or treatment of leachate.[51] In comparison, transport and infrastructure took close to 30% of the expenditure. This budgeting trend shows a logic of planning that views waste disposal as a backend function, not one that is integrated into the city's ecological impact, public health policy, or climate targets.[52] The landfills, therefore, are made invisible due to both economic marginalization and policy denialism.

iii. **Lack of Transparency**

There is no centralized, real-time data portal providing citizens access to emission data, the level of groundwater contamination, and public health indicators around landfill areas, which further exacerbates the problem. CPCB (Central Pollution Control Board) and the DPCC (Delhi Pollution Control Committee) issue periodic reports that are still technical, disjointed and not easily accessible to the public. The result is an information asymmetry that isolates policy accountability from public participation. If landfills are to be reintegrated into the centre of urban

[47] Abubakar, Ismaila Rimi et al. "Environmental Sustainability Impacts of Solid Waste Management Practices in the Global South." *International journal of environmental research and public health* vol. 19,19 12717. 5 Oct. 2022, doi:10.3390/ijerph191912717

[48] Swati Singh Sambyal, Down To Earth, *Delhi's solid waste: a systemic failure*, 5 Jan., 2017

[49] Sengupta, Alokeparna. "Complementing" World Class" transport infrastructure residential property development-The case of neoliberal urban restructuring in East Delhi." (2017).

[50] Pratibha Sharma, *Delhi's Air: Why Does No One Care About Unmanaged Waste?*, Economic and Political Weekly (Dec. 20, 2017)

[51] Mitul Kaul, *Copy of Jaankari || The Economics Society, SRCC*, (July 30, 2024), https://ecosocsrcc.com/wp-content/uploads/2024/07/Project-Jaankari-2022-23.pdf.

[52] *Cutting down landfill waste – Mississauga's move to curb excessive waste*, (Mar. 15, 2024), https://www.mississauga.ca/city-of-mississauga-news/news/cutting-down-landfill-waste-mississaugas-move-to-curb-excessive-waste/.

policy, first, they must be made visible socially, institutionally, and politically.[53]

Policy invisibility also continues in cyberspace. For instance, the Swachh Bharat Urban Dashboard that rates cities on cleanliness assigns importance to tangible results, such as sweeping roads or toilet coverage, but not to back-end processes such as remediation of landfills or biomining.[54] Therefore, cities can rise in the cleanliness ratings while their landfill problem increases. Delhi has consistently missed NGT-established deadlines for clearing legacy waste, but this is not seen in urban performance metrics. [55]Under this model, cities are encouraged to clean façades instead of addressing structural waste issues.

The invisibility of landfills corresponds to an underlying epistemological bias in Indian urbanism. Cities are imagined as growth machines and engines of development, not ecological reciprocity or waste justice spaces. Landfills problematize this imagination: they are bleak reminders of consumption, exclusion, and systemic rot.[56] To include them in policy frameworks means a change in both language and logic: from waste as an "end-point" to waste as an ongoing process of urban metabolism.[57] That takes new tools such as integrated waste mapping, decentralised segregation systems, inclusive policy-making, and rights-based urban design tools, which re-centre landfills not only as issues to be concealed but as signals of how just or unjust a city actually is.

iv. **Health Risks, Caste Geography, and Gendered Exposure**

Delhi NCR's dumping grounds release a toxic combination of pollutants from methane and sulphur dioxide to benzene and ultrafine particulate matter (PM2.5).[58] Air quality monitors placed within 500 metres of Ghazipur and Bhalswa regularly show levels 150–250% over the allowed National Ambient Air Quality Standards (NAAQS). In addition to noxious fumes, these places have polluted groundwater, which regularly indicates high concentrations of nitrates, heavy metals and biological contaminants.[59] This cocktail of chemicals, continually breathed and consumed by inhabitants, contributes directly to chronic health deterioration but is legally unrecognized by urban planners.

A 2022 community health survey conducted by the Delhi Health Initiative revealed that nearly 60% of Bhalswa-area households report chronic respiratory conditions such as asthma or bronchitis, over four times the city-wide average.[60] Such prevalence cannot be chalked up to coincidence, especially when supported by satellite imaging that confirms persistent toxic plumes emanating from landfill fires. These consistent pollution exposures have become entrenched in the day-to-day breathing and living conditions of entire generations.

Laid over top of these environmental burdens is a geography of caste characterised by structural neglect. Based on a 2021 report by the Delhi Social Justice Commission, more than 80% of residents living near landfills are Scheduled Castes or Muslims. Their presence is not simply a natural demographic result but an expression of caste exclusions that make some areas "sacrifice zones" of urban planning. While richer parts of town, such as

[53] Wolsink, Maarten. "Contested environmental policy infrastructure: Socio-political acceptance of renewable energy, water, and waste facilities." *Environmental Impact Assessment Review* 30.5 (2010): 302-311.

[54] Payoja Ahulwalia, *Seven years of Swachh Bharat Mission*, https://prsindia.org/theprsblog/seven-years-of-swachh-bharat-mission?page=170&per-page=1.

[55] Das, Piu, and Gouri Gargate. "Legal jurisprudence of solid waste management in India: development through the decades." *International Journal of Global Environmental Issues* 22.2-3 (2023): 268-294.

[56] Sundaresan J. Decolonial reflections on urban pedagogy in India. Area. 2019; 00:1–9. https://doi.org/10.1111/area.12596

[57] Gandy, Matthew. "Rethinking urban metabolism: water, space and the modern city." *City* 8.3 (2004): 363-379.

[58] Selokar, Ashish, et al. "PM 2.5 particulate matter and its effects in Delhi/NCR." *Materials Today: Proceedings* 33 (2020): 4566-4572.

[59] Singhal, B. B. S., et al. "Groundwater contamination." *Applied Hydrogeology of Fractured Rocks: Second Edition* (2010): 221-236.

[60] Priyali Dhingra, *Delhi's landfills spread health hazards amid buried promises*, Question of Cities (Nov. 18, 2022)

New Friends Colony or Greater Kailash, have tidy green spaces, such populations face environmental danger disguised as legality, hidden behind distance, and explained through silence.[61]

Income inequality exacerbates these injustices. The 2019 National Sample Survey estimated the average monthly income in landfill-neighbouring wards to be around ₹8,000, below half the city's average of ₹18,000. Low incomes reduce nutritional security, access to health services and disease resilience, converting environmental risks into virtual certainty of life-changing outcomes.

Females in these areas have a double burden: they run homes and partake in small-scale recycling, steroid exposure to toxins, and the constant responsibilities of domestic care. According to a 2020 report from the Delhi Health Initiative, Ghazipur and Bhalswa women were twice as likely as men to exhibit chronic skin conditions. Their exposure is two-fold along the frontline of landfill danger and in the home, where this same contamination clings to living space and water systems.

Pregnant women and infants are disproportionately saddled with horrific outcomes. Hospital records at ward level in Chilla (2022) showed that 10 of 12 babies born to women living locally had low birthweight, thyroid or respiratory problems.[62] The findings resonate with international environmental health literature, which consistently points to intrauterine susceptibility to toxicants. Every infant born in landfill proximity has the biological odds against them since birth.

Child health indicators also highlight the crisis. UNICEF's health monitoring statistics (2022) indicate that about 45% of children in these neighbourhoods suffer from repeated episodes of diarrhoea, more than twice the Delhi prevalence rate of 21%. [63]Pathogens in contaminated soil and poor sanitation facilities are responsible for systemic gastrointestinal infections that hinder physical and mental growth, increasing the risk of illiteracy and child labour.[64]

Domestic exposure to landfill waste conditions further aggravates exposure for women and children within the household. Women sort through recyclable plastics, aluminium, and glass without wearing protective equipment. Their homes and bodies are veritable extensions of landfill pollution, disseminating toxins onto kitchen surfaces, bedding, and play toys. These chronic low-dose exposures pose a peculiar public health issue that existing environmental policy is not equipped to tackle.

Site conditions for waste labourers pose health hazards. Combustion from open fires, waste dump collapse and chemical pollution present tangible dangers.[65]

Physical exertion work in these settings also causes long-term musculoskeletal illnesses. Recovery staff are burdened with heavy weights daily, put up with uncomfortable postures, and put in extra hours without rest. Indian labour laws, however, are oblivious to all such cumulative trauma, regarding them as common work wear and tear instead of occupational diseases.[66]

Nutrition-wise, these groups do not do well. 38% of the women of reproductive age in Ghazipur have iron-deficiency anaemia, twice the urban rate. Not only does such a deficiency undermine women's health, but it also

[61] Kumar-Rao, Arati. *Marginlands: Indian landscapes on the brink*. Pan Macmillan, 2024.

[62] Singh, Neha, et al. "Impact of Plastic Wastes Generated During COVID-19 Pandemic on Population Health and Well Being." *Plastic and the COVID-19 Pandemic: Innovative Solutions to Mitigate Plastic Pollution*. Cham: Springer Nature Switzerland, 2024. 149-171.

[63] Saha, Jayanti, Dilwar Hussain, and Dhiman Debsarma. "Exploring the Association Between Floods and Diarrhea among Under-five Children in Rural India." *Disaster Medicine and Public Health Preparedness* 18 (2024): e142.

[64] Sekhar, K. Chandra. "Sanitation and Child Development." *PUB TYPE* 93 (1991): 73.

[65] Chavan, Digambar, Shashi Arya, and Sunil Kumar. "Open dumping of organic waste: Associated fire, environmental pollution and health hazards." *Advanced organic waste management*. Elsevier, 2022. 15-31.

[66] Melhorn, J. Mark. "Cumulative trauma disorders and repetitive strain injuries the future." *Clinical Orthopaedics and Related Research®* 351 (1998): 107-126.

results in increased maternal and infant deaths. The intersection of poverty, dietary inadequacy, and environmental pollution locks communities into generational underdevelopment.

Surveys done by NGOs in early 2023 reported that 27% of adults who lived close to landfill sites showed symptoms of anxiety; 18% were exhibiting depression signs.

Vectors transmit disease silently in the backstreets of trash. Filthy water and bad drainage attract mosquitoes and rodents. Delhi Medical Association statistics in 2021 indicate TB rates 1.3 times greater in landfill-neighbour wards, with leptospirosis cases 1.4 times higher than city-wide averages.[67]

Seasonal climatic phenomena aggravate health risks. Monsoon rainfall washes leachate into water sources. After the rains in 2022, water tests in Bhalswa revealed levels of contamination three times over safe limits.[68] Surface water flooding disperses faeces and waste material into living spaces, converting public health crises into seasonally recurring catastrophes.

India's main environmental laws Air Act (1981), Water Act (1974), and Environment Protection Act (1986), set standards for pollutants but are oblivious to cumulative exposure and human impact assessments. Environmental Impact Assessment standards are still procedural, neglecting lived realities and community consultations for the most vulnerable.[69]

Without recognizing the intersection of caste, gender, socio-economic status, and environmental health, Delhi's autonomy risks being hollow. True justice requires a holistic response health infrastructure, legal protection, educational intervention, and occupational safeguards as fundamental components of landfill governance and urban humanization.

v. **Non-Compliance and the Climate Conundrum**

India's adherence to the Sustainable Development Goals (SDGs) and Nationally Determined Contributions (NDCs) under the Paris Agreement is a general promise: to achieve economic growth while incorporating environmental sustainability and resilience into the development trajectory. But non-adherence to this is a sign of a disconnect between design and implementation.

V. Reforms and Measures to be Undertaken

Substantive reforms to be undertaken to curb this menace caused by landfills. This will require several systemic changes-

- Firstly, regulating bodies that are specialised, for instance MCDs, NDMC, environmental activists, health ministries, and waste-picker representatives, need to be given substantive power and should be legally obliged to put in place, monitor, and revise waste policies.
- Secondly, stakeholders' to be made part of the decision-making body.
- Thirdly, judicial orders need to be enacted into enforceable norms, with strict compliance and failing to observe shall attract heavy fines.
- Lastly, protections for waste workers need to be put into law, and it should become mandatory.

The problem of landfill is both conceptual and structural. Processes like composting, bio-mining, and methane flaring are manageable. The issue lies lack of governance. What is needed is a legally empowered Landfill Rehabilitation Authority, with an actual budget, oversight authority, and prosecutorial backup.

[67] Mandal, Sandip et al. "Estimating the Burden of Tuberculosis in India: A Modelling Study." *Indian journal of community medicine : official publication of Indian Association of Preventive & Social Medicine* vol. 48,3 (2023): 436-442. doi:10.4103/ijcm.ijcm_160_23

[68] Kumar, Sanjeev, Sirajuddin Ahmed, and Rajkumar Joshi. "Assessment Of Temporal Variations In Leachate Characteristics At An Active Landfill Site Of Delhi." *Journal of Survey in Fisheries Sciences* 10.3 (2023): 791-800.

[69] No, Regent Estate Plot. "ENVIRONMENTAL AND SOCIAL IMPACT STATEMENT." (2015).

IV. Conclusion

In conclusion, the author likes to contend that laws are no longer enough to prescriptively dictate landfill procedures; the State need to reassure its people with the right to clean water and air as part of the right to life under Art. 21 of the Constitution. The health and life of vulnerable residents who reside in the vicinity of Ghazipur or Bhalswa to be protected by the State at any cost. Concerned governmental bodies to track air quality, water contamination and take preemptive action on methane signals regularly.

Not only this, but the health and legal rights of the waste pickers to be protected too. Stakeholder input for designing reclamation plans and closure of landfill must be taken into consideration; thereafter, the plan must be reviewed by the local councils. Citizen participation should become an inevitable part of the entire process.

Every coin has two sides; one can view landfill sites as a sight of menace or an economic toolkit at the same time. They are the sources of both emissions and potential resources. If supported by technology, methane can be sold as clean energy. Methane recovery can become part of a climate action plan, too.

Subsequently, the next step should be framing of creative judicial interpretations, like more environmental benches issuing orders for landfill rehabilitation trusts, carbon financing mandates, or enforceable workplace protections based on constitutional assurances. The three interwoven strands, climate-backed economics, rights-based regulation, and juridical innovation, can collectively redefine and reincarnate the face of urban environmental governance. Delhi needs to construct a system that can overcome emergency measures and convert environmental catastrophe into civic planning.

This reform imperative holds unequivocal guidance for future works:

- Juridical research ought to investigate how constitutional rights may sustain climate-financed environmental programs. Can the right to life be used to justify carbon bond issuances for restoring waste sites? Might a PIL contend that failure to regulate landfill emissions infringes on local health and India's global commitments?
- Litigation structures must challenge courts to make environmental orders with bite. For instance, a landfill rehabilitation fund ordered by the court could be created through statutory payments from municipal authorities, augmented by carbon credit income shares. Worker cooperatives might also be compelled to join fund decision-making.
- Institutional design research must investigate hybrid and horizontal modes of governance: institutions in which municipal corporations, pollution control boards, waste-worker cooperatives and citizen watchdog panels work together and co-govern, not hierarchically enforce or adjudicate. What are the platforms that can tap local data to inform municipal decisions, and how can oversight bodies be vested with the authority to raise warning flags and enforce rectification?
- Inspiration can be drawn from foreign models like Seoul's public-private carbon efforts, Medellín's community-driven landfill redevelopment, and Argentina's rights-based labour policies for waste.

Delhi possesses the social energy, intellectual depth, and institutional potential to drive this transformation. Waste must be visualised not as what is thrown away or discarded, but as what is left when institutions fail. This issue can be resolved if the people of the city change their perception. Trash to be viewed as a space of democratic action, climate responsibility and civic dignity.