

## Impact assessment of Swachh Bharat mission in Raghbir Nagar

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### *Abstract*

*Sanitation and hygiene form the bedrock of public health and environmental sustainability, aligning with Sustainable Development Goal 6 (SDG 6), which underscores universal access to clean water and sanitation. The United Nations Development Programme (UNDP) emphasizes the critical role of these essentials in building equitable and sustainable urban living environments. Launched in 2014, the Swachh Bharat Mission (SBM) has been instrumental in addressing India's sanitation challenges, yet uneven implementation persists. Raghbir Nagar in Delhi exemplifies such challenges, grappling with irregular waste collection, open dumping, and insufficient public sanitation facilities. While some infrastructural progress has been observed, a cohesive and community-oriented strategy remains crucial.*

*Indore, a trailblazer in urban sanitation, offers valuable lessons. Under the leadership of former mayor Malini Laxmansingh Gaur, Indore transformed its waste management practices by prioritizing strict waste segregation, efficient collection systems, and fostering strong civic participation. These measures established the city as a national benchmark for cleanliness. Similarly, Delhi's Navjeevan Colony reflects how focused initiatives can lead to significant improvements, showcasing the effectiveness of collaborative efforts between residents and local stakeholders. Raghbir Nagar has the potential to replicate such success by addressing critical gaps. Strengthening the door-to-door waste collection system, ensuring proper waste segregation, enhancing public sanitation infrastructure, and launching awareness campaigns to instill a culture of cleanliness are vital steps.*

*Moreover, targeted investments in solid waste management facilities and fostering collaboration between authorities and residents are imperative to achieving sustainable outcomes. The present study had two main objectives. The first objective was to assess the impact of Swachh Bharat Mission in Raghbir Nagar. For this, a questionnaire-based survey was carried out in the colony. The second objective was to identify the reasons for the limited success of the mission in the area. A survey of secondary sources helped in identifying two cases (Indore and Navjeevan Colony) where the Swachh Bharat Mission had been successfully implemented.*

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*Drawing inspiration from Indore's structured approach and Navjeevan Colony's effective community engagement, Raghbir Nagar can move toward achieving the goals of the Swachh Bharat Mission. By adopting these best practices and tailoring them to local needs, the locality can foster a cleaner, healthier living environment for its residents.*

**Keywords:** Sanitation, Swachh Bharat Mission, SDG 6, Urban Waste Management.

## INTRODUCTION

The Swachh Bharat Mission (SBM), launched by the Government of India in 2014, is a significant initiative aimed at improving sanitation, solid waste management, and eliminating open defecation across urban and rural India. As a central component of India's development agenda, SBM aligns with Sustainable Development Goal 6 (SDG 6), which calls for the availability and sustainable management of water and sanitation for all (United Nations, 2023). Access to sanitation is not only a fundamental human right but also plays a crucial role in public health, economic development, and environmental sustainability. According to the United Nations Development Programme (UNDP), "sanitation and hygiene are critical for health, well-being, and the achievement of equitable and sustainable urban living environments" (UNDP, 2023).

SBM is structured across multiple phases, each focusing on specific aspects of sanitation. The first phase, which spanned from 2014 to 2019, primarily aimed at eliminating open defecation by constructing individual household latrines (IHHLs) and public toilets in rural and urban areas. The second phase, which began in 2019, expanded the focus to include solid waste management and the maintenance of sanitation infrastructure to ensure long-term sustainability. The ongoing mission has led to significant improvements in urban sanitation, yet challenges persist in certain areas, particularly in underserved urban slums and areas with poor infrastructural development.

A key component of SBM's progress is the Swachh Survekshan, an annual cleanliness survey conducted by the Ministry of Housing and Urban Affairs. The

survey evaluates the cleanliness standards of cities across India based on their waste management practices, infrastructure, and citizen participation. Indore, a city in Madhya Pradesh, has consistently topped the rankings in Swachh Survekshan, earning recognition for its robust waste management system, effective waste segregation practices, and community involvement. Indore's success is largely attributed to strong governance, municipal leadership, and the active participation of residents, which together have led to the establishment of a highly efficient sanitation system.

In contrast, Delhi, the national capital, has made notable progress in sanitation but faces significant challenges in certain localities. According to the Swachh Survekshan 2020 rankings, notably, areas like the NDMC (New Delhi Municipal Council) region, which have access to better sanitation facilities and robust waste collection systems, perform much better in the rankings than others. However, areas such as Raghbir Nagar, a locality in West Delhi, continue to struggle with issues like irregular waste collection, open dumping, insufficient public sanitation infrastructure, and low community engagement in cleanliness efforts.

These disparities in sanitation practices across Delhi highlight the importance of addressing localized issues and challenges. By examining the factors that contribute to the success of SBM in areas such as Indore and Delhi's better-performing localities, this study seeks to identify actionable solutions for Raghbir Nagar. The success stories of Indore, where municipal and government leadership, combined with active citizen participation, have driven improvements, offer valuable lessons for Delhi's slums and other urban areas.

The aim of this research is to assess the impact of SBM on sanitation in Raghbir Nagar, to analyse the factors influencing its limited success, and to draw comparisons with the successes of Indore and other well-performing areas of Delhi. By focusing on the role of leadership, government intervention, and community involvement, this study intends to provide insights into how the sanitation system in Raghbir Nagar can be enhanced to align with SBM's broader objectives of creating cleaner, healthier, and more sustainable urban environments.

## **OBJECTIVES AND METHODOLOGY**

Solid waste management is a significant challenge in urban areas, and Raghbir Nagar is no exception. Despite the efforts under the Swachh Bharat Mission (SBM), the locality continues to struggle with cleanliness and effective waste management, which directly impacts public health and sanitation. This research seeks to assess the effectiveness of SBM in improving waste management in Raghbir Nagar and to explore the existing challenges that hinder the success of SBM.

The primary objectives of this study are:

- To assess the awareness of solid waste management practices among the residents of Raghbir Nagar.
- To examine the key problems related to waste collection, segregation, and disposal in the locality.
- To compare the sanitation conditions between the inner and outer parts of Raghbir Nagar, with a focus on SBM interventions.
- To draw comparisons with successful models like Indore and Navjeevan Colony, and propose recommendations to enhance solid waste management in Raghbir Nagar.

### **Methodology**

This study employs a combination of qualitative and quantitative methods to assess the waste

management situation in Raghbir Nagar, providing a comprehensive understanding of the impact of SBM and the challenges that persist in the locality.

For the inner part of Raghbir Nagar, data collection was primarily qualitative, based on interviews with local residents and key stakeholders, including the former Pradhan and a municipal worker, along with field observations. These interviews, which were non-structured, offered valuable insights into the socio-cultural and infrastructural issues affecting waste management in the area. The data collection process involved engaging with community members and key stakeholders to understand the prevailing sanitation and waste management practices in the locality. Through interviews and field observations, insights were gathered on the social and infrastructural factors influencing waste management. The methodology focused on identifying challenges related to community participation, infrastructure adequacy, and environmental factors impacting the effectiveness of waste management systems. These aspects were analysed to provide a comprehensive understanding of the locality's waste management dynamics.

In contrast, the outer part of Raghbir Nagar was assessed using a quantitative approach. A structured questionnaire was administered to 102 respondents, gathering data on waste segregation practices, garbage collection times, sanitation conditions, and the level of community participation in cleanliness initiatives. The outer part, which is located closer to the District Magistrate's office, is relatively cleaner and has slightly better waste management practices, but it still faces notable challenges.

The research also incorporates secondary data to study successful models of waste management. For Indore, secondary data was sourced from research papers and reports that analyse its remarkable transformation into one of India's cleanest cities under the Swachh Bharat Mission. This data provided insights into the strategies and leadership approaches that drove its success. Similarly,

Navjivan Vihar, celebrated as Delhi's first zero-waste colony, was

studied using secondary sources, including an article and a YouTube video highlighting its innovative practices. To complement this, a field visit to Navjivan Vihar was conducted to observe the implemented practices firsthand and gain deeper insights into its waste management strategies.

## REVIEW OF LITERATURE

The authors reviewed a number of studies related to the Swachh Bharat Mission (SBM). Some studies assess the overall impact of the SBM while others examine its impact in certain areas. Naina Lal Kidwai (2017) lists the benefits of SBM. She quotes a study published in *Nature* which estimates that since its inception in 2014, the SBM had helped in averting 60,000 to 70,000 infant deaths annually. It had provided direct employment to 2.59 million workers and also opened new livelihood opportunities for women who had been trained as Rani Mistries to construct sanitation infrastructure.

Global Waste Management Outlook (2024) published by the United Nations Environment Programme (UNEP) stresses the importance of sustainable waste management, which SBM aims to address. The report draws connections between waste management, sanitation, and public health, indicating that SBM's goals are in line with global sustainability targets

WHO (2018) found that SBM had reduced the number of deaths due to diarrhea. UNICEF (2017) reported that 93% of women felt safer because they had a toilet at home. UNICEF (2018 and 2019) also found that each household in ODF villages saved nearly ₹50,000 every year in the form of reduced health bills and time saved in waiting or traveling for treatment. The savings were 4.7 times more than the money spent on constructing the toilet. ODF villages showed less contamination than non-ODF villages. Soil and groundwater resources in ODF

villages were also significantly cleaner, which was a key finding of the Bill and Melinda Gates Foundation (2017). Their study found that malnutrition among children was significantly lower in ODF villages compared to non-ODF villages. The study also found better health outcomes for women in these areas.

Similar findings were reported by a quasi-experimental study by Chakrabarti et al. (2024). The SBM led to a huge increase in the number of toilets constructed, and districts with more than 30% toilets constructed under SBM corresponded with lower infant and under-5 mortality rates. Assessing the impact of SBM on Acute Diarrheal Disease (ADD), Dandabathula et al. (2019) found that the number of outbreaks per year during 2017 and 2018 were fewer than in any other year under investigation.

A cross-sectional community survey-based study conducted by A. Gahlot et al. (2017-18) in Kanpur Nagar, Uttar Pradesh, found that people living in ODF villages had greater awareness about the SBM than those living in other villages. Similarly, a study conducted in rural Bihar by Anoop Jain et al. (2020) found that economic and structural factors prevented the construction of latrines despite awareness about their importance for health. This study emphasized the need to address these barriers to ensure greater success in SBM's implementation.

Anna Verkuilen et al. (2016) conducted a systematic review on the effectiveness of SBM and identified barriers to ending open defecation in India. The study emphasized the importance of addressing socio-economic and cultural barriers that prevent the complete success of SBM, particularly in rural areas where open defecation is still prevalent.

UNICEF (2020) evaluated the national economic impact of SBM, confirming that it resulted in significant financial savings for households, including savings on health expenses. This aligns with the findings of WHO-UNICEF (2017) in their joint report on the progress of drinking water,

sanitation, and hygiene programs. UNICEF (2018) also explored the environmental impacts, highlighting the improvements in water, soil, and food safety in areas where SBM was actively implemented.

Sumbul Mujtaba and Dr. Tanu Dang (2020) explored the role of social media advertisements in raising awareness about SBM, noting that digital platforms played a crucial role in engaging the public and spreading SBM's message effectively. This modern approach to outreach has played an important role in SBM's success, especially in urban and semi-urban areas. Kavita Malik (2020) reviewed the benefits of SBM, emphasizing its role in improving both public health and the overall economic development of rural areas. Malik also highlighted SBM's potential for fostering a cleaner environment and empowering communities, particularly women, in the process.

As SBM continues to unfold, there remains a need for continuous monitoring and evaluation to ensure that the mission's objectives are met and that its impacts are sustained across different regions. This review of the literature provides valuable insights into the successes, challenges, and ongoing efforts to improve sanitation and hygiene in India, particularly under the Swachh Bharat Mission.

## **STUDY AREA**

Raghubir Nagar is a developing locality in Tagore Garden Extension, situated in the western part of New Delhi. It is surrounded by areas such as Punjabi Bagh Extension, Paschim Vihar, Jwalaheri, Madipur, and Rajouri Garden, forming part of the city's

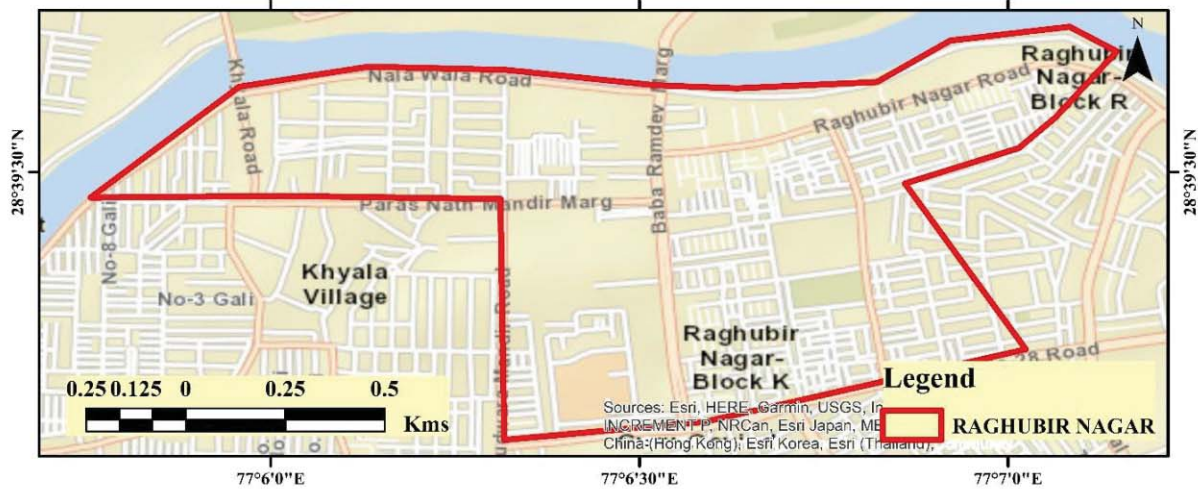
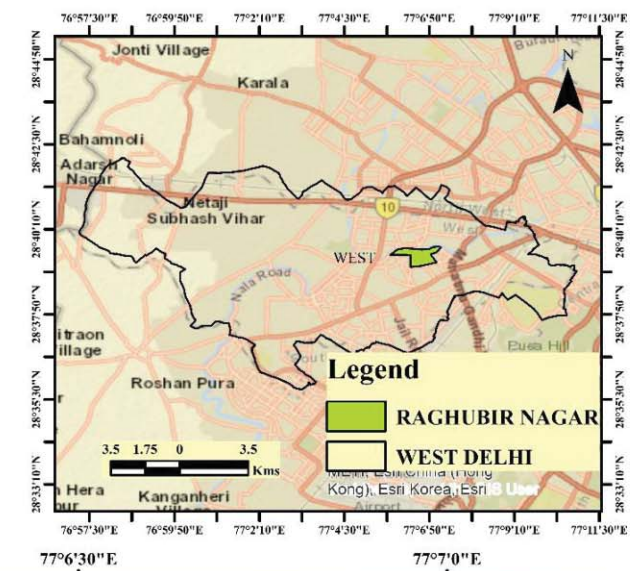
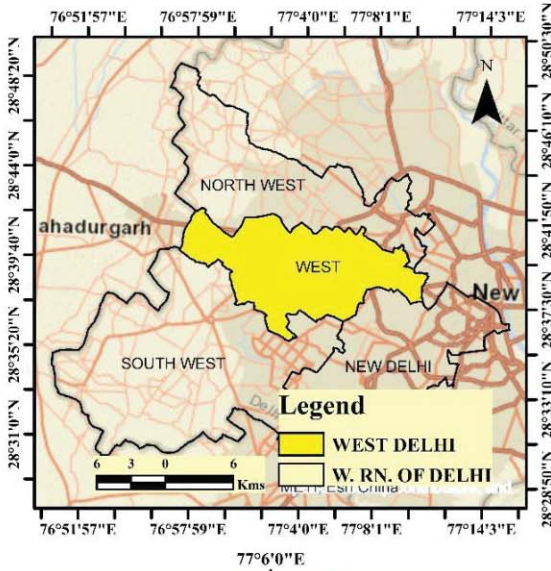
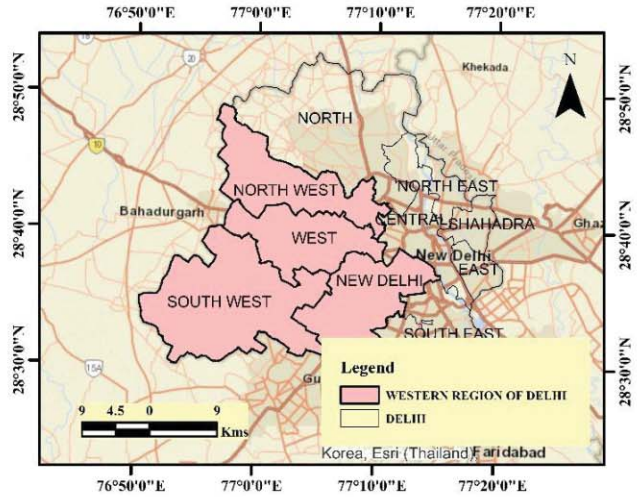
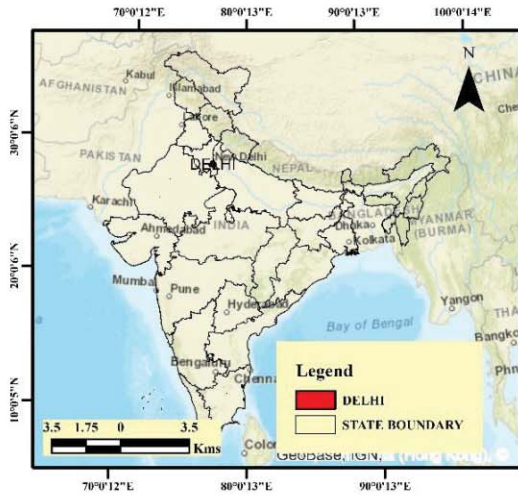
rapidly urbanizing landscape. Designated as a slum area, Raghubir Nagar exemplifies the socioeconomic disparities prevalent in many urban centers (Kumar & Singh, 2021).

Demographically, the locality has a population of approximately 78,369, as noted in recent government reports (State Election Commission of Delhi, 2022). Geographically, Raghubir Nagar is situated near the Sahibi River, which has deteriorated over time into an open drain due to urban encroachments and pollution. This environmental degradation has exacerbated public health concerns and highlights broader ecological challenges in urban planning (Sharma et al., 2020).

The neighbourhood is marked by narrow streets and densely packed residential clusters, which hinder the implementation of effective infrastructural projects. These congested conditions contribute to poor sanitation and waste management, further emphasizing the infrastructural and social challenges of the area (Gupta & Verma, 2019). Additionally, the proximity of Raghubir Nagar to industrial zones and commercial hubs in West Delhi adds layers of complexity to its waste management systems (Mehta, 2021).

In summary, Raghubir Nagar is emblematic of the intricate relationship between geography, urban poverty, and environmental sustainability. The locality's challenges with waste management and sanitation underscore the need for targeted interventions under programs like the Swachh Bharat Mission.

## STUDY AREA



## FINDINGS

The study of solid waste management in Raghurir Nagar was conducted through surveys in both the inner and outer parts of the locality. The outer part involved a quantitative survey, while the inner part focused on qualitative data collection. These findings provide a comprehensive picture of the waste management challenges faced by the community.

### Findings from Outer Raghurir Nagar

In the outer part of Raghurir Nagar, a quantitative survey was conducted with 102 respondents. The survey collected data on various aspects of waste management, providing a clearer picture of the practices and challenges within the area.

The survey conducted in the outer part of Raghurir Nagar aimed to assess various aspects of waste segregation, collection, and the public's awareness of the Swachh Bharat Mission (SBM). The results highlight key areas of waste management practices, infrastructure, and community participation, providing insight into the effectiveness of SBM in this region.

### Waste Segregation Practices

The Swachh Bharat Mission (SBM) promotes waste segregation by encouraging the use of separate bins for different types of waste, including wet, dry, e-waste, sanitary, and hazardous waste (DPCC, 2023). Despite the availability of bins in public places, some residents continue to neglect segregation practices, contributing to inefficient waste management systems.

Out of total 102 responses obtained during survey, 56.86 percent segregate the wet and dry garbage in their home, while 19.61 percent do not segregate the waste. There are 17.65 percent who sometimes segregate the wet and dry waste generated in their houses. However, 5.88 percent do not know about the segregation of waste. The people who do not

segregate waste reflect lack of awareness and lack of education among the people.

### Disposal of waste

Out of 102 respondents, 12.75 percent burn the waste while 61.76 percent properly dispose the waste in dustbins. However, 25.49 percent throw them away in nearby areas. Under SBM, cities were given the target of ensuring 100 percent segregation of waste at source, but on the ground, it is still a challenge which is to be achieved. Although government has installed blue and green dustbins for waste segregation at source but end to end segregation infrastructure is lacking in many places so the waste often gets mixed up in the dumping site.

In the study area, a majority of the respondents are aware about the segregation but there is still a lot of ground to be covered before 100 percent source segregation of waste can be achieved. It was also observed during the survey that the dry and wet waste get mixed up at the dumping site. The proper disposal of waste is crucial to ensure public health and environmental sustainability. The majority of respondents (62 percent) disposes their waste correctly in the dustbin. However, there is a need for more public awareness, campaigns to educate people about the proper disposal of waste and waste segregation.

### Waste Collection Efficiency

Waste collection includes door to door collection of household waste as well as collection of waste from dumping sites. Generally, in urban areas municipal bodies are involved in the waste collection. For this purpose, vehicles such as garbage cycle rickshaw, electric garbage van (with or without GPS), mini dumper, diesel trucks, etc. are used. According to a report published by Delhi Pollution Control Committee (DPCC), 2023, there are a total of 8324 operational vehicles for waste collection in Delhi. Out of these, 2650 vehicles are equipped with GPS. The central zone has the largest number of

operational vehicles i.e. 1561 vehicles. The west zone comprises 25 wards and a total of 517 garbage collection vehicles are operational in these wards. Out of these, 328 vehicles are equipped with GPS technology.

According to the survey, 50.98% of respondents mentioned that garbage collection vehicles visit their locality regularly, while 18.63% reported alternate-day visits, and 30.4% indicated that waste collection is irregular. Notably, 69.61% of respondents in the surveyed area enjoy regular or near-regular collection services. This indicates that the collection system is functional in Raghbir Nagar, but further efforts are required to ensure 100% coverage, in line with SBM goals (Ministry of Housing and Urban Affairs, 2018).

However, 37 out of 102 respondents reported that waste is collected from their homes, while 38 said garbage is directly collected from dumping sites, and 27 claimed that waste is picked up from roadside areas. The open dumping sites in the area, observed during the field survey, pose significant environmental hazards, as unregulated waste dumping leads to contamination and health concerns (WHO, 2020).

### **Community Participation and Awareness of SBM**

Regarding awareness of the Swachh Bharat Mission, 81.06% of respondents (61 males, 27 females) reported being familiar with the campaign. Interestingly, the level of awareness was positively correlated with the respondents' educational background. The awareness was 77.14% among individuals with education below the 10th standard, 87.18% for those with secondary education, and 95.23% among graduates. Notably, all postgraduate respondents were aware of SBM.

However, only 36% of respondents had volunteered for SBM activities, indicating a gap in active participation. While 60% of respondents made individual efforts to raise awareness about SBM, a

significant portion (40%) had not contributed to spreading SBM-related information.

### **Government Efforts and Public Perception**

Regarding the perceived efforts of government authorities, 47.06% of respondents rated SBM implementation as good, citing visible improvements in cleanliness and sanitation in their locality. They also acknowledged the infrastructure provided by the government, which has contributed to a behavioral shift toward cleanliness. On the other hand, 36.27% rated the government's efforts as average, and 16.67% believed the government's efforts were below average, citing ongoing challenges such as open defecation and insufficient awareness creation.

These findings indicate that while SBM has made notable progress in Raghbir Nagar, there remains room for improvement in terms of stricter enforcement and community engagement. Effective government action, coupled with public participation, is essential to the mission's success (Ministry of Housing and Urban Affairs, 2018).

### **Findings from Inner Raghbir Nagar**

The study conducted in the inner part of Raghbir Nagar revealed several critical challenges related to cleanliness, waste management, and community participation. Conversations with key stakeholders, including a former RWA president, highlighted the influence of political disputes, community behaviour, and infrastructural limitations as significant barriers to effective waste management.

During discussions, the former RWA president mentioned that political disputes between opposing parties often hinder development initiatives. He explained that these conflicts create an environment of non-cooperation, making it challenging to implement projects aimed at improving cleanliness and waste management. This underscores the need for higher-level government intervention to ensure

consistent development and effective solid waste management.

At M Block, which houses a waste collection unit operated by a private agency, several systemic issues were evident. The unit handles approximately 8-20 tons of garbage daily, as it has become the primary collection point due to the closure of waste collection units in R Block, B2 Block, the area near Andhya Vidyalaya, and C Block. However, the unit is severely understaffed, with only 4-5 workers



Source: Supervisor, M Block Waste Management Unit

Figure 1 : B2 Block Waste Collection Unit – Before

The supervisor from the M Block unit shared that the waste collection unit in B2 Block was once functional, but it has since been closed. Despite clear signage on the walls indicating that the unit is no longer operational and instructing people not to dispose of waste there, residents continue to disregard the rules and throw garbage in the area. The result is evident—the once clean space is now overwhelmed with waste. This situation highlights the ongoing challenges in enforcing waste management regulations and raising awareness among the local community

Field observations revealed a stark lack of hygiene in the area. Roads were slippery due to waste spillage, and a strong odour permeated the surroundings. Stray cows were seen feeding on garbage, and residents exacerbated the problem by throwing food

managing the waste. Ragpickers play a vital role in segregating reusable items from the garbage and selling them in the market to earn their livelihood. While this process reduces some of the waste, residents frequently dispose of garbage improperly, often dumping it near the unit instead of in designated bins, which adds to the workers' challenges.

### B2 Block: Waste Management Issues Before and After



Source: Primary Data, (2024-25)

Figure 2 : B2 Block Waste Collection Unit – After

scraps directly onto the road. These practices reflect a lack of awareness and responsibility among community members, contributing to the worsening conditions.

A large park in the area also presented a concerning sight. What appeared to be a lush green lawn from a distance turned out to be waterlogged areas covered with algae, creating an

unhygienic environment. The park's walls were used by residents to dry clothes, and garbage was scattered throughout the space, highlighting neglect and poor maintenance.

Community behaviour emerged as a critical factor in the challenges faced by inner Raghbir Nagar. Many residents prioritize keeping their homes clean while

disregarding the cleanliness of public spaces. Some even dispose of waste from a distance or during the night, leaving it scattered around the waste unit. Despite previous awareness campaigns, these initiatives have not significantly influenced the residents' waste disposal habits, indicating a need for more impactful and targeted interventions.

The findings emphasize the need for a multi-level approach to address the issues in inner Raghur Nagar. Enhanced community participation, improved waste management infrastructure, and behavioural change initiatives, supported by effective governance, are critical to creating a cleaner and healthier environment in this area.

Although a formal comparison was not part of the study design, the field visits and the data collected through both qualitative and quantitative methods revealed a drastic difference in sanitation conditions between the inner and outer parts of Raghur Nagar. The outer part, while not without its issues, has comparatively better waste management and cleanliness. On the other hand, the inner part struggles with severe sanitation issues, poor cleanliness, and a lack of community involvement, further exacerbated by the scavenging of animals.

## **LEARNING FROM INDORE: THE CLEANEST CITY IN INDIA**

Indore has set an unparalleled benchmark in waste management, earning the cleanest city award six times consecutively and maintaining its first rank in the Swachh Survekshan survey since 2017. The city's journey from 25th position in 2015 to the top spot exemplifies a model of determined leadership and effective strategies. This transformation was spearheaded by the visionary leadership of former Mayor Malini Laxmansingh Gaur, whose initiatives laid the groundwork for sustainable change (Ministry of Housing and Urban Affairs, 2021).

### **Why We Chose Indore as a Model**

Indore stands out as an exceptional model due to its remarkable achievements in solid waste management, effective community participation, and proactive municipal governance. The city's transformation into the cleanest city in India is not just a result of strategic initiatives but also a testament to how it has become a social movement. By emulating Indore's successful practices, we aim to bring similar positive changes to Raghur Nagar.

### **Indore's Comprehensive Waste Management System**

The Indore Municipal Corporation (IMC) has implemented an efficient and systematic waste management process, making it a model city for solid waste management. Indore utilizes a door-to-door waste collection system, employing partitioned vehicles designed to carry six types of segregated waste. These vehicles transport waste from households to strategically located transfer stations within the city.

At the transfer stations, waste is weighed, compressed, and then transported to either the Material Recovery Facility (MRF) or composting plants. Each vehicle is GPS-enabled and monitored by a dedicated tracking cell to ensure adherence to routes. Drivers found deviating are penalized, with repeated violations leading to termination (Indore Municipal Corporation Reports).

### **Material Recovery Facility (MRF)**

Indore's MRF effectively handles segregated waste, ensuring optimal recyclability. Dry waste is further sorted using advanced optical methods and categorized into 18 types based on size, composition, and usability. The waste is then sent to specific units for recycling or reuse. A portion of the waste, classified as inert, is directed to cement kilns. IMC and NEPRA have partnered with Birla Cement to use this waste as an alternative fuel source (NEPRA Environmental Solutions).

## **Organic Waste Treatment and Bio-CNG Production**

IMC operates a 600 tons-per-day (TPD) mechanical composting plant, producing 55–65 tons of compost daily. The city also employs scientific methods such as aerobic composting and anaerobic digestion for biodegradable waste, contributing to its sustainable waste-to-energy solutions.

A standout initiative is the biomethanation plant near Choithram Mandi, the largest wholesale market in Indore, which produces 20 tons of waste daily. This plant converts organic waste into approximately 800 kilograms of bio-CNG, fueling 22 city buses and creating a closed-loop system benefiting both the environment and public transportation (News Coverage on Choithram Mandi Biomethanation Plant).

## **Seven Habits That Changed Indore**

1. Everyday garbage disposal: A robust door-to-door garbage collection system eliminated the need for roadside garbage bins, which previously attracted stray animals.
2. Garbage-to-compost units: Gardens, hotels, and schools were encouraged to establish composting units.
3. Discouraging polythene use: Awareness campaigns targeted both residents and shopkeepers to minimize plastic use.
4. Dustbins on wheels: Citizens adopted the habit of carrying portable dustbins in their vehicles.
5. Awareness among children: Teachers and parents played a crucial role in instilling cleanliness habits in children.
6. Post-event cleanups: Cleaning efforts were mandated after all public and social functions.
7. Eighth pledge at weddings: An additional pledge encouraging guests to "Reduce, Reuse, and Recycle" became part of wedding ceremonies.

## **Behavioural Change and Impact**

Indore's success is also rooted in its relentless efforts to inspire behavioural change among its residents. Through awareness campaigns, community engagement, and strict enforcement, the city has drastically reduced illegal dumping activities by 90% within IMC's jurisdiction. Financially, the city has generated over ₹5.67 crore in revenue through service charges and enforcement measures (Ministry of Housing and Urban Affairs, 2021).

Prior to these efforts, Indore faced severe challenges, including irregular waste collection, black spots every half kilometer, and inadequate waste treatment, which attracted stray animals. However, with community engagement, awareness campaigns, and stricter enforcement, the city achieved remarkable results. A sticker campaign in residential areas emphasized segregation and accountability, while residents were actively involved in cleanliness drives (Indore Municipal Corporation Reports).

## **Transformation of Devguradia Landfill**

One of the most inspiring aspects of Indore's journey is the transformation of the Devguradia landfill into a hill garden. Once a site for unmanaged waste, it now serves as a symbol of what sustainable waste management can achieve.

## **Indore's Source Segregation Strategy**

Indore's waste segregation strategy includes six categories:

1. Biodegradable waste
2. Non-biodegradable waste
3. Plastic waste
4. Sanitary waste
5. Domestic hazardous waste
6. E-waste

This dual system not only addresses the varied waste generation capacities across the city but also ensures comprehensive coverage, from small households to large commercial establishments. By

integrating these practices with community awareness and municipal oversight, Indore has created a scalable model for urban cleanliness (Ministry of Housing and Urban Affairs, 2021).

### **Awareness Campaign**

Information, Education, and Communication (IEC) formed the backbone of Indore's transformation under the Swachh Bharat Mission, driving behaviour change that became the foundation of its success. The Indore Municipal Corporation (IMC) implemented a diverse array of IEC activities, spanning traditional methods, audiovisual mediums, print and electronic media, and social/digital platforms. These efforts targeted various population segments and sectors, including hotels, restaurants, hospitals, industries, transportation hubs, commercial complexes, and parks (Kumari, 2019).

Grassroots innovations like street plays, wall paintings, FM radio programs, and other local media became an integral part of the strategy to engage the public creatively. The use of FM radio, in particular, was an effective tool in reaching a wider audience, including remote areas, with cleanliness messages and important updates about waste management (Mishra et al., 2020). Festivals such as Ganesh Chaturthi, Dussehra, and Gandhi Jayanti served as platforms

to spread the message of cleanliness. Additionally, IEC activities were integrated with monitoring mechanisms, ensuring service delivery verification through tools such as the 311 app, surprise inspections, and biometric attendance tracking for staff (Indore Smart City Development Limited, n.d.). The 311 app emerged as a vital tool for residents to register complaints about service delivery, with issues being addressed promptly under the supervision of the Municipal Commissioner. This approach empowered citizens by creating direct linkages between service providers— such as community associations, NGOs, and citizen volunteers—and IMC officials, including Zonal

Officers and Core Service Inspectors (CSI) (Singh, 2019).

The IEC initiatives also fostered collaboration between stakeholders. For instance, waste recycling efforts were linked with the Department of Chemicals and Fertilizers for compost production and the Department of Agriculture to supply compost to neighbouring farmers. NGOs played a critical role in educating citizens about waste recycling, compost preparation, and its benefits to other stakeholders. These activities established a cross-partnership model connecting waste generators, collectors, processors, and users of recycled products (Sharma & Pandey, 2020).

Through these innovations, the citizens of Indore were made aware of how local Swachh Bharat initiatives aligned with broader policies and departmental efforts, ultimately benefiting diverse stakeholders (Indore Smart City Development Limited, n.d.).

### **Lessons from Indore**

Indore's waste management journey exemplifies how a city can rise from challenges with strong leadership, community participation, and strategic planning. The city adopted a ward-wise solid waste management approach, ensuring focused and systematic implementation. Initially, two wards were selected for a pilot project to achieve 100% waste collection and segregation. Encouraged by success, the program was scaled to 10 wards within two months and extended to all 85 wards within 6–8 months (Indore Municipal Corporation Reports).

The systematic approach, coupled with the meticulous efforts of 2,854 sanitary workers, has resulted in commendable achievements. Illegal dumping has reduced drastically, and a robust system for collection and disposal has made Indore a shining example of urban cleanliness.

### **LEARNING FROM NAVJIVAN VIHAR : THE FIRST ZERO WASTE COLONY OF NEW DELHI**

Navjivan Vihar, a residential colony in New Delhi, has become one of the city's foremost examples of sustainable living, particularly through its zero-waste initiative. The project, led by Dr. Ruby, the colony's secretary, a medical professional, and the community's dedicated members, has significantly impacted waste management, water conservation, and overall environmental practices. Dr. Ruby, drawing from her healthcare background, emphasized the public health risks associated with poor waste management. She noted, "I know about the hygiene issues created by waste and the diseases which spread due to lack of proper sanitation. As a secretary, I got a platform to deliver solutions at a larger level, instead of just the individual level. So I took it up on priority" (Agrawal, 2022). The initiative has gained momentum and positive results, not just in reducing waste but also in educating the broader community on the benefits of sustainable living.

### **Why We Chose Navjivan Vihar as a Model**

Navjivan Vihar, located in New Delhi, stands out as the city's first and only zero-waste colony. The exceptional leadership and commitment of its residents have transformed it into a beacon of sustainable living. Under the guidance of individuals like Dr. Ruby, the community has embraced the importance of sanitation and hygiene, turning these principles into a way of life. The proactive efforts in waste management, water conservation, and environmental stewardship make Navjivan Vihar an inspiring model for Raghbir Nagar to follow.

### **Leadership in action**

The leadership at Navjivan Vihar has been essential to the success of its zero-waste initiative. Dr. Ruby Makhija, the colony's secretary, has taken the lead in reducing food waste and promoting sustainable practices. Mona Vashisht has focused on managing fabric waste, while Anuj Bhatia has been dedicated to water conservation efforts. Shammi Narang handles general waste segregation and disposal, and Gopa Banerjee is responsible for managing garden

waste, turning it into compost for the community's gardens.

These leaders, along with other residents, have developed a system where everyone plays a part in maintaining the colony's waste management practices. Together, they work to ensure that sustainable living is a priority, not only for today but for future generations as well.

The initiative began six years ago when the Municipal Corporation of Delhi (MCD) held a workshop on solid waste management. The workshop provided valuable insights into solid waste management guidelines and penalties for improper waste disposal. This workshop helped the residents realize the scale of the waste issue and served as a catalyst for the changes that followed. According to the supervisor of Navjivan Vihar, the process started with research and subsequent prioritization of waste management as a critical issue for the colony.

As the project gained momentum, a core group of residents, alongside the leadership, initiated the practice of waste segregation. Residents were encouraged to separate their waste into three categories: wet waste, dry waste, and hazardous waste. The colony's leadership also focused on educating domestic helpers (maids) and garbage collectors, going door to door to ensure proper segregation practices. The supervisor noted that it was initially challenging to convince maids to adopt waste segregation practices. However, the colony's leadership addressed this challenge by distributing free, biodegradable sanitary napkins to the maids every month. These interactions were used as an opportunity to further educate them on waste segregation, water conservation, and other sustainability practices. Over time, these habits were adopted by the maids in their homes, thereby creating a wider impact within the community. The supervisor also shared that residents make bioenzymes, a cleaning liquid derived from kitchen waste. This practice has further aided in reducing

waste and promoting sustainability within the community.

The supervisor further explained that wet waste was consistently directed to composting pits within the colony, where it was converted into compost for use in the colony's gardens. This initiative has not only reduced landfill waste but also provided valuable resources for maintaining the colony's green spaces. The composting process included the use of coco peat and macro mix to enhance the quality of the compost, a practice the supervisor proudly highlighted.

Additionally, water conservation became another major focus for the colony. Aerators were installed in all taps and showers to reduce water usage. A demonstration video showed how the water flow rate could be reduced from eight litres per minute to 1.5 litres, encouraging many residents to adopt this measure. The colony also installed rainwater harvesting pits to recharge groundwater, alongside alarm systems in overhead tanks to prevent water wastage from overflow.

When the discussion turned to garden waste, the supervisor mentioned that the colony had established leaf composting systems in every garden. These composters allowed for the recycling of garden waste into compost, which was then used to nourish the gardens. This practice not only kept the colony clean but also reduced the burden on landfills. Over time, the colony's successful waste management practices have inspired surrounding communities to adopt similar approaches.

In addition to waste segregation and water conservation efforts. The colony also actively engages in environmental awareness campaigns. Navjivan Vihar, a colony in New Delhi, organizes regular nest-making initiatives to attract the state bird. The colony also features graffiti on its walls to create awareness about the importance of saving water. The society encourages the use of cloth bags instead of plastic, maintains terrace gardens, carries

out donation drives for clothes, toys, and books, and organizes events for environmental awareness (Agarwal, 2022).

All these efforts underscore the community's ongoing commitment to sustainability and environmental stewardship. Regarding the colony's operations, the supervisor clarified that there are 18 workers, all men, as no female workers have been employed since the beginning. The workers are responsible for collecting the waste, performing sweeping tasks in the colony, and ensuring the overall cleanliness of the streets. Additionally, while municipal workers also come to the colony, the society's workers carry out sweeping tasks once the garbage has been collected. The payment for these workers comes from the colony's residents. The supervisor mentioned that a maintenance cost of ₹1200 is collected monthly from each household, which covers all community-related tasks, including waste management and cleanliness.

In conclusion, the waste management and sustainability practices in Navjivan Vihar exemplify the power of community-driven initiatives in addressing critical environmental challenges. Through collective action and strong leadership, the residents of Navjivan Vihar have successfully created a model of zero-waste living that not only benefits their own community but also serves as an inspiring example for neighbouring colonies to follow.

#### **CONCLUSION: LEARNING FROM SUCCESSFUL MODELS TO TRANSFORM RAGHUBIR NAGAR**

“The only way to achieve lasting change is to learn from those who have succeeded before you.” – Peter Drucker. This sentiment rings true for Raghubir Nagar as it looks to improve its waste management practices. By studying the successes of models like Indore and Navjivan Vihar, Raghubir Nagar can adopt strategies that have already proven effective, avoiding the need to reinvent the wheel and instead, building on existing knowledge to create lasting

transformation.

A key takeaway from Indore's waste management success is the importance of strong, committed leadership. The former mayor of Indore played an instrumental role in driving the city's cleanliness initiative, creating a model for others to follow. In Raghur Nagar, local government involvement must be equally significant. A well-structured plan for cleanliness at the block level, similar to Indore's ward-based system, would ensure focused and manageable efforts within each community section. This approach will bring waste management to the forefront of local concerns, ensuring everyone has ownership of their environment. This aligns with Indore's success in making cleanliness a priority at the governmental level, which ultimately led to the city becoming India's cleanest in the Swachh Survekshan rankings (Swachh Survekshan, 2020).

Furthermore, the emotional connection to a neighbourhood can play a significant role in shaping people's attitudes toward waste management. In Raghur Nagar, many residents are migrants who may not feel the same attachment to the area as long-term residents. This challenge can be addressed through continuous awareness campaigns that educate residents about the long-term benefits of a cleaner environment, not just for the present, but for future generations as well. These campaigns should highlight the impact of waste management on health, the environment, and the overall quality of life in Raghur Nagar, helping foster a deeper sense of community responsibility. The importance of such campaigns was underscored in studies examining urban waste management, which emphasize the need for cultural and behavioral shifts to support sustainability (UN-Habitat, 2020).

Navjivan Vihar's community-driven composting and waste segregation model offers another important lesson. In this Delhi neighbourhood, residents separate their waste into wet, dry, and hazardous categories, with wet waste being converted into compost for use in the colony's gardens. This

approach significantly reduces the burden on landfills and recycles organic waste into valuable resources. Raghur Nagar could replicate this model by setting up localized composting systems, teaching residents how to segregate waste effectively, and making the process as easy and accessible as possible. Composting facilities could be paired with community gardens, helping to strengthen the connection between waste management and the creation of green spaces within the community (Agrawal, 2022). This model is aligned with

global sustainable practices as highlighted by the United Nations Environment Programme (UNEP), which advocates for the adoption of waste segregation and composting to reduce landfill dependence (UNEP, 2020).

With the Swachh Bharat Mission, Raghur Nagar has an opportunity to not only improve waste management but also address water conservation, as seen in the success of Navjivan Vihar. Just as Navjivan Vihar has implemented aerators in taps and set up rainwater harvesting systems, Raghur Nagar could adopt similar measures to conserve water. Installing water-saving devices and creating rainwater harvesting systems would help mitigate water scarcity and reduce the pressure on municipal water resources. This would ensure that clean water remains accessible to both current and future generations. Experts have pointed out that integrating rainwater harvesting and water-saving technologies is among the most effective solutions to urban water challenges (Central Pollution Control Board, 2021).

Additionally, modern technology can be leveraged to improve waste management operations in Raghur Nagar. Tools like GPS tracking, facial recognition, and Radio Frequency Identification (RFID) can enhance the efficiency and transparency of waste collection and segregation. By assigning unique QR codes to households, Raghur Nagar can monitor waste output and ensure that residents

comply with waste segregation rules. GPS systems can optimize waste collection routes, ensuring that no area is left behind. These technological innovations can help streamline processes, improve accountability, and make waste management more efficient and transparent. The potential for using technology to support waste management has been discussed in various urban sustainability frameworks, which highlight the role of data-driven systems for better waste handling (World Bank, 2020).

Collaboration between the local government, NGOs, and residents will be crucial for Raghbir Nagar's transformation into a cleaner, more sustainable area. The government must provide the necessary resources and infrastructure, while NGOs can assist in awareness campaigns and training. The community must take ownership of the waste management process, ensuring that every resident contributes to the initiative's success. Together, with a unified approach, Raghbir Nagar can create a waste-free environment that serves as an example for other communities to follow.

In conclusion, Raghbir Nagar's path to a cleaner, more sustainable future is not only possible but achievable by learning from successful models like Indore and Navjivan Vihar. By focusing on strong leadership, community engagement, modern technology, and education, Raghbir

Nagar can become a model of waste management that transforms not just the neighbourhood, but also inspires surrounding areas to follow suit.

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