Challenges And Opportunities In Linking Sanitation Campaigns With Sustainable Development: A Policy Review Of Swachh Bharat In Indore

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Abstract

It had already read how the idea of Sustainable Development had been paired with Swachh Bharat Abhiyan (SBA) in the Madhya Pradesh city of Indore, which had been known all along as the cleanest city in India. It had achieved it in the form of mixed-methods research design that consisted of the quantitative survey and qualitative interviews and field researches. The study had uncovered that citizen awareness and participation had also helped in achieving sanitation in the city. Waste segregation and recycling practices had become the municipal innovations highly oriented on the Sustainable Development Goals (SDGs) throughout the world with respect to the goals connected with the sanitation system, responsible urbanized living and accountable consumption. Even with these successes, there were still other issues such as behavioral resistance, infrastructural deficiencies, lack of finances, and bad welfare of sanitation workers. The paper had reported that though the SBA implementation had been a model of a sustainable urban management in Indore, its long term successes in issues of inclusiveness, financial stability and labour would have been imperative in a bid to ensure the sustainability of the implementation.

Keywords: Sustainable Development; Swachh Bharat Abhiyan; Indore; Waste Management; Sanitation; Urban Governance; SDGs; Public Participation.

Introduction

Sanitation is a key determinant of social equity, the environment, and health in the community [1]. High disease burdens, economic inefficiencies and environmental degradation have been directly associated with poor sanitation across the world. Poor sanitation facilities in the Indian context have been a historic contributor to issues of open defecation, poor waste disposal and the transmission of communicable diseases [2]. In response to these issues, the Government of India has initiated the Swachh Bharat Abhiyan (SBA) on 2nd October 2014, with a lofty goal of making India a cleaner and healthier place by addressing the three areas of concern: eradicating open defecation, enhancing waste management systems, and spreading awareness of hygiene practices [3-4]. In contrast to previous sanitation programs, SBA was not simply an infrastructural initiative but a mass-movement of behavioral change, of bringing sanitation into popular political and social discourse [5].

The city of Indore, a major city in Madhya Pradesh has turned out to be one of the biggest success stories of Swachh Bharat Mission [6]. The city has consistently topped Swachh Survekshan rankings in the past few years and it is known as the cleanest city in India. The success of Indore

is generally thought to be based on a combination of policy innovation, effective local governance, community involvement, and appropriate utilization of public-private partnerships [7-8]. Its door-to-door waste collection model, stringent monitoring systems, enforcement of source segregation, and novel practices such as waste to energy plants have been broadly presented as examples of urban best practices in sanitation management [9]. Simultaneously, the city has also been a testing ground of the boundaries of sanitation campaigns when it comes to general sustainable development goals (SDGs) [10].

The nexus of sanitation and sustainable development is a policy field of great concern. Although SBA has achieved great results in its mobilization of communities and impressive results in its infrastructure development and cleanliness rankings, its sustainability over the long term is a controversial issue [11]. The correspondence to the United Nations Sustainable Development Goals, and especially SDG 6 (Clean Water and Sanitation), SDG 3 (Good Health and Well-being), and SDG 11 (Sustainable Cities and Communities) provokes some valid concerns: Are sanitation campaigns in such a city as Indore actually making cities sustainable? Are they inclusive and equitable in the sense that disadvantaged groups can equally access sanitation services? And are these initiatives financially and institutionally sustainable in the long run, beyond periodic rankings and campaigns?

Moreover, challenges such as behavioral inertia, gaps in rural-urban linkages, inadequate attention to wastewater treatment, and reliance on rankings as indicators of success highlight the complexity of linking sanitation campaigns with sustainability [12]. Indore's case demonstrates that while cleanliness can be achieved in measurable terms, sustaining these achievements requires continuous investment in infrastructure, effective policy coordination, and deeper cultural shifts in public behavior. At the same time, there are significant opportunities to leverage the momentum of SBA for achieving sustainable development—through green technologies, waste-to-resource approaches, integration of sanitation with climate action, and participatory governance models [13].

This paper undertakes a policy review of Swachh Bharat in Indore, focusing on the challenges and opportunities in linking sanitation initiatives with sustainable development [14]. By situating Indore's experience within the broader framework of national and global sustainability agendas, the study seeks to highlight both the limitations of existing approaches and the potential pathways for creating sanitation systems that are not only clean but also inclusive, resilient, and environmentally sustainable.

Research objectives

- To determine the extent to which Swachh Bharat Abhiyan in Indore had been incorporated into the concept of sustainable development.
- To examine the most important issues and problems to limit sustainability of SBA in Indore.

1. Literature Review

Seth (2024) [16] had indicated that reforms in sanitation were closely linked in India with more general developmental changes. He had indicated that new national initiatives (including Swachh Bharat Abhiyan) had positioned the concept of cleanliness and hygiene as not only health-principle and civic-principle, but also as a source of civic, and even national, pride. His work had already indicated that mission-mode programs had resulted in visibility and political momentum but had also required significant administrative backing to sustain long-term outcomes.

Jain (2025) [17] had examined the handling of temple waste on the Gomti River, in the context of localized solutions to floral and organic waste management, which had contributed to sustainability objectives. The study had already determined that composting, recycling and resource recovery had relieved the strain on urban wastage systems and had improved the quality of the environment. The research had also highlighted the importance of community involvement and sector-based innovations to provide efficient waste management.

Jena and Behura (2023) [18] had re-expressed the Gandhian philosophy of Sarvodaya ideology stating that it is still relevant in the twenty-first century. The evaluation they conducted had identified that values of common good, simplicity and ethical responsibility had been influential in moulding localized cleanliness behaviours. They had proposed that value-based mobilization could be used to supplement infrastructure and policy interventions by linking Gandhian ethics with new sanitation campaigns.

Meena, Pal, and Gautam (2024) [19] had evaluated the potential of biogas in India on a zone-by-zone basis, and had found both technical opportunities and systemic challenges. They had already established that the availability of feedstock, the logistics of feedstock collection, and conducive policy frameworks had predetermined the viability of biogas plants. They had opined that incorporating waste-to-energy processes into city waste had provided a promising opportunity to decrease the reliance on landfills and play a role in mitigating climate change.

Pradhan and Pradhan (2023) [20] had previously examined multidimensional poverty during childhood in India, and observed a reduction in health, education and sanitation indicators of deprivation. They had attributed such gains to concerted policy action and huge social programs and had threatened chronic inter-regional inequalities. Their study had pointed out that hygiene programs like SBA had been of great significance as a lever to facilitate the standard of living and to reduce poverty.

Bage and Lama (2024) [21] had studied the hygiene behavior and the practice of sanitation among the Scheduled Tribes in Arunachal Pradesh, and found that the level of awareness and the hygiene behavior adoption had varied in different cultures and availability of infrastructures. Their discussion had shown that delivery of sanitation facilities and delivery of culturally sensitive programs would determine the success of the programs beyond the concept of the program delivery but also the obstacles posed by the context and behavior.

Ansari, Dutt, and Kumar (2024) [22] had given an example of Saharanpur Smart City where new waste management systems had been introduced. They had demonstrated that technological

interventions, government-private sector partnerships, and source segregation had made a huge difference in their studies. They had however also observed that the worker welfare and financial sustainability had been the weakest links in the system, and needed more effort to make them viable in the long term.

Pandey (2025) [23] had stressed the idea of seva, or selfless service as a principle of civic engagement in sanitation efforts. His writings had indicated that the ethics of community, volunteerism and service had reinforced the adoption of community cleanliness programs through a sense of joint responsibility.

Saiyad and Desai (2021) [24] had reviewed the policy formulation of rural sanitation in India and observed that decentralization and community-based strategies had increased the adoption rates. They had decided that provision of infrastructure was important, but long-term success had been necessitated by behavior change, capacity building, and participatory governance.

Dev (2021) [25] had presented the larger context of growth, inclusion and sustainability in India and the contextualization of sanitation as part of long-term development objectives in the country. He had suggested that inclusive growth policies must incorporate environmental concerns, and that sanitation was, both, a health requirement and an indicator of sustainable urbanization.

Srivastava and Srivastava (2023) [26] had touched on issues of administration and innovations in India, and how efficient governance had determined the results of government schemes. Their efforts had shown that information-driven planning, inter-agency coordination, and innovative management practices played a key role in maintaining mission-mode projects such as SBA.

Malhotra (2023) [27] had examined the connection between justice and human rights and development, and argued that sustainable social development had been founded on fair access to resources and services. His own writings had already indicated that sanitation campaigns such as the Swachh Bharat Abhiyan (SMA), extended beyond hygiene to incorporate dignity, equity and basic human rights. This perception had entrenched the belief that sanitation could not be treated as an infrastructure goal but as an instrument of justice and inclusiveness.

Ghosh, Ghosh, and Baidya (2021)[28] had already mentioned the applicability of the circular economy to the Indian context with emphasis on reduce, reuse, and recycle principles (3Rs) in the policy environment. Their work had demonstrated that waste management required systemic mobilization of resource recovery and sustainable production-consumption cycles, as opposed to linear models of disposal. They had emphasised that the decoupling of municipal waste systems with the principles of the circular economy had enhanced environmental performance and economic resilience.

Chakraborty, Das, and Tiwari (2022) [29] had carried out a KAP (Knowledge, Attitude, Practice) research on open defecation in West Bengal slums in urban areas under Swachh Bharat Abhiyan framework. Their report had revealed that although there was increase in the level of awareness on sanitation, there were still attitudinal and behavioral gaps that were mostly perpetuated by the cultural norms, poverty and lack of infrastructures. This paper had demonstrated that even policy-level successes did not necessarily translate into behavior change without long-term engagement of the community and intervention within vulnerable groups.

Singh, Kanoungo, Goyal, Gupta, and Chaudhary (2022) [30] had critically evaluated the municipal solid waste management in India and found weaknesses in disposal systems and model implementation opportunities. They had observed that, although several local urban bodies had tried to decentralize the processing of waste, issues of source segregation, dependency on landfills, and by-laws enforcement had still been noteworthy. They had argued in their study that integrated waste management systems were needed, which would be effective in the long term through a combination of technological solutions, financial sustainability, and participation of citizens.

2. Research Methodology

2.1. Research Design

It had also adopted a mixed-method research design combining both the quantitative and qualitative research designs. This had helped the researchers to record quantifiable and qualitative insights into the extent to which Swachh Bharat Abhiyan (SBA) and sustainable development goals in Indore had been achieved. Quantitative surveys had been used to give numerical measurements on the level of participation by citizens, waste management and level of awareness. In the meantime, qualitative interviews and field observations had provided a better insight into socio-political dynamics, infrastructural constraints and operational issues.

2.2. Study Area

The study was limited to the city of Indore a large city in Madhya Pradesh. The town of Indore had been selected specifically as an area of the study due to its recurrent redesignation as the cleanest town in India as per the surveys of Swachh Survekshan. Its good performance as a company under SBA had positioned it as a case study in understanding how sustainability principles could be applied to urban governance and municipal management practices.

3.3 Population and Sampling

A wide range of stakeholders involved in or affected by SBA activities had been included in the population. These had constituted officials of Indore Municipal Corporation (IMC), sanitation workers, officials of non-governmental organizations (NGOs), and households of various socioeconomic groups.

A purposive sampling technique had been used in order to achieve a comprehensive representation. The sample size was constituted by 150 respondents with 50 representing municipal authorities, 20 NGOs, 50 households, and 30 sanitation workers who are directly involved in the practice of collecting and segregating waste. This distribution had enabled the study to capture both institutionalized views and perceptions and the reality on the ground.

3.4. Data Collection Methods

Primary Data

Primary data had been collected using a combination of surveys, interviews, and field observations.

• **Surveys** An awareness survey among households and sanitation workers regarding the rate of awareness, waste segregation, and SBA involvement had already been conducted.

- **Semi-structured** IMC officials, representatives of NGOs, policy frameworks, operational strategies, and challenges faced in the process of achieving sustainable outcomes have been interviewed.
- **Field observations** had been conducted at materials handling points, such as waste-segregating points to capture actual operation of the waste management systems.

Secondary Data

There were also several published and official records considered as sources of secondary data. These had comprised of government reports, annual reports of the Indore Municipal Corporation, reports of progress under SBA. In addition, data on Swachh Survnekshan ranking of performance and city sanitation were also addressed. Along with these sources, policy literature and academic literature on waste management and sustainability in urban areas were also searched.

3.5. Data Analysis

Descriptive statistics methods such as frequency distribution, percentages and cross tabulations were employed in tabulating the quantitative data of surveys. These tools had enabled the researchers to present measurable patterns of participation, awareness, and satisfaction among the interviewees.

Qualitative data collected through interviews and observation had been analyzed using thematic content analysis. This strategy had helped to establish shared issues, including the monetary barriers, behavioral barriers and lack of structure. Moreover, the results were cross tabulated with the United Nations Sustainable Development Goals (SDGs) to determine the level at which the SBA activities in Indore had been in line with the international standards with respect to sustainability.

3.6. Ethical Considerations

The ethics of the study had been observed. Prior informed consent was obtained by all of the respondents. Anonymity and confidentiality of the answers given by individual respondents had been assured. The study had also emphasized voluntary participation that gave people a right to withdraw at any time. Furthermore, researcher bias, coercion, or misrepresentation had been prevented, thus, the research process was objective and had integrity.

3.7. Limitations

There were some limitations to the study. Because the study was restricted to Indore city, the findings may not have been generalizable to other cities in India, which may not necessarily have the same demographic and infrastructural profiles. Further, since some of the data had been dependent on self-report responses, then elimination of the probability of social desirability bias was not possible as some respondents may have over-reported their involvement in SBA practices. Lastly, the lack of time and resources had constrained the fieldwork and the size of the sample as a whole, potentially decreasing the expansive nature of results.

4. Results And Discussion

The research had already produced both quantitative and qualitative data, as well as, the importance of integrating the principles of sustainable development with the Swachh Bharat Abhiyan (SBA) within Indore. The household and sanitation worker survey and interviews with municipal officials and NGOs had provided an insight into the level of awareness, citizen involvement, obstacles, and the alignment of SBA with the Sustainable Development Goals (SDGs). The findings were arranged in thematic sub-headings to offer a guided discussion.

4.1. Awareness and Participation in Swachh Bharat Abhiyan

The findings had shown that public awareness regarding SBA was considerably high in Indore. Approximately 86% of surveyed households had been aware of waste segregation practices, while 78% had actively participated in household-level waste segregation. NGO interventions and regular campaigns by the Indore Municipal Corporation (IMC) had played a significant role in shaping this awareness.

Table 1: Household Awareness and Participation in SBA

Parameter	Frequency	Percentage (%)
Households aware of SBA objectives	43	86
Households practicing segregation	39	78
Households using IMC waste bins	41	82
Households participating in drives	34	68

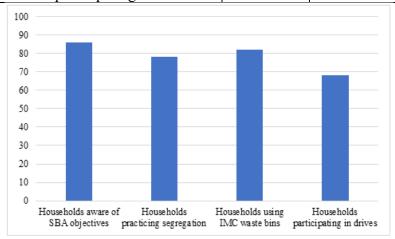


Figure 1: Household Awareness and Participation in SBA

The data had indicated that while awareness levels were high, consistent participation in cleanliness drives had been relatively lower, suggesting a gap between knowledge and practice.

4.2. Institutional and Policy-Level Insights

Interviews with IMC officials had revealed that the city had adopted a multi-tiered waste management system, integrating door-to-door collection, segregation at source, and processing at designated facilities. Officials had emphasized that citizen cooperation had been the cornerstone of Indore's success. However, they had also highlighted challenges such as managing bio-medical and construction waste, which required specialized treatment facilities.

NGO representatives had noted that awareness campaigns had been successful in middle- and high-income localities, but low-income communities had faced behavioral and infrastructural

barriers to consistent participation. This reflected the challenge of achieving inclusivity in sustainable urban management.

4.3. Waste Management Practices and Challenges

Field observations had confirmed that Indore had established an effective two-bin system and ensured daily door-to-door waste collection. Waste segregation plants had been operational, and composting units had been used for organic waste processing.

However, challenges had persisted in terms of financial sustainability. IMC had relied heavily on government subsidies and user charges, but cost recovery had remained inadequate. Sanitation workers had reported issues such as irregular wages, lack of safety equipment, and physical strain due to workload.

Table 2: Key Challenges Reported by Stakeholders

Table	3		
Stakeholder Group	Reported Challenge	Frequency	Percentage (%)
Households	Inconvenience of segregation	12	24
Sanitation Workers	Lack of safety equipment	18	60
Sanitation Workers	Irregular wages	10	33
Municipal Officials	Financial sustainability of operations	15	30
NGO Representatives	Behavioral resistance in low-	12	60
	income groups		

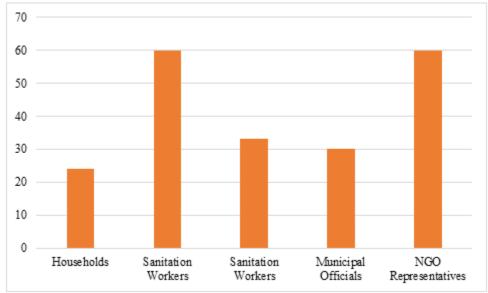


Figure 2: Key Challenges Reported by Stakeholders

The results had indicated that while infrastructure and governance had been relatively strong, human resource and financial sustainability issues had remained pressing concerns.

4.4. Alignment with Sustainable Development Goals (SDGs)

The integration of SBA initiatives in Indore had shown significant alignment with the SDGs, particularly:

- SDG 6 (Clean Water and Sanitation): Through improved sanitation practices.
- SDG 11 (Sustainable Cities and Communities): By creating resilient waste management systems.
- SDG 12 (Responsible Consumption and Production): Through waste segregation and recycling practices.

Nevertheless, partial alignment had been observed with **SDG 8 (Decent Work and Economic Growth)** due to inadequate working conditions and irregular wages of sanitation workers.

Table 3: Waste Segregation Practices Observed in Indore

Category	Frequency	Percentage (%)	
Households practicing daily segregation	92	61.3	
Households practicing occasional segregation	38	25.3	
Households not segregating waste	20	13.4	
Total	150	100	

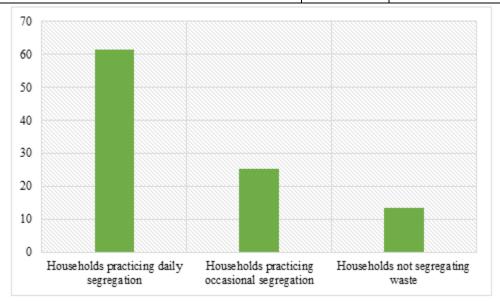


Figure 3: Waste Segregation Practices Observed in Indore

The table had shown that nearly two-thirds of respondents (61.3%) had practiced daily segregation of waste. However, 13.4% had not engaged in segregation at all, which had highlighted a persistent behavioral challenge despite Indore's achievements under SBA.

Table 4: Types of Waste Generated and Managed in Indore

Waste Type	Frequency (tons/day)	Percentage (%)
Biodegradable waste	650	52
Recyclable (plastic, paper, metal)	280	22.4
Hazardous & e-waste	70	5.6
Construction & demolition waste	250	20
Total	1250	100

Biodegradable waste (52%) had constituted the largest portion of Indore's daily waste output, followed by recyclable materials (22.4%). The high proportion of construction waste (20%) had reflected rapid urban expansion, while hazardous waste (5.6%) had posed environmental and health risks, requiring specialized treatment.

Table 5: Alignment of SBA Practices in Indore with SDGs

SDG Goal	SDG Objective	Degree of	Observations
Number		Alignment	
SDG 6	Clean Water and	High	Improved household sanitation
	Sanitation		practices and awareness.
SDG 11	Sustainable Cities and	High	Effective solid waste management
	Communities		and citizen participation.
SDG 12	Responsible	High	Waste segregation and recycling
	Consumption and		initiatives.
	Production		
SDG 8	Decent Work and	Moderate	Inadequate wages and poor
	Economic Growth		working conditions for sanitation
			workers.

4.5. Discussion

The study had demonstrated that Indore's success under SBA was not merely a result of policy implementation but also of active citizen engagement and community participation. The integration of sustainability into urban governance had been evident in waste management practices and infrastructural innovations.

However, persistent challenges had underscored the need for greater financial planning, better protection and welfare of sanitation workers, and inclusive strategies targeting marginalized communities. While Indore had achieved high national rankings, the long-term sustainability of these achievements had depended on addressing these systemic challenges.

The results had therefore indicated that when well carried out, SBA could be an effective tool in ensuring sustainable urban development. However, in order to be successful in the long run, it was necessary to focus not only on the infrastructure and involvement but also on equity, inclusivity and economic sustainability.

5. Conclusion

It was concluded in the study that the Swachh Bharat Abhiyan in Indore had shown very positive assimilation with the concept of sustainable development, especially through proper waste segregation, community involvement, and novel municipal leadership. Indore was already a model city where campaigns, institutional support, and active citizen involvement had worked together to achieve better sanitation and compliance with major Sustainable Development Goals (SDGs). Nevertheless, the study had also noted that some groups had been resistant to behavior change, financial sustainability was deficient, and sanitation workers had lacked adequate welfare support. The findings had highlighted that though the successes of Indore under SBA were immense, it would have been unable to achieve success in the long term unless it addressed the infrastructural gaps, social inclusivity, and economic and labour-related facets of waste management.

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