



# **GAIL (India) Limited**

**Impact Assessment Report on Support for  
supply & installation of steel dust bins for  
Nagar Nigam in Varanasi, Uttar Pradesh (FY  
19-20**



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## Table of Contents

1.1	Executive Summary	4
1.2	Introduction	6
1.2.1	CSR at GAIL	6
1.2.2	GAIL CSR Vision	6
1.2.3	GAIL CSR Objectives	6
1.2.4	About the programme/project	6
1.2.5	About the Implementing Agency	9
1.3	Methodology and Approach	10
1.3.1	OECD DAC: Evaluation Criteria	10
1.3.2	Geographical Scope	11
1.3.3	Sample Coverage	11
1.3.4	Data Collection and Analysis	12
1.3.5	Stakeholder Map	12
1.3.6	Impact Map	13
1.4	Scoring Matrix	14
1.5	Impact Assessment	15
1.5.1	Relevance of Intervention	15
1.5.2	Coherence of Intervention	16
1.5.3	Effectiveness of Intervention	17
1.5.4	Efficiency of Intervention	18
1.5.5	Visibility of GAIL/Branding:	18
1.5.6	Impact of Intervention	18
1.5.7	Sustainability of Intervention	24
1.5.8	Overall rating of the project	25
1.6	Case Studies	25
1.7	Conclusion and Way Forward	26



## 1.1 Executive Summary

Since gaining independence, India has expedited its journey to being a worldwide leader in both thought and action. With one-sixth of the world's population, India has the ability to offer the pivotal traction required to achieve the 2030 Agenda. India's alignment with the national development agenda, as shown by the motto "Sabka Saath Sabka Vikas" (common efforts for inclusive growth), underlines the country's commitment to the SDGs (SDGs).

The country has effectively lifted more than 271 million people out of multidimensional poverty through economic growth and empowerment. Housing, nutrition, child health, education, sanitation, drinking water, and power inequalities have all reduced due to improved access. India achieved 100 percent rural sanitation and a significant reduction in stunting among children and maternal mortality rates through a cross-country initiative launched by the Clean India Campaign and the National Nutrition Mission.

On the national level, there is still a substantial amount of work to be done in multiple sectors. In order to actualize its immense economic potential and strive toward inclusive development, India must accelerate and maintain its upward trend on key social development metrics.

India's Solid Waste Management (SWM) systems have mostly remained unchanged despite significant advancements in the social, economic, and environmental spheres. In a country like India, a number of factors, including the government policy, a country's legal framework, financial resources, and social and cultural perspectives, all play a key part in maintaining an effective waste management system.

The Swachh Bharat Abhiyan was launched in 2014 to address the country's substantial WASH sector components that require attention for improvement. The objectives of the initiative were to increase public awareness and enhance the nation's infrastructure in order to assist the growth of sustainable sanitation, hygiene, and waste management systems. One of the key goals of the programme was to ensure that there was appropriate waste disposal infrastructure in the country. In order to maintain clean and healthy communities, collective education of the community was prioritized because inadequate waste disposal frequently has the biggest impact in metropolitan areas.

When viewed through a state lens, Uttar Pradesh ranks 26th among states and UTs, with a solid waste generation rate of 52 grammes per capita per day, whereas Varanasi district generates more than 600 MT of waste per day at a rate of 0.400 kg per capita per day. Most of the waste produced is comprised of biodegradable, compostable, and recyclable materials. This is due to the city's high amount of religious and vegetable waste, as well as a high amount of plastic waste. The majority of the waste is organic in nature, accounting for nearly 41.95% of the total. The estimated increase in waste generation by 2031 will be around 889 MT per day due to its high population density and rich tourism potential.

Although generally performing well, the state nonetheless has shortcomings in certain municipalities' fundamental waste managing practices. One of the main objectives of SBM is the segregation of waste at source, storage, collection and disposal, yet the city require improvement to achieve this. This factor has led to uneven development of the waste storage and collecting system throughout the city.



GAIL (India) Limited, as a socially conscious public sector organization, recognized the importance of addressing the problem of solid waste management in Varanasi and supported by supplying and installing 634 dual steel dustbins for Municipal Corporation at various public places and residential locations across 13 wards of Varanasi to improve waste collection and segregation.

The program's goal was to increase people's access to better sanitation and waste disposal infrastructure, raise awareness on segregation of wet and dry waste, improve the cleanliness of the surrounding area, and improve outdoor waste disposal. This will eventually aid in reducing the number of illnesses associated with dumping untreated waste, enhancing sanitation and hygiene, enhancing public health, and enhancing waste sorting and disposal.

GAIL CSR responded to the need by contributing to the problem and helping in the provision of a sufficient number of bins for several areas, thus widening the reach of the initiative and helping to improve the general waste collection and segregation conditions of the city. Due to the increased availability of waste collection bins, all the stakeholders recognized that the initiative aided in ensuring efficient waste collection and disposal. They also stated that the project was essential in promoting waste segregation at the source among the communities in the target districts.

GAIL (India) Limited enlisted KPMG to carry out an impact assessment study in order to assess the project's impact and comprehend the perception of the stakeholders. To understand the goal and scope of the project, stakeholder consultations and a review of the team's documents and data were conducted. Following a desk review, the programme team helped identify and finalize key performance indicators. The OECD-DAC (Organisation for Economic Co-operation and Development- Development Assistance Committee) framework was utilised for developing research tools (questionnaires for qualitative surveys) and evaluating the impact created for this study.



## 1.2 Introduction

### 1.2.1 CSR at GAIL

GAIL (India) Limited, conferred with the status of Maharatna in 2013, is India's leading natural gas company with diversified interests across the natural gas value chain of trading, transmission, LPG production, LNG- regasification, petrochemicals, city gas, etc. It owns and operates a network of around 14617 km of natural gas pipelines spread across the length and breadth of country. GAIL firmly believes that meeting people's needs, enhancing communities, and safeguarding the environment will ultimately determine how long progress can be sustained.

Pursuant to the provisions of the Companies Act, 2013 and rules made thereunder including the statutory modifications/ amendments from time to time as notified by the Government of India, GAIL (India) Limited earmarks two percent of its average net profit of the preceding three financial years towards achieving its CSR objectives through implementation of meaningful and sustainable CSR programmes.

### 1.2.2 GAIL CSR Vision

GAIL, through its CSR initiatives, will continue to enhance value creation in the society and in the community in which it operates, through its services, conduct & initiatives, so as to promote sustained growth for the society and community, in fulfillment its role as a Socially Responsible Corporate, with environmental concern.

### 1.2.3 GAIL CSR Objectives

- Ensure an increased commitment at all levels in the organization, to operate its business in an economically, socially & environmentally sustainable manner, while recognizing the interests of all its stakeholders.
- To directly or indirectly take up programmes that benefit the communities in & around its work centres and results, over a period of time, in enhancing the quality of life & economic well-being of the local populace.
- To generate, through its CSR initiatives, goodwill, and pride for GAIL among stakeholders and help reinforce a positive & socially responsible image of GAIL as a corporate entity.

### 1.2.4 About the programme/project

People's consuming habits have altered dramatically as an outcome of the industrial revolution and economic progress<sup>1</sup>. The rate at which the world is rapidly expanding into urbanization at the same time is unparalleled. Small to medium-sized cities in low-income countries account for the majority of such urbanization<sup>2</sup>. However, technology

<sup>1</sup> Gour A. Singh S. (2022 October 27) *Solid Waste Management in India: A State-of-the-Art Review*. Environmental Engineering Research 2023. Vol 28(4).

<sup>2</sup> Cohen B. (2004) *Urban growth in developing countries: a review of current trends and a caution regarding existing forecasts*. World Dev. 32(1):23–51

has also made solid waste management extremely complicated at the same time. In consequence of this modified way of life, the proportion of inorganic components in wastes has increased dramatically, adversely affecting waste management and making it a contemporary global issue<sup>3</sup>. Such cities are now faced with the difficulty of managing waste in a way that is both ecologically and socially sustainable.

The generation of solid waste is a natural byproduct of human activity, and how it is treated has a substantial effect on the health of the local community and environment<sup>4</sup>. Globally, as plastic and electronic consumer products proliferate, people are disposing increasing amounts of waste, and its structure is more complex than ever before<sup>5</sup>. This emphasizes the need for sustainable disposal and management of waste. Coming to the characteristics of local waste, they vary with cultural, meteorological, and socioeconomic aspects, as well as institutional capabilities. This reason explains why waste governance is becoming more regionalized and institutionalized on a global scale. It has been observed that unsustainable waste management can be a hazard to both the people and the environment of the country. As cities are deemed accountable for delivering public goods to their population, the onus of providing excellent waste management services has frequently fallen on cities<sup>6</sup>.

Even though almost all countries in the world are engaged in a resolute struggle, they have yet to come up with a rational and sustainable waste management system. Nevertheless, this problem has been adequately tackled in a few industrialised nations, including Germany, Italy, Canada, and Australia. However, the rest of the world, which includes many developing and poor countries, is still developing its fundamental infrastructure, so there is still a long way to go toward sustainable waste management<sup>7</sup>.

In the context of India, the growth of urban areas, shifting consumer habits, and industrialization leading to a rise in municipal waste generation are harming the environment and endangering sustainable development<sup>8</sup>. India is a varied nation with many different religious groups, cultures, and customs, making it more challenging to achieve sustainable development as the country experiences accelerated population expansion and improvements in living conditions<sup>9</sup>.

In order to combat both environmental deterioration and climate change, waste management has become a significant aspect. The world is moving toward a circular economy, where products are reused or recycled to cut down on waste production.

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<sup>3</sup> Gour A. Singh S. (2022 October 27) *Solid Waste Management in India: A State-of-the-Art Review*. Environmental Engineering Research 2023. Vol 28(4).

<sup>4</sup> Vergara S. & Tchobanoglous G. (2012) *Municipal Solid Waste and the Environment: A Global Perspective*. Annual Review of Environment and Resources. Vol. 37:277–309

<sup>5</sup> Ibid.

<sup>6</sup> Ibid.

<sup>7</sup> Bhattacharya S. Chatterjee S. & Sachdev B. (2021 November) *An Examine on the Solid Waste Management System in Urban India and Its Impact on Climate Change*. International Journal of Innovative Research in Science, Engineering and Technology. Vol. 10, Issue 11.

<sup>8</sup> Priti, Mandal, K. (2019 June 03) *Review on evolution of municipal solid waste management in India: practices, challenges, and policy implications*. Journal of Material Cycles and Waste Management. Vol 21, 1263–1279.

<sup>9</sup> Ibid.



Today's world requires a proper solid waste management system more than ever to combat climate change.<sup>10</sup>

Despite substantial progress in the social, economic, and environmental aspects, India's Solid Waste Management (SWM) systems have mostly stayed static. In order to transition to more sustainable SWM, new management systems and waste management facilities are needed<sup>11</sup>. In a country like India, several factors like government policy, legislative basis, and financial provision, as well as social and cultural perspective also play a significant role in ensuring an efficient system for waste management<sup>12</sup>.

To address the variegated landscape of the country as well as the significant WASH sector components that need attention for improvement, the Swachh Bharat Abhiyan was introduced in 2014. The initiative aimed to raise awareness and improve the development of sustainable sanitation, hygiene, and waste management systems in the nation. The campaign sought to engage in home, workplace, village, and city cleanliness, which would result in a significant decrease in waste and pollution. The effort placed a strong emphasis on the creation of effective waste disposal and sanitary systems. The programme considered these actions important in order to uphold the nation's morale and cleanliness, combined with strict adherence to the law<sup>13</sup>.

Providing adequate sewage infrastructure, public restrooms, and garbage disposals across the nation was another priority of the programme. Since inappropriate waste disposal often has the greatest impact in metropolitan areas, collective education of the population was prioritized in order to maintain clean and healthy communities.

The participation of the states in the decision-making process about the approach and strategy to be used in each of them is one of the SBA's key strengths. It was duly recognised in the programme that in order to achieve the desired results, the states itself are best positioned to choose the type of approach, technique, and technology that best meets their socioeconomic, geographic, cultural, linguistic, and technological settings.

In an effort to create planned, cleaner, and greener cities, the Uttar Pradesh Government implemented the solid waste management (SWM) model across the State's urban bodies, similar to the models used in Indore<sup>14</sup>. This is the need of the hour as with regards to treatment of solid waste, it was noted that only 5, 520 TPD of the 14,710 TPD of waste produced is being treated in Uttar Pradesh. A significant amount of waste is still either not gathered, not stored, or not transported to the treatment centers. To treat solid waste before final disposal, the state has made an effort to establish three new waste processing and disposal facilities by granting authorizations<sup>15</sup>.

Although generally performing well, the state still has shortcomings in several municipalities' fundamental waste collection infrastructure and procedures. One of the

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<sup>10</sup> Bhattacharya S. Chatterjee S. & Sachdev B. (2021 November) *An Examine on the Solid Waste Management System in Urban India and Its Impact on Climate Change*. International Journal of Innovative Research in Science, Engineering and Technology. Vol. 10, Issue 11.

<sup>11</sup> Kumar S. Smith S. et al. (2017 March 22) *Challenges and opportunities associated with waste management in India*. Royal Society Open Science. <http://doi.org/10.1098/rsos.160764>

<sup>12</sup> Priti, Mandal, K. (2019 June 03) *Review on evolution of municipal solid waste management in India: practices, challenges, and policy implications*. Journal of Material Cycles and Waste Management. Vol 21, 1263–1279.

<sup>13</sup> Singh S. Kunwar N & Sharma A. (2018) *Impact of Swachh Bharat Abhiyan in Indian society*. International Journal of Home Science 2018; 4(1): 215-219

<sup>14</sup> [Uttar Pradesh plans to implement waste management model of Indore - The Hindu](#)

<sup>15</sup> [Uttar Pradesh plans to implement waste management model of Indore - The Hindu](#)





main objectives of SBM is the collection of waste that has been separated at the source, but these areas lack the infrastructure and public awareness to ensure this. This aspect has led to uneven development of the waste collection system across the districts of Uttar Pradesh.

Coming to the city of Varanasi in Uttar Pradesh, the city is estimated to generate around 749 tonnes of municipal solid waste per day (TPD) and around 75.7% of this generated waste is collected by the Municipality<sup>16</sup>. The city also estimates to generate around 1,31,547 tonnes CO2 Eq GHG emissions from solid waste management. According to the Varanasi Solid Waste Management- Action Plan, it is estimated that by 2031 solid waste generation in Varanasi will increase to about 889.74 TPD<sup>17</sup>.

In order to tackle and control the generation of solid waste management in the city of Varanasi and to support the Varanasi Nagar Nigam, GAIL (India) Limited, in association with Uttar Pradesh Small Industries Corporation Limited (UPSICL), installed around 634 steel dustbins with wet and dry waste segregation in 13 wards around the city. The dustbins were of 60 – liter capacity. The bins are clearly marked with biodegradable and non-biodegradable tags to encourage source segregation in the public and to aid in the collection of dry and wet waste.

The locations for the installation of the bins were identified by the Varanasi Municipal Corporation and the dustbins were installed in public places such as outside shops, marketplaces, outside temples, on the pavements etc. where most amount of waste is collected. Some bins were also installed inside schools and residential colonies. Post installation, the bins were handed over to Municipal Corporation for maintenance and upkeep.

#### 1.2.5 About the Implementing Agency

For the purpose of comprehensive development of small industrial units of the state, Uttar Pradesh Small Industries Corporation Limited (UPSICL) was established in June 1958 as a wholly Government owned company. To fulfill its objectives, the corporation is providing assistance to the small-scale industrial units of the state. The main objective of the organization is to provide various raw materials like iron, steel, coal etc. to small scale units.

Additionally, the organization is also involved in establishment and maintenance of the industrial establishments of the Directorate, providing marketing assistance to small scale entrepreneurs, establishing industrial estates and clusters in backward areas etc.

U.P. Small Industries Corporation Limited is the only corporation of the state Government, which is responsible for the MSME of the state. For the comprehensive development of the industrial units, UPSICL has been established by the Government of Uttar Pradesh. This has aided in enhancing the industrial development of the state.

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<sup>16</sup> [An Audit of Municipal Solid Waste Management System in Selected Wards of Varanasi – A Case Study – IJERT](#)

<sup>17</sup> [An Audit of Municipal Solid Waste Management System in Selected Wards of Varanasi – A Case Study – IJERT](#)

For the purpose of this project, GAIL collaborated with UPSICL for procurement and installation of 634 steel dustbins in 13 wards of Varanasi, Uttar Pradesh.

### 1.3 Methodology and Approach

GAIL has been implementing successful CSR initiatives based on community needs. A third-party evaluation of the results attained is essential given the dynamic nature of the social development programmes deployed. This impact assessment aims to explain what has been done well and what can be done moving forward. It will not only assist in determining the significance of the project, including the efficiency of project design and interventions, sustainability of results, and impact of the intervention on the target community, but it will also provide guidance for expanding or replicating the successful initiatives while redesigning or ending the projects/initiatives that were unable to have the intended impact.

The impact assessment is intended to provide key insights on the following questions:

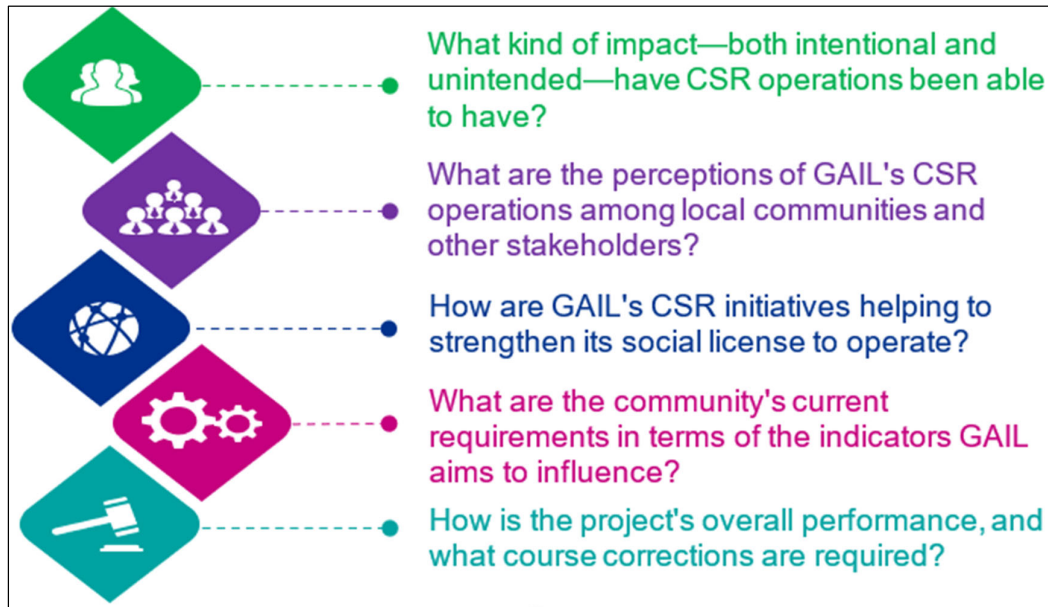


Figure 1: Research questions

The study was conducted through a combination of qualitative and quantitative data collection techniques. These include in-depth interviews and focus group discussions with beneficiaries and key stakeholders, as well as secondary research in the multiple thematic areas for a baseline perspective.

#### 1.3.1 OECD DAC: Evaluation Criteria

Given the fundamental approach for conducting an impact study, the OECD-DAC (Development Assistance Committee) Evaluation Network's framework is well regarded for assessing the efficacy of development programmes. In response to the need for a method through which bilateral development agencies could monitor the financing

supplied to multilateral organisations for various development initiatives, the DAC Evaluation Network developed a set of evaluation criteria for measuring the performance of any development project (UNICEF, 2012).

In 1991, the OECD Development Assistance Committee (DAC) devised the criteria for assessing international development cooperation. They are now widely used beyond the DAC and have established themselves as a cornerstone of evaluation methodology. These standards have routinely been used for international donors, including UN agencies (OECD, 2020).

The OECD DAC Network has identified six evaluation criteria and two principles for their application: relevance, effectiveness, coherence, efficiency, impact, and sustainability. These criteria are meant to help facilitate evaluations. They were revised in 2019 to improve the accuracy and utility of assessment and to strengthen evaluation's contribution to sustainable development (OECD, 2020).

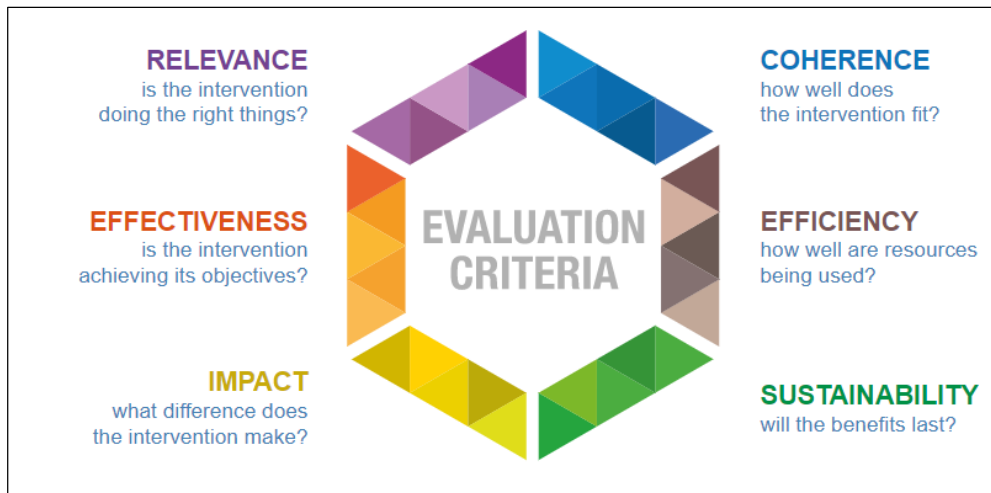


Figure 2: OECD-DAC Evaluation Criteria

### 1.3.2 Geographical Scope

The impact assessment for this project covered 1 district of 1 state.

	State	Districts
Under GAIL's CSR initiative	Uttar Pradesh	Varanasi

Table 1: Geographical Scope

### 1.3.3 Sample Coverage

A sample of 14 stakeholders was covered for the study. The beneficiaries were identified at the dustbin installation locations on a random basis. Duplication of responses were also avoided to ensure opinion of all stakeholders is covered adequately.



### 1.3.4 Data Collection and Analysis

In Uttar Pradesh, KPMG carried out the data collection exercise on field with assistance from GAIL CSR SPOCs and the implementing agency.

In-depth interviews were conducted with the relevant stakeholders face – to – face on field, with the help of pre-designed questionnaires. The data was later updated and translated into excel sheets. Following data collection and cleaning, the data was analysed, and the outcomes were utilised to assess the project's impact.

### 1.3.5 Stakeholder Map

Stakeholders play an imperative role in project implementation on the ground. Stakeholder involvement can offer insightful information that aids in making critical decisions for the organisation. They can aid in designing improved guidelines, processes, and systems, as well as future communications and plans. Institutions and stakeholders taking part in the exercise include:

Project	Type of Stakeholder	Number of stakeholders
<b>Support for supply &amp; installation of steel dust bins for Nagar Nigam in Varanasi, Uttar Pradesh (FY 19-20)</b>	GAIL CSR Project SPoC	1
	Implementation agency	1
	Municipal Corporation members	2
	Beneficiaries	10

*Table 2: Stakeholders involved in the sampling*



### 1.3.6 Impact Map

Thematic Area	Location	Project Name	Implementing Agency	Overall Objective	Key Activities	Key Outputs	Key Outcomes	Impact
GAIL Arogya: Nutrition, Health and Sanitation [Item no. (i), Schedule VII, Companies Act 2013]	Varanasi, Uttar Pradesh	<b>Project 19:</b> Support for supply & installation of steel dust bins for Nagar Nigam in Varanasi, Uttar Pradesh (FY 19-20)	Uttar Pradesh Small Industries Corporation Limited (UPSICL)	Supply and installation of 634 dual steel dustbins for Nagar Nigam in Varanasi, Uttar Pradesh	Supply & installation of 634 dual steel dustbins for Nagar Nigam in Varanasi	<ul style="list-style-type: none"> <li>No. of steel dustbins provided</li> <li>No. of steel dustbins installed</li> <li>No. of locations where dustbins were installed</li> <li>Quantity of wet waste &amp; dry waste segregated every month from the dustbins</li> <li>Handing over the dustbins to proper authorities for upkeep and maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Improvement in waste disposal through availability of dustbins.</li> <li>Increase in frequency of waste collection</li> <li>Increase in geographical coverage of waste disposal &amp; collection</li> <li>Improved health and cleanliness in the community &amp; localities</li> </ul>	<ul style="list-style-type: none"> <li>Improved access to better sanitation &amp; waste disposal facilities for the people</li> <li>Improved awareness on wet waste &amp; dry waste segregation</li> <li>Improved cleanliness in the surrounding areas</li> <li>Reduction in diseases reported due to dumping of waste in open</li> </ul>

Table 3: Impact map from the project



## 1.4 Scoring Matrix

A scoring guideline was designed where OECD DAC parameters were scored and bundled basis our understanding of the project and availability of information. Weights were assigned to the bundled OECD DAC parameters. Also, a parameter on Branding was included to understand the community's awareness on the project. Various components within the parameters have been assigned scores. Weights and scores have been used to compute the overall score for the location where project was implemented.

The following scoring matrix was developed to rate the performance of the projects across the district:

OECD Parameters	Indicators	Weightage	Combined Weightage
<b>Relevance</b>	Needs Assessment Report	20%	W1: 40%
	Relevance to target beneficiaries	50%	
	Alignment to SDGs	30%	
<b>Coherence</b>	Alignment with national policy	50%	
	Alignment with GAIL CSR policy	50%	
<b>Efficiency</b>	Timeline Adherence: Project Completion	40%	
	Duplication	20%	
	Adherence: Budget	40%	
<b>Effectiveness</b>	Identification of problem	25%	
	Process driven implementation strategy	25%	
	Qualified implementation team	25%	
	Targeted beneficiaries	25%	
<b>Impact</b>	% Respondents reporting using the dustbins on a regular basis	25%	W3: 10%
	% Respondents reporting improved waste collection and segregation	25%	
	% Respondents overall satisfied with the intervention	25%	
	% Respondents practicing wet and dry waste segregation	25%	
<b>Branding</b>	Visibility (visible/word of mouth)	100%	W3: 10%
<b>Sustainability</b>	Sustainability Mechanism, Convergence	100%	W4: 10%
<b>Score= W1*Average (Relevance, Coherence) + W2*Average (Efficiency, Effectiveness, Impact) + W3* (Branding) + W4* (Sustainability)</b>			

Table 4: Scoring Matrix



## 1.5 Impact Assessment

### 1.5.1 Relevance of Intervention

*Relevance is a measure of how much the intervention objectives and design respond to the needs, beliefs, and priorities of the beneficiaries and continue to do so even if circumstances change.*

Relevance measures how effectively a programme is aligned with the goals and policies of the Government in which it is implemented. It also aims to know if the programme is relevant to the needs of the beneficiaries. The program's relevance is understood in this context in terms of community needs as well as linkages to existing Government operations.

Despite typically functioning well, the state of Uttar Pradesh has faced challenges related to the fundamental infrastructure and provisions of waste collection in a number of municipalities. According to the Annual Report on Implementation of Solid Waste Management Rules, 2016 (2020-21), The generation of solid waste is 14,710 TPD overall out of which a total of 14,292 TPD of solid waste has been collected. A total of 17 MSW processing facilities are operational, with a total of 5,520 TPD treatment capacity. The report also highlights that among the 651 Urban Local Bodies (ULBs) in the state out of which 592 ULBs have identified and allotted lands for setting up of processing and disposal facilities for Solid Waste Management. The infrastructure necessary to ensure the collection of waste that has been segregated at the source is also lacking in these locations. This contributed to an unequal development across the different parts of the target districts, as some places possessed the infrastructure needed for efficient waste collection while others did not.

The project focused on aiding the implementation of Swachh Bharat Abhiyan by providing waste collection bins in the Municipal Corporations of the targeted wards in Varanasi. Due to the increased availability of waste collection bins and the increased public awareness of source segregation, all stakeholders considered this project to be pertinent in their locality and one that would help ensure waste collection. The stakeholders agreed that the need for providing separate bins for wet and dry waste was necessary because there was no source segregation and fewer bins were previously available. Additionally, they emphasized how important a part the project has played in encouraging waste segregation at the source among the communities and increasing the amount of waste collection in the different localities across Varanasi.



Figure 3: Steel dustbins by GAIL

### 1.5.2 Coherence of Intervention

Coherence refers to the compatibility of the intervention with other interventions in a country, sector, or institution.

It measures the extent to which other interventions (particularly policies) support or undermine the intervention, and vice versa.

#### I. Alignment of the programme with National Priorities - Sustainable Development Goals (SDGs)

The Sustainable Development Goals (SDGs), commonly recognized as the global goals, were established in 2015 by all United Nations members with the purpose of eradicating poverty, protecting the environment, and ensuring that everyone lives in peace and prosperity by 2030. India was a significant contributor to the development of the SDGs and is committed to achieving them by 2030.



SDG Goal	Target	Sub-targets <sup>18</sup>	Relevance
<b>GOAL 3</b>	<b>Good Health and Well-Being</b>	<b>3.9</b> By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	The project's aim was to improve the practice of waste collection and segregation and to enable reduced waste disposal in public locations. This would result in an improvement in the city's overall health and well-being and a reduction in soil, water and air pollution which would in turn have a positive impact on the health of community members

<sup>18</sup> <https://sustainabledevelopment.un.org/topics/sustainabledevelopmentgoals>



<b>GOAL 6</b>	<b>Clean Water and Sanitation</b>	<b>6.b Support and strengthen the participation of local communities in improving water and sanitation management</b>	The project aimed to improve waste collection by enabling segregation of wet and dry waste.
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Table 4: Associated SDG Goals

## II. Coherence with national priorities:

The project is further aligned with the national and state government goals, policies, and initiatives, as listed below:

Project	Description	Coherence
<b>Uttar Pradesh State Solid Waste Management Policy</b>	The Uttar Pradesh Solid Waste Management Policy is based on following principles: reduction and reuse at source, Urban Local Bodies will promote the options for Solid Waste Management for prevention of waste generation and promoting reuse.	The project is in alignment with the policy and focuses on provision of steel dustbins that have been installed in public places

Table 5: Associated National Schemes

### 1.5.3 Effectiveness of Intervention

*Effectiveness is defined as an assessment of the factors influencing progress toward outcomes for each stakeholder as well as validation of the robustness of systems and processes.*

It aids in ensuring that the implementation and monitoring processes are sturdy in order to achieve the greatest possible social impact. The efficacy of the programme is established by examining how well the program's activities were carried out as well as the efficiency with which the program's systems and processes were implemented.

The project's goal was to improve the process of waste segregation and collection in the target districts and aid the implementation of Swachh Bharat Abhiyan. Therefore, to successfully attain these outcomes, the project adopted the following measures:

- I. Identification of the problem:** The project's main objective was to solve the issue of source segregation and effective collection of waste in the target wards of Varanasi. The project further aimed at supporting the Municipal Corporation in waste collection and ensuring cleanliness and hygiene. To be able to deliver the best results for the communities and stakeholders involved, the issue was identified, and the project was effectively developed.
- II. Process driven implementation strategy:** The project employed a process-driven implementation strategy that includes fundamental market research to ensure a context-specific initiative, standardised activities with a set timeframe to assure quality, and pre-determined KPIs to ensure consistency.
- III. Qualified implementation team-** The implementing agency deployed a qualified team with previous expertise managing similar tasks. The agency monitored the procurement and delivery process of the tipper dustbins. This



contributed to the preservation of implementation quality and provided prompt assistance to the municipal corporations.

#### 1.5.4 Efficiency of Intervention

*The efficiency criterion seeks to determine whether the project was completed in a cost-effective and timely way.*

The purpose is to establish whether the inputs—funds, knowledge, time, etc.—were effectively employed to create the intervention outcomes. This evaluation criterion attempts to determine whether the programme was completed on schedule and within budget.

The project has been efficiently implemented in the target wards of Varanasi with the support of key stakeholders.

**I. *Timeliness of delivery or implementation of project interventions***

The programme was implemented within the given time - period by UPSICL with support from GAIL CSR team in the target wards of Varanasi and 634 dustbins were successfully installed in 13 wards. The initial agreement between GAIL and UPSICL for procurement and installation of dustbins was three months. An addendum was signed between both the parties for an extension by 1 month in light of the COVID – 19 pandemic to ensure completion of the project target.

**II. *Cost efficiency of project activities***

Interaction with the GAIL CSR and UPSICL team members also revealed that there was no budget overflow and that all the activities were successfully carried out within the allotted budget. Payment milestones were clearly defined as such, and interventions were implemented in the districts in consultation with the key stakeholders.

**III. *Duplication/ overlap of project activities***

Duplication of effort arises when similar interventions are needlessly undertaken within the same community/ location due to poor knowledge management and inadequate coordination of projects, thereby resulting in fund and resource inefficiency. In this case, it was discovered that Varanasi already had dustbins, but they were either old or insufficient to cover all locations in terms of waste collection. As a result, this project contributed to expanding the reach of the intervention and avoiding duplication or overlap of project activities in the target wards of the city.

#### 1.5.5 Visibility of GAIL/Branding:

The steel dustbins at Varanasi showcased adequate branding and visibility of GAIL (India) Limited. Each dustbin was marked with a GAIL logo clearly highlighting that the dustbin has been installed under GAIL CSR initiative.

#### 1.5.6 Impact of Intervention

*Impact has been measured in terms of the proportion of respondents who reported having a significant change in their lives due to the initiation of the project.*



The goal of measuring the impact is to determine the project's primary or secondary long-term impacts. This could be direct or indirect, intentional, or unintentional. The unintended consequences of an intervention can be favourable or harmful.

## I. Short Term Impacts

### a. Improvement in the waste collection and segregation process

Prior to the launch of the Swachh Bharat Mission, municipality workers collected household waste in some areas while housing complexes used private contract agencies to ensure waste collection<sup>19</sup>.

The locations where the dustbins are supplied and installed originally had no provisions for waste segregation at source due to the lack of separate bins for wet & dry waste, according to the stakeholders from the implementing agency who were interviewed. The community's health used to be jeopardized by public waste dumps on open spaces or vacant lots. Unsegregated waste that had been collected was frequently dumped in dumpsters that were close to public streets. Due to the lack of dumpsters and their inability to hold the volume of waste being thrown into them, the overflow of waste created an unsanitary and unsightly environment in the communities. Therefore, maintaining the health and hygiene of the districts was a significant challenge due to the inadequate education & awareness and segregation & collection of waste<sup>20</sup>.

However, waste should be separated based on type, and the best methods for treatment and disposal should be adopted. If solid waste is not adequately segregated, it will possibly end up intermixed in landfills just as it was in household bins. Food scraps, paper, and liquid waste can combine and decay, releasing toxic gas into the atmosphere and runoff into the soil<sup>21</sup>.

In order to address these problems, "steel dustbins" were introduced to support SBM implementation to boost the effectiveness of the waste collection and source segregation processes. One steel dustbin as a whole had two separate dustbins attached with clearly segregate the disposal of wet and dry waste. Through the use of these bins, waste segregation has been initiated, and public awareness has seen a rise. People are now more mindful and are aware of the difference between wet and dry waste are and where they should dump waste. This also helped to improve sanitation of surrounding.

100% of the beneficiaries interacted with were effectively using the steel dustbins on a daily basis to dispose off the waste.

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<sup>19</sup> <https://www.smartcityindore.org/solid-waste/>

<sup>20</sup> Ibid.

<sup>21</sup> <https://axil-is.com/blogs-articles/waste-segregation/#:~:text=Failing%20to%20segregate%20trade%20waste,harmful%20gas%20into%20the%20atmosphere.>



Figure 4: Installed steels dustbins for (wet and dry waste)

According to the stakeholders surveyed, Varanasi Nagar Nigam regularly works in shifts to meet the city’s needs for waste collection in addition to carrying out the waste collection process in their respective wards every day. As per the Nagar Nigam officials, the dustbins are regularly cleared in a trolley from each of the locations where they are installed. The waste is then segregated and collected in a larger dustbin from where it is transferred in a truck to the waste disposal and recycling locations. They reaffirmed the segregation of the waste and assisted in its collection in the designated location.

The following image illustrates the process of waste management that follows the waste segregation and collection.

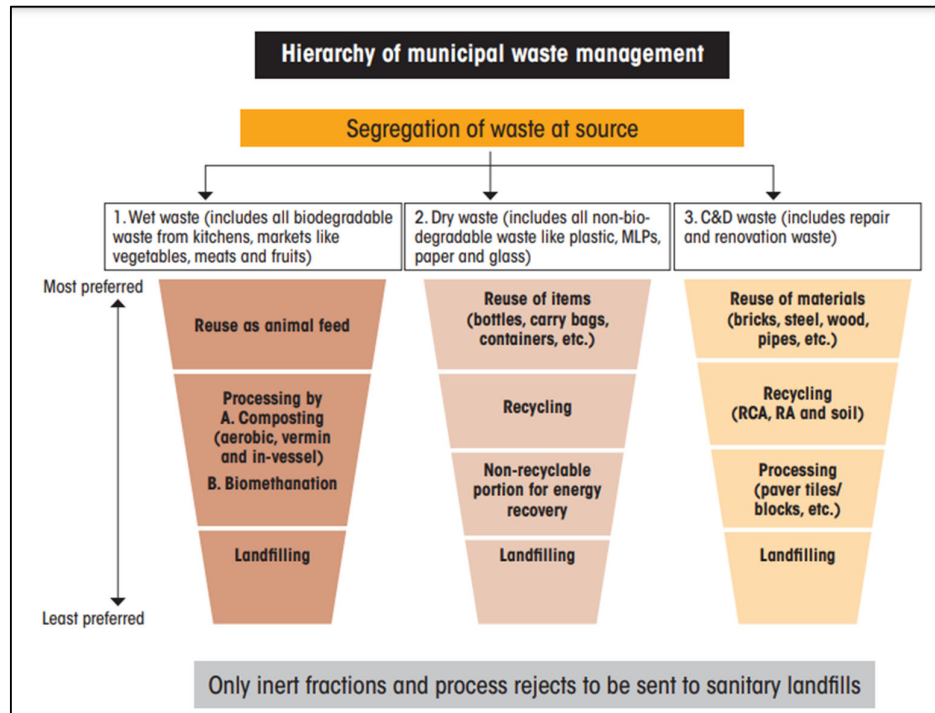


Figure 5: Waste Management Process  
Source: Guidelines for Swachh Bharat Mission (urban) 2.0, 2021

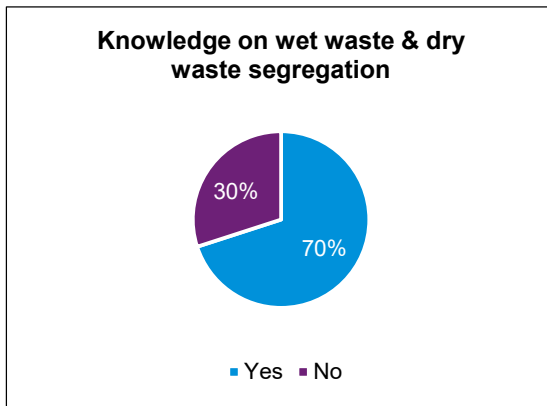


Figure 6: Knowledge on wet and dry waste segregation

A majority of 70% of the respondents were aware about the purpose of providing two bins and the need for segregating wet waste and dry waste. 30% of the respondents were not aware of the process of wet waste and dry waste segregation and they continued to dispose off waste in one bin only. A need for greater awareness generation on the importance of different kinds of wastes and segregation of wet and dry waste was felt in the wards visited. Some small business owners and street vendors also benefited from the intervention as earlier they had to pay a fixed amount to the Nagar Nigam for the collection of waste that was disposed outside their shops. After the installation of the dustbins, they are no longer required to pay Nagar Nigam for waste collection. As people become more conscious, they have stopped throwing waste outside on the street. The shop vendors also spread awareness among their customers to use the dustbins effectively to throw waste.

Disease prevention and preservation of the area's cleanliness, reduction of time, effort and cost factors involved in segregating the waste at the source aids in creating a positive impact for the intervention.

The installation of the steel dustbins has made the surroundings cleaner and more hygienic. Stakeholders from the Municipal Corporation highlighted several challenges that they faced before the installation of dustbins such as waste being disposed off on the streets leading to spread of foul smell and mosquitos who spread different kinds of diseases. Additionally, the health of the cattle in the city was also impacted as the cattle used to sit on the open waste and subsequently, suffered from lumpy virus. There has been a reduction in these harmful effects over time due to the installation of the dustbins.



Figure 7: Installed steels dustbins for (wet and dry waste) reflects cleanliness around the area.

The project to provide steel dustbins to the target districts received unanimous praise from the stakeholders who were interviewed for its positive effects on raising awareness and preventing segregation at the source. A majority of 80% of the beneficiaries felt that the intervention by GAIL had helped to bring about better waste disposal practices in the people. 60% of the beneficiaries felt that the surroundings had become cleaner and more hygienic as people frequently used the steel dustbins to dispose the waste.

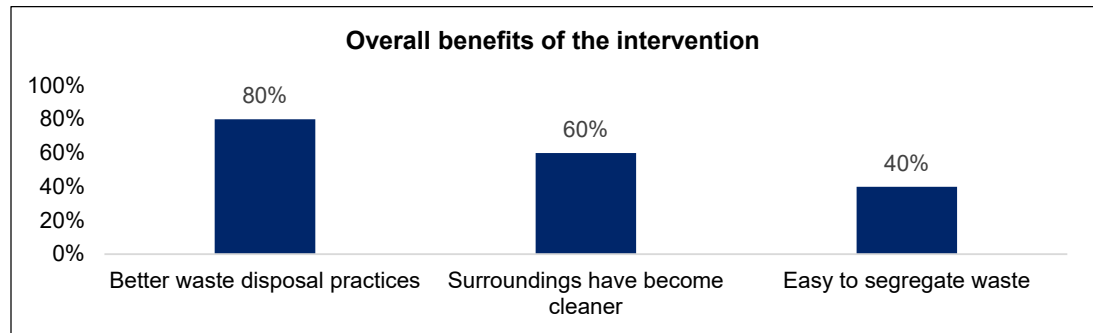


Figure 8: Overall benefits of the intervention

## II. Long Term Impacts

### a. Awareness creation regarding waste segregation

The potential of the population and administration is hampered by lack of awareness. Both sides must be informed about the current state of affairs and SWM's development. By measuring public involvement and awareness via knowledge gap analysis, which encourages informed decision-making, awareness-related issues can be addressed.<sup>22</sup>

No matter how waste is being generated, segregating waste is the real roadblock faced by the country. Waste collection and segregation are done simultaneously in India. It is the responsibility of the citizen to separate and dispose of waste according to the specified categories.

<sup>22</sup> Gour A. Singh S. (2022 October 27) *Solid Waste Management in India: A State-of-the-Art Review*. Environmental Engineering Research 2023. Vol 28(4).

According to the interviewed stakeholders, the provision of separate dry & wet waste dustbins by GAIL helped in increasing the awareness among the communities in the target districts. The designated containers aimed to raise public awareness of segregation at the point of source. Despite these efforts, there were still visible cases of waste being disposed off without getting segregated which created trouble for the Municipality workers at the time of collection and led to increase in time and effort.



Figure 9: Installed steels dustbins

#### **b. Improved hygiene and sanitation in the city**

The proportion of waste being disposed in public dumping sites has significantly decreased as a result of the better waste collection services in the target wards of Varanasi. The overall surroundings of the city improved significantly due to reduced public waste disposal, creating cleaner and healthier settings. People in the target wards gradually experienced better living and health conditions as a result of cleaner environments. A reduction in the overall financial burden of health issues on communities is a direct result of improved health conditions. This leads to an improvement in the economic growth and well-being of the population as they are able to devote more time and effort to income-generating activities as a result of being less ill.



Figure 10: Installed steels dustbins

During interactions with stakeholders and beneficiaries, it was discovered that 100% of the beneficiaries found the initiative relevant, which aided in the promotion of cleaner and more sanitary surroundings.

Majority of the beneficiaries were satisfied with the intervention and found it as an essential requirement for their city. The following figure highlights the satisfaction level of the beneficiaries with regards to sanitation and hygiene

through this intervention on a scale of 1-5 with 1 being the least satisfied and 5 being the most satisfied:

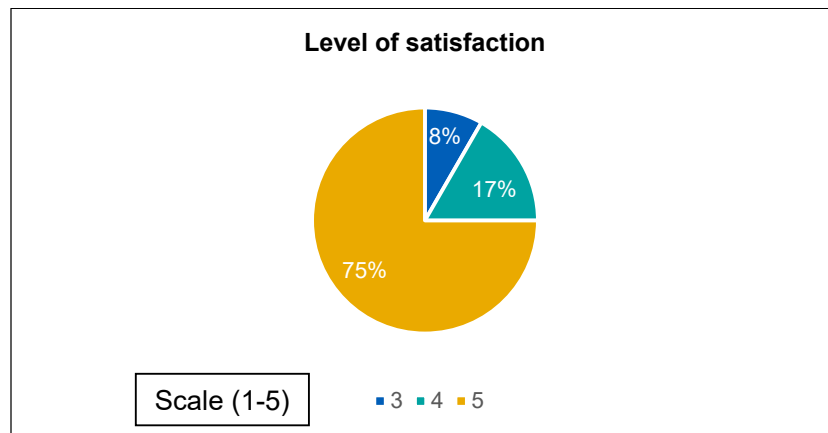


Figure 11: Level of satisfaction among beneficiaries

Majority of the beneficiaries (75%) rated the intervention as 5 and were seen to be highly satisfied. 17% of the beneficiaries rated the intervention as 4 whereas a small proportion of 8% of the beneficiaries were neutral towards the intervention. Some of the beneficiaries felt the need for more awareness generation on a regular basis to ensure waste segregation. Additionally, at some of the locations, it was observed that the dustbins had either been shifted to some other spot or were broken and not in use. This had led to certain amount of dissatisfaction in the people as they suggested the need for greater intervention by the Municipal Corporation or implementing agency to replace such dustbins in time.

### 1.5.7 Sustainability of Intervention

*Sustainability assesses how well the programme secures the long-term viability of its outcomes and influence.*

The continuation of a positive effect after development or aid has stopped is referred to as sustainability. This evaluation criterion contains key elements concerning the likelihood of continuous long-term benefits and risk tolerance. To achieve sustainability, a governing framework, financial model, and operating system must be established.

At delivery, the steel dustbins were handed over to the Municipality. This demonstrates that the project had an effective exit strategy to close the project efficiently while transferring ownership of the steel containers to the Municipality.

The project increased Municipal Corporations' capability for segregated waste collection and attempted to reduce the amount of waste disposed in public spaces, which affected the target locations' overall health and well-being conditions. The project also raised community awareness about waste segregation at the source and hygienic waste disposal methods. Thus, improving the city's facilities helped to sustain the impact by allowing them to continue with an improved waste collection approach.

In addition, the project attempted to improve the working conditions of manual scavengers. Since the initiative helped in the segregation of wet and dry waste through the provision of





two separate bins, they did not have to undergo the procedure of manual segregation and disposal of waste. This indirectly reduced their workload and improved their working circumstances because they did not have to come into direct contact with the disposed waste, which had a positive impact on their overall health and well-being.

Despite these benefits, in order to ensure long term sustainability of the project, regular monitoring is required from time to time by the Municipal Corporation. This had led to certain amount of dissatisfaction in the people as they suggested the need for greater intervention by the Municipal Corporation or implementing agency to replace such dustbins in time. Additionally, there is a need to spread greater awareness among the people to ensure that they practice wet and dry waste segregation while disposing waste at the dustbins.

### 1.5.8 Overall rating of the project

The scoring matrix was used to evaluate and score performance of the project across the city of Varanasi. The following table provides the district-wise rating across the defined parameters:

Location	Relevance	Coherence	Efficiency	Effectiveness	Impact	Sustainability	Branding	Total Score
Varanasi	80%	100%	100%	100%	100%	100%	100%	97%

Table 6: Overall scoring of project

The GAIL project for installation of dustbins implemented in Varanasi scored an average of 97%. The project was aligned to GAIL’s CSR policy and SDGs and was relevant to the needs of the community. The project was efficiently executed across the selected 13 wards within the allocated budget and timelines. The completion rate was 100% for the project and 100% of the beneficiaries surveyed were satisfied with the support being provided.

The total score of the project came to 97% due to which this project can be rated as “**Highly Impactful**” in nature.

## 1.6 Case Studies

### I. Pradeep Patel, a small snacks seller

Pradeep Patel is a 37-year-old shopkeeper who sells snacks and sweets and has a small shop in the city of Varanasi. Pradeep has had his shop in the same location from several years. He was aware of the intervention by GAIL and had 2 dustbins installed in front of his shop which were being used for waste collection and disposal. Before the installation of the dustbins, people who used to visit his shop as well as the nearby shops used to throw paper plates, spoons, food etc. in a small dustbin installed by him outside his shop. Majority of the times, the waste was disposed off in the open, on the street and in front of his shop. This led to the surroundings becoming unhygienic and unwelcoming. There was accumulation of waste which led to increase in the number of flies and mosquitos that used to sit on the waste as well as on the food displayed in this shop.

According to Pradeep, post the installation of the dustbins, one of the project's benefits has been that it promotes a cleaner and more sanitary environment. The people coming to his shop make use of the dustbin to throw the waste which has made the area also clean.



In addition, the waste generated by his shop is also thrown in the dustbin installed by GAIL. As the municipality is responsible for waste collection from these installed dustbins, the frequency of collection is maintained at twice a day. The shopkeeper does not have to pay from his pocket to ask for the waste to get collected. Earlier he had to pay INR 150/- to the Municipality to collect the waste from time to time.

Pradeep, as a kind gesture, also assists in cleaning the dustbin soap as and when needed. He was overall satisfied with the intervention and also thankful for making the city clean and hygienic.

## **II. Pradeep Kumar Sonkar, resident, Jawahar Nagar Colony**

Pradeep Kumar Sonkar is a resident at Jawahar Nagar Colony in Varanasi. GAIL and UPSICL have installed steel dustbins at different landmarks in his colony for proper collection and disposal of waste.

According to Pradeep, before the installation of the dustbins, the surroundings in the colony were unsanitary and residents used to dispose waste in the open. Post the installation of the dustbins, people have started using them from time to time which has made the area cleaner.

Despite the best efforts in the installation of the dustbins, according to Pradeep, the residents felt that the dustbins were small in size. Being installed in public places where the footfall of people is extremely high, the capacity of the dustbins was limited. Additionally, a Municipal Van came in the colony from time to time to collect waste door – to door from each house. Therefore, although people used the dustbins from time to time, the frequency of usage was limited.

He also suggested on ensuring increased frequency of waste collection from the public dustbins by the Municipal Corporation.

Despite these suggestions, he was overall satisfied with the intervention and stated that it had help to curb waste accumulation in his colony leading to a more hygienic and cleaner environment.

## **1.7 Conclusion and Way Forward**

Due to the waste management practices used prior to the implementation of the Swachh Bharat Mission, there was little to no comprehension of both the hazards associated with public waste disposal and the importance of segregation of waste at the source. The SBM programme adequately addressed this challenge, and the nation's total waste management system significantly improved as a result. The programme also evaluated a number of other WASH-related concerns that were directly or indirectly linked to one another, making it a comprehensive approach to address the nation's WASH problems.

This study sought to evaluate the effects of the GAIL CSR project, which provided Swachhta equipment like dustbin with dedicated wet & dry waste containers in Varanasi, Uttar Pradesh.

The objective of GAIL CSR was to assist in achieving the SBM-set goals and to expand the program's scope and enhance its overall implementation. The interviewed stakeholder voiced their appreciation and satisfaction for the project's successful execution, which assisted them in improving the waste management standards in their districts. The project

was implemented successfully, and it has helped to close existing gaps in the waste collection system that were present in the target districts' selected locations.

To increase the impact of the project as well as ensure continued impact of the current project outcomes, the following challenges can be addressed in the following recommendations:

- **Changing the design of the steel dustbins:** During the field visit and interaction with beneficiaries, it was noted that being dustbins meant for public use, the size of the bins could have been bigger as current dustbins were seen to be filled at a very fast rate due to less space available. This led to requirement of frequent clearing of the dustbins. GAIL & UPSICL may consider changing the design of the bins to provide larger size dustbins that can accumulate waste for 1-2 days in one go. Additionally, provision of a lid over the dustbins would ensure a reduction in the odor produced from the waste collected.
- **Awareness generation:** For similar kind of projects, going forward, GAIL may collaborate with the implementing agency and the Municipal Corporation to include a component related to awareness generation at regular intervals in order to ensure that the community members are better aware regarding different aspects of waste segregation such as wet waste and dry waste segregation etc. This would further aid the Municipal Corporation in ensuring smooth waste collection & segregation at the household level.
- **Better identification of locations for dustbin installation:** Going forward, for similar kinds of projects, GAIL may consider assessing the locations that are chosen to install the dustbins and avoid installation inside residential colonies. During field interactions, it was noted that community dustbins may not be necessary inside colonies as a waste collection van comes to collect waste from door to door and every household. Residents were reluctant to approach the established dustbin because the door – to - door service is handier and more convenient. Therefore, such dustbins should be installed mainly in public places.
- **Regular monitoring, maintenance, and replacement:** it was observed in a few locations that some of the dustbins had either been shifted to some other spot or were broken and not in use. This had led to certain amount of dissatisfaction in the people as they suggested the need for greater intervention by the Municipal Corporation or implementing agency to replace such dustbins in time. Although GAIL has provided steel dustbins to Municipal corporation, regular monitoring of dustbins should be conducted by Municipal corporation to identify and replace such dustbins.



*Figure 12: GAIL dustbins at some sites broken*

# Thank you



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