



IMPACT ASSESSMENT REPORT:

PROGRAMS TO SUPPORT PLASTIC WASTE MANAGEMENT

PROJECT YEAR: 2021-22

ASSESSMENT YEAR: 2023-24

IMPLEMENTED BY:



PREPARED BY:





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01 Executive Summary



Urban India is currently witnessing environmental threats due to suboptimal level of waste management, increased plastic pollution, growing infrastructural process, among other contributing factors. The growing population and increasing urbanization have led to a surge in plastic waste generation, causing environmental degradation and health hazards.

Improper handling and disposal of plastic waste leads to the accumulation of plastic waste in landfills and water bodies, causing severe damage to the ecosystem and posing health risks to humans and animals. Ragpickers, who play a significant role in the waste management sector, face several challenges while handling plastic waste. They often lack the resources and infrastructure required for

efficient waste handling, making it difficult for them to segregate plastic waste effectively. They are also exposed to hazardous conditions, which pose a risk to their health and well-being.

As a part of its CSR Policy, Dabur India Ltd, through Jivanti Welfare & Charitable Trust, has rolled out interventions enabling environmental sustainability. Being an FMCG company, handling post-consumer plastic waste and its management is a crucial part of its environmental sustainability strategy. Through its plastic waste management program, Dabur is creating awareness among ragpickers about safe waste handling practices and effective plastic waste segregation methods. In addition, the intervention also looks at a bottom-up approach by involving

multiple stakeholders at household and community levels such as women, housing society members, school students and teachers to ensure a sustainable solution in Solid Waste Management. The intervention addresses SDG 12 of the UN SDGs, Agenda 2030. Nationally, it targets activity (iv) of Schedule VII of the

Companies Act, 2013.

The objectives of the Impact Assessment study is to evaluate the intended objectives of plastic waste management program by Dabur India Ltd are, which includes:



The assessment has revealed the pre-intervention condition regarding waste management, in which about **79% of the ragpicker/ waste worker community did not undertake proper waste management practices**. The inadequate status of waste segregation in the pre-intervention phase is also underscored by the waste workers, attributed to several factors such as **lack of knowledge about different types of plastic, lack of demand for segregated wastes**, etc.

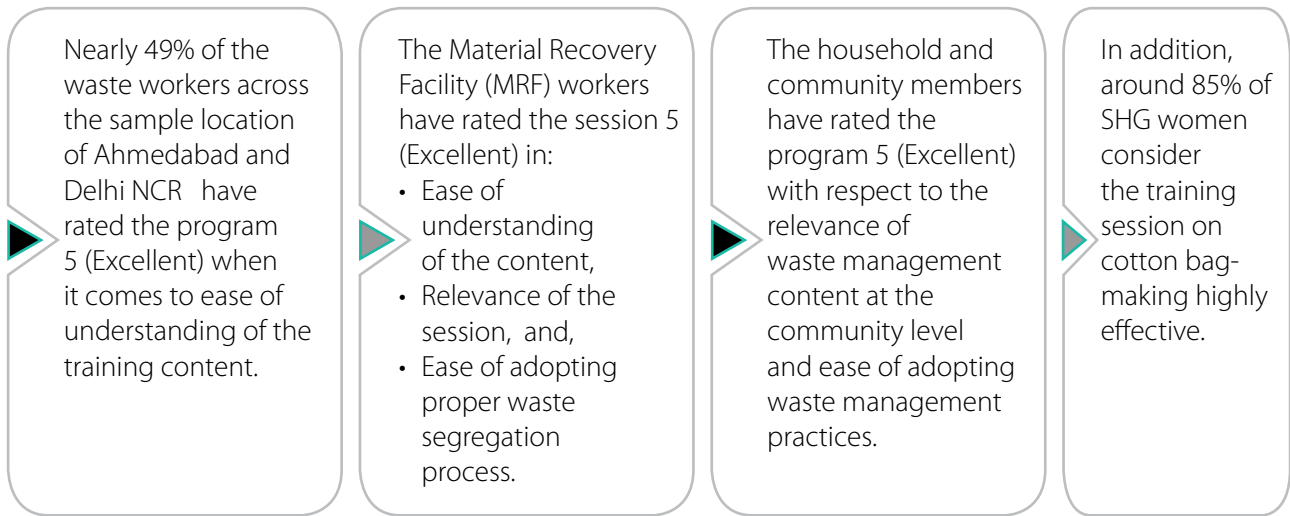
The impact assessment has also examined the waste management process followed by the waste workers after the accumulation of waste. Around **80% of the ragpickers/waste workers sell their waste, 11% of the respondents are involved in the recycling process, and 5% of the respondents sort the accumulated waste**. As a part of the assessment, the health stats of the waste workers are also verified using verbal interaction. **Approximately 77% of the respondents have reportedly denied being**

diagnosed with any health problem because of working in waste management sector.

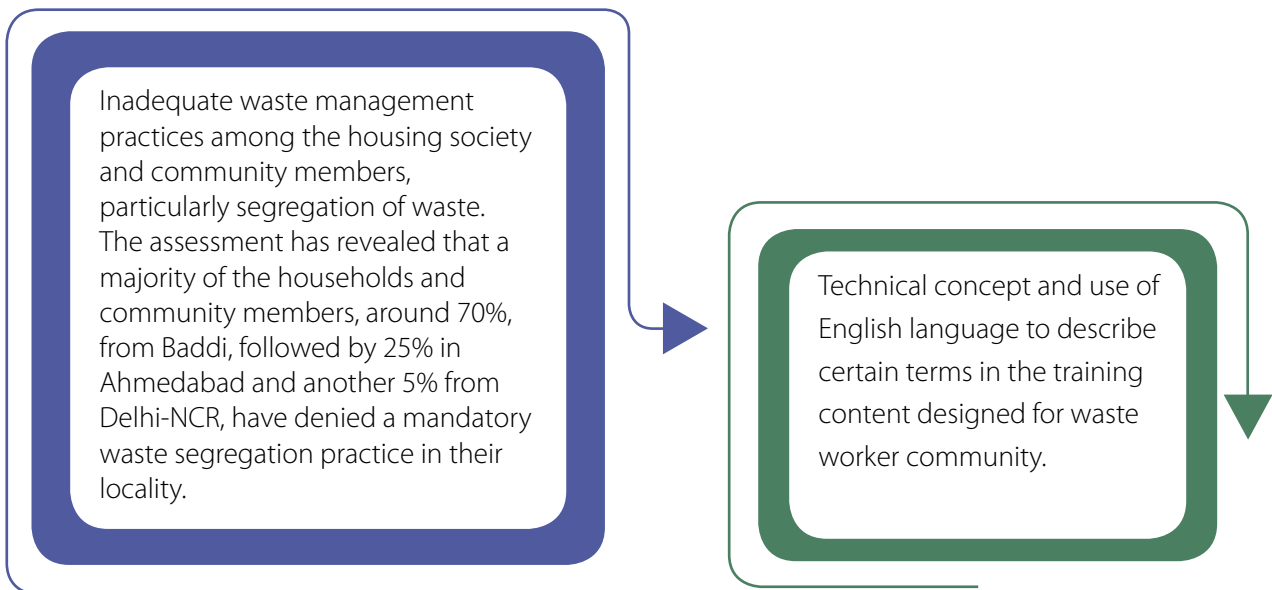
The assessment has also evaluated the awareness-building session and post-training impact on the housing society and community members. In the post implementation phase, **46% of respondents have affirmed the provision of bins** for the residents to segregate waste, while another **46% denied provision of separate bins for residents** across the sample locations of Baddi and Ahmedabad.

The engagement with SHG women gathered a positive response as the respondent women consider the program to be **useful in acquiring the skill to produce cotton bags**. The participating women have also earned profit as a result of the program. The women beneficiaries have clarified that the **NGO provides the raw materials**, and after the production, each bag is **bought at a price of ₹5 by the NGO**, which is then distributed within the community.

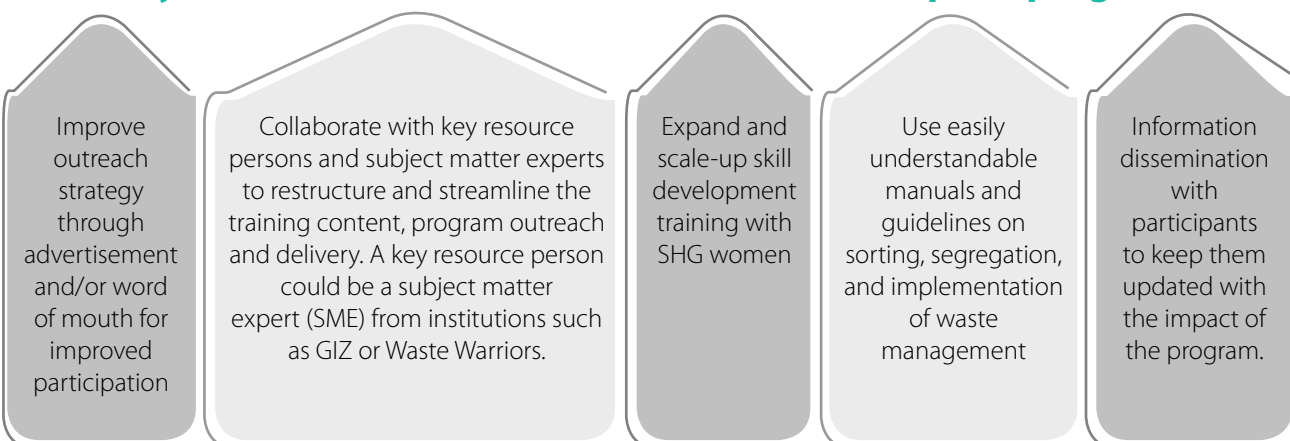
The impact of the program is very well captured by respondents' reception of the training and awareness program.



Some of the limitations of the program as per the assessment are:



Some key recommendations to enhance and scale-up the program are:



02 Introduction

Plastic Waste Management in India is a growing concern due to the significant volume of plastic waste generated every day. At a household level, plastic waste management issues in India are primarily related to limited awareness and inadequate waste segregation practices. Many households still do not have access to basic waste management infrastructure such as separate bins for wet and dry waste, making it difficult to separate plastic waste from other waste like kitchen waste. Additionally, the lack of a proper waste disposal system means that plastic waste often ends up in landfills or is illegally dumped in open spaces. In residential housing societies also, the situation is particularly challenging due to a lack of awareness, inadequate infrastructure, and limited waste management resources. Ragpickers, who are responsible for collecting and sorting waste, often

face health issues due to the hazardous nature of plastic waste. Many of them work in unsafe conditions without proper protective gear, putting their health and safety at risk. They also face limited employment opportunities, low wages, and social stigma.

This program is targeted at making Plastic Waste Management more efficient in India and improving the health and quality of life of waste workers. Under this program, a range of activities were implemented across various communities, schools, and colleges to address the issue of plastic waste management. One of the primary activities was conducting awareness sessions on effective waste management practices, including the use of color-coded bins, segregation of recyclable and non-recyclable plastic waste, and the importance of proper disposal methods. The program provided training to ragpickers and waste workers





to help them identify and segregate plastic waste safely and efficiently. They were also made aware of the importance of wearing gloves and mask to avoid facing health issues from exposure to waste.

Additionally, the “My 10 Kg Plastic” campaign was implemented in Delhi-NCR, which sought to encourage common citizens to contribute their plastic waste to Indian Pollution Control Association (iPCA), the NGO running the initiative for Dabur. The NGO used the waste collected to fuel their own recycling facility. The program involved RWAs, schools, and colleges to raise awareness about waste management and provide them with the tools to

implement effective waste management practices within their communities.

Furthermore, Jivanti Welfare & Charitable Trust is operating a special initiative in rural and remote areas of Baddi, Himachal Pradesh, focusing on environmental sustainability. The activities include awareness campaigns to save the environment and efforts to prevent and reduce single-use plastic. Additionally, the initiative involves production and distribution of cotton-cloth bags by engaging Self-Help Group of women from villages in and around the targeted location, encouraging community members to avoid using single-use plastic bags.

As part of the assessment, the GIVE team conducted primary data collection in the following locations:



The primary data collection leads to interaction with waste workers, community members, children, etc. in these cities. The other key beneficiaries, such as MRF workers, RWAs, and participants of “My 10 Kg Plastic” campaign were surveyed in Delhi-NCR. In addition, interactions were also undertaken with SHG women, villagers and community members, who are the key stakeholders in the production and distribution of cotton-bag and the campaign for reduction of single-use plastic. In-depth Key Informant Interviews (KIIs) were conducted with the program teams of

Jivanti Welfare & Charitable Trust, IPCA and NEPRA Foundation. Interactions were also undertaken with trainers involved in the program.

This Impact Assessment Report will examine the status of plastic waste management practices followed by the beneficiaries, improvement in the income and health of waste workers, challenges that remain, and the impact created. The report will also explore the barriers to segregating waste faced by the community members and waste workers, and provide recommendations for improving the same.

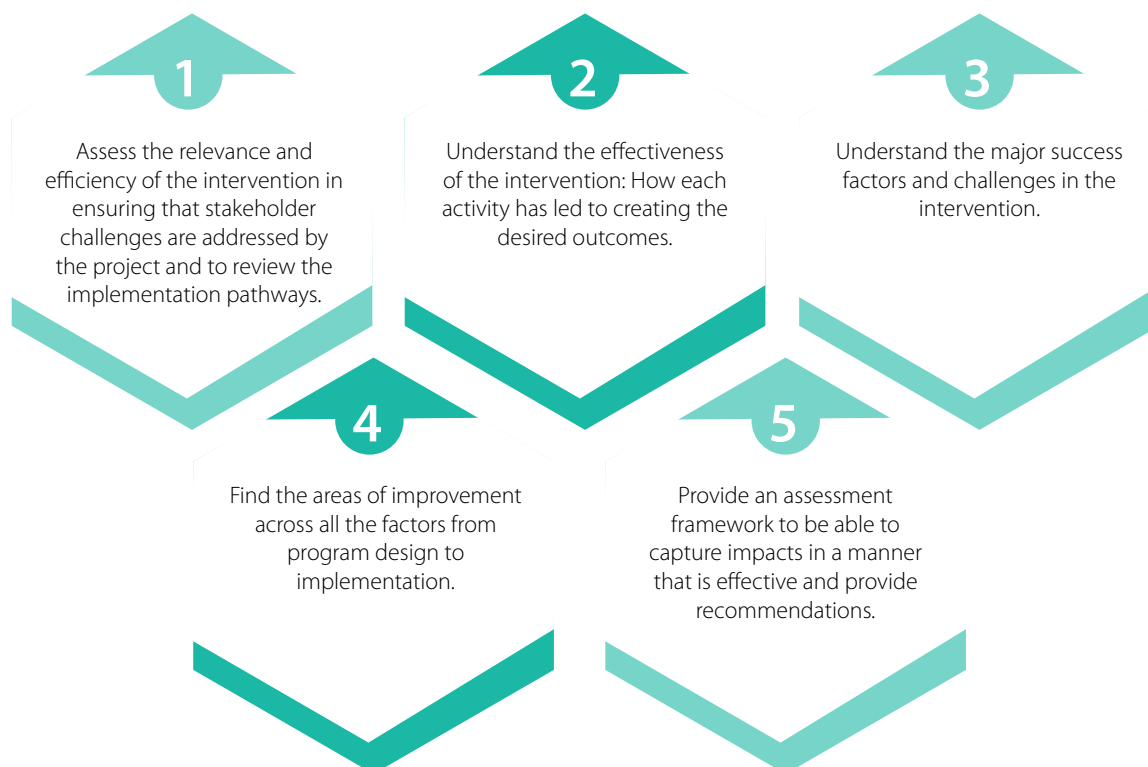
03 Scope of Study

The study aims to understand the implementation pathway of the project, the impact it has had on its primary beneficiaries across Baddi (Himachal Pradesh), Delhi-NCR, and Ahmedabad (Gujarat) and the effectiveness of the interventions in diverting plastic waste away from the landfills. The

Impact Assessment study tries to map the program implementation against the proposed plan and draws focus on how the intervention has resulted in better awareness about plastic waste handling amongst the beneficiaries.

Objectives of the Study

The major objectives of the study are:



LIMITATIONS

Scheduling interaction with waste worker community were difficult owing to their informal and mobile nature of work.

04 Methodology

Three-Point Assessment Framework:

Based on the Theory of Change and the Logical Framework Analysis created, we examined the relevance of services, the preparedness for program activities, qualitative and quantitative assessments, efficiency, and effectiveness of delivery of services

as well as any innovations that may have been implemented on the ground. The impact assessment findings are further anchored around GIVE's Three-Point Assessment Framework as illustrated here.



Program Design

We study program design through program strategies, inputs and resources, assumptions, outreach mechanisms, and much more. GIVE's Impact Assessment approach for program design is based on assessment criteria like Relevance and Preparedness using methodologies such as need assessment of baseline survey.



Program Delivery

GIVE assesses the Program Delivery to understand the success of the program delivery mechanism in attaining the overall objectives such as cost effectiveness, resource efficiency, equity in service delivery, best practices and challenges, perception about the services among the relevant stakeholders, among other actors.



Impact and Sustainability

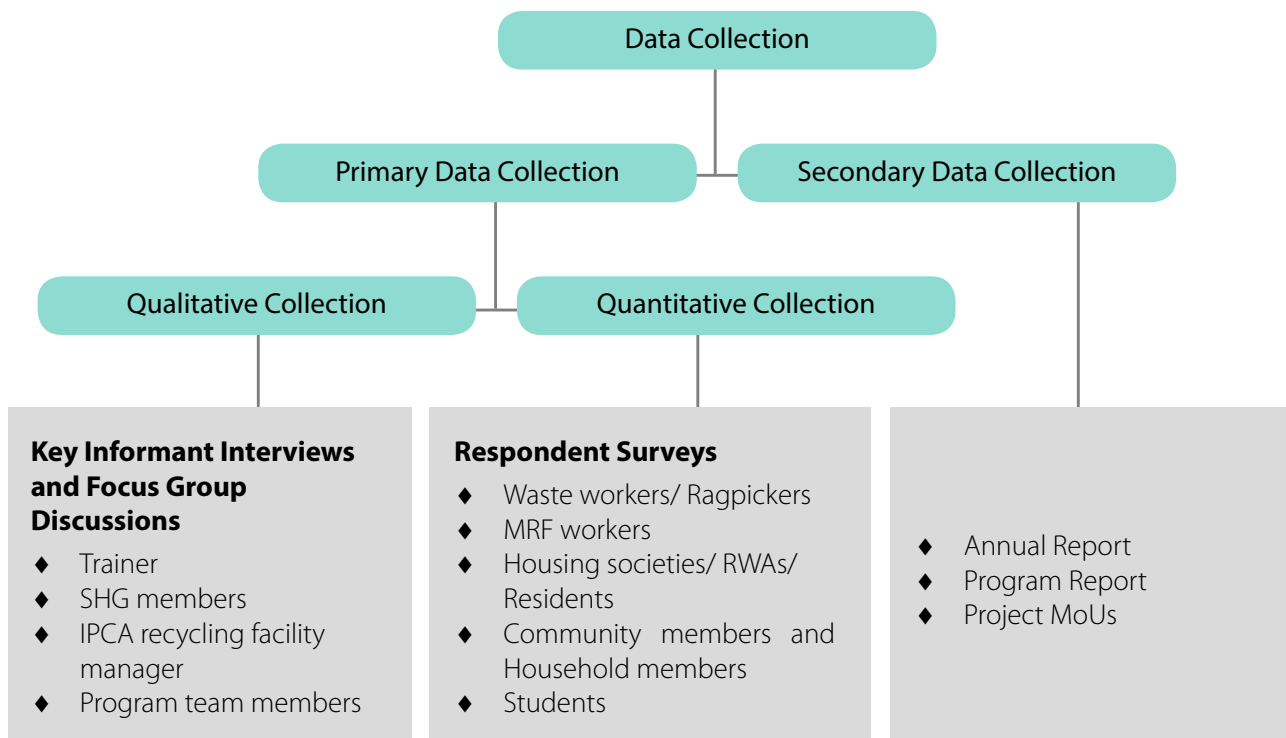
The program's impact potential was assessed to ascertain whether a change or the desired outcome can be attributed to the program intervention. GIVE uses criteria such as scale of impact and sustainability of impact to understand the impact potential of the projects.

We initiated the Impact Assessment study by identifying the key stakeholders for the project. These stakeholders were ratified in consensus with the implementing partner. The study takes a 'Mixed Method' approach, which includes both qualitative as well as quantitative data capture and analysis.

The quantitative tools provide values to key indicators related to awareness, adoption, quality. It also maps the outputs against the targets and outcomes perceived by the beneficiaries. On the other hand, the

qualitative method and approaches provide a better understanding and help to build a storyline for the achievements and gaps in the program from the lens of immediate stakeholders involved in the program implementation, other than the beneficiaries. A qualitative study gives substantiated evidence for a better understanding of the processes involved in the program implementation. Thus, the 'Mixed Method' approach also helps in developing a framework for gap identification and course correction.

Data Collection Method



Primary Data

Primary Data is the key to collecting first-hand information as evidence from the beneficiaries and stakeholders on the interventions. It allows us to understand the benefits delivered, its effectiveness and key challenges to assess the impact created by the program and arrive at recommendations that enhance it.

Secondary Data

For Secondary Data collection, the project MoU, and annual program reports were referred. These documents gave high-level insights about the projects, including the inception and implementation phase along with the processes followed.



Theory of Change



Input

Assessing relevance & reach of the program



Output

Assessing efficiency & target achieved against activities planned



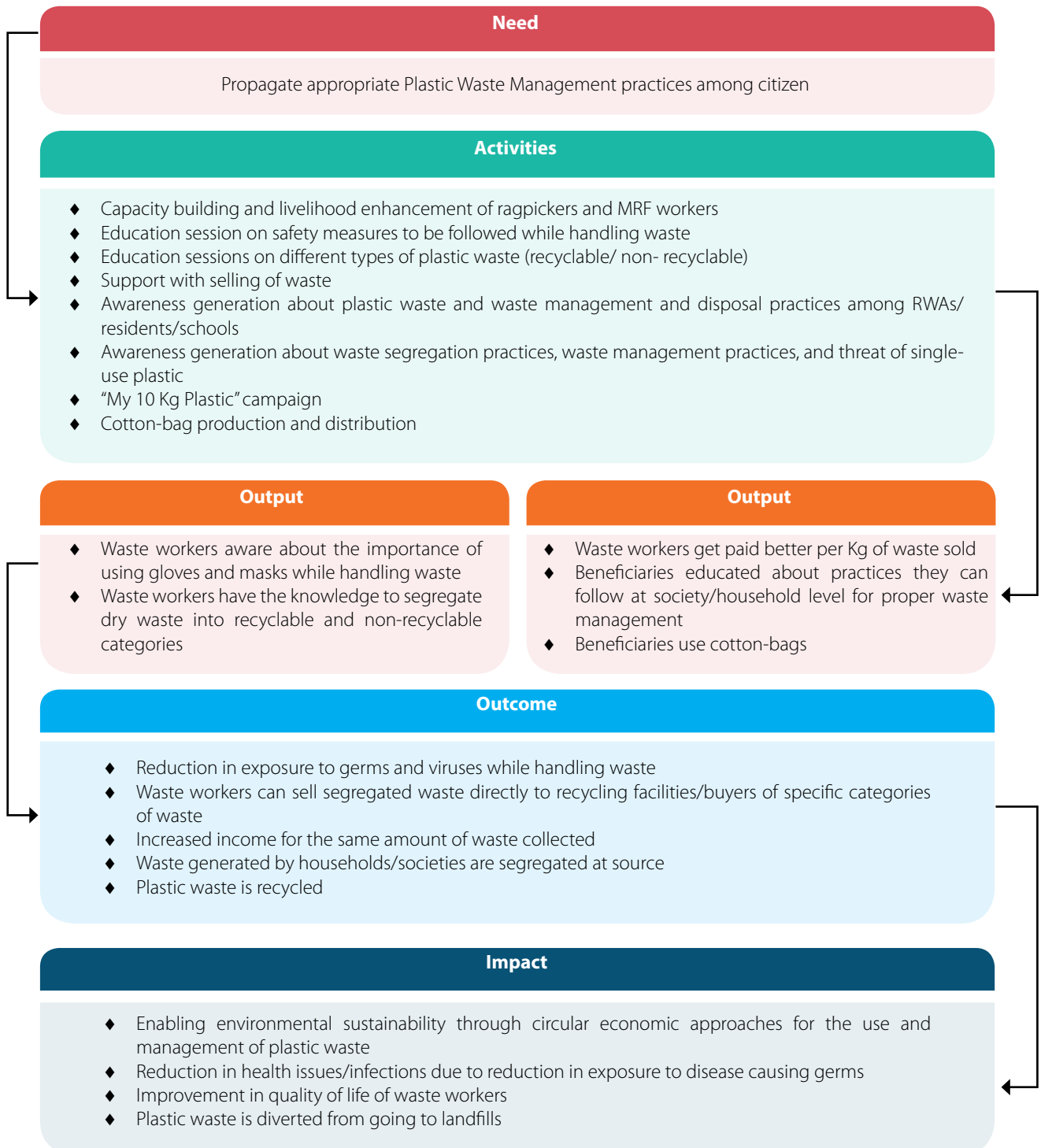
Outcome

Assessing effectiveness & immediate outcomes of intervention



Impact

Assess the impact created by the project against the initial goals



Logical Framework Analysis

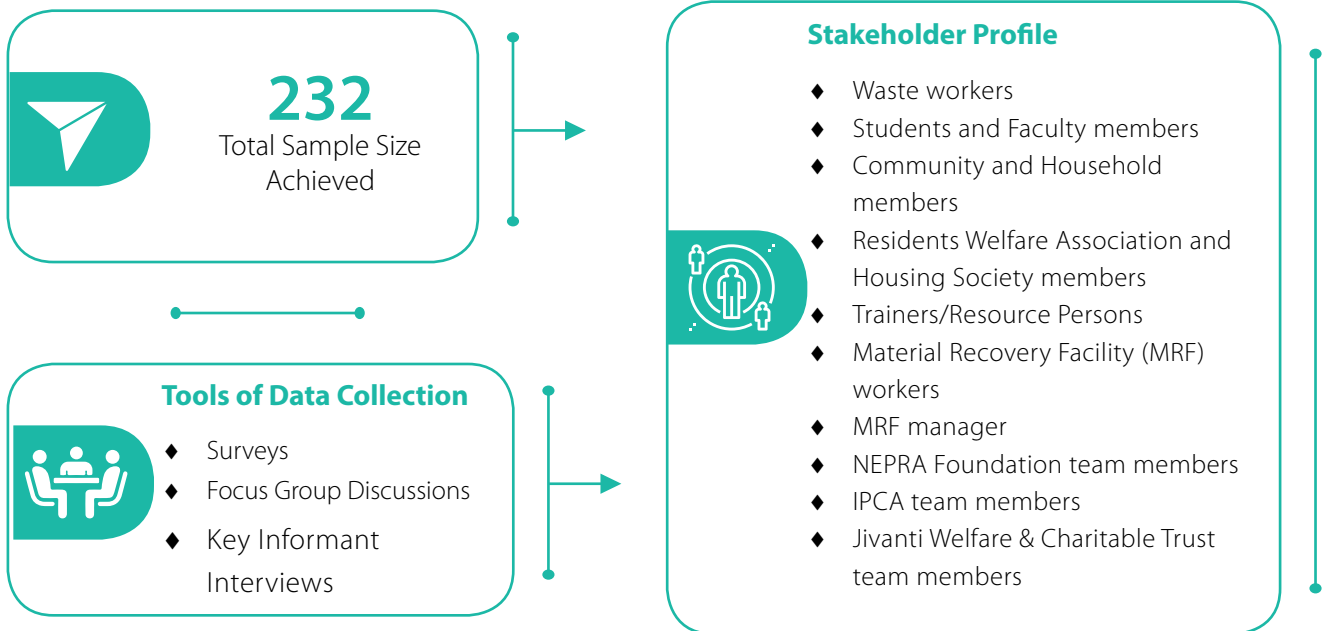
Log Frame Analysis (LFA)				
	Project Summary	Indicators	Means of Verification	Assumptions
Impact	<ul style="list-style-type: none"> ◆ Reduction in health issues/infections due to reduction in exposure to disease-causing germs ◆ Improvement in quality of life of waste workers ◆ Plastic waste is diverted from going to landfills 	<ul style="list-style-type: none"> ◆ Current incidence of HPV infections and frequent fever amongst waste workers ◆ Improvement in quality of education of children, diet, house upgradation of waste workers ◆ Amount of plastic waste recycled per month 	<ul style="list-style-type: none"> ◆ Beneficiary survey ◆ KIs with NGO program team ◆ KM with recycling facility manager 	N/A
Outcomes	<ul style="list-style-type: none"> ◆ Reduction in exposure to germs and viruses while handling waste ◆ Waste workers can sell segregated waste directly to recycling facilities/ buyers of specific categories of waste ◆ Increased income for the same amount of waste collected ◆ Waste generated by households/societies are segregated at source ◆ Plastic waste is recycled 	<ul style="list-style-type: none"> ◆ % change in incidence of health issues ◆ Sales options available to waste workers for selling their waste ◆ % change in monthly income ◆ % of RWAs adopting new waste management practices 	<ul style="list-style-type: none"> ◆ Beneficiary surveys ◆ KIs with NGO program teams ◆ KM with recycling facility manager 	<ul style="list-style-type: none"> ◆ Gloves and masks are effective in stopping infections ◆ Recycling facility has the capacity to recycle all plastic waste received
Output	<ul style="list-style-type: none"> ◆ Waste workers aware about the importance of using gloves and masks while handling waste ◆ Waste workers have the knowledge to segregate dry waste into recyclable and non-recyclable categories ◆ Waste workers get paid better per Kg of waste sold ◆ RWAs and residents educated about practices they can follow at society/ household level for proper waste management ◆ Participants segregate their plastic waste for recycling 	<ul style="list-style-type: none"> ◆ Adoption status of gloves/masks amongst waste workers ◆ Ability of the waste workers to correctly classify waste into recyclable/non-recyclable category ◆ Price received per Kg of waste ◆ No. of RWAs/ community members possessing the knowledge of waste segregation 	<ul style="list-style-type: none"> ◆ Beneficiary surveys ◆ KIs with NGO program teams ◆ KM with ULB official 	<ul style="list-style-type: none"> ◆ Waste workers have access to gloves and masks ◆ The segregated plastic waste is collected by IPCA and sent to recycling facility

Log Frame Analysis (LFA)

	Project Summary	Indicators	Means of Verification	Assumptions
Input	<ul style="list-style-type: none"> ◆ Education session on Safety measures to be followed while handling waste ◆ Education sessions on different types of plastic waste (recyclable/ non-recyclable) ◆ Support with selling of waste ◆ Awareness generation about waste segregation practices ◆ "My 10 Kg Plastic" campaign ◆ Awareness session on reduction of single-use plastic ◆ Production and Distribution of cotton-bags 	<ul style="list-style-type: none"> ◆ Number of ragpickers reached ◆ Number of RWAs impacted ◆ Number of schools and colleges benefitted ◆ Number of individuals participating in "My 10 Kg campaign" ◆ Number of cotton bags sold and distributed 	<ul style="list-style-type: none"> ◆ Beneficiary surveys ◆ KIs with NGO program teams 	<ul style="list-style-type: none"> ◆ Beneficiaries are able to grasp the content of the awareness sessions



Sampling Strategy



Key Informant Interviews



Focus Group Discussions



05 Findings and Analysis

The assessment has probed into understanding the pre-intervention status of waste collection and management practice in the targeted locations. Some of the respondents, particularly the household and community members in rural areas, reportedly mentioned that waste management was inadequate and only after the intervention waste management process in their neighborhood was streamlined. The relevance of the program can be established given the fact that as many as 7% of respondents stated that there wasn't any waste management practice in their community prior to the intervention. Before the program was implemented, **community members disposed of untreated household waste randomly**, without adhering to dumping at a designated spot, as illustrated in Figure 1.



Figure 1: Pre-intervention Waste Management Practice

A very **few respondents have, however, denied the prevalence of proper waste collection and management practice in their community even after the program implementation.** This indicates the threat posed by the untreated household waste to the environment. The respondents have indicated reliance on community-based practices, particularly involving women in waste collection, as shown in Figure 2. This suggests that despite the program's ongoing efforts to raise awareness about plastic pollution and waste management, and its considerable duration of operation, full outreach

has not been achieved. This could be attributed to a slower rate of program adoption.



Figure 2: Post-intervention Waste Management Practice

The waste workers, who are one of the critical stakeholders in the waste management industry and a key beneficiary group of the program, have also shared the pre-intervention condition with regards to waste management practice. Figure 3 shows that approximately **80% of waste workers did not follow proper waste management techniques, as they failed to segregate different types of plastic waste before the intervention.**

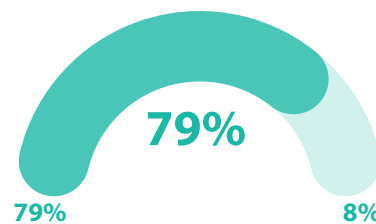


Figure 3: Percentage of waste workers undertaking waste management practice in the pre-intervention phase



Prior to the intervention as many as **88% respondents had lack of knowledge on types of plastic** as depicted in figure 4. A few respondents, approximately **9% of the respondents have attributed the failure of waste segregation to waste buyers who never segregated the waste.** This solidifies the rationale behind implementing the program, especially engagement with the waste worker communities.

- Lack of knowledge about different kinds of plastic waste
- Waste buyer did not want segregated
- Paucity of time

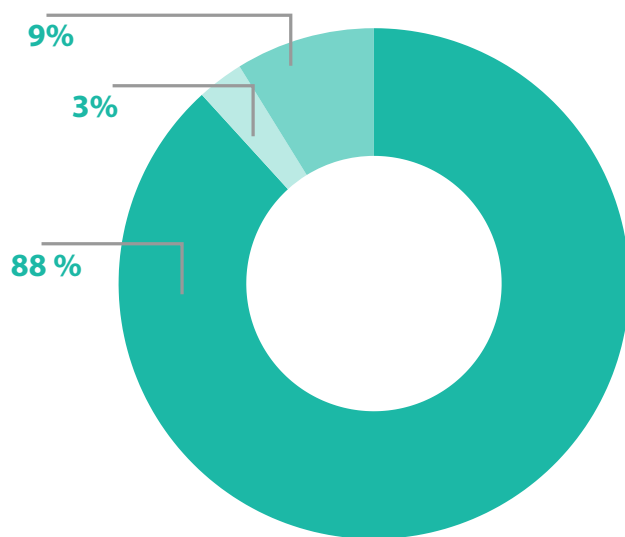


Figure 4: Percentage of waste workers highlighting the reasons for not following waste segregation technique in the pre-intervention period.

The necessity of the intervention is evident from table 1.1 and 1.2. As many as **97% of the waste workers from Ahmedabad have confirmed non-**

association with any waste worker/ ragpicker union/community. This is also evident from the fact that in the pre-intervention period, all the respondents from Ahmedabad would collect waste independently, potentially lacking the technical knowledge on waste management practice. The non-association with any group/union in a way could also mean the deteriorating condition of these stakeholders which increases the relevance of the program even more. **In Noida, however, we observe that all the respondents are associated with ragpicker association and many among them, around 75%, worked at Material Recovery Facility,** potentially indicating better understanding of segregation, sorting, recycling, etc. with respect to waste management practice.

Sample Location	Association with Waste Worker/ Ragpicker Community/Union			
	Yes	No	No Response	Grand Total
Ahmedabad		97%	3%	79%
Noida	100%			21%

Table 1.1: Percentage of waste workers engaged with ragpicker association

Sample Location	Waste Collection in the Pre-Intervention Phase		
	Independently	Work at a Material Recovery Facility (MRF)	Grand Total
Ahmedabad	100%		79%
Noida	25%	75%	21%

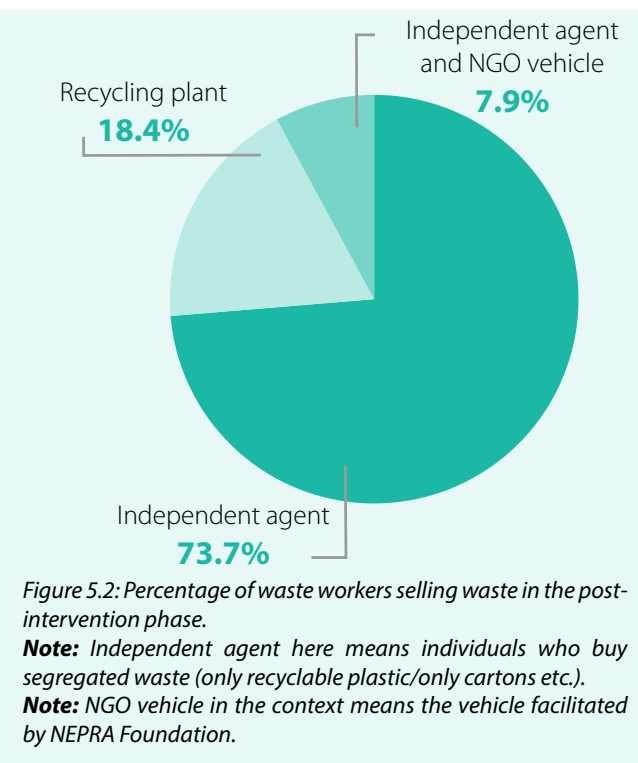
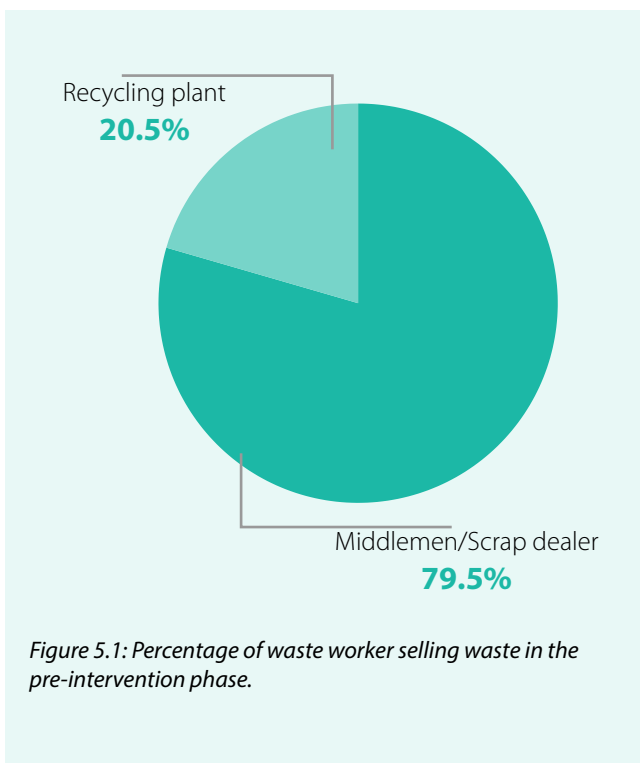
Table 1.2: Percentage of waste workers' waste collection practice in the pre-intervention phase



The assessment has probed into understanding the pre and post-intervention status of waste management process of the collected wastes opted by the respondent group in the waste worker category, as illustrated in figure 5.1 and figure 5.2. Nearly **80% of the respondents are dependent on middlemen/scrap dealers as a source of selling the accumulated waste.** Only about **20% of respondents were directly involved in the recycling process** as a result of being engaged in Material Recovery Facility, **indicating only a handful of waste workers had access to or were**

equipped to deal with sorting/segregation.

In the post-intervention phase, however, it is evident that the same respondent group diversified the sources of selling the accumulated waste. The majority of these respondents, around **70%, directly sell segregated/sorted wastes, typically, recyclable waste, to individuals.** A few, approximately **8% of the respondents not only depend on individuals buying segregated waste but also resort to selling collected waste through the NGO** (NEPRA Foundation).



The relevance of the program can be also determined from the waste workers' response on the change in the level of outcome from selling waste after the implementation of the intervention. Approximately 97% of respondents reportedly mentioned earning more from selling waste after the program implementation compared to before the program was implemented. The respondents have mentioned, depending on the item, **for every kg of waste, the waste workers earn between ₹5-20, essentially meaning between ₹100-300 for every sale.** However, **respondents who are engaged in MRF units (beneficiaries of IPCA), their income is**

fixed at ₹15,000.

One of the most integral components of the intervention is the engagement with Self-Help Group (SHG) women.

All the women respondents involved in the cotton bag production agreed to receiving support from Jivanti Welfare & Charitable Trust. Figure 6 depicts nearly **70% of the respondents have agreed to receiving infrastructural support** from the NGO. The infrastructural support involves provision of sewing machine, involvement of key resource person such as the trainer, among others. In addition

to receiving infrastructural support, the **NGO also buy back the cotton bags that are produced, as informed by around 27% of respondents.**

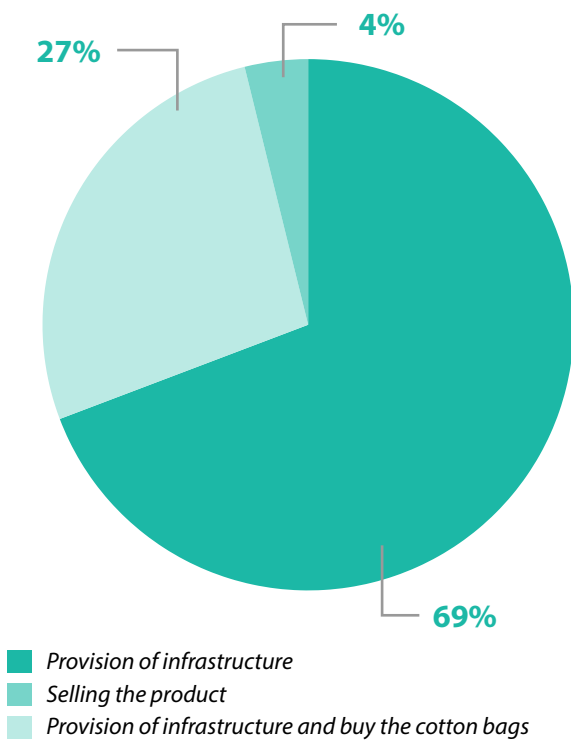


Figure 6: Percentage of SHG women providing insight on support extended by the program team.



Furthermore, the relevance of the program has also been highlighted by the program team members of the participating NGOs. The respondents from the program team have stated various concerns related to inadequate waste management practices among citizens. Some of these concerns are highlighted in figure 7. **More than 32% of the program team members believe lack of knowledge about waste management practice among citizens and lack of resources available to the citizens are the primary concerns.** The failure to effectively streamline waste management practices signifies the implementation of the program.

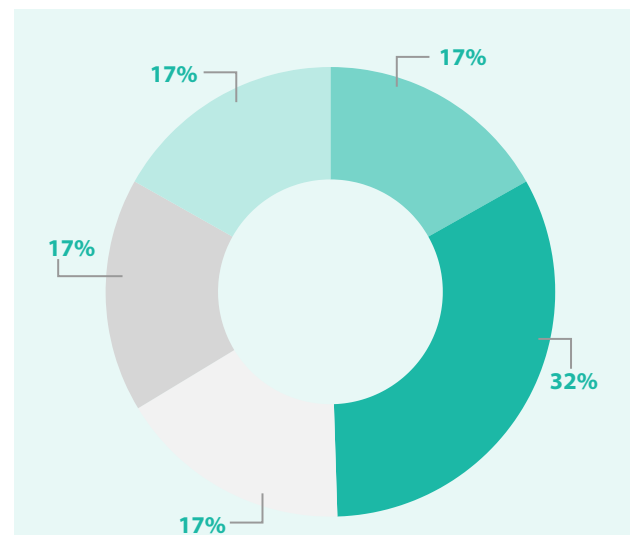


Figure 7: Percentage of program team members' perception on waste management practices

- ◆ Lack of knowledge about waste management practice
- ◆ Lack of resources (dustbins, etc.)
- ◆ Lack of knowledge about waste management practice
- ◆ Lack of resources (dustbins, etc.)
- ◆ Overpopulation
- ◆ Ineffective waste collection mechanism
- ◆ Lack of awareness among citizens
- ◆ Absence of agencies/entities to collect segregated waste

The effectiveness of the program can be determined from the level of agreement on segregating/sorting of wastes amongst the waste workers. **Around 97% of the respondents agreed to segregate/sort the collected waste** after the program implementation as a part of the waste management process. The steps undertaken by the waste worker after waste accumulation is further broken down by the respondents, which typically involve the following:



The level of engagement of the waste workers in the waste management process is depicted in Figure 8 and it is evident that a majority of the waste pickers/ragpickers, **80% are involved in selling the waste material, followed by 11% respondents who are involved in recycling as well. 5% of the respondents are engaged only in sorting the waste.**

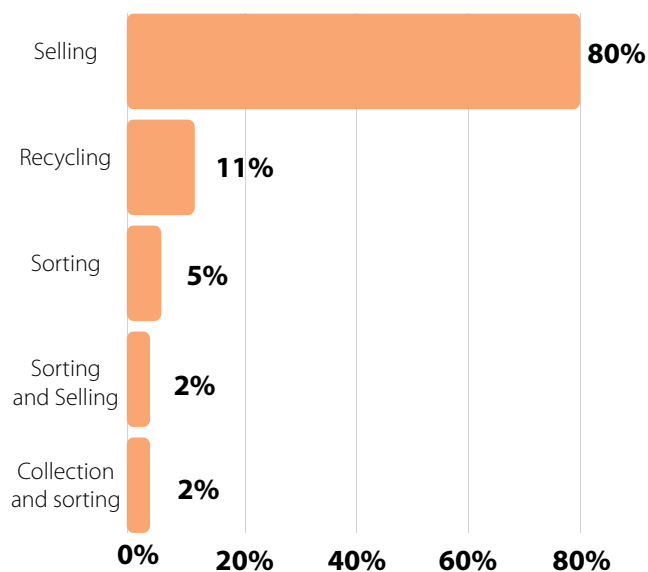


Figure 8: Percentage of respondents' insight on waste management process after waste accumulation/collection.

The interactions with the waste workers have highlighted that although the respondents adhere to sorting of the waste, several challenges remain in following a proper waste segregation and management process, potentially reducing the effectiveness of the program delivery. Some of the challenges highlighted by the respondents include:

- ◆ Waste buyers refuse to take segregated waste
- ◆ Inadequate knowledge on various kinds of plastics

The activities with the waste workers ensure an improved approach of program delivery so that long-term program objectives can be met. As per the respondents, the training sessions with the waste workers are typically **undertaken in an offline mode**, which last between 30 minutes-1 hour. These training sessions, as confirmed by the respondents, would typically include identification and demonstration of different kinds of plastic. Upon probing further on the challenges with the content faced by the trainers, **49% confirmed not having any difficulties in understanding the training content.** However, a little more than half of the respondents identified some or other challenges related to medium and terminologies used in the training content, as indicated in figure 9.



Figure 9: Challenges identified by waste workers with the training content.



The waste workers' understanding on types of recyclable waste is also evaluated to understand the efficacy of the program delivery to achieve the long-term goal of solid waste management in the urban localities. Figure 10 shows some of the items mapped by the respondents that they classified as recyclable waste out of the accumulated waste material.

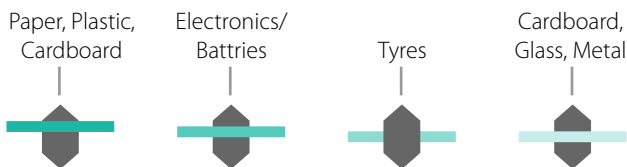


Figure 10: Types of recyclable waste classified by waste workers.

The program has managed to successfully generate awareness among the waste worker community and its efficacy can be gauged from the health and safety measures undertaken by the beneficiaries by using Personal Protective Equipment (PPEs) while picking and collecting waste. **A complete 100% of the respondents from the wastepicker community agreed to using gloves and masks during the waste collection process.** Furthermore, the assessment has delved deeper in understanding the possibility of any health issues of the beneficiaries, to assess the health status of waste workers, who are generally at a risk of developing occupational illness due to their exposure to toxic environment. About **77% of respondents reportedly mentioned not having any health issues**, as shown figure 11.

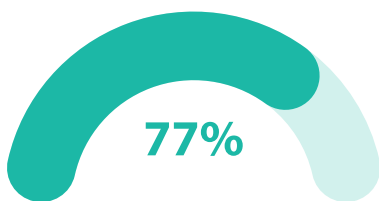


Figure 11: Respondents not diagnosed with health problem.

Furthermore, the program is also assessed through interacting with the MRF workers to understand the efficiency and effectiveness of the program delivery. **100% of the respondents agreed to attending the awareness session on waste management undertaken** as part of the program. The respondents further elucidated on the nature/theme of the training as:

- ◆ Equipping the workers with handling different kinds of waste such as recyclable and non-recyclable waste.
- ◆ Waste collection technique to effectively sort dry and wet waste.

The MRF workers knowledge on type of recyclable waste is also assessed to understand the effectiveness of the program delivery. As per the respondents, the waste material they typically receive that are recyclable are shown in figure 12.

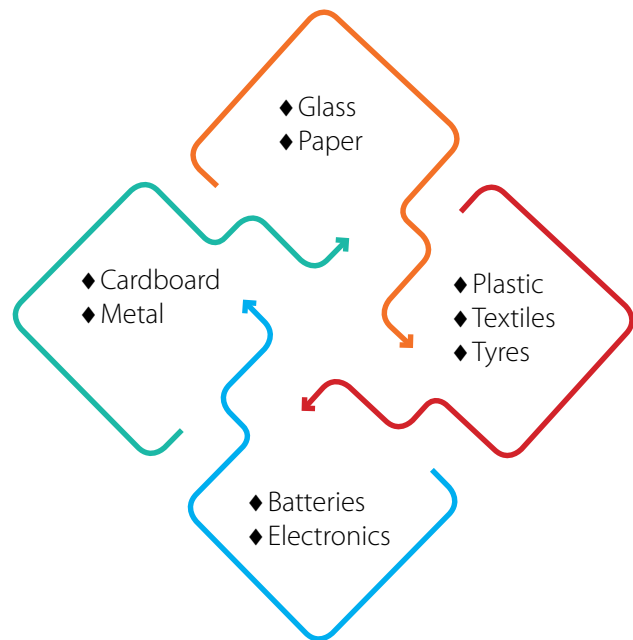


Figure 12: Types of recyclable waste received by the MRF workers.

The respondents, in addition, provided information on their understanding and involvement in the process of Refuse Derived Fuel (RDF) and the type of waste materials that are used in RDF. As per the respondents, for Refuse Derived Fuel, waste materials such municipal solid waste and industrial wastes are generally turned into source of energy, as illustrated in figure 13.

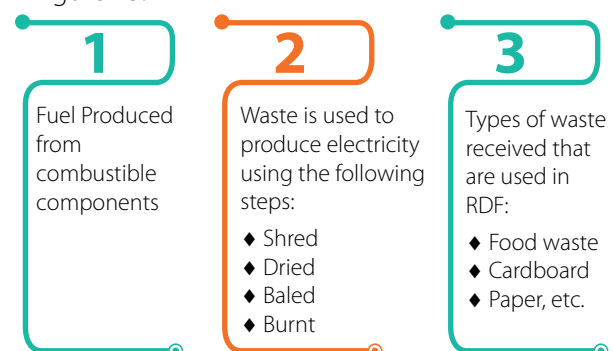


Figure 13: Respondents' insight on RDF.



The type of waste that is typically received is further corroborated by the manager of the recycling facility. They confirmed receiving industrial, agricultural and hazardous waste material. In addition, the respondent added the design for recycling is particularly important for industrial wastes such as constituent materials of automobiles and the plant capacity is designed in a way for easier material separation. The respondent has added that the **plant is equipped and has the capacity to recycle household waste** and thereby confirmed its complete association for the “My 10 Kg Plastic” initiative, which signifies the efficiency of the program. The respondent has affirmed **recycling all the plastic waste accumulated from the “My 10 Kg Plastic” initiative at the plant.**

When it comes to program activity with household and community members, interaction is undertaken

to assess the program delivery about the awareness sessions. The respondents from the Housing Society, Residents Welfare Association, Household and Community members across all the targeted sample locations have confirmed their participation in the sessions along with the themes and topics covered in the sessions. As indicated in figure 14, **more than 40% respondents informed that the sessions encompassed topics related to health and hygiene measures**, another **24% respondents affirmed the session included topics such waste segregation and implementation of recycling method.** The figure also depicts that **around 2% of the respondents provided no clarity on the themes of the session.** Other thematic areas of the awareness sessions, as per the respondents, involved concepts like waste management, environmental impact.

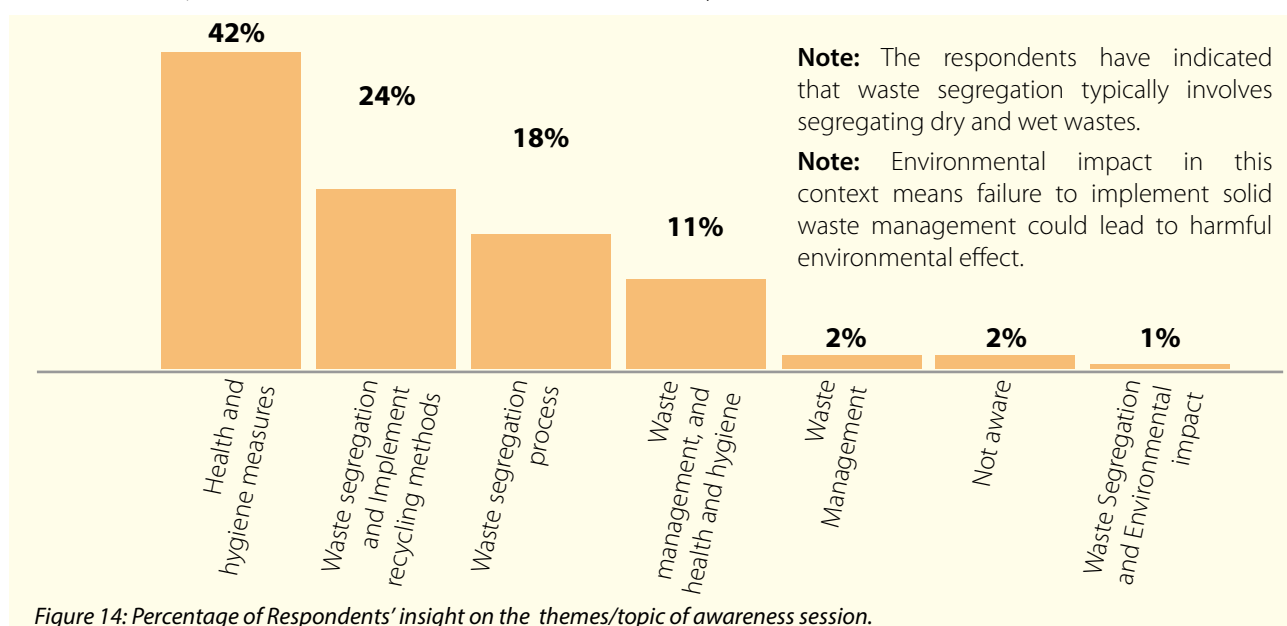


Figure 14: Percentage of Respondents' insight on the themes/topic of awareness session.

The interactions with housing society members have revealed the effectiveness of the program in terms of effort towards waste disposal process. Upon inquiring on the level of engagement among the respondents to take the **initiative of providing residents with bin for waste segregation, only about 46% respondents concurred**, as depicted in figure 15.

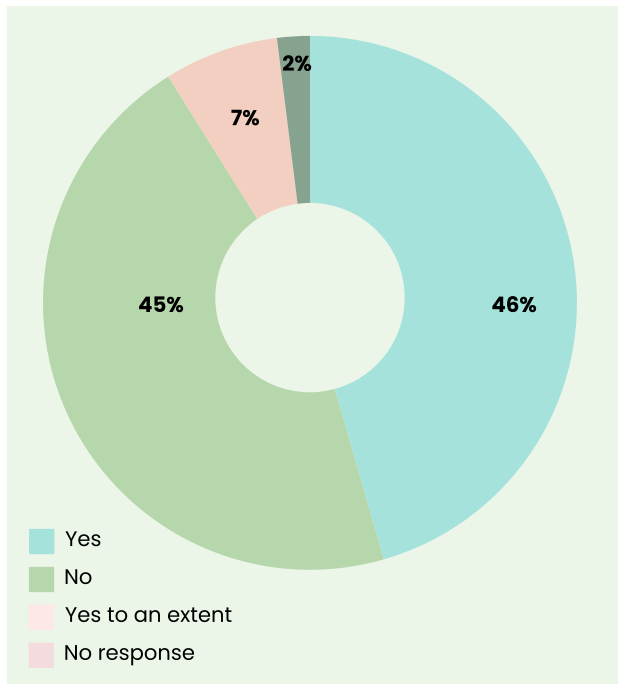
To further understand the effectiveness of the program delivery, location-wise comparative analysis between respondents of the housing societies/ community members of the sample location of

Delhi NCR and Ahmedabad is drawn, as indicated in the below table. **Out of this, 46% of respondents who have agreed to provide residents with bins, 90% are the beneficiaries of IPCA from Delhi-NCR and remaining 10% are from Ahmedabad.** Furthermore, about 7% of respondents from Ahmedabad also highlighted the partial implementation of the activity, stating the implementation only is only successful to an extent. The remaining 45% of the respondents disagreed to provision of bins for the residents.

Location	Yes	No	Yes, to an extent	No Response
Ahmedabad	10%	100%	100%	
Delhi NCR	90%			100%
Grand Total	46%	45%	7%	2%

Note: Total number of respondents in Ahmedabad and Delhi responding to the question: **46, which is equal to 100%**

Figure 15 (Above & Below): Percentage of respondents on providing residents with different bins for segregating waste.



- ◆ Dry and wet waste segregation
- ◆ Use of dustbin for waste disposal
- ◆ Prevention of plastic waste
- ◆ Health and Hygiene

The program delivery is analyzed for the activities undertaken by Jivanti Welfare & Charitable Trust, which encompasses skilling women on cotton bag production and distribution to promote environmental sustainability as these are an ideal alternative for plastic bags. The **registration charges** for the training course is **₹50 per trainee** as mentioned by the women participants. The interactions with the Self-Help Group (SHG) women revealed the efficacy of the program as **all the participating women find the training program to be useful**. Moreover, the respondent women also affirmed that they learned to make cotton bags. In addition, the women also shared that they were trained in making cotton masks and apparel. Furthermore, the participating women clearly stated that the **NGO provides raw material exclusively for cotton bag production**.

Since awareness generation is one of the integral components of the Plastic Waste Management program, students are one of the key stakeholders. The NEPRA Foundation in Ahmedabad facilitate such awareness session for students. According to the students, the program delivery in the school is solely to **enhance public awareness on solid waste management, foster clean school campus, raise awareness and ensure proper waste disposal and management**. As per the students, the **sessions are usually delivered in an offline mode through physical classes for around 70-150 students**. In addition to the students, the faculty members also participated in the sessions. The interactions with the students and the teachers provided an overview of the delivery of such sessions. As informed by the respondents, awareness generation was undertaken on various topics, such as:

- ◆ Waste management at an institutional level
- ◆ Waste management at household/individual level
- ◆ Professional career/livelihood in the waste management sector





Nonetheless, it is observed that the respondents particularly added that **producing and selling cotton bags and masks helped them earn profit. For each cotton bag, the respondents are paid ₹5 by the NGO**, which is later distributed in the community as reportedly mentioned by the women participants.

According to the participating women, the training is typically delivered at the Training Centre, the infrastructure for which is provided by the NGO. The efficiency of the program can be gauged through trainer-to-trainee ratio. As confirmed by the respondents, **for every 12-18 trainees, 1 trainer is deployed to implement the training program, which indicates an ideal trainer-to-trainee ratio to manage practical skill development training sessions.**

The impact of the program can be well defined through the lens of various beneficiaries and stakeholders engaged in the program. The awareness sessions with workers, for instance, gathered a positive response with regards to ease of understanding of the concept. As indicated in table 2. **49% of the waste workers across all the sample locations rated the program 5, which indicates the awareness session to be 'very easy' for the respondents.** Only about a **13% of the respondents are neutral towards the ease of understanding of the concept.** Moreover, when it come to practicality of the lessons pertaining to waste management methods taught in the session, **a total 100% of the respondents from waste worker category rated the program excellent**, as depicted in table 3. signifying a positive impact that the program has created among the targeted waste worker community

Scale	Rating	Percentage
Very Easy	5	49%
Easy	4	38%
Neutral	3	13%
Difficult	2	
Very Difficult	1	

Table 2: Ease of understanding of the awareness session.

Scale	Rating	Percentage
Excellent	4	100%
Good	3	
Satisfactory	2	
Poor	1	

Table 3: Practicality of waste management methods taught.

The respondents from the waste worker community explicitly stated the positive aspects of these awareness training sessions, which includes:

- ◆ Modality/demonstration technique
- ◆ Waste management content and concepts
- ◆ Use of IEC material, particularly to explain waste segregation technique
- ◆ Group discussions focusing on the profession and livelihood of the ragpickers/waste workers
- ◆ Community engagement

Almost all the respondents assured complying with precautionary measure when it comes to waste accumulation, sorting, and waste management practice, indicating that the program is able to generate a positive impact to create awareness among the beneficiaries. Nonetheless, **the program's impact is constrained, as most respondents are not inclined to deeply engage and contribute to this sector.** This is evident from the beneficiaries' responses, with as many as **79% of them not envisioning themselves to be engaged in waste business as entrepreneurs.** This limitation **restricts the involvement of skilled resources in the waste management industry, thereby hindering long-term impact.**

In a similar manner, the assessment also considered evaluating the impact of the training sessions among the MRF workers based on various criteria such as ease of understanding of the concepts, relevance of the sessions to the job, ease of adopting proper segregation technique post the training sessions. As indicated in table 4, **all the respondent rated the training session as 'Excellent'** in all categories.

Scale	Rating	Ease of Understanding (Percentage of Respondents)	Relevance of the session to the job (Percentage of Respondents)	Ease of adopting to proper segregation technique (Percentage of Respondents)
Excellent	4	100%	100%	100%
Good	3			
Satisfactory	2			
Poor	1			

Table 4: Percentage of respondents' rating on Ease of Understanding, Relevance, and Ease of Adopting to Segregation Technique.

Nevertheless, unlike the waste workers, the respondents from the MRF category believes that significant opportunities could arise from the training sessions, suggesting their potential role or participation in the waste business as entrepreneurs in the future. A total 100% of the respondents envision themselves as future entrepreneurs in the waste management sector, indicating sustainability in waste management practices and prevention of plastic pollution due to competent workers in the waste management industry.

The intervention claims to create positive impact by not only catering to the waste workers but also

extending support through various benefits to their families as depicted in figure 16. It is observed that approximately **31% of respondents denied receiving any benefits** as opposed to **69% of the respondents who agreed to receiving the benefits provided as a part of the program**. These benefits include:

- ◆ Education Support
- ◆ Health and Hygiene Workshops, etc.

Figure 16 shows that as many as **44% of waste workers have affirmed to receive education support for their wards**, followed by **15% respondents who have received both education support and health and hygiene workshops for their children**.

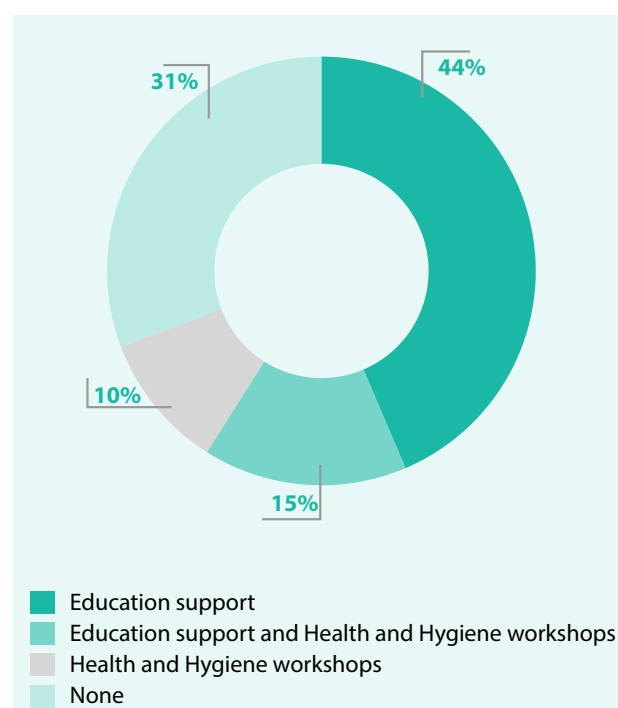


Figure 16: Percentage of respondents receiving support/benefits for their children from the NGO.

The assessment has delved deeper to identify the location/NGO-wise indirect beneficiaries who have received the benefits of the program, as illustrated in Table 5. It is observed that of the **44% of the respondents who have received education support, 59% are the beneficiaries of NEPRA**

foundation and 41% are the beneficiaries of IPCA Foundation. All the beneficiaries who have denied receiving support for their children are particularly from Ahmedabad. Beneficiaries who have affirmed receiving support for both education and health and hygiene workshop are all from Ahmedabad.

Location and NGO	Education	Education Support and Health and Hygiene Workshops	Health and Hygiene Workshops	None
Ahmedabad, NEPRA Foundation	59%	100%	75%	100%
Delhi-NCR, IPCA	41%		25%	
Grand Total	44%	15%	10%	31%

Note: Total number of respondents in Ahmedabad and Delhi responding to the question: **31, which is equal to 100%**

Table 5: Percentage of respondents receiving support/benefits for their children as per location/NGO.

The program impact on households and community members is also assessed by evaluating changes in outcomes resulting from the program. About **56% of respondents have confirmed mandatory waste segregation practice and 37% respondents denied having mandatory waste segregation practice in their community/society.** Furthermore, the analysis has also captured location-wise responses which highlighted **out of the 56% who confirmed having mandatory waste segregation practice, 52% are from Baddi, followed by 26% from Delhi NCR,** as indicated in figure 17. We also observe that

location like Baddi leads when it comes to non-compliance to mandatory waste management practice. **70% respondents from Baddi denied having mandatory waste segregation practice out of all 37% respondents across all locations,** as depicted in the below table. This could be potentially because the intervention in Baddi with community member is limited to awareness generation on plastic pollution unlike in Delhi-NCR, comprising additional activity such as “My 10 Kg plastic” which creates the need for implementation of waste management.

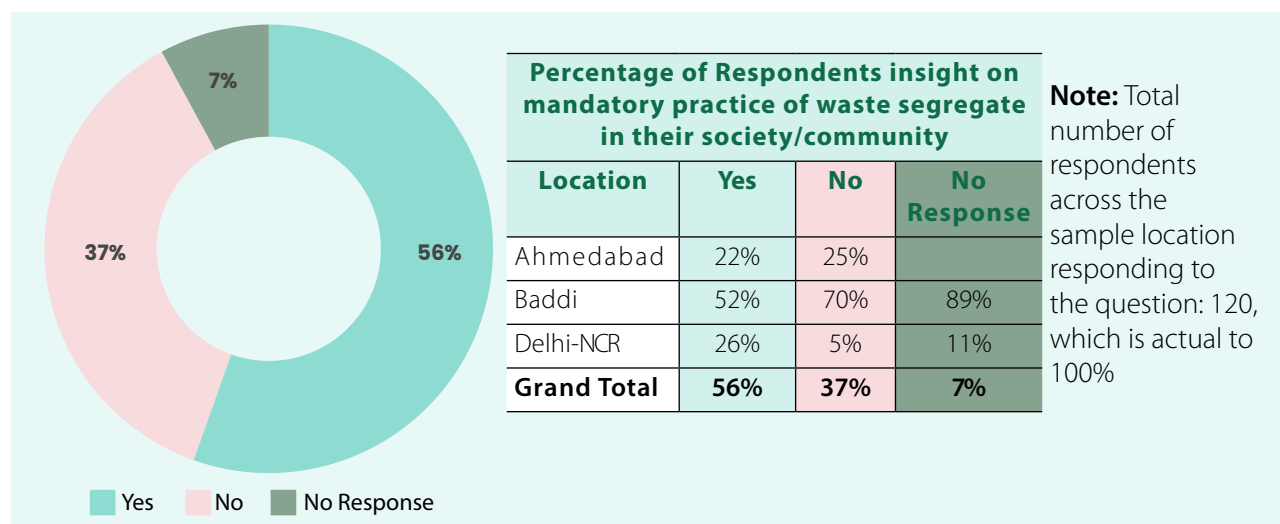
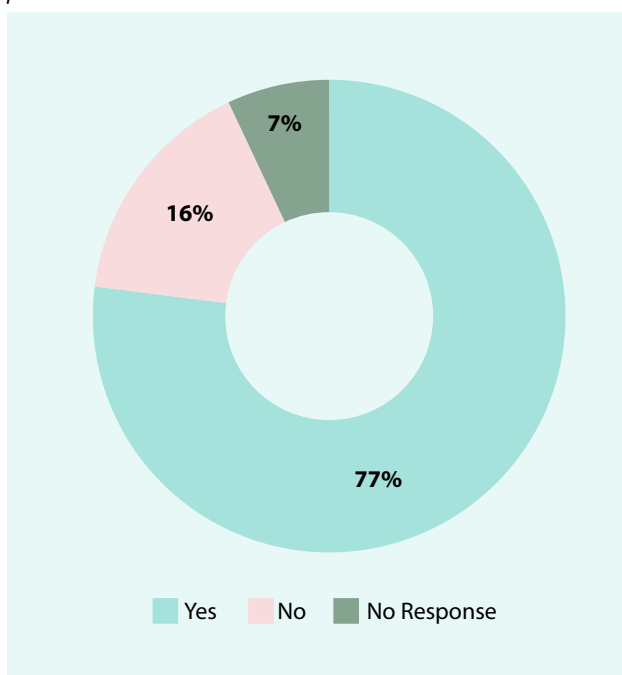


Figure 17: Percentage of respondents' insight on mandatory waste segregation.

The impact of the intervention can also be gauged by the program spillover to other community members other than the targeted households/ community members/ RWAs/Housing society members as shown in figure 18. Upon inquiring with respondents of the Household category, **77% of the respondents agreed to advocating waste management practices with other community members** or their participation in the training on waste management. When it comes to location-wise distribution, it is evident that out of this 77% of respondents, 68% are from Baddi and 22% are from Delhi-NCR, as depicted in the below table. **16% of respondents denied their involvement in encouraging others to undertake waste management practice or community members' participation in training session on waste management.**

Encouraging/training other household/community members on waste management and segregation practices. Or Participation of others in training session by the NGO?			
Location	Yes	No	No response
Ahmedabad	10%	89%	
Baddi	68%	11%	100%
Delhi NCR	22%		
Grand Total	77%	16%	7%

Figure 18 (Above & Below): Percentage of respondents' insight on participation of others in waste segregation and management practices.



The intervention's impact is assessed based on the respondents' perspectives regarding the relevance of the waste management training content at the community/society level and the ease of adopting the waste management practices taught during the sessions. Table 6 indicates that an overwhelming 84% of the respondents rated the program 5 (Excellent), followed by 10% of the respondents who rated the program 4. The respondents' ratings underscore the success of the program achieved at the community level.

Scale	Rating	Percentage
Excellent	5	84%
Very Good	4	10%
Good	3	5%
Satisfactory	2	1%
Poor	1	-

Table 6: Percentage of respondents' rating on relevance of waste management content and ease of adopting waste management practice.

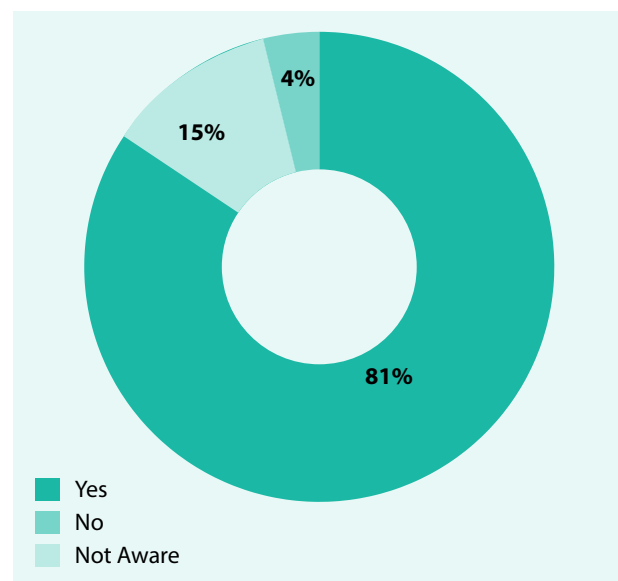


Figure 19: Percentage of respondents affirming the use of separate bins for dry and wet waste in the institute

The engagement with students and faculty members have also seemingly created a positive impact among the participating educational institute and the targeted group such as school community members. Interactions with the students and the faculty members have involved inquiries about whether the schools have begun to implement separate dustbins for dry and wet waste. **More than 80% of the**

students affirmed implementation of separate bins post the implementation of the sessions in the institute, as depicted in figure 19.

Additionally, the respondents have also provided information on reuse of plastic and paper waste. **69% of respondents have affirmed reusing plastic and paper waste** that are accumulated in school and the remaining **13% denied reusing the waste material**. The plastic waste, as mentioned by the respondents, are repurposed for:

- ◆ School assignments such as 'Best Out of Waste' project.
- ◆ Art and craft with paper waste, etc.

In addition, the faculty members are actively involved in generating awareness among students to reduce plastic pollution, proper disposal of waste material, among other waste management practices, as mentioned by the teachers and faculty members.

The program has broadened its scope to combat plastic pollution through sustainable means, involving Self-Help Group women in the production of cotton bags to achieve lasting and meaningful impact. The program impact is measured in terms of the level of satisfaction the women have gained through the training program. As depicted in table 7, **100% of the women respondents rated the training program 4, indicating that they find the training session to be 'Excellent'**.

Scale	Rating	Percentage
Excelient	4	100%
Good	3	
Satisfactory	2	
Poor	1	

Table 7. Level of satisfaction with the training program among the SHG women.

Furthermore, the effectiveness of the training program is also determined through respondents' insight on relevance and profitability. Table 8 depicts **85% of the women rated the training session 'Highly Effective' and another 15% of women rated the sessions 'Effective'**, indicating that program is relevant in the local context and is able to generate positive impact for the participating women to earn profit.

Scale	Percentage
Highly Effective	85%
Effective	15%
Totally Ineffective	-
Total	100%

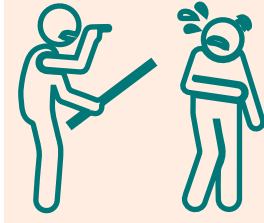
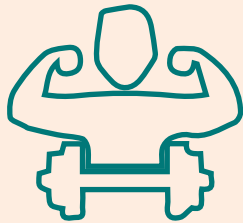
Table 8: Percentage of women finding the training session effective.

The impact of the training is also verified with the trainer who stated that the training has created a positive impact by ensuring holistic development of women in the following ways:

- ◆ Enhanced income
- ◆ Improved livelihood opportunities
- ◆ Opportunities to continue with further education
- ◆ Explore employment opportunity outside their hometown, etc.



06 SWOT Analysis



Strength

- ◆ The awareness building, training sessions, and sensitization gathered positive response among majority of the stakeholder group, which is gradually enhancing the waste management practices among individuals and communities.
- ◆ The program has been successful in generating profit and improved livelihood for the SHG women.
- ◆ The housing societies and community members that were trained and sensitized have successfully adopted multiple waste management practices after the intervention.

Weakness

- ◆ The training content for the waste worker community is considered difficult due to technical concept and use of English language.
- ◆ The household and community members still witness the challenges on inadequacy in waste disposal and waste segregation technique.

Opportunities

- ◆ The training content for ragpickers should be restructured and simplified using easy languages and explanation.
- ◆ NGOs can form partnerships with larger organizations, such as hotels and offices, to ensure that their plastic waste is properly managed and recycled.
- ◆ Expansion opportunity towards sustainable fashion/ clothing should be explored using the skill of the SHG women. The NGO can facilitate raw material and market linkages to improve the income of the women.

Threats

- ◆ Environmental and the associated health risks cannot be mitigated in such a short span of program implementation.

07 Recommendations

Outreach

Outreach mechanisms such as strategic advertisements should be considered for increasing participation in addition to word-of-mouth outreach.

Collaboration with Subject Matter Experts (SMEs)

On-boarding SMEs to deliver awareness and training sessions could be beneficial. Opportunity of convergence with specialists can be implemented to revisit, restructure, and streamline the content, outreach and delivery of the sessions.

Program Expansion

Engagement with SHG women should be scaled up through skill development, and provision of sufficient

resources, creating avenues for sustainable clothing, ensuring improved income for women.

Easy Guidelines for Waste Management

The participants should be provided with guidelines and/or manual on how to sort and segregate different types of waste, including household wastes, bio-medical and toxic wastes, which can be shared through various communication platforms or in-person.

Impact Reporting and Information Dissemination

The impact being created through this initiative should be periodically shared with the participants to keep them motivated.







DABUR INDIA LIMITED

8/3, Asaf Ali Road, New Delhi - 110002, India
Website: www.dabur.com | E-mail: corpcomm@dabur.com
Email for investors: investors@dabur.com



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