DABUR INDIA LIMITED

PLASTIC WASTE MANAGEMENT

CSR IMPACT ASSESSMENT REPORT

PROJECT YEAR:
2020-21

ASSESSMENT YEAR:
2022-23

JIVANTI

give | grants

IMPLEMENTED BY   PREPARED BY

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Executive Summary

Plastic waste management is a critical issue that requires urgent attention in developing countries like India. 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 is supporting interventions enabling environmental sustainability. Being an FMCG company, handling of post-consumer plastic waste and its management is a crucial part of the environment sustainability strategy. Under its plastic waste management program, being rolled out through its CSR arm Jivanti Welfare and Charitable Trust, Dabur India Ltd is creating awareness among ragpickers about safe waste handling practices and effective plastic waste segregation methods. The CSR outlay for the program in FY 2020-21 was ₹ 1.39 Crores.

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 plastic waste management program by Dabur India Ltd are:

- **Capacity building of waste collectors** and promoting awareness on segregation, collection, recycling, and reuse of plastic waste

- **Sensitising community & RWAs** on plastic waste management

- **Welfare of ragpicker community**

The project was implemented pan-India, and the impact evaluation was carried out in Delhi and Ahmedabad, where a total sample size of 79 stakeholders comprising 69 beneficiaries were covered. Awareness sessions on handling of plastic waste were imparted by both IPCA and Nepra Foundation. They have conducted awareness sessions in the resident welfare associations (RWAs) in Delhi-NCR, schools and colleges in Ahmedabad to educate citizens and students about plastic waste management practices, including the use of colour-coded bins.

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The highlights of the assessment conducted in the selected locations indicate:

Key Performance Indicators (KPIs)	Achievement of IPCA	Achievement of Nepra Foundation
Amount of waste recycled (and diverted from landfills)	• 3 metric tonnes of plastic waste recycled per month through "My 10 Kg Plastic" initiative. • 2 metric tonnes dry waste recycled per day per MRF facility.	Collaborated with waste management agencies and municipal authorities for recycling 9,59,037 units of MLP collected
No. of waste workers benefitted	12 workers provided employment at IPCA MRF facility; several others (a few hundreds) were trained on segregation, and health and hygiene practices. They sell their waste to IPCA through local scrap dealers (price per Kg of waste monitored by IPCA).	~250 waste workers
No. of households participating in "My 10 Kg Plastic"	~50,000 households	NA
No. of schools/colleges/RWAs reached through awareness	~150 RWAs	17 schools and colleges reached in a month

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The primary beneficiaries of the project's outreach efforts were the RWAs, schools, and colleges, who received training and awareness on waste management practices. The project "My 10 Kg campaign" also encouraged citizens to take responsibility for their plastic waste by aggregating and donating it to the IPCA recycling facility. The assessment reveals that the project has succeeded in improving the income and health of the ragpickers by ₹ 5,000-7,000 per month in Delhi and ₹ 3,000 per month in Ahmedabad. The increase in income has resulted in an improvement in their quality of life. They have started investing more in their children's education, adopted more nutritious diets, and improved the general sanitation of their homes. The direct impact of the program has been apparent reduction in the plastic waste generation by the community. Our interaction with the Assistant Commissioner, MCD Shahdara, Delhi, has validated the fact that plastic waste was effectively managed. The awareness sessions among the citizens have encouraged people to start using cloth/jute bags as a substitute to plastic bags. The plastic waste was found to be segregated at site during the assessment. Previously, the multi-layered plastic (MLP) waste that used to be left over in bins ended up in landfills, but now they are redirected to the IPCA recycling plant. The RWAs have adopted some of the waste management

practices such as using separate bin bags for plastic waste collection, segregating plastic waste from all dry waste, and using composters. Overall, the CSR project funded by Dabur is an essential initiative that addresses the pressing issue of plastic waste management in India. By raising awareness and engaging ragpickers, citizens and relevant stakeholders, the project has the potential to bring significant positive changes to the waste management sector, leading to a cleaner and healthier environment

While citizen action remains a key area of the uptake of the waste management practices, establishing material recovery facility (MRF) as part of the extended producers' responsibility (EPR) will prove to provide livelihood and ensure environmental sustainability of the project.

Introduction

Plastic waste management in India is a growing concern due to the significant volume of plastic waste generated every day. At the 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 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 ragpickers. 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 colour-coded bins, segregation of recyclable and non-recyclable plastic waste, and the importance of proper disposal methods. The program provided training to ragpickers 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 getting health issues from exposure to waste.

Additionally, Dabur and Jivanti implemented the "My 10 Kg Plastic" campaign in Delhi-NCR, which sought to encourage common citizens to contribute their plastic waste to IPCA, the NGO running the campaign 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.

As part of the assessment, the GIVE team conducted a physical visit to Delhi-NCR and Ahmedabad to interact with the ragpickers impacted in these cities. The other key beneficiaries — MRF workers, RWAs and participants of "My 10 Kg Plastic" campaign — were surveyed in Delhi-NCR. In-depth Key Informant Interviews (KIIs) were conducted with the program teams of IPCA (responsible for the interventions in Delhi-NCR) and

Nepra Foundation (responsible for the interventions in Ahmedabad), the IPCA recycling facility manager and the Assistant Commissioner of MCD, Shahdara, Delhi (who helped in outreach of the "My 10 Kg Plastic" campaign). A virtual interview was conducted with a professor at Mahatma Gandhi Labour Institute, Ahmedabad (where an awareness session was conducted) and the Dabur CSR Team.

This impact assessment report will examine the status of plastic waste management practices followed by the beneficiaries, the improvement in the income and health of waste workers, the 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 Objectives and Scope of Study

The study aims to understand the implementation pathway of the project, the impact it has had on its primary beneficiaries across Delhi-NCR and Ahmedabad, 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.

3.1 Objectives of the Study

The major objectives of the study are as follows:

- **Assess the relevance and efficiency of the intervention** in ensuring that stakeholder challenges are addressed by the project and to review the implementation pathways

- **Understand the effectiveness of the intervention:** How each activity has led to creating the desired outcomes

- **Understand the major success factors and challenges** in the intervention

- **Find the areas of improvement** across all the factors from program design to implementation

- **Provide an assessment framework** to be able to capture impacts in a manner that is effective recommendation

3.2 Limitations of the Study

- Nepra Foundation reported that a significant amount of funding was used for conducting awareness sessions in schools and colleges of Ahmedabad. However, due to lack of availability of beneficiary data, the NGO could not facilitate interaction with any of them.

- The ragpickers are primarily nomadic in nature so it was difficult to track them for interaction. The sample size, thus, remained limited for this stakeholder group.

Assessment Framework

To create an overall framework for the impact assessment, following activities were undertaken. We began by establishing the scope of the assessment in terms of type of stakeholders to be engaged and topics to be discussed with them. Based on this and the understanding of the project activities, we developed stakeholder-wise questionnaires to ascertain factors including rationale for supporting the program, the implementation process, challenges encountered and stakeholder feedback about the efficacy of the program. The findings and recommendations arising out of this process are mentioned in the subsequent sections of the report.

4.1 Theory of Change

The THEORY OF CHANGE FRAMEWORK (ToC) for the given program is illustrated below:

Input
Assessing relevance & reach of the program

Output
Assessing efficiency & target achieved against activities planned

Outcome
Assessing effectiveness & immediate outcomes of intervention

Impact
Assessing the impact created by the project against the initial goals

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Theory of Change (ToC)				
Need	**Input**	**Output**	**Outcome**	**Impact**
Propagate appropriate plastic waste management practices among citizens.	**Capacity building and livelihood enhancement of ragpickers and MRF workers** • 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.	• 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.	• 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.	**Enabling environmental sustainability through circular economic approaches for the use and management of plastic waste** • Reduction in health issues/ infections due to reduction in exposure to disease casuing grems. • Improvement in quality of life of waste workers
	Awareness generation about plastic waste and waste management and disposal practices amongst RWAs, residents, schools • Awareness generation about waste segregation practices • "My 10 Kg Plastic" campaign	• Beneficiaries educated about practices they can follow at society/ household level for proper waste management. • Participants segregate their plastic waste for recycling	• Waste generated by households/ societies are segregated at source. • Plastic waste is recycled	• Plastic waste is diverted from going to landfills.

4.2 Logical Framework Model

A LOGICAL FRAMEWORK MODEL is created against the identified ToC to reflect the identifiable indicators, means of verification, and assumptions, as given below:
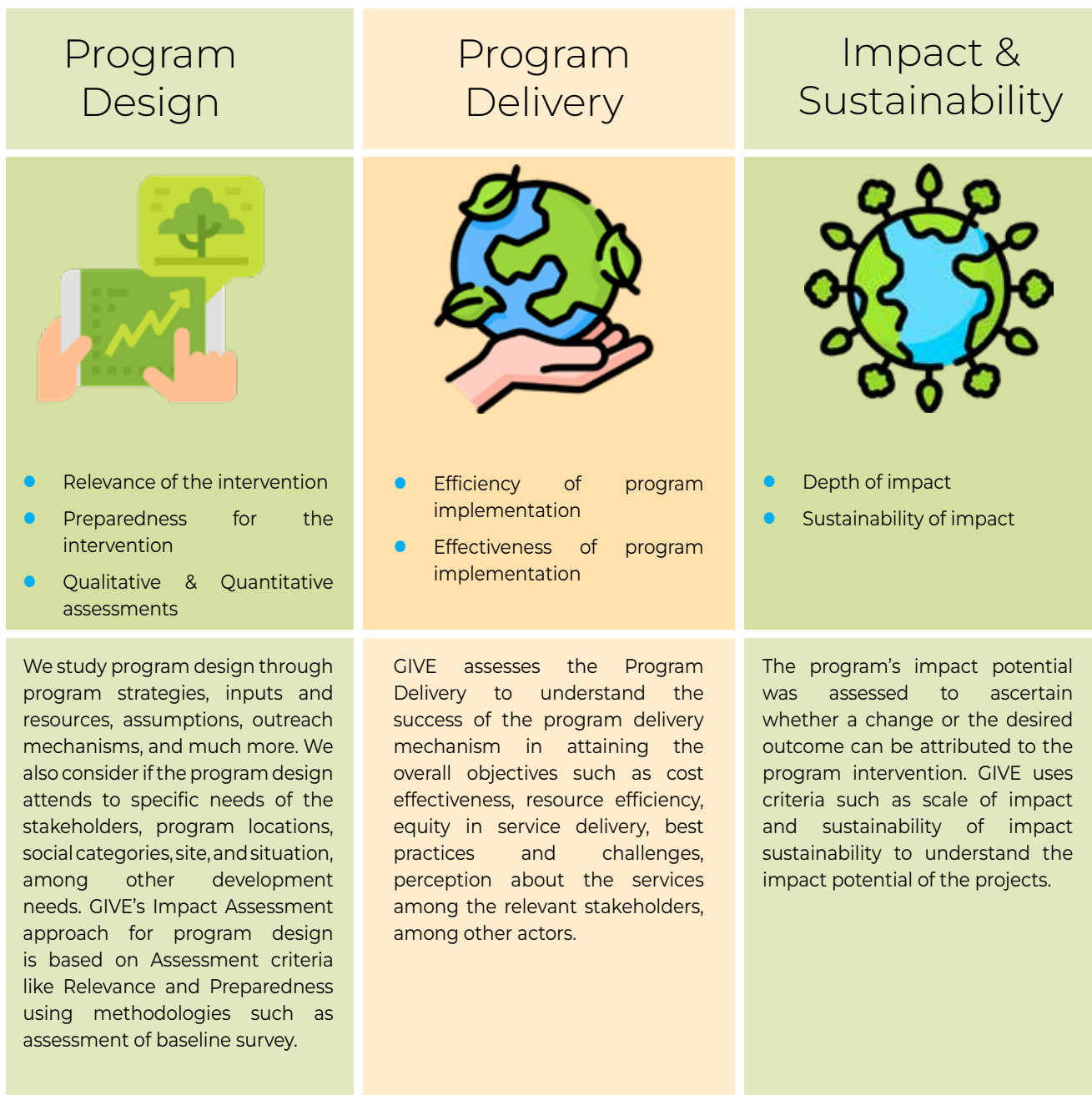
		Log Frame
	Project Summary	
Impact	• Reduction in health issues/infections due to reduction in exposure to disease causing germs. • Improvement in quality of life of waste workers • Plastic waste is diverted from going to landfills.	
Outcomes	• Reduction in exposure to germs and viruses while handling 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	
Output	• 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.	
Input	• 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	

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Analysis   (LFA)

Indicators	Means of Verification	Assumptions
• 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	• Beneficiary survey • KIIs with NGO program teams • KII with recycling facility manager	N/A
• % 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	• Beneficiary surveys • KIIs with NGO program teams • KII with recycling facility manager	• Gloves and masks are effective in stopping infections. • Recycling facility has the capacity to recycle all plastic waste received
• 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	• Beneficiary surveys • KIIs with NGO program teams • KII with ULB official	• Waste workers have access to gloves and masks. • The segregated plastic waste is collected by IPCA and sent to recycling facility
• No. of ragpickers reached. • No. of RWAs impacted. • No. of schools and colleges benefitted. • No. of individuals participating in "My 10 Kg Plastic" campaign	• Beneficiary surveys • KIIs with NGO program teams	• Beneficiaries are able to grasp the content of the awareness sessions

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4.3 Three-Point Assessment Framework

Based on the ToC and the LFA 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.

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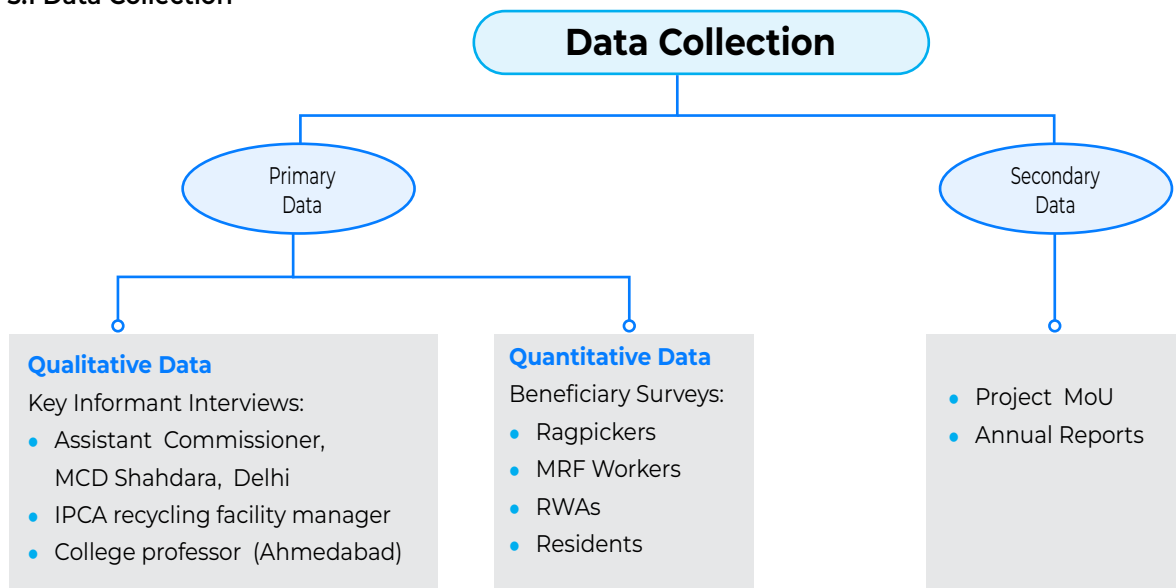| Program Design	Program Delivery	Impact & Sustainability
• Relevance of the intervention • Preparedness for the intervention • Qualitative & Quantitative assessments	• Efficiency of program implementation • Effectiveness of program implementation	• Depth of impact • Sustainability of impact
We study program design through program strategies, inputs and resources, assumptions, outreach mechanisms, and much more. We also consider if the program design attends to specific needs of the stakeholders, program locations, social categories, site, and situation, among other development needs. GIVE's Impact Assessment approach for program design is based on Assessment criteria like Relevance and Preparedness using methodologies such as assessment of baseline survey.	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.	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 sustainability to understand the impact potential of the projects.

05 Methodology Adopted

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.

5.1 Data Collection

Data Collection

- Primary Data
- Secondary Data

Qualitative Data
Key Informant Interviews:
- Assistant Commissioner, MCD Shahdara, Delhi
- IPCA recycling facility manager
- College professor (Ahmedabad)

Quantitative Data
Beneficiary Surveys:
- Ragpickers
- MRF Workers
- RWAs
- Residents

- Project MoU
- Annual Reports

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.

Considering a confidence interval of 95%, and 5% allowable margin error, the study planned for data collection of 236 stakeholders. However, due to lack of beneficiary data (students/ teachers) in Ahmedabad and difficulty in surveying ragpickers due to the nomadic nature of their job, the study was able to achieve a sample size of 79.

The following formula details out the sample size calculation process with the assumptions considered.

$$\text{Sample size} = \frac{\dfrac{z^2 \times p(1-p)}{e^2}}{1 + \left(\dfrac{z^2 \times p(1-p)}{e^2 N}\right)}$$

- N = Total stakeholder population
- z = Z Score (Z-score is the number of standard deviations a given proportion is away from the mean and 1.96 here corresponding to a 95% confidence interval)
- e = Margin of Error (Percentage in decimal form; here taken as 0.05 (+/- 5% error)
- p = sample proportion (0.5)

The sample size of 69 was distributed amongst the following stakeholders: ragpickers, MRF workers, students/teachers, RWAs and participants of "My 10 Kg Plastic", Recycling facility manager, Urban local body (ULB) officials, NGO program teams and the Dabur CSR team. For the quantitative data collection, random sampling of beneficiaries was conducted.

Following table elaborates the sample size distribution of beneficiaries as per the strategy.

Stakeholders	Sample size achieved	Remarks	Mode of interview
Ragpickers	33	Ahmedabad: 7 Delhi-NCR: 26	Physical(16) Virtual(17)
MRF Workers	4	All were from Delhi-NCR	Physical
RWAs	5	All were from Delhi-NCR	Physical
Residents	27	All were from Delhi-NCR	Physical (14) Virtual (13)
Total	**69**		

The study was conducted over a period of 4 days, from 10th February to 15th February 2023.

Key informant interviews: Questionnaires were designed for each stakeholder interview. All relevant questions were asked to the respondents and were captured. This was done through purposive sampling.

Stakeholder Group	No. of Interviews (Achieved)	Mode of interview
Assistant Commissioner, MCD Shahdara, Delhi-NCR	1	Physical
College Professor (Ahmedabad)	1	Virtual
IPCA Recycling facility manager	1	Physical
IPCA Program team	3	Physical
Nepra Foundation Program team	2	Virtual
Dabur CSR team	2	Virtual
Total	**10**	

Analysis & Findings

Descriptive statistic (basic features of the data including frequencies, counts, percentages), comparative analysis (before and after comparisons), and content analysis (for qualitative data to interpret and analyze unstructured textual content into manageable data) were done to analyze and interpret the data collected. The findings for the program are organized as per the three-point assessment framework described earlier.

The GIVE team conducted on-site surveys with ragpickers in two project locations, Delhi and Ahmedabad, where IPCA and Nepra Foundation respectively run the project.

55% of the surveyed ragpickers were based in Delhi. In Delhi-NCR, interactions were conducted with other important beneficiaries of the project, such as MRF workers, RWAs, and residents. Additionally, a virtual KII was conducted with a professor from Mahatma Gandhi Labour Institute in Ahmedabad to gain insights into the awareness session organized by Nepra Foundation in the college. In-depth KIIs were also conducted with various stakeholders, including the manager of the recycling facility operated by IPCA in Patparganj, Delhi, the MCD of Shahdara, Delhi, the program teams of NGOs, and the CSR team of Dabur.
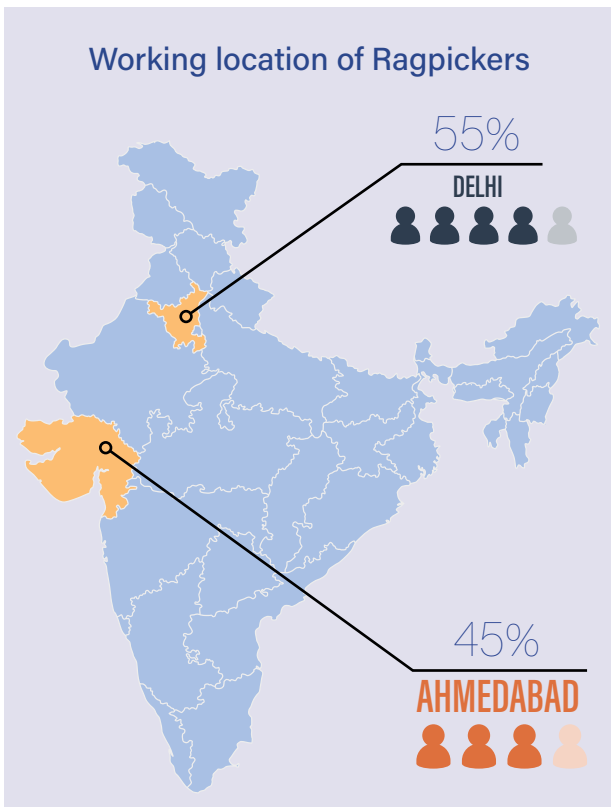
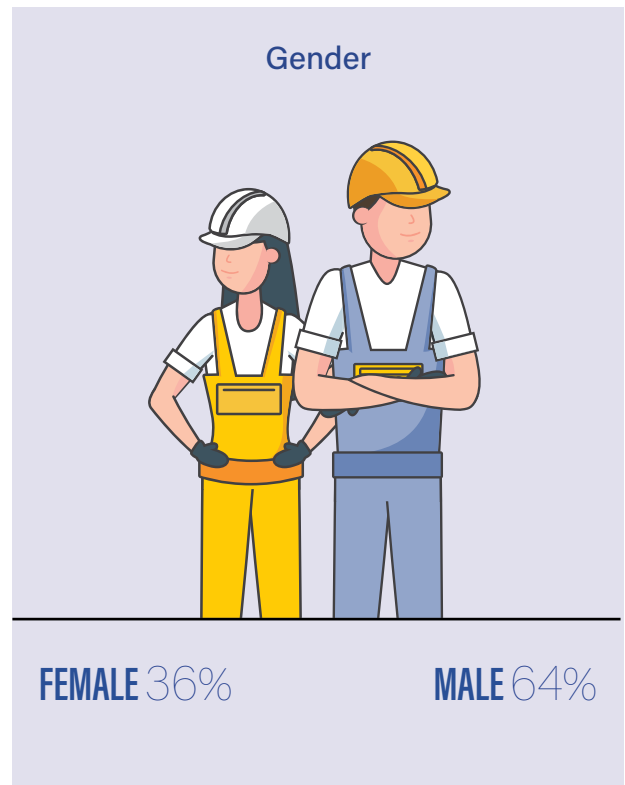*Figure 1: State-wise beneficiary (ragpickers) split*

Figure 2: Gender split of ragpickers surveyed

Basic Profile of the Beneficiaries

The ragpickers trained by the NGOs were middle-aged with their age ranging from 30-45 years. 64% of the ragpickers interviewed were males. The average monthly income of the ragpickers from Ahmedabad was reported to be ₹ 14,000- 15,000. The ragpickers operating in Delhi had a slightly less monthly earning of ₹ 10,000-12,000. Most of the ragpickers have been involved in ragpicking for an average of 15 years. All the MRF workers surveyed were male. Their average monthly income was found to be higher than the average income of the ragpickers at ₹ 15,000-16,000.

The RWAs and residents interviewed belonged to five housing societies spread across Delhi-NCR. The residential societies visited as part of the study are listed in fig. 3.

6.1 Program Design

Relevance of the project is analyzed based on how relevant the project activities are with respect to the needs of the community and the issues prevalent prior to the intervention. The rationale behind the implementation in the select locations is scrutinized to check if the most underserved are being benefitted through the program or not. The preparedness of the NGO team is assessed on the basis of the implementation methods adopted and the strategies in place for handling envisaged challenges during execution.

Relevance

The IPCA program team reported that prior to the intervention, ragpickers in Delhi were working in an unorganized manner owing to the nature of the sector. They did not have a guaranteed/reliable source of income and were often exploited by *kabaadiwalas* who paid

Residential Societies Covered as Part of the Study

Figure 3: Residential societies visited as part of the study
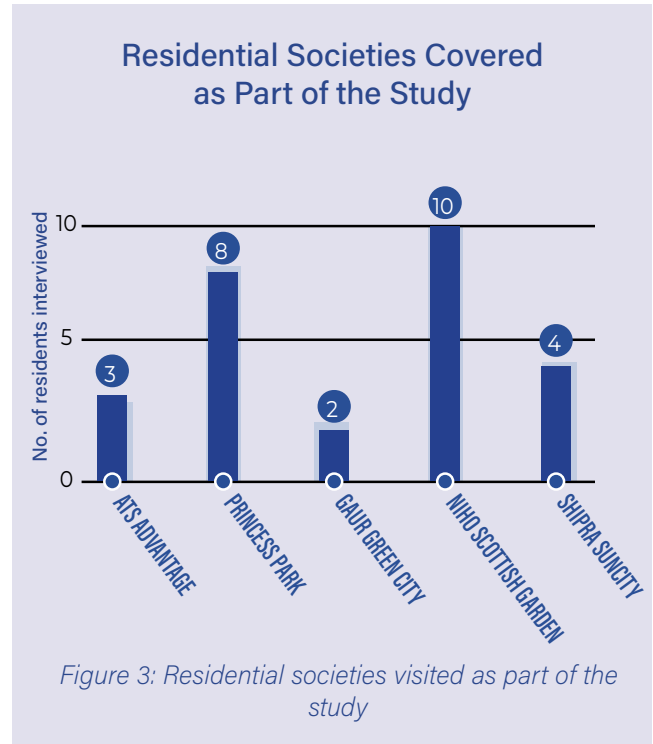
them less for the waste they collected.

66% of the ragpickers reported that earnings from selling waste was their primary and only source of income. Before the intervention, Delhi's ragpickers collected an average of approximately 150 kg of waste per day, while Ahmedabad's ragpickers collected around 100 kg per day. Both groups earned an average of ₹ 200-300 per day by selling the waste they collected. The intervention doubled their income, as they now receive better payment per kg of waste by selling it to IPCA's MRF facility (in Delhi) and to Nepra/ recycling plants (in Ahmedabad). The ragpickers in Delhi also reported being employed by IPCA as part of the intervention, resulting in guaranteed and improved income per month. Therefore, the program is highly relevant in terms of augmenting the livelihoods of ragpickers.

The MRF workers reported that they had no knowledge of types of plastic waste prior to IPCA's session because of which they sold the plastic waste without segregation and got paid a lesser amount for it.

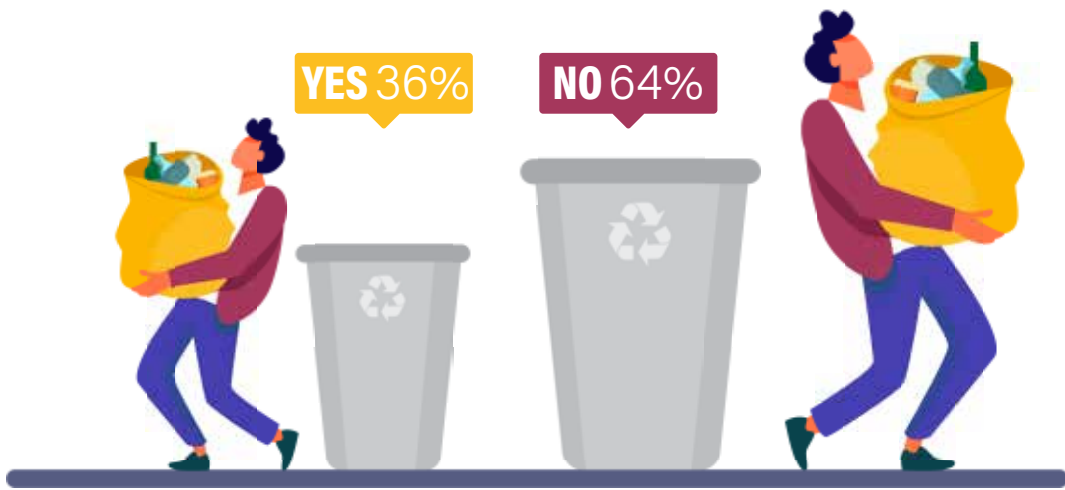**Do the ragpickers collect same amount of waste everyday?**

YES 36%   NO 64%

Figure 4: Amount of waste collected by ragpickers
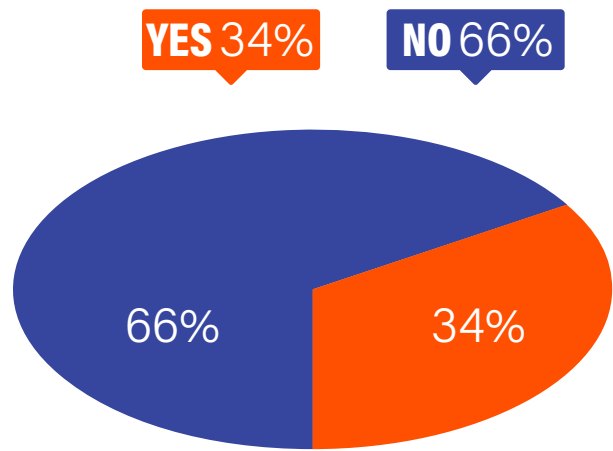
Do the ragpickers have any other streams of income?

YES 34%   NO 66%

66%   34%

Figure 5: Income channels of ragpickers

The IPCA program team reported that many ragpickers suffered from minor cuts on account of ignorance about the importance of taking safety precautions while handling the waste. As a result, they were vulnerable to HPV infection, which were confirmed by the MRF workers. They reported experiencing fever and infections due to cuts on their hands. Furthermore, the ragpickers in Ahmedabad were reported to have poor hygiene practices in the form of irregular bathing, which increases their risk of infection. This emphasizes the need for awareness sessions on safety measures and hygiene practices to address these issues.

IN Delhi-NCR, all the RWAs were not segregating waste prior to the intervention. They sold all their waste to the local vendors in an unsegregated form. 2 of the 5 societies had colour coded garbage bins available in the public areas. Rest did not follow any specific waste management practice prior to the intervention. 74% of the residents also reported not segregating plastic waste from other waste prior to the intervention. This suggests that there was room for improvement in waste management and segregation practices both at the society and household level in these housing societies.
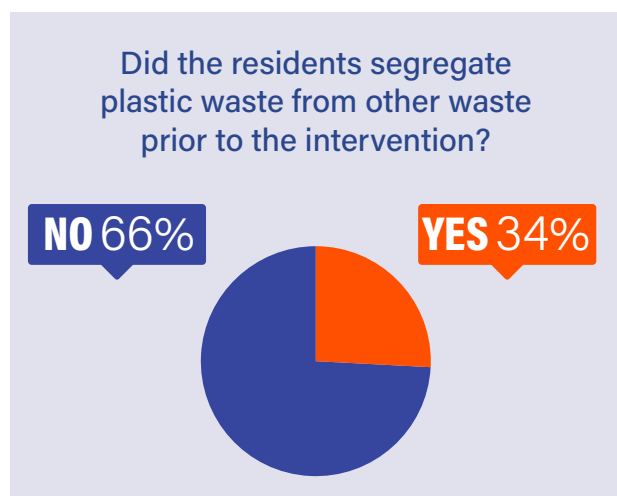

Figure 6: Percentage of residents segregating plastic waste pre-intervention

The professor at Mahatma Gandhi Labour Institute in Ahmedabad reported that Nepra Foundation conducted a knowledge session on careers in waste management. It was meant for students of the institutional safety and environmental tech courses offered by the institute. The professor mentioned that the course content was perfectly aligned to the needs of the student.

Preparedness

The IPCA program team reported that they use their connections with local scrap dealers and *kabadiwalas* to reach out to ragpickers in Delhi. The Nepra team in Ahmedabad preferred reaching out to the ragpickers directly as they could be tracked.

For awareness sessions in housing societies, the IPCA ground team members first conducted a need assessment for awareness generation among the residents, followed by obtaining permission from the society president for conducting the session.

The outreach for "My 10 Kg Plastic" was done primarily through word of mouth. All the residents were found to have become aware about the campaign through their friends, relatives and RWAs. They also reported being active participants in spreading word about this campaign amongst their own networks. The IPCA team as well as the Dabur CSR team corroborated the same stating that the community participation has been extremely positive. The IPCA team also leveraged the connections of ULB officials to spread word about this campaign. The assistant commissioner of MCD, Shahdara, Delhi confirmed the same by stating that he was an active participant in spreading word about the campaign in his locality by having meetings with RWA heads. Schools, colleges also participated in this initiative, in addition to RWAs.

The IPCA team stated that there were a broad range of reasons that inhibit common citizens from following good waste management practices.

The key reasons listed by them were as follows:

- Lack of knowledge about waste management practices
- Lack of resources (like separate bins)
- Lack of time
- Low accessibility to vendors who collect segregated waste
- Low accessibility to MLP (multi-layered plastic) waste collectors

GIVE found that the intervention carried out by IPCA successfully addressed the identified concerns through various measures such as conducting awareness sessions in RWAs, installing dedicated bins for plastic waste collection, and providing plastic waste pickup services. The residents of RWAs located in Delhi-NCR confirmed that their housekeeping staff collects the plastic waste every day and disposes it off in the dedicated bins provided by IPCA within the society premises. Furthermore, IPCA clears these bins on a weekly basis. On the scale of 1-5, with 1 being the extremely poor and 5 being an excellent, the intervention rated by different stakeholders is mentioned in the table below.

Stakeholder	Parameter	Ratings (out of 5)
Assistant Commissioner, MCD Shahdara	Timely collection of accumulated plastic waste	4
RWA	Relevance of the training content to society level waste management	4.7
MRF Worker	Relevance of the awareness session to your present job	5
Dabur CSR Team	Response to needs of the communities	5

6.2 Program Delivery

Efficiency of the intervention is analyzed based on how well resources were used in terms of the activities conducted. Effectiveness is analyzed based on the extent to which the intervention has achieved its objectives as outlined in the project proposal. The lens adopted for the scope of the impact assessment is to analyze both efficiency and effectiveness through each of the project objectives.

Efficiency

IPCA ensured maximum efficiency of the awareness sessions in educating the participants by:

- Ensuring simplicity and clarity of training content by getting them prepared by experts in their team (people having Master's in Environmental Management)
- Tailoring the content to the needs of the participants (ragpickers/ MRF workers/ residents)
- Demonstrating different types of plastic waste using practical examples (like mineral water bottles)
- Informing about the rates of different types of plastics so that the ragpickers/MRF workers know what price to expect for different waste items, post segregation

In addition to getting content curated by experts, Nepra reported using field observations and past experiences to finetune the content.

To ensure continued learning and minimize loss of impact, both the NGOs reported continuing the awareness and education sessions virtually during the pandemic. While Nepra continues to offer training both physically and virtually, IPCA has fully transitioned to an offline model for the ragpickers and MRF workers post-pandemic to ensure higher efficiency.

In order to ensure successful adoption of the awareness session, IPCA reported regular communication and periodic follow-up with the RWA presidents to address any queries they may have. This approach reduces the need for refresher training and opens up more time for IPCA to train other RWAs, maximizing the impact of their efforts.

Effectiveness

The program has been successful in achieving its primary objectives as evidenced through the study. However, there is a scope for the NGOs to improve data tracking and management. The assessment found that the NGOs were not recording data for KPIs crucial to the project. The progress reported by the NGOs against relevant KPIs is listed in the table below:

Key Performance Indicators (KPIs)	Achievement of IPCA	Achievement of Nepra Foundation
Amount of waste recycled (and diverted from landfills)	• 3 metric tonnes of plastic waste recycled per month through "My 10 Kg Plastic" initiative. • 2 metric tonnes dry waste recycled per day per MRF facility.	Collaborated with waste management agencies and municipal authorities for recycling; 9,59,037 units of MLP collected
No. of waste workers benefitted	12 workers provided with employment at IPCA MRF facility; several others (a few hundreds) were trained on segregation and health and hygiene practices. They sell their waste to IPCA throu gh local scrap dealers (price per Kg of waste monitored by IPCA).	~250 waste workers
No. of households participating in "My 10 Kg Plastic"	~50,000 households	NA
No. of schools/colleges/RWAs reached through awareness sessions	~150 RWAs	17 schools and colleges reached in a month

93% of the ragpickers reported collecting waste individually, prior to the intervention. All of the Ahmedabad ragpickers are now part of an association and sell their waste to Nepra and the Delhi ragpickers are employed at IPCA's MRF facility. All of them also reported doubling their income post-intervention as a result of the support provided. This indicates that the program has been effective in improving the livelihood of ragpickers by eliminating middlemen from the sales chain.

There has also been a change in waste segregating behaviour of the ragpickers. All the ragpickers reported that they did not segregate waste prior to the intervention because of:

- Lack of knowledge about different kinds of plastic waste (In Delhi-NCR and Ahmedabad)

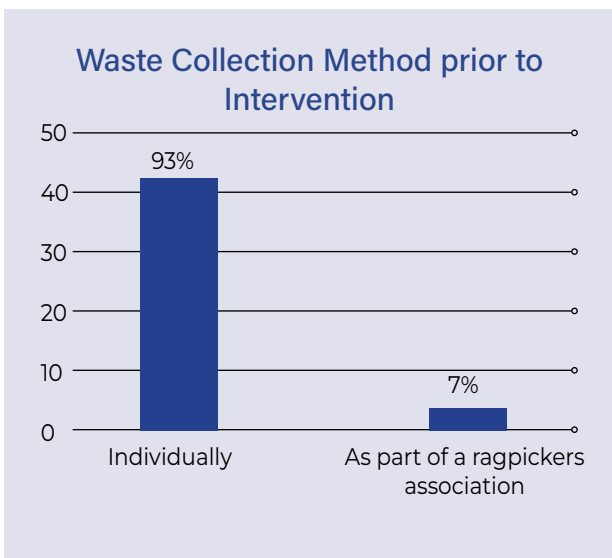- Unavailability of segregated waste buyers (In Delhi-NCR)

Waste Collection Method prior to Intervention

Figure 7: Waste collection method followed by ragpickers pre-intervention

The program has succeeded in rectifying both the problems. All the ragpickers now practice waste segregation. They can distinguish between recyclable and non-recyclable materials. They were asked to identify

each of the recyclable and non-recyclable items, which are illustrated in the table below.

Recyclable	Non-recyclable
Plastic bottles and hard plastic items	Clothes, rubber items, shoes

MRF worker was also asked to distinguish between recyclable and non-recyclable materials

Recyclable	Non-recyclable
Cans, bottles, hard plastic, cover bags	Clothes, shoes, thermocol

Identification process for different kinds of plastic demonstrated during the session/training (MRF Workers)

Identification process for different kinds of plastic demonstrated during the session/training (Ragpickers)
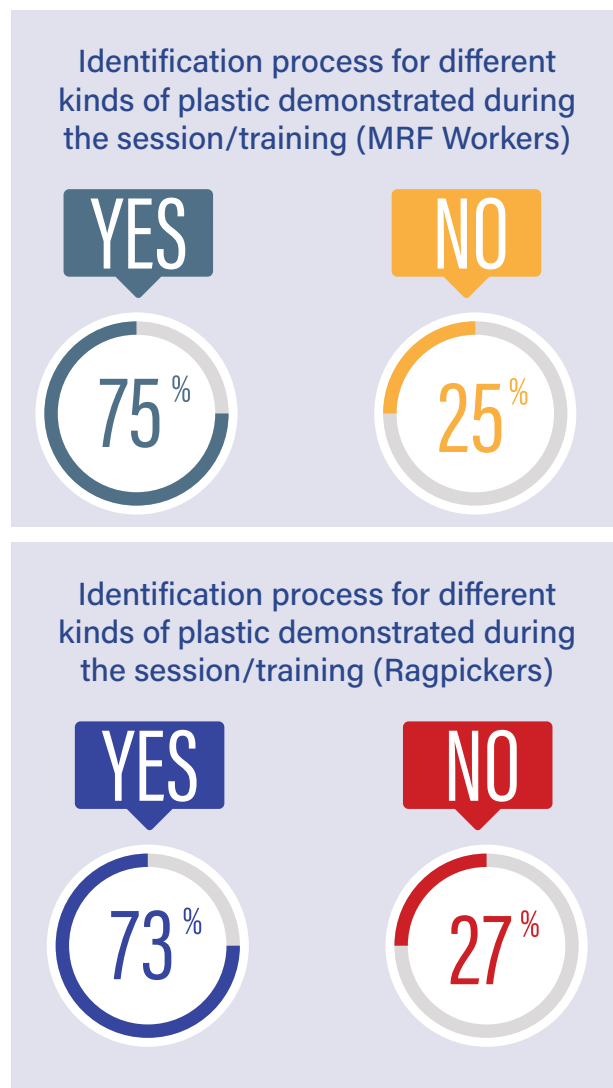

Figure 8: Practical demonstration of identifying different kinds plastic done / not done during the session/ training

This indicates that the ragpickers have a general understanding of the differentiation between recyclable and non-recyclable materials within the dry waste category. However, their knowledge regarding the differentiation between recyclable and non-recyclable plastics, including multi-layered plastics, may be limited. The MRF workers were also found to not have any knowledge of RDF and waste items that qualify for RDF.

During the assessment the GIVE team observed all the ragpickers and MRF workers wearing gloves and masks. This finding is consistent with the reported reduction in waste exposure-induced infections and fever among the workers.

The residents reported aggregation of 2-5 kg of plastic waste per month as part of the "My 10 Kg Plastic" Initiative. Most of them had started participating in it since its inception and continue to participate. The common challenge reported by 29% of them was difficulty in segregating plastic waste due to lack of knowledge about recyclable and non-recyclable plastic. The rest faced no challenges.

According to the data collected, 80% (4 out of 5) of the Resident Welfare Associations (RWAs) reported segregating plastic waste from other dry waste after the intervention. The plastic waste is collected by IPCA, while the other dry waste is collected by a government vendor. Among these RWAs, 2 reported composting their wet waste, while the remaining 3 disposed of their wet waste to the government vendor, indicating a need to improve their awareness about wet waste management. Additionally, all the societies were observed to have colour-coded bins

in the public areas.

The Assistant Commissioner of MCD, Shahdara, Delhi, reported an increase in participation in the "My 10 Kg Plastic" campaign over the years, with people from different sections showing great interest. However, some of the challenges that he highlighted pertains to lack of awareness about different types of plastic waste and their recycling capabilities, interference from local vendors who pick up useful items from the IPCA-provided bins, and sometimes mix segregated waste, as well as the high cost of pickup and dumping of waste.

The plastic waste collected at the MRF facility is sent to the IPCA recycling facility for processing. The manager of the recycling facility mentioned that only recyclable plastic waste, specifically MLPs, is accepted at the facility. The MLPs are then converted into plain plastic sheets that are utilized in the production of various household products such as watches, dustbins, park benches, racks, and planters. The plastic sheets are sold via the online platform ecareproducts.com and to buyers across India. The recycling plant was observed to be functioning at full capacity, with a daily recycling rate of 30 MT.

Stakeholder	Parameter	Ratings (out of 5)
IPCA Program Team	Willingness of the participants/organizations to adopt waste management practices	4
Nepra Foundation Program Team	Willingness of the participants/organizations to adopt waste management practices	4
RWA	Ease of adoption of the practices taught	4.5
MRF Worker	Ease of adoption of the segregation methods taught	5
Dabur CSR	Team Delivery of expected outcomes	4

6.3 Impact & Sustainability

The program has yielded positive results in the income and health of ragpickers in Delhi and Ahmedabad. The program has successfully increased the income of waste workers by ₹ 5,000-7,000 per month in Delhi and ₹ 3,000 per month in Ahmedabad, resulting in an improvement in their quality of life. They have started investing more in their children's education, adopting a more nutritious diet, upgrading their homes, and improving the general sanitation of their households.

The Assistant Commissioner of MCD Shahdara, Delhi, has observed a reduction in plastic waste generation by the community. This observation was corroborated by the residents who reported a decrease in plastic waste generation. The reduction in plastic waste generation can be attributed to the use of cloth/jute bags by people and better segregation of plastic waste. Previously, the MLPs left over in bins were sent to landfills, but now they are redirected to the IPCA recycling plant.

The RWAs mentioned that there has been a general improvement in the sanitation of the society due to more awareness about waste management. They also reported adopting the following waste management practices post the awareness sessions:

- 3 out of 5 RWAs have started using of separate bin bags for plastic waste collection

- Segregation of plastic waste from all dry waste being practiced by all

- 3 of the 5 RWAs have started using composters for handling wet waste

Overall, the program has resulted in significant improvements in the income and quality of life of waste workers in Delhi and Ahmedabad. Additionally, the program has also led to a reduction in plastic waste generation and increased awareness about waste management practices among the community.

Stakeholder	Parameter	Ratings (out of 5)
IPCA Program Team	Impact of the program on the income of ragpickers	5
	Impact of program on health of rag-pickers/ MRF workers	5
Nepra Foundation Program Team	Impact of the program on the income of ragpickers	4
	Impact of program on health of rag-pickers	5
Dabur CSR Team	Scope to ensure sustainability	4.5

SWOT Analysis

A SWOT analysis is carried out to understand the program's strengths, weaknesses, opportunities, and threats. It was conducted from the responses received from the program team and other implementation-level stakeholders, at the same time considering the beneficiary feedback.

Strengths	Weakness
• The program has been successful in improving the health and livelihoods of waste workers, thereby supporting them in making lifestyle improvements. • The program has been successful in reducing the amount of plastic waste generated by individuals, an impact not pre-determined. • "My 10 Kg campaign" has been immensely successful in diverting 3 metric tonnes of plastic waste away from landfills every month. • The resident welfare associations (RWAs) that were trained have successfully adopted multiple waste management practices after the intervention, resulting in a reduction in the amount of waste reaching landfills.	• There is potential to enhance the impact of the program by organizing awareness sessions on plastic segregation directly with the residents of the housing societies and other participants of the "My 10 Kg plastic" campaign. They still encounter difficulties in distinguishing between recyclable and non-recyclable plastic
Opportunities	**Threats**
• The ragpickers should be made aware of other types of waste such as RDF and types of plastics. • NGOs can form partnerships with larger organizations, such as hotels and offices, to ensure that their plastic waste is properly managed and recycled. • NGOs can consider educating the public about the negative trends associated with plastic consumption, including how to avoid generating microplastics (such as by not cutting the tips of milk packets), and the harmful effects of using plastic straws	• No perceived threats.

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Conclusion and Recommendations

The plastic waste management program, though envisaged as an awareness traction program, has been able to achieve the behavioural shift of the citizen, especially the ragpickers in handling of the waste.

The behavioural shift is attributed to the combined efforts of knowledge sessions and the MRF/ERP facility that pays these ragpickers wages higher than *kabadiwalas*. Some of the reasons this program is able to achieve the intended objective:

- Improved health

- Better wages and confirmed source of livelihood
- No additional environmental footprint in landfills (enabling circular economic approaches)

The success of the program lies in 'knowledge in action'. The program will cease to meet the intended objective the moment awareness session doesn't translate in practice and behavioural shift as a result. While ragpickers will be quick in the adoption of plastic waste management practices, key challenge with citizen is supportive structure that can sustain uptake of plastic waste management practices at an individual level.

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Recommendations

The following recommendations have stemmed from on-ground observations and interactions with the beneficiaries/ stakeholders.

Challenges/ Observations	Recommendations
Although the "My 10 Kg Plastic" campaign has been hugely successful, there is still a scope to increase participation and enhance the program's impact.	• Outreach mechanisms such as strategic advertisements can be considered for increasing participation in addition to word-of-mouth outreach. • The participants should be provided with a primer on how to segregate recyclable and non-recyclable plastic and purchase links of dustbins. This can be done via WhatsApp groups too. • The impact being created through this initiative should be periodically shared with the participants to keep them motivated.
The program has already led to a reduction in amount of plastic waste generation per individual. Activities specifically designed to achieve this impact can be integrated in the program.	• Education sessions on plastic reuse and upcycling and information about ways to go zero-waste can be considered.
Beneficiary (students/teachers) data is not maintained by Nepra Foundation.	• All NGOs should maintain beneficiary data for monitoring and tracking impact, in this case usefulness and adoption of taught waste management practices.

Figure 9: Colour-coded bins in housing society

Figure 10 : IPCA and Dabur's plastic collection bin in housing society

Figure 11 : IPCA MRF facility

Figure 12 : Ragpickers surveyed in Ahmedabad