



IMPACT ASSESSMENT REPORT 2017-19

ALAG KARO

AN AWARENESS AND IMPLEMENTATION PROGRAM
OF WASTE SEGREGATION AT SOURCE

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ALAG KARO

Alag Karo program was conceived with a focus on improving awareness and implementing source segregation of waste in the city of Gurugram. It aimed to establish and sustain segregation of waste at source in residential societies, schools and commercial establishments and also develop capacities of waste collectors to ensure higher recycling rates in the city.

PROGRAM PARTNERS



Coca-Cola believes in sustainable business operations with a sharp focus on communities and the environment. With a vision of 'World Without Waste', the company is committed to enabling the circular economy of solid waste including packaging material so that it becomes part of the economic value chain without adversely impacting our environment.



Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH is a public-benefit federal enterprise owned by the German Government that provides services worldwide in the field of international cooperation for sustainable development. For over 60 years, GIZ India has been working jointly with partners for economic, ecological and social development.



Tetra Pak is a leader in providing innovative packaging and processing solutions to the food industry worldwide. Together with our customers, we make food safe and available, everywhere for everyone. Tetra Pak has committed to a low-carbon, circular economy where the entire food chain has a minimum climate impact by using renewables, sourcing materials responsibly, increasing recycling, as well as committing to resource-efficient products and processes.



Saahas, 'Not for Profit' organization was set up in 2001 under the Society's Act. Saahas primarily works for setting up Sustainable Waste Management systems with a vision of India becoming a leading Circular Economy where Nothing is Waste. The programs are based on the core concepts of 'Source Segregation and 'Decentralized Waste Management' within the framework of the Solid Waste Management Rules 2016 and principles of Circular Economy. Saahas works with government institutions, corporates, households and schools to bring attention to best practices in the management of solid waste and also establishes collection and processing infrastructure. Our programs also provide better livelihood opportunities for the informal sector and people at the base of the pyramid.



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Har Din Teen Bin

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LIST OF ABBREVIATIONS

3R	Reduce, Reuse and Recycle
CapEx and OpEx	Capital Expenditure and Operational Expenditure
DLF	Delhi Land and Finance Ltd.
FGD	Focus Group Discussion
FP	Financial proxy
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GoI	Government of India
HDPE	High-density polyethylene
HK	Housekeeping Staff
HSPCB	Haryana State Pollution Control Board
IDI	In-Depth Interview
IEC	Information Education and Communication
INR	Indian National Rupee
IRECS Framework	Inclusiveness, Relevance Effectiveness, Convergence, Sustainability Framework
KAP	Knowledge, Attitude, Practice
Kg	Kilogram
MCG	Municipal Corporation of Gurugram
MoEFCC	Ministry of Environment, Forest and Climate Change
MoHUA	Ministry of Housing and Urban Affairs
MRF	Material Recovery Facilities
MSW	Municipal Solid Waste
MT	Million Ton
NEERI	National Environmental Engineering Research Institute
NPV	Net Present Value
NUA	New Urban Agenda
PET	Polyethylene Terephthalate
RDF	Refuse-derived Fuel
RWA	Resident Welfare Association
SBM	Swachh Bharat Mission
SDGs	Sustainable Development Goals
SROI	Social Return on Investment
SSW	Source Segregation of Waste
TERI	The Energy and Resource Institute
ULBs	Urban Local Bodies
USD	United States Dollar
WHO	World Health Organization
WW	Waste Workers

TANGIBLE BENEFITS

IMPACT HIGHLIGHTS OF



RESIDENTIAL SOCIETIES



In three years, 2017-19, Alag Karo program has been implemented in **22,000 houses** spread across **42 residential societies** in Gurugram

- In **25 societies**, source segregation level: **>90%**
- In **13 societies**, source segregation level: **75% - 90%**
- **21 societies** practicing **on-site composting** processing **8.9 tonnes of biodegradable waste daily**

This reduces dumping in landfills, cuts down GHG emission by 12,000 tons of CO2 equivalent per year with an estimated social benefit of INR 42 million.

34 tonnes of waste segregated daily

CORPORATES



Implemented across **412 offices & 87 restaurants** (DLF Cyber City & Cyber Hub)



800 house-keeping staff



50,000 office employees

15.6 tons of waste segregated daily.

EDUCATIONAL INSTITUTIONS



Sensitised and trained **23,800 kids** across **39 schools** on waste segregation

WASTE WORKERS



525 waste workers sensitised and trained to help improve their livelihood, health and hygiene conditions
35 training sessions
12 waste workers trained on plastic recycling by CIPET, Murthal



LITPICK: Designed and manufactured a customised stick to pick waste, distributed to 60 waste workers.

New jobs generated
34 composting staff

Source segregation of waste provided cleaner dry waste to waste workers resulting in higher income. On an average they **earned INR 4,133 per month extra through source segregated waste** compared to mixed waste.



BEFORE

100% waste workers suffered injuries during collection and sorting of mixed waste averaging **60 injuries annually** per waste worker, resulting in loss of time and money

Housekeeping staff suffered injuries during collection and sorting of mixed waste leading to **loss of pay, additional expenditure for treatment**

AFTER

0 injuries

Money saved INR 1254 per year per waste worker

Reduced injuries for Housekeeping staff, resulting in **86 manhours of downtime reduction** per person annually

390 trainings, 10,000 individuals

Residents | Volunteers | Domestic Help | Housekeepers

Potential savings of more than INR 3 million annually, in tipping fee by the Municipal Corporation of Gurugram due to on-site composting in 21 societies processing 8.9 tonnes of biodegradable waste daily.



23.9 tons of waste diverted from the landfill daily. Of which, 8.9 tons of biodegradable waste is composted and 15 tons of dry waste is sent for recycling.



The program was instrumental in institutionalising Source Segregation in various residential and commercial communities by putting in place governance structure, finance model and rigorous monitoring and operating systems.

The SROI of the Alag Karo program is estimated to be 2.66 i.e. for every **INR 1** invested, **a social value worth INR 2.66** has been created as on 2019-20.

INTANGIBLE BENEFITS

IMPACT HIGHLIGHTS OF



Inculcating a sense of responsibility towards waste management amongst various stakeholders.
Changing the attitude from NIMBY 'Not In My Back Yard' to MWMR 'My Waste, My Responsibility'



Empowerment & social inclusion of



Housekeeping staffs



Domestic Help



Waste Workers

Adoption of the 3R- Reduce, Reuse and Recycle principles in daily life



Communities get more sensitive towards other environmental challenges like air-pollution, water conservation, improving bio-diversity etc.



Obtaining Identity cards from the Municipality for Waste Workers:

- Making their work legal
- Reducing harassment by the police
- Enhanced access to various government schemes



Organic compost made from waste replacing chemical fertilizers in apartment communities leading to healthier soil

Apart from Source Segregation, the Alag Karo program promoted sustainable lifestyle and contributed to building the social-entrepreneurship ecosystem of composting solution providers, crockery bank programs, sustainable/natural cleaning product sellers etc.



Many residential societies in the Alag Karo program became role models of waste management and encouraged and helped other societies, creating a domino effect, thus multiplying the program impact.





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EXECUTIVE SUMMARY

With growth in urbanization, enhanced standard of living and change in consumption pattern, the volume of solid waste has seen multiple fold increase in India. Between 1991 and 2014 the annual solid waste generation has more than doubled from 23.86 million ton to 62 million ton¹. The latest studies estimate that 1.45 lakh million ton (MT) solid waste is generated per day across the country². What is most disturbing is the fact that almost 80% of this waste is disposed unscientifically without proper processing³. The Government of India, taking cognizance of the sorry state of solid waste management in the country, notified Solid Waste Management (SWM) Rules, 2016. The rules require segregation of waste at source. However, implementation of the rules has been weak. This can be attributed to lack of enabling environment in terms of facilitating policies; assigned roles and fixed accountabilities; trained municipal officials, RWAs, waste workers and vendors, etc., on SWM; budgetary commitments and weak enforcement of rules. In 2016-17, Coca-Cola, GIZ and Tetra Pak came together to address the key issue of implementing Source Segregation with a specific focus on Gurugram. Saahas, a non for profit organisation working in the Sustainable Waste Management sector since 2001, was the implementation partner. Communication strategy is critical in such programs where different stakeholders such as the Municipal Administration, Schools, Residential communities, Offices had to be on boarded. Customised IEC material was developed and public campaigns were organised to publicise the program and its features. The key target group in the program were residential societies, in all 65 residential societies were sensitized, out of which 42 societies went on to implement source segregation. The program was also implemented in schools and offices. Implementation typically involved awareness generation and training of the residents/occupants, house maids and housekeeping staff on source segregation; monitoring and feedback; and helping the Resident Welfare Associations (RWAs)/Housekeeping Administration bring in policies and systems for institutionalising Source Segregation and setting up infrastructure for collecting, storing and/or processing segregated waste. Additionally, the segregated waste is further sorted by waste workers, so the program also intervened in training and supporting waste workers to improve their livelihood.

To understand the impact of the program, KPMG was involved to undertake a study in 2019. As part of the study, KPMG used two frameworks - IRECS which stands for Inclusiveness; Relevance; Effectiveness; Convergence; and Sustainability, and Social Return on Investment (SROI) for evaluating the impact of Alag Karo. The study covered 14 residential societies, selected on a sample basis out of which 13 societies had achieved more than 90% waste segregation of waste by the end of 2019. Further, 6 out of these 14 societies had on-site composting facilities for wet waste. As per the data provided by Saahas, overall, 25 out of 42 societies (about 60%) had achieved source segregation level of more than 90% and at another 13 societies (about 31%)

ALAG KARO ADOPTED TRAIN THE TRAINER MODEL WHEREIN VOLUNTEERS WERE TRAINED TO BUILD CAPACITY OF DIFFERENT STAKEHOLDERS WITHIN THEIR COMMUNITY, HENCE ALSO ENSURING SUSTAINABILITY OF PROGRAM OBJECTIVES.

source segregation was more than 75% by the end of 2019. Additionally, about 50% (21 residential societies) were composting. Composting has a direct impact in reducing dumping in landfills. This is quite an achievement in a state like Haryana where only 17.5% of the waste is successfully treated and recycled, while about 78% is sent to landfills. The remaining 4.5% is not collected⁴.

Alag Karo was found to be in alignment with the Solid Waste Management Rules, 2016 and contributed directly to SDG 3, 6, 8, 11 and 13. It was effective in enhancing the level of awareness among residents, maids, housekeeping staff and waste workers on source segregation and also assisted in changing their behaviour. To achieve this, the program deployed engaging IEC (Information, Education and Communication) in different formats, both in English and Hindi. As a result, more than 95% of the residents interviewed on a sample basis agreed that they had become more aware of waste segregation due to the training and sensitization activities carried out under the program. Alag Karo carried out capacity building of all the relevant stakeholders to ensure and sustain waste segregation at source. Further, the program enabled continuous support for the RWA and volunteers through regular meetings; providing technical and process related information; guidance in planning, implementation and monitoring. The long term handholding was crucial and helped in stabilizing the program. In total 390 training sessions covering more than 10,000 individuals were conducted during the program's implementation, from 2017 to 2019. The program was instrumental in creating an enabling environment to sustain its impact by helping RWAs put in place a governance structure, financial provision and operating system. It adopted train-the-trainer approach wherein volunteers were trained to build capacities of different stakeholders within their community, thus ensuring long term sustainability of the program. The program Alag Karo is a good example of collaboration between different stakeholders leveraging on each other's strengths to implement a solution for addressing challenges related to solid waste management in a city. The program brought in private players like Coca-Cola, Tetra Pak and international development agencies like GIZ and to finance it. Saahas, a non-profit organization with expertise in MSWM was on boarded for implementation; government support came in through enabling policies and MCG (Municipal Corporation Gurugram) while the Residential societies were motivated to implement the program in their campuses. The efficient utilization of resources and technical know-how resulted in achieving the goals of this program. On impact front, the study found that the program has been able to improve working conditions for housekeeping and waste workers. 98.88% of housekeeping staff and 100% of waste workers interviewed on a sample basis during the study, shared that source segregation had resulted in lowering of work place injuries and thereby reducing their medical expenses. Further, 65.47% of housekeeping staffs interviewed on a sample basis experienced an enhanced sense of dignity post implementation of Alag Karo. In case of waste workers, the study found that source segregation led to better quality of dry waste resulting in an increase in their per capita annual income by about INR 49,500. While, 97.6% of the housekeeping staff interviewed said that waste collection time had increased post implementation of Alag Karo by around 50 minutes; the time to further sort the waste



reduced from approximately 4 hours to 1.5 hours. With additional guidance from Saahas, 21 out of 42 societies were composting 8.9 tonnes of wet waste. This helps the Municipal Corporation of Gurugram (MCG) save more than INR 3 million in tipping fee annually by diverting this waste away from the landfill. Furthermore, this will result in annual reduction of GHG emission by 12,000 tonnes CO₂ equivalent with an estimated social impact cost of INR 42 million⁸.

Going forward, most RWAs and residents that we interacted with during the study, expressed confidence in being able to sustain the program on their own. This can be attributed to the approach adopted by the program with a focus on institutionalizing the practices through appropriate policies, systems and processes. Based on our estimates, the SROI of the program is 2.66 as on 2019-20. This means that for every Indian rupee of investment by Coke Cola, GIZ and Tetra Pak, a social value of INR 2.66 has been created as on 2019–20. This ratio indicates a successful implementation of the program. This community driven self-sustaining model is effective in ensuring source segregation of waste. However, this program alone cannot provide holistic solutions to the MSWM issues of segregated waste collection, handling and disposal in an environment friendly and cost-effective manner. The program is limited in its scope and is unable to influence the complete value chain of MSWM. To extract maximum benefit out of such initiatives, we need an enabling environment in terms of facilitating policies and rules; assigning roles and fixing accountabilities; building capacities of the municipal officials, RWAs, waste workers and vendors, etc., on SWM; budgetary commitments and strict enforcement of rules. Programs like Alag Karo with significant public outreach and intense process focus for long term sustainability, can be far more effective with these enabling factors in place.



CHAPTER 1: INTRODUCTION

1.1 SOLID WASTE MANAGEMENT - AN OVERVIEW

As of 2018, 4.2 billion people were living in urban areas globally which is projected to increase to 6.7 billion by 2050⁹. As the world moves toward its urban future, the amount of municipal solid waste (MSW), one of the most important by-products of an urban lifestyle, is growing even faster than the rate of urbanization¹⁰. As a result, solid waste management is emerging as one of the major concerns for every city government.

In 2016, the solid waste generated across the world's cities was 2.01 billion tonnes with a per capita waste footprint of 0.74 kilograms per day¹¹. Driven by rapid population growth and urbanization, it is estimated that the annual waste generation will increase by 70% from 2016 levels to 3.40 billion tonnes by 2050¹². The existing solid waste management capacities cannot keep pace with this growth resulting into environmental degradation.

The SDGs, the Paris Agreement on climate change and the New Urban Agenda (NUA) all address solid waste management. The '3R' framework of Reduce, Reuse and Recycle is the solution to the growing problem of solid waste globally. To achieve the '3R', in addition to the large-scale changes like Material Recovery Facilities (MRF); Remanufacturing; Extended Producer Responsibility and projects for waste treatment, the first and most critical step is segregating waste at source.

1.2 ASPECTS OF SOLID WASTE MANAGEMENT

Municipal Solid Waste Management (MSWM), a critical element towards sustainable metropolitan development, comprises segregation, storage, collection, relocation, transportation, processing, and disposal of solid waste to minimize its adverse impact on environment. Unmanaged MSW becomes a factor for propagation of innumerable ailments¹³.

Solid Waste Management (SWM) accounts a major cost element for local government bodies. In developing countries, MSWM accounts for between 20% and 50% of local government budgets. By 2025, it is estimated that the lower and lower middle-income countries will be spending USD 7.7 billion and USD 84.1 billion respectively annually on solid waste management. Still, in low-income countries, over 90% of waste is often disposed in unregulated dumps or openly burned.

In India, it is reported that "80% of waste is disposed indiscriminately at dump yards in an unhygienic and unscientific manner by the municipal authorities"¹⁴. In several municipalities, existing landfill sites have already been exhausted and overloaded beyond their capacity. Given present MSWM practices in India, it is estimated that 1,175 hectare of land per year will be required for landfill by 2030¹⁵.

Dumping of unsegregated solid waste in landfill creates serious health, safety and environmental consequences. It is estimated that "the emissions from the decay of the organic proportion of the

estimated 11.2 billion tonnes of solid waste collected every year, contributes to about 5 per cent of global greenhouse gases¹⁶. In India, burning of waste is the third biggest cause of greenhouse emission¹⁷. Leachate from the landfill contaminates groundwater and surface water if not properly managed. This has the potential of affecting the entire food chain if the contaminated water is utilized for agriculture, human and animal consumption.

Currently, the workers working with unsegregated waste are exposed to hazardous substances such as bio-medical materials which are infectious and toxic in nature, additionally materials like razor etc. also cause injuries. The World Health Organization (WHO) has observed that 22 types of diseases are associated with improper management of municipal solid waste¹⁸.

1.3 SOLID WASTE MANAGEMENT CHALLENGES IN GURUGRAM

The combination of rapid population and economic growth in Gurugram along with associated affluence has led to an increase in the use of consumer items. This is also accompanied by rapid influx of population from other areas. Consequently, there is an increased production of municipal solid waste. According to the Haryana State Pollution Control Board (HSPCB) annual report 2018-19, 1000 tonnes of waste is generated per day in the Gurugram-Faridabad cluster which accounts to almost one-fourth of total daily waste generated in the State. The projected solid waste generation in 2041 for Gurugram is expected to be about 2900 MT per day. The Municipal Corporation of Gurugram (MCG) is the apex body responsible for the solid waste planning and management in the city. The Energy and Resources Institute (TERI) conducted a field survey on Municipal Solid Waste in Gurugram in 2019. It showed that, about 33% is organic waste (Kitchen, garden, wood, textile/leather), 13% is plastics wastes such as- polyethylene terephthalate (PET); High-density polyethylene (HDPE); high resin content plastic (resin content #3 through #7) containers, expanded polystyrene, plastic film and rigid plastic and 7% is paper waste, 1% per cent is glass and metal waste respectively. The remaining 45% are other wastes like electronics, tires, diapers, inert material, hazardous materials etc¹⁹.

The Solid Waste Management Rules, 2016 as notified by the Ministry of Environment, Forest and Climate Change (MoEFCC) provide for source segregation of waste in order to channelize the waste for recovery, reuse and recycle. However, compliance of segregation continues to be weak. As per the HSPCB annual report 2018-19, only 17.5% of the waste is successfully treated and recycled, while about 78% is sent to landfills. The remaining 4.5% is not collected²⁰. In case of Gurugram, most of the solid waste remains unsegregated and is disposed at Bandhwari landfill with little processing. Total waste received at the landfill is about 166 percent of its capacity²¹. Segregation of waste at source can help address the situation as wet waste can be used for production of compost, dry waste can be reused and recycled to generate economic value and non-recyclable dry waste can be processed to produce refuse-derived fuel (RDF). This approach has been demonstrated to work in cities like Indore and Bhopal where less than 10 per cent of the cities' waste goes to the landfill²².

TO ACHIEVE THE '3R' FRAMEWORK OF REDUCE, REUSE AND RECYCLE, IN ADDITION TO LARGE-SCALE CHANGES LIKE MATERIAL RECOVERY FACILITIES (MRF); REMANUFACTURING; EXTENDED PRODUCER RESPONSIBILITY AND PROJECTS FOR WASTE TREATMENT, THE FIRST STEP IS SEGREGATING WASTE AT SOURCE



1.4 ALAG KARO

In 2017, Coca Cola, GIZ and Tetra Pak decided to collaborate for Alag Karo, a program conceived with a focus on improving awareness and implementing Source Segregation of Waste (SSW) in the city of Gurugram.

The goal of the program was to inspire, handhold and implement source segregation of waste in residential complexes, educational and commercial establishments/communities and develop capacities of waste workers to improve waste recycling thus reducing dumping and burning of waste in the city of Gurugram.

The program was implemented by Saahas, a Bengaluru headquartered non-profit organization which has been actively involved in Solid Waste Management since 2001. Committed to provide holistic and scientific solutions to responsibly manage MSW, Saahas helps communities across rural and urban India towards reducing, reusing and recycling their waste with an aim to achieve 90% resource recovery thus, driving circular economy.

Alag Karo program was started with the following objectives:

- Awareness generation and handholding support to 20,000 household in 40 selected RWAs on waste segregation at source
- Engagement with 50 commercial establishments on waste segregation at source
- Engagement with 50 schools on environmental awareness and waste management
- Training at least 500 waste workers in Gurugram on safe handling of segregated waste
- Development of at least 2 policy recommendations for adoption by the residential associations and in municipal plans

1.4.1 ALAG KARO PROGRAM IN RESIDENTIAL COMMUNITIES

As a strategy, the program focused on multistoried apartments and gated communities because while these high-density residential areas are large bulk waste generators, the baseline study carried at the beginning of the program highlighted that these residential societies did not have a workable model for sustainable waste management.

Hence, through this strategy, the program could create maximum impact with the limited resources and timeline.

1.4.2 PROGRAM DESIGNING AND IMPLEMENTATION

Saahas followed a well-defined step-by-step approach to reach the households and ensure waste segregation at the source. The program started with a baseline KAP (Knowledge, Attitude, Practice) study with an aim to understand the practices and gaps around waste management in apartment communities. The study found that 60% of the surveyed residents were not practicing source segregation which further emphasized the need for the program.

The inputs and findings of the baseline study were used to design the program. Typically, the Saahas team would begin with signing an MoU with the residential society. This would then be followed by a baseline audit to understand the current waste management system, trainings to different stakeholders, assistance in designing a system for implementing, monitoring and review of segregated waste collection. Throughout the period of the program, Saahas staff would provide handholding support to the RWAs to ensure integration of segregated waste collection mechanism in the societies.

Further, to bring rigour in the program, Saahas would undertake pre, during and post intervention audits for each residential society, findings of which were shared with different stakeholders. The program design has been presented in Figure 1.

Figure 1

ALAG KARO RWA PROGRAMME DESIGN



FORMATION OF THE CORE GROUP WITHIN THE RWA

Saahas team developed a core team of volunteers comprising of residents of the societies. Their primary role was to support Saahas in onboarding the RWA and assisting in organizing all trainings to the housekeeping team (estate manager, housekeeping staff), maids and residents. They also assisted Saahas in implementing, monitoring, reviewing and sustenance of the program in collaboration with the RWA.

01

02

ASSESSMENT, AUDIT & GAP ANALYSIS

Baseline audit was conducted to understand the existing system of waste collection, suggest changes required and estimate the capital and operational expenditure for implementing waste segregation.

ONBOARDING OF RWAs

Getting buy-in from the RWAs for-

- Financial commitments for initial investment and ongoing expenditure
- Driving implementation
- Institutionalization of SWM through framing policies and rules

03

04

EXECUTION PLAN

A detailed plan for implementing waste segregation was devised. This included IEC material, training modules, outreach design, etc.



TRAININGS

Trainings of different stakeholders - volunteers, housekeeping staff, residents, maids etc. on segregation of waste at source.

05



06

DOOR TO DOOR CAMPAIGN

Undertook door to door campaign with residents to establish rapport and address individual concerns. This was carried out by volunteers with an aim to create ownership and inspire greater trust and initiative.



PILOT AND LAUNCH

Source segregation was piloted to gauge the response. Based on the outcome of the pilot, program was launched with changes, if required, across the entire residential society

07

08

MONITORING & FEEDBACK

With the help of housekeeping staff and volunteers, a comprehensive monitoring mechanism was instituted to identify and follow-up with defaulters.



SUSTAINABILITY

Sustainability was ensured by institutionalizing the practices through RWA policy, rules and amendment to facility management contracts. Further, RWAs' capacity was developed by training and handholding support to continue with the program.

09

10

BEYOND PROJECT SCOPE

Established on-site composting system for managing wet waste. Not only did this ensure sustainability, but it also met the legal requirement under the SWM Rules 2016 for bulk waste generator



Discarded Tropicana and other beverage cartons.

Discarded Nourish and other milk cartons.

Discarded Real and other juice cartons.

Discarded Ghee and other food cartons.

1.4.3 PROGRAM OUTREACH IN RESIDENTIAL SEGMENT

A total of 65 societies comprising of 35,250 households were sensitized, out of which the program was implemented in 42 societies having 24,390 units. This is higher than the initial target of 40 residential societies. Please note that considering 10% of the dwellings were not occupied, the program coverage has been considered to be 22,000 households across 42 societies.

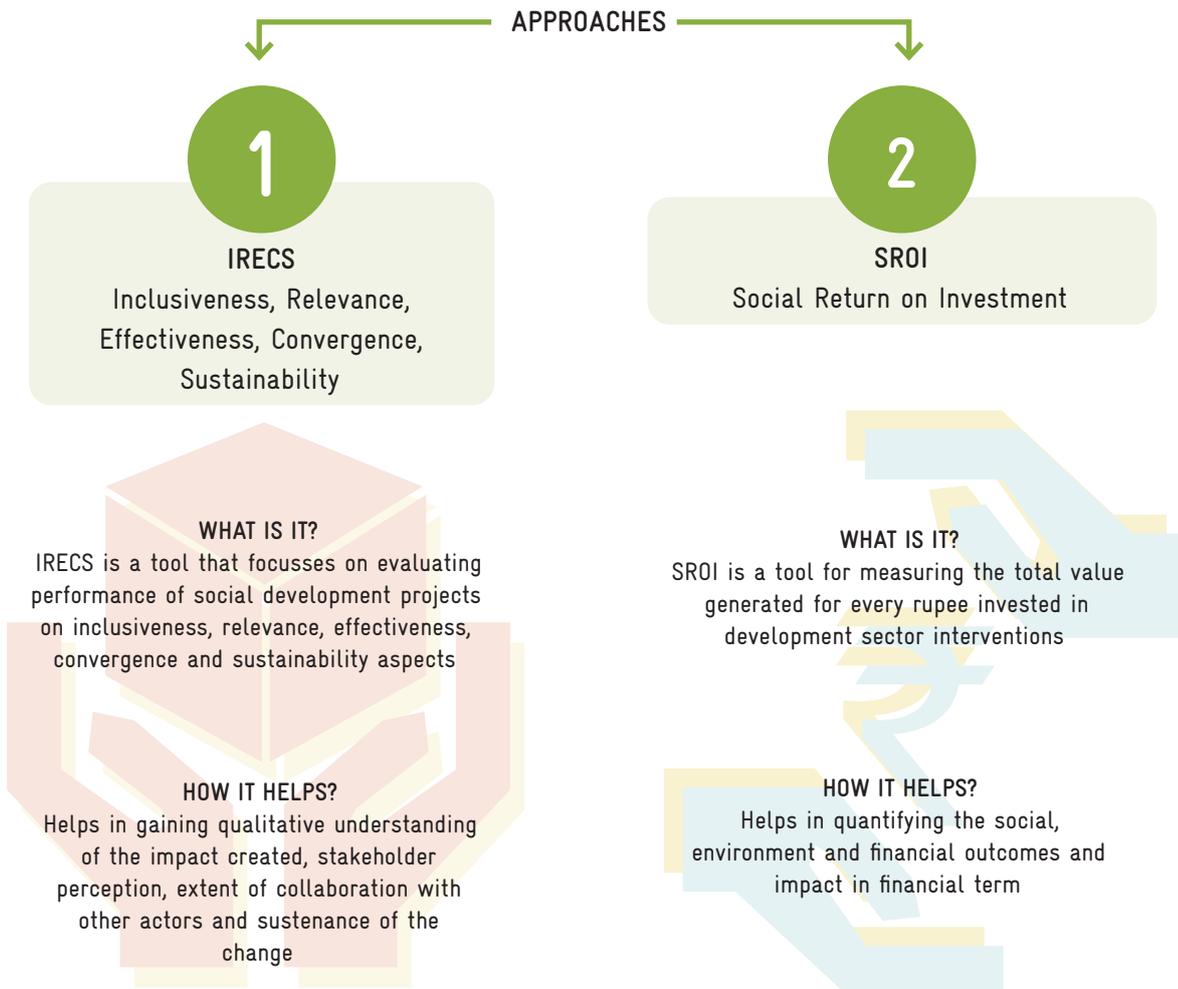
1.5 IMPACT EVALUATION - APPROACH AND METHODOLOGY

Alag Karo program was started in January 2017 in Gurugram and came to an end in December 2019. To understand the impact of the program, KPMG was onboarded to undertake a study.

1.5.1 FRAMEWORK FOR ASSESSING EFFECTIVENESS

The study used two frameworks for evaluating the impact of the Alag Karo (Figure 2).

Figure 2: Effectiveness Frameworks





1.5.2 IRECS FRAMEWORK

The IRECS framework stands for Inclusiveness, Relevance, Effectiveness, Convergence, and Sustainability. It is a widely used framework for evaluating impact of social development programs and is based on the OECD-DAC framework. An overview of the above mentioned five evaluation parameters is provided below.

- **Inclusiveness:** Assesses the extent to which communities get equitable benefits of all the programs and the services offered.
- **Relevance:** Assesses the extent to which the program responds to the felt needs of the communities.
- **Effectiveness:** Assesses the extent to which objectives of developmental interventions are being achieved.
- **Convergence:** Assesses the degree of convergence with Government or partners, and linkages with concurrent Government programs in the field.
- **Sustainability:** Assesses the extent of continuation of benefits from a development intervention after major assistance has been completed.

1.5.3 SROI

Social Return on Investment (SROI) is a systematic method that endeavors to measure and incorporate value created because of investment – namely social, environmental and economic value which is not fully reflected in conventional cost-benefit analyses. This method is used to monetize the social and environmental impact of the program and measure how much value has been created for each rupee invested/ spent on the program. The evaluative aspect of an SROI quantifies the value of the social impact of programs, and policies, and measures change in ways that are relevant to the people or organizations that experience or contribute to it. Through an SROI, organizations can evidence the social value their programs are achieving, gain deeper insight into what impact they are having for their stakeholders and can thus use this as an input for their company strategy. SROI is about value, rather than money. It can encompass the social value generated by an entire organization or focus on just one specific aspect of the organization's work.

SROI utilizes the concept of “theory of change/ impact map” to describe the change creation by measuring social, environmental and economic outcomes. It uses monetary values to represent



the outcomes thus enabling calculation of ratio of benefits to costs to be calculated. SROI analysis includes case studies and qualitative, quantitative and financial information thus helping organizations/ people to base their future decisions. The striking advantage of SROI study is that other impact assessment methodologies stop at identifying outcomes while SROI methodology goes beyond to value them and calculate the social value of impact. Steps of a SROI study are listed in Figure 3

1.5.4 DETAILED METHODOLOGY

This study adopted a four-phase structured methodology for evaluation as illustrated below in Figure 4. The adopted methodology ensured that IRECS evaluation criteria and SROI steps were followed throughout to effectively capture the impact of the program.

1.6 SCOPE OF THE STUDY

The scope of this study covered the residential societies only. However, limited analysis on the commercial pillar (based on secondary source) has been included in the report.

Alag Karo program primarily had four areas of intervention:

1. Residential Communities or Resident Welfare Association (RWAs),
2. Commercial Entities (Offices, Tech Parks and Malls),
3. Schools and
4. Waste Workers

This study has assessed the impact for only two areas namely RWA and Waste Workers. The reasons for the same are explained below:

Figure 3: SROI Framework

SETTING THE SCOPE

Identification of stakeholders including beneficiary group, finalizing the scope- setting the boundary of what is going to be considered for evaluative SROI - stakeholders including beneficiaries, impacts, project period, etc.

MAPPING OUTCOMES

Creating impact map, identifying investments and valuing inputs, identifying outcomes and indicators for monitoring/evidencing outcomes.

EVIDENCING OUTCOMES

Collecting and analyzing outcome data and establishing how long the outcome will last.

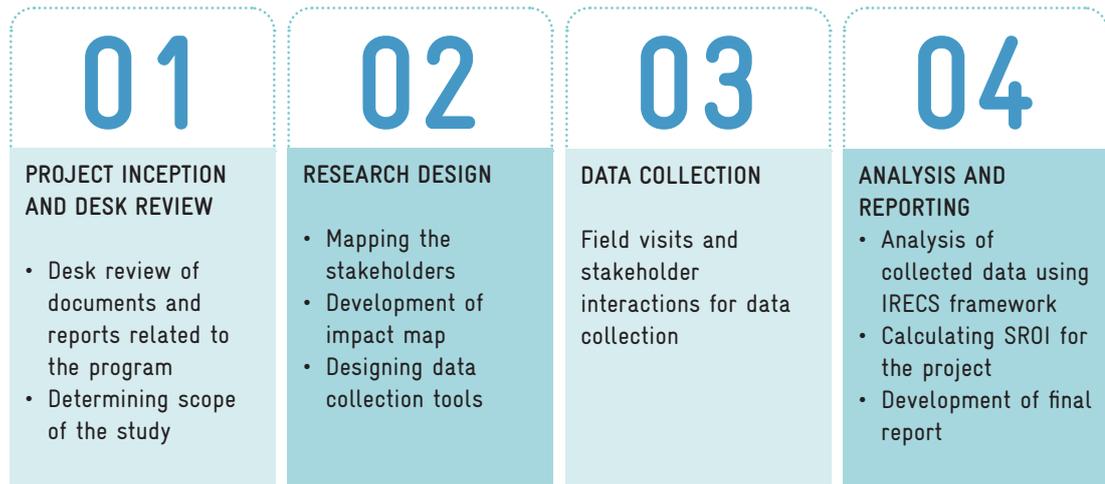
ESTABLISHING IMPACTS

Identifying and valuing financial proxies, adjusting outcomes using deadweight, displacement, attribution and drop off, calculating the impact.

CALCULATING SROI

Projecting the value of outcome into future based on the duration for which the impact will last, calculating the net present value including calculation of ratio and undertaking sensitivity analysis.

Figure 4: Methodology Phases



- **Residential Communities:**
Residential Community is a key focus area for this study and overall program as well where maximum time and effort has been put in by the team. Additionally, the waste quantity getting segregated and processed could be measured and estimated accurately. Most RWAs also allowed the audit team to take interviews of the different stakeholders. Hence the study has primarily focussed on RWAs and to some extent on waste workers in terms of them handling segregated waste.
- **Commercial Entity:**
This project primarily covered DLF Cyber City and Cyber Hub (all offices and restaurants). DLF management did not give permission to any external entity to review the implementation as they would have had to take formal permission from all of their clients which they said was an uphill task. Reaching out to just few clients selectively would not have given the correct representation. Hence this vertical was kept out of the impact study. Although, as claimed by Saahas, this was a high impact intervention where the program was implemented across 412 offices and 87 restaurants, reaching out to more than 800 house-keeping staff (through direct trainings by Saahas) and more than 50,000 office employees (indirect communication through posters/mails etc.). As informed by Saahas, 15.6 tonnes of waste is being segregated every day. These numbers have not been verified by the Audit team.
- **Schools**
Saahas team reached out to 39 schools, covering 23,800 kids for awareness activities through sessions in assembly, class rooms etc.. However, in most schools as there is very little wet waste generated, the impact in terms of waste segregated and managed is minimal. Schools were also reluctant in giving permission to the audit team hence were kept out of the study.
- **Waste Workers**
Saahas conducted 35 training sessions, reaching out to 525 waste workers to help improve livelihood conditions and health hygiene. They also organised training visit for 12 waste workers



GIVEN PRESENT SWM PRACTICES IN INDIA, IT IS ESTIMATED THAT 1,175 HECTARE OF LAND PER YEAR WILL BE REQUIRED FOR LANDFILL BY 2031. IT IS ESTIMATED THAT "THE EMISSIONS FROM THE DECAY OF THE ORGANIC PROPORTION OF THE ESTIMATED 11.2 BILLION TONS OF SOLID WASTE COLLECTED EVERY YEAR, CONTRIBUTES TO ABOUT 5 PER CENT OF GLOBAL GREENHOUSE GASES"



to CIPET (Central Institute of Plastics Engineering & Technology) for training on plastic recycling. Some of the waste workers were also trained in offering Zero Waste Event services and they conducted 5 events. In 2 colonies first aid kits were given and trainings were organised for 15 waste workers on first aid. The team developed LitPik, a stick for picking waste easily and 60 were distributed to waste workers. The impact of all these activities was hard to quantify in the SROI framework and hence have been excluded. The above has not been verified by the Audit team.

1.7 SAMPLING STRATEGY

1.7.1 SAMPLING DESIGN

To identify a representative number of respondents, Stratified Random Sampling was followed. This Stratified Random Sampling is a method of sampling that involves the division of a population into smaller sub-groups known as strata. In stratified random sampling or stratification, the strata are formed based on members' shared attributes or characteristics. It involves dividing the entire population into homogeneous groups called strata (plural for stratum). The strata for the study were identified based on the following criteria

- Volunteers, RWAs, and residents
- Maids
- Housekeeping staff
- Estate Managers
- Implementation agency staff
- Waste workers

Once the groups/strata were identified, random samples were selected from each stratum. Random Sampling method is a type of probability sampling method under which each unit of the population has an equal probability of being selected as a sample. In other words, a simple random sample of size 'n' consists of 'n' individuals from the population such that every unit of 'n' has an equal chance to be the sample selected. This method is used to avoid bias in sample selection²³.

1.7.2 CALCULATION OF SAMPLE SIZE

The following formula has been used to estimate sample size.

Sample size formula for infinite population

$$ss = \frac{Z^2 * (p) * (1-p)}{c^2}$$

Where

Z = Z value for 95% (1.96)

p = percentage picking a choice, expressed as decimal, it is taken as 0.5

c = confidence interval, expressed as decimal, it is taken as 0.07

For finite population, the formula is indicated below-

$$\text{New ss} = \frac{ss}{1 + \frac{(ss-1)}{\text{pop}}}$$

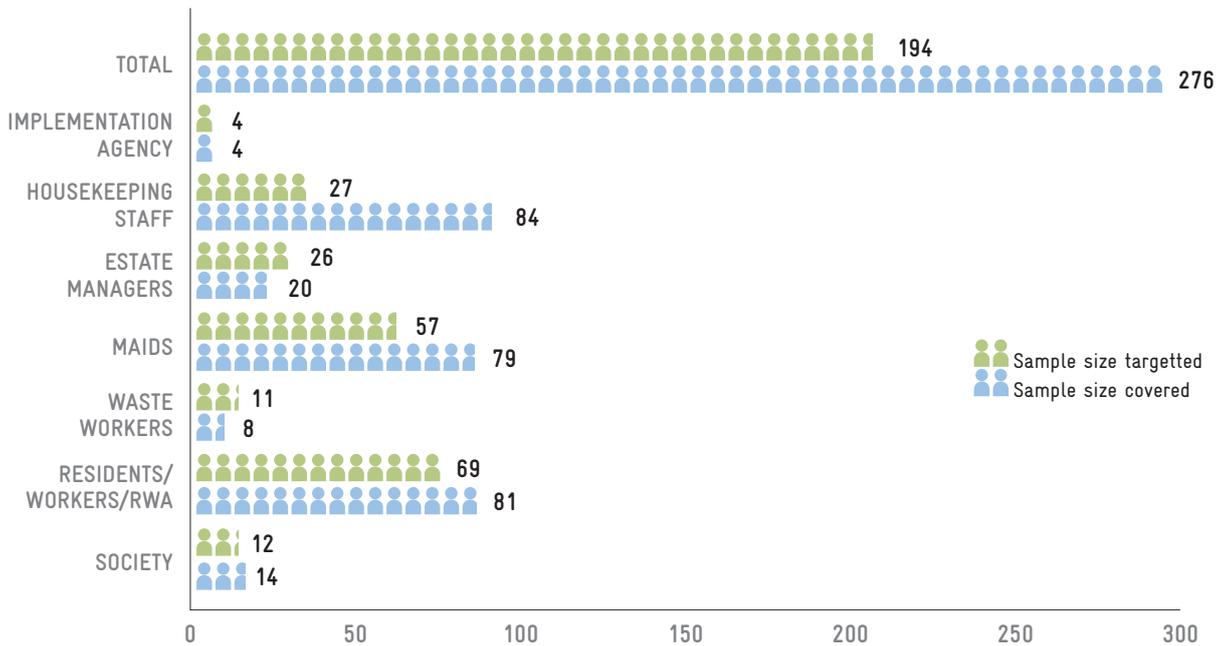
Where

pop = population

The program was implemented in 42 societies covering 22,000 households in Zone 3 and 4 of



Figure 5: Sample Size



Gurugram. Considering 95% confidence level and 7% confidence interval, a total sample size of 194 was selected for the purpose of the study. 33.33% (14 out of 42) of the total societies in the population was covered in the study (Figure 5).

1.8 STAKEHOLDER MAPPING

The method used for engaging with the stakeholders include In-Depth Interviews (IDI) and Focused Group Discussions (FGD). The various stakeholder mapped is shown in Figure 6 below.

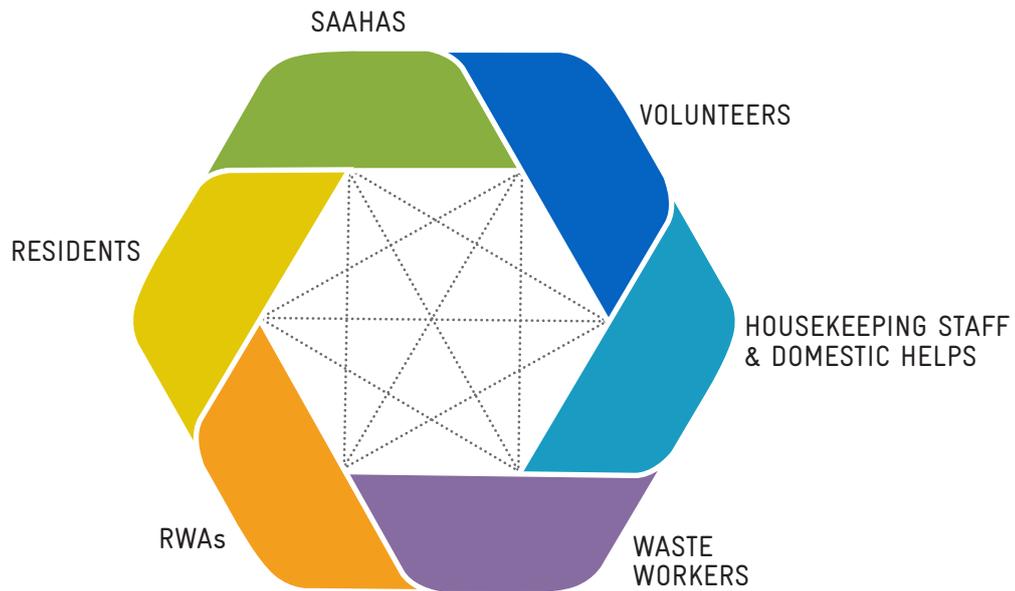
1.8.1 FOCUSED GROUP DISCUSSION

An FGD involves gathering people from similar backgrounds or experiences together to discuss a specific topic of interest. It is a form of qualitative research where questions are asked about their perception, attitudes, beliefs, opinion or ideas. In FGDs, participants are free to talk with other group members; unlike other research methods it encourages discussions with other participants. It generally involves group interviewing in which a small group of usually 8 to 12 people participates. In this study, FGDs and informal discussions were conducted with various stakeholders using a separate set of guided questions developed for each group of respondents.

1.8.2 IN-DEPTH INTERVIEW

An In-Depth Interview (IDI) is defined as a qualitative research technique where, intensive individual interviews are conducted. In such interviews there are smaller numbers of respondents so that on a program, idea, or subject the respondent's perspectives are explored. An IDI can also be mentioned as a loosely structured interview which permits freedom for both the interviewer and interviewee in case of changing directions and exploring additional points when required. IDIs are varied from survey interviews where they are less structured. In this study, IDIs have been conducted with selected stakeholders with a structured guided questionnaire.

Figure 6: Stakeholders Landscape



1.9 IMPACT MAP

Impact map is a tool for describing or illustrating how and why a desired change is expected to happen, that is, connecting the activities of the project with the outcomes, impacts and their contribution to achievement of the final goal. An impact map for the program was developed as part of the study.



Table 1: Impact Map

Inputs	Output	Outcome	Impact
<ul style="list-style-type: none"> • Training sessions for stakeholders • Handholding support through face to face meetings, WhatsApp messages and phone calls • Concurrent monitoring and waste audits. 	<ul style="list-style-type: none"> • 65 training covering about 2,000 residents • 61 training sessions covering 235 volunteers • 90 trainings covering 523 housekeeping staff • 176 trainings covering 7686 maids • 96 waste workers reached out • 244 monitoring visits and waste audits • Waste segregation program implemented in 42 societies. 	Increase in the awareness level of residents on waste segregation	Sensitized and enhanced knowledge of residents towards environment
		Increase in the awareness level of volunteers on waste segregation	Sensitized and enhanced knowledge of volunteers towards environment
		Increase in the awareness level of housekeeping staff on waste segregation	Sensitized and enhanced knowledge of housekeeping staff towards environment
		Change in waste collection time for housekeeping staff due to segregated waste	Improved satisfaction level of housekeeping staff
		Improvement in savings of housekeeping staff due to less work place injuries	Increased economic benefits to the housekeeping staff
		Better health due to lesser work place injuries	Improved quality of life
		Increase in the awareness level of maids on waste segregation	Sensitized and enhanced knowledge of maids
		Change in collection time of waste workers	Improved satisfaction level of waste workers due to time saved
		Change in secondary sorting time of waste worker	
		Reduced expenses on medical treatments due to less work place injuries	Increased economic benefits to the waste workers
		Better health due to lesser work place injuries	Improved quality of life
		Increased income of the waste workers by selling better quality of dry waste	Increased economic benefits to the waste workers
		Decrease in MCG expenses (tipping fee) due to wet waste being composted by the societies	Improvement in MSWM systems and processes
		Economic value of compost generated from wet waste	Economic and environmental benefits to the local communities
		Increase in employment due to on-site composting	Fostering social entrepreneurship growth in waste management sector Economic benefits to the on-site compost workers
Decrease in GHG emission due to composting of wet waste	Environmental benefit to the local community		

CHAPTER 2: ANALYSIS AND FINDINGS - IRECS

2.1 EVALUATION CRITERIA: INCLUSIVENESS

'Inclusiveness' measures the extent to which the project has used appropriate measures for implementing the projects across segments and include stakeholders from all categories.

2.1.1. COVERAGE OF STAKEHOLDERS FROM THE VALUE CHAIN OF WASTE MANAGEMENT

Alag Karo program covered all the stakeholders crucial for ensuring segregated waste at source - residents, housekeeping staff, maids and waste workers. The program adopted a holistic approach by creating enabling environment for waste segregation at source through awareness generation and capacity building of all the relevant stakeholders. A snapshot of different categories of stakeholder trained as part of the program is given below:

Figure 7: Stakeholders Trained



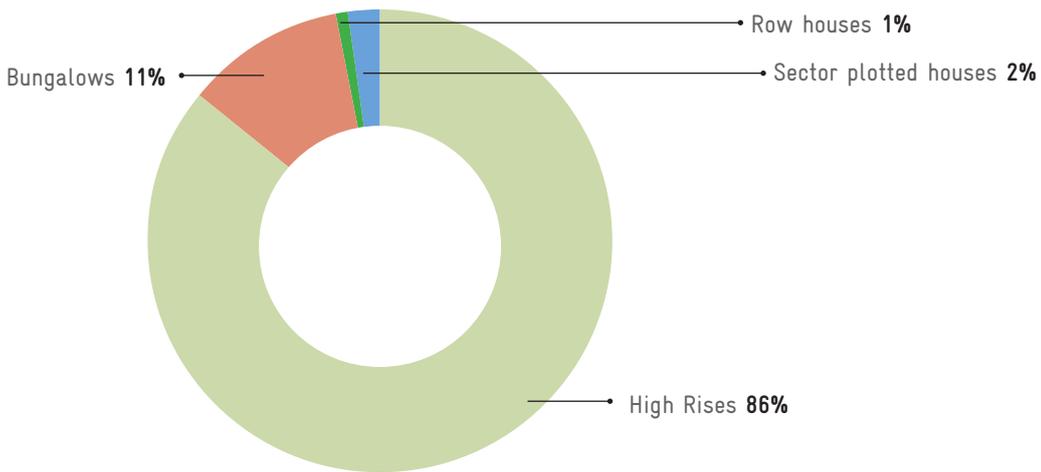
2.1.2. COVERAGE OF RESIDENTIAL SOCIETIES FROM DIFFERENT SEGMENTS

Saahas, with the authorization from MCG worked on segregating waste at source in the societies in Zone 3 and Zone 4 of Gurugram. As part of this project, Saahas has included societies belonging to different categories including -

- High rises (86.15%)
- Bungalows (10.76%)
- Row houses (1.53%)
- Sector plotted houses (1.54%)

As is evident from the data provided above, the program as a strategy mainly focused on high rise apartments which are high-density residential areas where waste is aggregated at a single point before being collected by MCG. Further, administration of such buildings is overseen by respective RWAs whose members are made of a board & residents. In this report, RWA refers to the Board members who are responsible for decision making and are elected from within the elected group of residents of RWA.

Figure 8: Categories of societies covered by the project



The program was also implemented in the commercial pillar (DLF Cyber City) and schools. This way it attempted to cover different categories of waste generators. However, the program did not cover the slum and unauthorized colonies which usually have unorganized waste disposal set up.

2.2 EVALUATION CRITERIA: RELEVANCE

‘Relevance’ is a measure of the extent to which the project has been able to support the suited needs and priorities of the stakeholders.

2.2.1. NEED ASSESSMENT STUDY

The Alag Karo project had started with a baseline KAP (Knowledge, Attitude, Practice) with 200 people across 19 different societies. This survey was conducted in early 2017. The main objective of the survey was to understand the existing knowledge, attitude and practices around managing wastes in apartment communities.

The findings of this survey indicated that although most of the respondents were aware about waste segregation, close to 60% had never practiced the same. Furthermore, only 20% of the respondents were aware of the waste management rules. This indicated that there is a need for a program like Alag Karo to create awareness around different aspect of waste management.

During the survey, about 65% of the respondents felt that waste should be properly segregated and disposed to designated collectors, with close to 80% of the respondents willing to adopt waste segregation. This clearly demonstrated a demand for a program like Alag Karo which aimed at ensuring waste segregation at source.

2.2.2. SOLID WASTE MANAGEMENT RULES 2016

The Union Ministry of Environment, Forests and Climate Change (MoEFCC) has notified the new Solid Waste Management Rules (SWM), 2016. These rules have mandated the residential societies, commercial and institutional establishments to practice source segregation of waste so that the waste could be managed by adopting 3R's approach of reduce, reuse and recycle. According to these rules, waste generator will have to pay “user fee” to waste worker and “spot fine” for non-segregation. The program was aligned to the Rules and aimed to create enabling environment for sustained compliance.



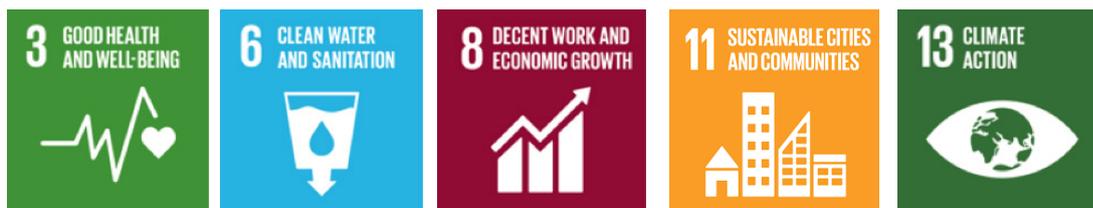
2.2.3. LINKAGE OF PROJECT TO SUSTAINABLE DEVELOPMENT GOALS (SDGS)

SDGs, also known as the global goals were adopted in 2015 by all member states of the United Nations to work towards ending poverty, protecting the planet and ensuring that all people enjoy peace and prosperity by 2030. India has played a crucial role in shaping the SDG goals and is committed to achieving the same by 2030.

Alag Karo, with its focus on creating awareness and capacity to ensure source segregation of waste in Gurugram, is aligned and contributes to the achievement of the following SDGs:

- i. **SDG 3 | Good Health and Well-Being:** Waste management and segregation at source significantly reduces the chances of diseases from hazardous chemicals and air, water, soil pollution and contamination. In addition, segregation of waste at source provides a safe working environment for the housekeeping staff and waste workers. It ensures that the hazardous wastes are disposed into separate bins, thereby minimizing the frequency of injuries and other associated risks. 98% of the housekeeping staff interviewed as part of the study shared that frequency of injuries and associated expense and loss of time at work has come down since implementation of segregation of waste at source.
- ii. **SDG 6 | Clean Water and Sanitation:** Toxic leachate is one of the major adverse impacts of uncontrolled dumping of unsegregated waste on open ground. In 2019, the National Environmental Engineering Research Institute (NEERI) study on quality of water in villages near Bandhwari waste dumping yard confirmed that water was highly contaminated with presence of heavy metals in the samples of water collected²⁵. Collection of segregated waste from source and proper disposal assist in avoiding groundwater pollution.
- iii. **SDG 8 | Decent Work and Economic Growth:** Waste segregation at source reduces the need for manual sorting and segregation of mixed waste by the waste workers. Furthermore, quality of dry waste improves fetching higher commercial value. The program also supported the waste workers in obtaining MCG IDs which help them with:
 - Easier access to residential societies for waste collection
 - Reduced harassment by the police
 - Enhanced access to various government schemes
 Analysis of primary data collected indicates that about 50% of the waste workers interviewed on a sample basis had received MCG IDs under the program.
- iv. **SDG 11 | Sustainable Cities and Communities:** The program is in complete alignment with the SDG11 which aims at reducing the adverse per capita environmental impact of cities, including by paying special attention to municipal and other waste management by 2030. As a

Figure 9: Sustainable Development Goals



result of Alag Karo program, 25 societies have achieved more than 90% of segregation at source positively impacting the SDG.

- v. **SDG 13: Impact on Climate Change:** Municipal solid waste is a significant contributor to greenhouse gas emissions through decomposition and life-cycle activities processes. The majority of these emissions are a result of landfilling. As a result, countries have been incorporating alternative forms of waste management including composting of the organic fraction of municipal solid waste²⁶. The program encouraged and provided active support to RWAs of the residential societies to establish in situ wet waste compost units and thereby helped in reducing greenhouse gas emission. About 50% (21 residential societies) have compost facilities out of which 81% (17 residential societies) have set up in-house composting facilities and about 20% (i.e. 4 residential societies) have off-site compost facilities which lead to reduced transportation and dumping of unsegregated wastes at the landfills. Societies that are not practicing in-house composting are sending their wet wastes to a third location for the purpose of treatment and composting.

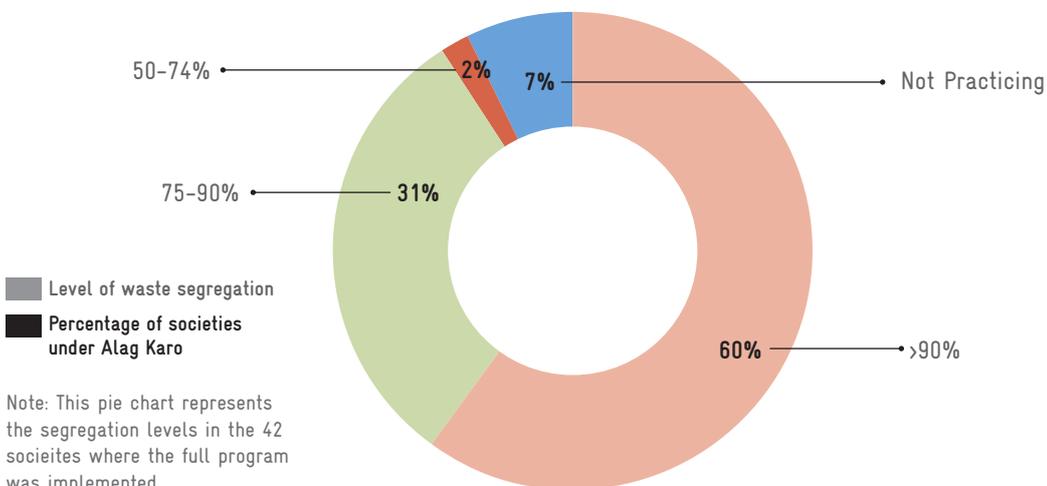
2.3 EVALUATION CRITERIA: EFFECTIVENESS

‘Effectiveness’ is an assessment of the factors affecting the progress towards outcomes for every stakeholder and validation of robustness of systems and processes. It helps in ensuring that the implementation and monitoring systems are robust to achieve optimum social impact.

2.3.1. BEHAVIOUR CHANGE

The success of the program critically depends on the attitude of the urban community towards the issue of waste management. Implementation of this program has resulted in the beneficiaries taking responsibility of their own waste through waste segregation at source. This change in attitude of the beneficiaries could be observed through the waste segregation levels practiced in the residential societies and awareness level on the issue.

Figure 10: Percentage of total residential societies implementing Alag Karo program and their waste segregation levels at source



Source: Alag Karo waste monitoring and audit data





WASTE SEGREGATION AT SOURCE REQUIRES BEHAVIORAL CHANGE ON PART OF THE RESIDENTS AND THE MAIDS WORKING WITH THEM. THIS REQUIRES EFFECTIVE AWARENESS GENERATION AND MOTIVATION TO CHANGE THE OLD HABIT. THIS WAS THE KEY AREA WHERE VOLUNTEERS PLAYED A CRITICAL ROLE AS THEY BECAME ROLE MODELS.





i. Waste segregation levels in residential societies

25 of the 42 societies where Alag Karo program has been implemented, the waste segregation level is more than 90%²⁷. In the sample, except Parsvnath Exotica, all the remaining 13 societies covered under the study had achieved more than 90% of waste segregation at source. At Parsvnath Exotica this stands at 75%. This is a big achievement in a state like Haryana where almost 78% of solid waste is sent to landfill²⁸.

RWAs and volunteers interviewed on a sample basis during the study shared that waste segregation was increasingly being practiced by the residents since the time Alag Karo program was introduced. The data maintained by the societies revealed that on an average about 5% of households default in segregating waste. Residents interviewed on a sample basis shared that default at segregating waste majorly happens when small children or visiting guests use wrong bin out of ignorance. Further, a new resident, maid or housekeeping staff not exposed to waste segregation also makes mistake in segregating waste properly. For such cases, RWA and volunteers organize training.

ii. Increase in awareness levels of residents

More than 95% of the residents interviewed on a sample basis shared that they had become more aware of waste segregation due the training and sensitization activities carried out under Alag Karo program. Speaking about the initial challenges in adopting the new practice of waste segregation, they acknowledged the role of volunteers and RWA through persuasion and regular follow-ups. Alag Karo program assisted volunteers and RWA in the process by providing relevant training and handholding support.

The program used engaging IEC tools to reach out to all relevant stakeholders like residents including children, housekeeping staff, maids, and support staff in the societies. While designing the IEC materials, Saahas staff took into consideration the context of each specific category of





stakeholders to ensure their effectiveness. The program used textual, audio and visual aids in both English and Hindi. These materials were focused on whys, hows and dos and don'ts of waste segregation at source.

The program used different formats like group meetings, one to one meeting, campaigns, games, competitions and display at public places to disseminate IEC materials to the intended audience.

Using these varied formats was helpful to create maximum impact. For example, 62.58% of housekeeping staff and maids interviewed on a sample basis shared that posters and banners were helpful whereas, 55.21% of them shared that individual interaction was helpful. 34.97% of the maids and housekeeping staff found group interaction as effective. This could be attributed to difference in the nature, education level, etc. among the audience.

2.3.2. CAPACITY BUILDING AND HANDHOLDING SUPPORT UNDER ALAG KARO

Alag Karo carried out capacity building of all the relevant stakeholders to ensure and sustain waste segregation at source. Further, the program provided continued handholding support to RWA and volunteers through regular meetings, providing information, supporting in planning, implementation and monitoring. The handholding support was crucial and helped in stabilizing the program.

i. Capacity building of stakeholders

Extensive trainings were provided to different stakeholders to ensure smooth implementation and sustainability of the program. The training activity under the program involved all the relevant categories of stakeholders viz. waste generators, waste handlers, monitors and volunteers. Effectiveness of the trainings imparted to the stakeholders was one of the key factors in achieving waste segregation.

Waste generators in this context refer to the stakeholders producing / generating waste and

disposing it in the bins at the household level. The category comprises of residents and maids working in the households. Building their understanding and capacity to segregate waste is critical for the success and sustainability of the program as they are the ones who carry out segregation of waste at source.

Waste handlers refer to stakeholders responsible for collecting waste from the households. The category comprises of housekeeping staff who collect waste from door to door in designated bins. Their capacity building was central to ensure the segregated waste is collected from households in appropriate bins as per its category. Further, they were also trained to provide on the spot feedback to defaulters to ensure segregation and accountability on part of the residents.

Monitors comprise of estate manager and housekeeping supervisor. They oversaw the implementation of the program and monitored it on daily basis to take course corrective measures.

Along with the above stakeholders, Alag Karo program also identified and motivated few of the residents to volunteer. Their role was to be the link between all the stakeholders to ensure end to end implementation of the program. Many a times they were the first source of information for most of the residents. Waste segregation at source requires behavioral change on the part of residents and the maids working with them. This requires effective awareness generation and motivation to change the old habit. To a marked extent, this role was driven by the volunteers who also reached out to the non-complying residents and persuaded them, as required, often taking support from Saahas. To make itself sustainable, the program adopted train the trainer approach. To implement this, volunteer capacity was built to impart training to different stakeholders and monitor the program on a continuous basis.

Alag Karo program developed separate customized training modules for each of the stakeholders with an aim of better targeting of messages. The program further integrated the understanding of difference in the context of the different set of audiences in designing the delivery of capacity building activities. For example, frequent refresher training in vernacular language were organized for maids and housekeeping staff because of the central role they played in ensuring success of the program.

The program faced challenges in ensuring attendance of residents in training. RWAs, housekeeping staff and volunteers helped in reaching out to residents not attending training through door to door awareness campaigns, emails, posters and memos on societies' notice boards. 26% of residents interviewed on a sample basis during the study shared that they did not attend any training on source segregation of waste. 63.16% of the residents who attended the training and interviewed on a sample basis found the awareness sessions conducted by Saahas to be effective whereas, remaining 36.84% of them did not find it effective.

75.95% of the maids interviewed on a sample basis during the study shared that trainings were effective in enabling them to understand how and why of the waste segregation, whereas remaining 24.05% maids found it ineffective

97.61% of housekeeping staff interviewed on a sample basis during the study stated that the trainings were effective in enabling them to understand the process of waste segregation. 96.47% shared that they had not received any training on waste segregation prior to Alag Karo program.

98% volunteers interviewed on a sample basis found training under the program effective. Further, all volunteers interviewed felt Alag Karo helped them build skills to effectively address grievances and concerns of the residents.

ii. Continued handholding support

Many of the residents and volunteers interviewed on a sample basis shared that they had attempted waste segregation at office or in the other society they were living before, with limited success. What seemed to have worked well for Alag Karo program was the guidance and handholding



74%

OF RESIDENTS INTERVIEWED ATTENDED TRAINING ON SOURCE SEGREGATION OF WASTE

63%

RESIDENTS WHO ATTENDED THE TRAINING AND INTERVIEWED ON A SAMPLE BASIS FOUND THE AWARENESS SESSIONS CONDUCTED BY SAAHAS TO BE EFFECTIVE

98%

OF HOUSEKEEPING STAFF STATED THAT THE TRAININGS WERE EFFECTIVE IN ENABLING THEM TO UNDERSTAND THE PROCESS OF WASTE SEGREGATION

76%

MAIDS INTERVIEWED SAID THAT TRAININGS WERE EFFECTIVE IN ENABLING THEM TO UNDERSTAND HOW AND WHY OF WASTE SEGREGATION

96%

OF HOUSEKEEPING STAFF SAID THEY HAD NOT RECEIVED ANY TRAINING ON WASTE SEGREGATION PRIOR TO ALAG KARO PROGRAM

98%

VOLUNTEERS INTERVIEWED ON A SAMPLE BASIS FOUND TRAINING UNDER THE PROGRAM EFFECTIVE

ALL VOLUNTEERS INTERVIEWED FELT ALAG KARO HELPED THEM BUILD SKILLS TO EFFECTIVELY ADDRESS GRIEVANCES AND CONCERNS OF THE RESIDENTS

support from Saahas staff. Saahas's technical knowledge on waste management and experience in implementing similar programs, helped in structuring the program in a way that it built capacities of the relevant stakeholders and enhanced their confidence in achieving waste segregation at source, as the program progressed. It assisted RWAs with the latest information to plan, mobilize and execute the program, and also helped with framing relevant policies for the sustenance of the program. It conducted waste audits at different intervals to understand the progress and take course corrective actions.

As a result, 38 of 42 residential societies covered under Alag Karo could achieve more than 75% waste segregation at source.

2.4 EVALUATION CRITERIA: CONVERGENCE

'Convergence' measures the extent to which the program can leverage the right partnership to create larger impact at sector level.

The program Alag Karo could be considered as a good example of collaboration between different stakeholders leveraging on each other's strengths to implement a solution for addressing challenges related to solid waste management in a city. The SWM Rules 2016 provides framework for solid waste management in the country including source segregation of waste. The responsibility of implementation of the Rules is on the State Governments and the Urban Local Bodies (ULBs). Despite almost 20-50% of ULB's budget being spent on SWM, only negligible proportion is utilized for building capacities of the residents and other waste generators to ensure waste segregation at the source. Most of the resources are spent on waste collection, transportation of waste to landfills and infrastructure development. Further, ULBs also lack expertise and manpower



to provide technical and handholding support to the residential societies willing to implement the Rules. As a result, the compliance with the Rules is weak.

The program brought private agencies like Coca-Cola and Tetra Pak, and international development agencies like GIZ, which provided funding for implementation. Saahas, a non-profit organization with expertise in MSWM was onboarded for implementation. Residential societies were motivated to finance CapEx and OpEx for implementing the program on their own campuses. The efficient utilization of resources and technical know-how resulted in effective implementation of the program.

This program has linkages with the Swachh Bharat Abhiyan launched on 2nd October 2014 to accelerate the efforts to achieve universal sanitation coverage. This mission promotes access to sanitation along with ensuring proper solid and liquid waste management. Further, the learnings from the program have been used to develop policy recommendations for implementing and sustaining Source Segregation in cities and towns. The recommendations are specifically for Ministry of Environment, Forest and Climate Change (MoEFCC) and Ministry of Housing and Urban Affairs (MoHUA) - Swachh Bharat Mission (SBM) cell.

2.5 EVALUATION CRITERIA: SUSTAINABILITY

‘Sustainability’ measures the extent to which the program ensures sustainability of its outcomes and impact, even after its exit.

Sustainability refers to building enabling environment to ensure continuation of the impact even after direct involvement of the implementation agency and withdrawal of support from the



SAAHAS' TECHNICAL KNOWLEDGE ON WASTE MANAGEMENT AND EXPERIENCE IN IMPLEMENTING SIMILAR PROGRAMS, HELPED IN STRUCTURING THE PROGRAM IN A WAY THAT IT BUILT CAPACITIES OF THE RELEVANT STAKEHOLDERS AND ENHANCED THEIR CONFIDENCE IN ACHIEVING WASTE SEGREGATION AT SOURCE.

donor. This requires putting in place governance structure, finance model and operating system.

2.5.1. GOVERNANCE

Governance structure requires framing policies, rules and norms mandating implementation of the desired change. It defines the roles and responsibilities of different stakeholders fixing accountability. Alag Karo by providing handholding support to RWAs in framing SWM related policies, rules and housekeeping staff contract terms has been instrumental in creating the Governance structure for continuation of the program after Saahas exit.

2.5.2. OPERATIONAL

Alag Karo, ensured the sustenance of the program by adopting an approach which was focused at developing the immediate need to build the capacity of different stakeholders to implement the activities. In addition, Alag Karo also created internal pool of volunteers who could further train on SWM as per the requirements of the program. It has also instituted volunteers led monitoring mechanism to enforce accountability and taking timely corrective action. This 'train the trainer' model along with strong monitoring and review mechanism have helped the societies to set up an operating structure which is processes and systems driven.

2.5.3. FINANCIAL

Sustenance of the program required a viable financial model. The program has used residents' contribution for financing the initial investment and subsequent operating expenses. In light of the MCG notification for imposing INR 25,000 for each instance of non-compliance of source segregation by a bulk waste generator, investing and continuing SWM made economic sense. The program through awareness generation around SWM Rules 2016 and MCG notification along with benefits of source segregation motivated RWAs to commit financial resources.

CHAPTER 3: MEASURING SROI

As elaborated in chapter-1 this report has used two evaluation frameworks which are IRECS and SROI. Generally, IRECS helps in gaining qualitative understanding of the impact. On the other hand, SROI helps organizations in evaluating changes which are being created by measuring social, environment and economic outcomes and providing monetary values to represent them. SROI also helps in understanding the total value generated for every rupee invested for interventions.

There are two types of SROI:

- Evaluative, which is conducted retrospectively and based on actual outcomes that have already taken place
- Forecast, which predicts how much social value will be created if the activities meet their intended outcome

For the purpose of this study only evaluative SROI has been conducted. SROI primarily involves six stages which are as follows:

- Stage - 1: Establishing Scope and identifying key stakeholders
- Stage - 2: Mapping outcomes
- Stage - 3: Evidencing outcomes and giving them a value
- Stage -4: Establishing impact
- Stage -5: Calculating the SROI
- Stage -6: Reporting

Stage 1 and Stage 2 have already been discussed in Chapter 1. Further stages have been elaborated in the section below.

3.1 EVIDENCING OUTCOMES

After formulating the impact map, indicators to measure the outcomes were developed based on the evaluation team's interaction with Alag Karo program staff, beneficiaries, and other relevant stakeholders. Also, evidences of outcomes were collected using primary and secondary data.

3.1.1 QUANTITY OF CHANGE

The quantity of change for the impact map is calculated by extrapolating the number of responses from the sample covered to the total population of the beneficiaries. Depending on the responses received during data collection, proportionate percentage of total beneficiaries are calculated.

Table 2 provides details about the evidence indicators for the outcomes and the quantity of change against each indicator.

Table 2: Evidence indicators and quantity of change

Output	Outcome	Evidence indicator(s)	Quantity of change (number of beneficiaries)
2,000 residents	Increase in the awareness level of residents on waste segregation	Numbers of residents sensitized on waste segregation	1,263 residents
235 volunteers	Increase in the awareness level of volunteers on waste segregation	Number of volunteers sensitized on waste segregation	230 volunteers
523 housekeeping staff	Increase in the awareness level of housekeeping staff on waste segregation	Number of housekeeping staff sensitized on waste segregation	511 housekeeping staff
	Change in waste collection time for housekeeping staff due to segregated waste	Number of hours housekeeping staff take in waste collection on a daily basis due to already segregated waste provided by the residents	511 housekeeping staff
	Improvement in savings of housekeeping staff due to less work place injuries	Number of housekeeping staff able to reduce expenses on medical treatments due to less work place injuries	517 housekeeping staff
	Better health due to lesser work place injuries	Change in time spent on seeking treatment for or recovering from workplace injurie	517 housekeeping staff
7,686 maids	Increase in the awareness level of maids on waste segregation	Numbers of maids sensitized on waste segregation	5,837 maids
96 waste workers	Change in loading time of waste workers	Number of waste workers feel change in the average time required to load segregated waste from the society	96 waste workers
	Change in secondary sorting time of waste workers	Number of workers feel change in the average time required for secondary sorting due to segregation of waste at source	96 waste workers
	Reduced expenses on medical treatments due to less work place injuries	Number of workers feel reduction in medical expenses due to less work place injuries	96 waste workers



Output	Outcome	Evidence indicator(s)	Quantity of change (number of beneficiaries)
96 waste workers	Better health due to lesser work place injuries	Change in time spent on seeking treatment for or recovering from workplace injuries	96 waste workers
	Increased income of the waste workers by selling dry waste	Number of waste workers feel increase in income by selling dry waste	96 waste workers
Overall community	Decrease in MCG expenses due to wet waste being composted by the societies	Total saving in tipping fee paid earlier by MCG to vendors for 21 societies which now compost their wet waste	1 Municipal Corporation of Gurugram
	Economic value of compost generated from segregated wet waste	Value of compost generated	1 City of Gurugram
	Increased employment due to on-site composting	Number of compost workers employed for composting due to Alag Karo program	34 compost workers at 17 on-site composting units
	Demand for professional wet waste processing organizations	Number of societies outsourcing this activity to professional organizations	1 additional for profit organization started operations in the city
	Decrease in GHG emission due to composting of wet waste	Social cost of GHG emission	1 City of Gurugram

3.1.1.1. ESTIMATING HOW LONG OUTCOME LAST

Considering the economic, environmental and social impact of segregating waste at source, the practice is and will remain to be the important first step in any intervention to manage solid waste. However, due to change in lifestyle, technology, law, rules, etc. the strategy, methods and means for executing, monitoring and reviewing waste segregation program adopted by a society may require changes. This evaluative study estimates that the strategy, methods and means for executing, monitoring and reviewing waste segregation used by the program will continue creating value for three years. Beyond three years, it is expected that a new intervention will be required to further enhance the capacity of societies to continue segregating waste. Hence, this will require our beneficiaries to be trained again. However, the rules and regulations of the country are likely to become far more stringent and people will have no other option but to follow source segregation.

3.1.1.2. FINANCIAL PROXY (FP) AND VALUE OF FINANCIAL PROXY

An SROI analysis uses financial proxies in order to establish a value of identified outcomes. As a standard practice, prices are used as a proxy for value of services. There are sometimes outcomes reported by stakeholders that are intangible and cannot be traded in a market. In such cases, the closest, comparable value is identified for that outcome. This is illustrated in Table 3, below.

Table 3: Financial proxies and values

Stakeholder	Outcome	Financial proxy (FP)	Value of financial proxy (INR)
Residents	Increase in the awareness level of residents on waste segregation	Participation cost of a person to attend a training as a listener which is organized by an external agency for developing knowledge/ skills on waste segregation	397
Volunteers	Increase in the awareness level of volunteers on waste segregation	Participation cost of a person to attend a training as a listener which is organized by an external agency for developing knowledge/ skills on waste segregation	397
Housekeeping staff	Increase in the awareness level of housekeeping staff on waste segregation	Participation cost of a person to attend a training as a listener which is organized by an external agency for developing knowledge/ skills on waste segregation	397
	Change in waste collection time for housekeeping staff due to segregated waste	Cost of additional time taken by a housekeeping staff per day for door to door collection of segregated waste	37
	Improvement in savings of housekeeping staff due to less work place injuries	Average monthly cost per housekeeping staff for treating work place injuries	93
	Better health due to lesser work place injuries	Average cost of hours saved in a month by a house keeping staff due to reduction in work place injuries	310
Maids	Increase in the awareness level of maids on waste segregation	Participation cost of a person to attend a training as a listener which is organized by an external agency for developing knowledge/ skills on waste segregation	397
Waste workers	Change in loading time of waste workers	Monthly cost of hours saved by a waste worker during collection of already segregated waste	3182
	Change in secondary sorting time of waste worker	Monthly cost of hours saved by a waste worker during secondary sorting due to segregated waste	6818
	Reduced expenses on medical treatments due to less work place injuries	Average cost of treatment for injuries suffered by waste worker in a month	105



Stakeholder	Outcome	Financial proxy (FP)	Value of financial proxy (INR)
Waste workers	Better health due to lesser work place injuries	Monthly cost of hours saved by waste workers due to reduction in injuries	175
	Increased income of the waste workers by selling dry waste	Monthly change in earnings of a waste worker by selling better quality of dry waste	4133
Communities	Decrease in MCG expenses due to wet waste being composted by the societies	Savings in tipping fee per ton for MCG due to reduction in wet waste generated and not going to landfill from 21 societies	1000
	Economic value of compost generated from segregated wet waste	Value of compost* generated per ton *waste collected for a year	10000
	Increased employment due to on-site composting	Monthly income of a compost worker employed at an onsite compost facility established under Alag-Karo program	12000
	Decrease in GHG emission due to composting of wet waste	Social cost of GHG emission	3500 ** **USD 50 converted into INR at USD 1 = INR 70

3.2 ESTABLISHING IMPACT

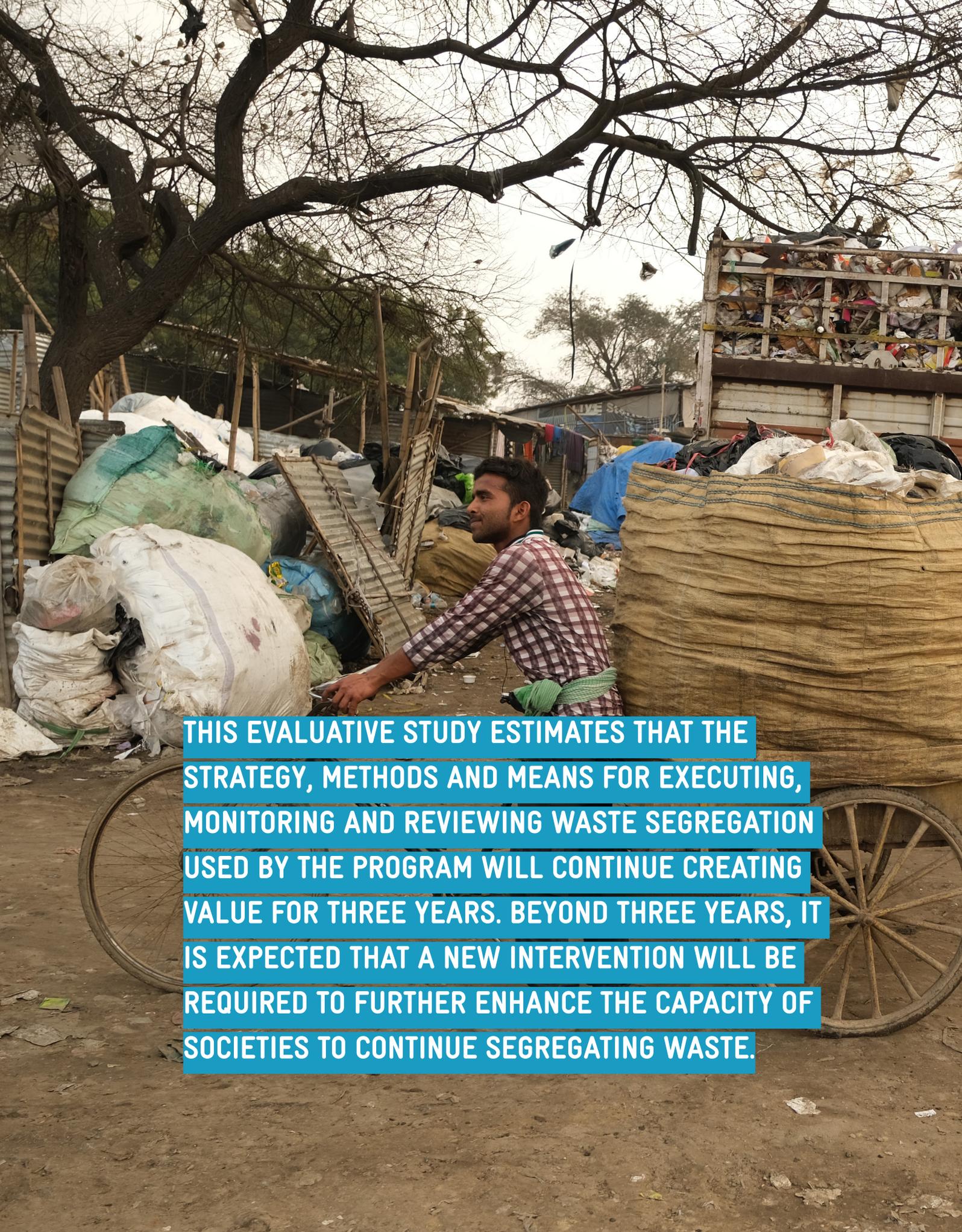
Establishing impact provides a way of estimating how much of the outcome would have happened anyway and what proportion of the outcome can be attributed to the activities that occur during the program. Establishing impact is crucial, as it reduces the risk of over counting and makes the assessment more credible. Therefore, in order to provide credibility to the analysis and prevent over-claiming, the four adjustments that are calculated during this stage are deadweight, displacement, attribution and drop-off, on the basis of which the impact is measured.

3.2.1. DEADWEIGHT

Deadweight is an estimation of the social and financial benefits that would have been created without the intervention. A deadweight of 17.5% is assumed for all the evidence indicators. The rationale for the same is owing to HSPCB annual report for 2018-19 stating only 17.5% of the waste is successfully treated and recycled, while about 78% is sent to landfills. The remaining 4.5% is not collected³¹. The state level figure of 17.5% of waste being segregated and successfully treated and recycled is used in absence of Gurugram specific data.

3.2.2. ATTRIBUTION

Attribution is an assessment of how much of the outcome was caused by the contribution of other organisations or people. Based on the interactions with residents, volunteers, RWAs,



THIS EVALUATIVE STUDY ESTIMATES THAT THE STRATEGY, METHODS AND MEANS FOR EXECUTING, MONITORING AND REVIEWING WASTE SEGREGATION USED BY THE PROGRAM WILL CONTINUE CREATING VALUE FOR THREE YEARS. BEYOND THREE YEARS, IT IS EXPECTED THAT A NEW INTERVENTION WILL BE REQUIRED TO FURTHER ENHANCE THE CAPACITY OF SOCIETIES TO CONTINUE SEGREGATING WASTE.

Estate Managers, maids, housekeeping staff and supervisors an attribution of 50% is provided to Saahas for the outcome created. Though, almost all agreed with the significance and need for segregation of waste at source, the respondents, on an average, attributed 50% of the program's outcome to the investment and rules framed by RWAs, efforts of volunteers, contributions of maid and housekeeping staff, etc. They agreed that Saahas staff provided extensive support in implementation of Alag Karo program however, initiatives of RWAs, volunteers, residents, maids and housekeeping staff were also instrumental in achievement of the program's objectives.

3.2.3. DROP-OFF

Drop-off is the process of considering any deterioration of program outcomes over time. Assuming that some of the stakeholders living in the society might shift the location and may or may not continue practicing waste segregation. Also, during a discussion with the stakeholders it was realised that very few societies still need the presence of the implementation partner for waste segregation. Further, during interaction with the beneficiaries and review of data of the residential societies on a sample basis, it was discovered that on an average 5% of residents default in segregating waste at source. Hence, accounting for these factors, a drop-off value of only 5% has been assumed for this evaluation.

3.2.4. DISPLACEMENT

Displacement is an assessment of how much of the outcomes displaced other outcomes. The program intends to develop skills, make societies more aware about waste segregation and its impact on the environment. No significant displacement was observed or reported during the study.

3.3 CALCULATING IMPACT

The impact of the project has been arrived at based on the following calculations:

Quantity of change multiplied by financial proxy (FP) minus deadweight, displacement and attribution

Impact for year one = Quantity of change x FP value x (1 – deadweight) x (1 – displacement) x (1 – attribution)

Impact for subsequent years =

Quantity of change x FP value x (1 – deadweight) x (1 – displacement) x (1 – attribution) + [impact value of previous year] x (1 – drop-off)]

On the basis of the above formulae and calculations, the cumulative impact generated from 2017-18 till 2019-20 is INR 2,96,83,324 ((Table 4).

3.3.1 CALCULATING THE SROI

The SROI value is expressed as a ratio of return and is derived from dividing the value of the impact by the value of the investment.

$$\text{SROI} = \frac{\text{Total impact value}}{\text{Total input value}}$$

However, before the calculation is made, the impact value is adjusted to reflect the NPV of projected outcome values. This is to reflect the present day value of benefits projected in future.

$$\text{SROI} = \frac{\text{Total present value of impact}}{\text{Total present value of inputs}}$$

Table 4: Impact Value (All figures in ₹)

Stakeholder	Outcome	Evidence indicator	Quantity of change	Value of proxy
2000 residents	Increase in the awareness level of residents on waste segregation	Numbers of residents sensitized on waste segregation	1263	397
235 volunteers	Increase in the awareness level of volunteers on waste segregation	Number of volunteers sensitized on waste segregation	230	397
523 housekeeping staff	Increase in the awareness level of housekeeping staff on waste segregation	Number of housekeeping staff sensitized on waste segregation	511	397
	Change in waste collection time for housekeeping staff due to segregated waste	Number of housekeeping staff reported change in hours taken per day for door to door collection of segregated waste	511	37
	Improvement in savings of housekeeping staff due to less work place injuries	Number of housekeeping staff able to reduce expenses on medical treatments due to less work place injuries	517	93
	Better health due to lesser work place injuries	Change in time spent on seeking treatment for or recovering from workplace injuries	517	310
7686 maids	Increase in the awareness level of maids on waste segregation	Numbers of maids sensitized on waste segregation	5837	397
96 waste workers	Change in loading time of waste workers	Number of waste workers feel change in the average time required to collect segregated waste from the society	96	3182
	Change in secondary sorting time of waste worker	Number of waste workers feel change in the average time required for secondary sorting	96	6818
	Reduced expenses on medical treatments due to less work place injuries	Number of workers feel reduction in medical expenses due to less work place injuries	96	105
	Better health due to lesser work place injuries	Change in time spent on seeking treatment for or recovering from workplace injuries	96	175
	Increased income of the waste workers by selling dry waste	Number of waste workers feel increase in income due to better quality of dry waste	96	4133



	Dead-weight	Displacement	Attribution (by others)	Drop-off	Impact: 2017-18	Impact: 2018-19	Impact: 2019-20	Cumulative impact	NPV till 2019-20
	17.5%	0%	50%	5%	91337	162650	188042	442029	377078
	17.5%	0%	50%	5%	18135	27820	35417	81372	69453
	17.5%	0%	50%	5%	34211	66072	78594	178877	152263
	17.5%	0%	50%	5%	-395685	-1746132	-2503808	-4645626	-3894531
	17.5%	0%	50%	5%	38740	155049	214829	408617	343135
	17.5%	0%	50%	5%	129132	516831	716095	1362058	1143782
	17.5%	0%	50%	5%	303479	725115	904529	1933123	1637882
	17.5%	0%	50%	5%	362271	992832	1352189	2707291	2284584
	17.5%	0%	50%	5%	776229	2127318	2897304	5800852	4895127
	17.5%	0%	50%	5%	11954	32762	44620	89335	75387
	17.5%	0%	50%	5%	19924	54603	74366	148892	125645
	17.5%	0%	50%	5%	470542	1289558	1756315	3516415	2967375

Stakeholder	Outcome	Evidence indicator	Quantity of change	Value of proxy
Communities	Decrease in MCG expenses due to wet waste being composted by the societies	Total saving in tipping fee paid earlier by MCG to vendors for 21 societies which now have onsite compost facility	1	1000
	Economic value of compost generated from wet waste	Value of compost generated	1	10000
	Increased employment due to on-site composting	Number of compost workers employed for composting in 17 societies due to the Alag Karo program	34	12000
	Decrease in GHG emission due to composting of wet waste	Social cost GHG emission	1	3500

3.3.2 PROGRAM INPUT

The input from Coca-Cola, GIZ and Tetra Pak is considered for the SROI calculation stage. The value of financial input has been provided by these three organisations amounts to INR 20,240,720 for four pillars which are RWAs, Commercial, Schools, and Waste Workers. However, this evaluative SROI only focuses on the impact on RWAs and Waste Workers pillars for which total investment was INR 12,000,000.

3.3.3 NET PRESENT VALUE

The impact value is adjusted to reflect the net present value (NPV) of the outcome values. The idea is to reflect the present-day value of benefits. A discount rate of 7.5% has been used for the NPV calculations.

The NPV of the benefits can be calculated by using the following calculations:

$$NPV = \text{Value of benefits} / ((1 + \text{discount rate}) \times \text{time})$$

3.4 REPORTING SROI VALUE AND RATIO

The SROI for this analysis is derived from dividing the total present value of the impacts by the

POST IMPLEMENTATION OF ALAG KARO, THE QUANTUM AND QUALITY OF DRY WASTE HAS INCREASED DUE TO REDUCED CONTAMINATION WITH WET AND HAZARDOUS WASTE LEADING TO BETTER COMMERCIAL VALUE FOR DRY WASTE. ON AN AVERAGE THE WASTE WORKERS REPORTED AN INCREASE IN THEIR EARNING APPROXIMATELY BY INR 4,133 PER MONTH

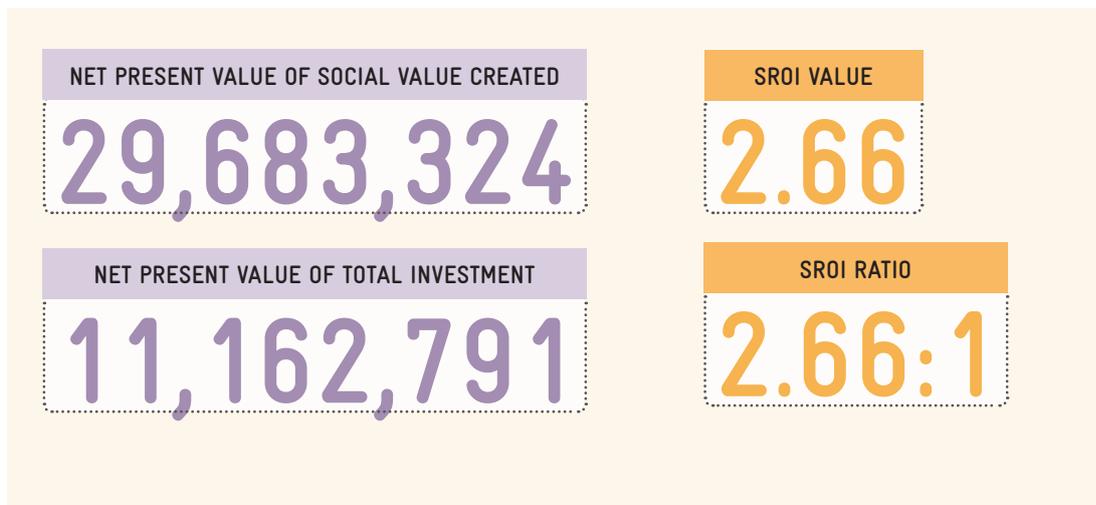


	Dead-weight	Displacement	Attribution (by others)	Drop-off	Impact: 2017-18	Impact: 2018-19	Impact: 2019-20	Cumulative impact	NPV till 2019-20	
	17.5%	0%	50%	5%	19107	458547	1160891	1638545	1349041	
	17.5%	0%	50%	5%	38214	713524	1250019	2001756	1659199	
	17.5%	0%	50%	5%	29700	835560	1746657	2611917	2156655	
	17.5%	0%	50%	5%	89513	6208125	11038913	17336550	14341250	
					Total	2036803	12620233	209544969	35612005	29683324

total impact value of the investment. Figure 11 describes the SROI value and the SROI ratio:

This means that the SROI is 2.66 in the year 2019-20, i.e. for every Indian rupee of investment by the stakeholders, INR 2.66 of the social value attributable to the stakeholders (majorly to the program) is created during 2019-20.

Figure 11: SROI Value and Ratio





CHAPTER 4: OVERALL IMPACT

4.1. IMPACT ON STAKEHOLDERS

RESIDENTS:

- Before Alag Karo, many societies used chute or floor bin system for waste collection which was replaced by door to door collection of segregated waste under the program. This has positively impacted the cleanliness and hygiene levels in the societies.
- More than 95% of the residents interviewed on a sample basis shared that they had become more aware of waste segregation due to the training and sensitization activities carried out under Alag Karo program. Many of them have become more sensitive towards environment protection and have started reducing and reusing waste.

MAIDS:

- Initially in the program there was reluctance from maids to adopt source segregation because of lack of understanding around the 'whys' and the 'hows' of waste segregation. The IEC tools and trainings organized by Saahas, interaction with housekeeping staff, and motivation from volunteers helped in adoption of the practice.
- About 96.20% maids interviewed on a sample basis mentioned that waste segregation at source was better for the environment. However, close to 58% of the maids indicated that their work load had increased due to waste segregation, 39% of the maids indicated no change in the work load and 2% of the maids felt that their work load decreased as they were not more required to change the liners of the bins, or take waste to floor bins, etc. The increase in work load was attributed to the requirement for washing bins daily after ban on plastic liners in bin. On an average work load was reported to have increased by 7-10 minutes per house per day.
- During study, few of the maids interviewed shared that motivated by the program, they were source segregating waste in their homes along with sharing the knowledge with their relatives and friends. This showcased that the impact of the program was beyond the intended limit.

HOUSEKEEPING STAFF:

- Segregation at source has resulted into safer working environments for the housekeeping staff. This has reduced injuries at work place and time lost because of the same. Housekeeping staff interviewed on a sample basis shared that on an average a housekeeping staff could save approximately 86 hours annually due to lesser injuries at work place.

- Segregating waste at source has reduced the chances of infection from handling waste. About 69.41% housekeeping staff interviewed on a sample basis stated that segregation of waste had positively impacted their health, reducing expenditures on the same. Close to 65.47% of the respondents shared experiencing an enhanced sense of ownership and dignity.

ESTATE MANAGERS:

- The program has helped the estate managers through training on waste segregation and management of waste. This has enabled them to train and monitor housekeeping staff and thereby ensuring better waste management. As a result, around 60% of the societies have achieved more than 90% source segregation of waste and another 31% of the societies have achieved 75 to 90% of waste segregation.

RWAS:

- 100% of the RWA board members interviewed on a sample basis during the study felt that the trainings organized by Saahas were effective in enabling them to understand the entire practice of source segregation. They also acknowledged Saahas's assistance in framing appropriate policies and rules to implement the program. In fact, 71.42% of interviewed RWA members shared that although they would have wanted to implement waste segregation, even if Saahas was not there, but it would have been very challenging for them.
- In 21 societies wet waste composting has been integrated in the solid waste management resulting in production of compost. This has resulted in about 8.9 tons of wet waste daily sent for composting and thereby diverted away from the landfill.

VOLUNTEERS:

- 100% of the volunteers interviewed on a sample basis expressed their satisfaction with the holistic approach in implementing Alag Karo and support received under the program. They acknowledged the role of training imparted under the program in building their knowledge on waste segregation and its effective implementation. The capacity built as part of the program will help in sustaining it in future.

WASTE WORKERS:

- Segregation at source creates a safer and more hygienic working environment for the waste workers, which in turn reduces their expenditure and time lost in seeking treatment for work place injuries.
- 100% of the waste workers interviewed on a sample basis mentioned that earlier they suffered injuries during collection and secondary sorting as waste used to be mixed with injurious material. Average number of such injuries per waste worker was about 60 annually which used to cost approximately INR 1,254 per year for seeking treatment.
- However, after the implementation of Alag Karo, the rate of injuries has almost reduced to zero resulting into money and time savings. Further, 75% waste workers interviewed on a sample basis stated that segregation at source improved the overall hygiene levels at their work place.
- Additionally, 37.5% of interviewed waste workers indicated that the quality of waste has improved due to segregation of waste at source. Post implementation of Alag Karo, the quantum and quality of dry waste has increased due to reduced contamination with wet and hazardous waste leading to better commercial value for dry waste. On an average they reported an increase in their earning approximately by INR 4,133 per month.



4.2. IMPACT ON WASTE MANAGEMENT

WASTE SEGREGATION IN RESIDENTIAL SOCIETIES:

Under Alag Karo, Saahas conducted three waste audits for each and every RWA for evaluating the status on segregation of waste at source. The different types of audits and the total amount of waste generated (in kgs) are as follows:

Analysis of the data showed that of the total waste being generated, 51% comprised of wet

Table 5: Types of Audits

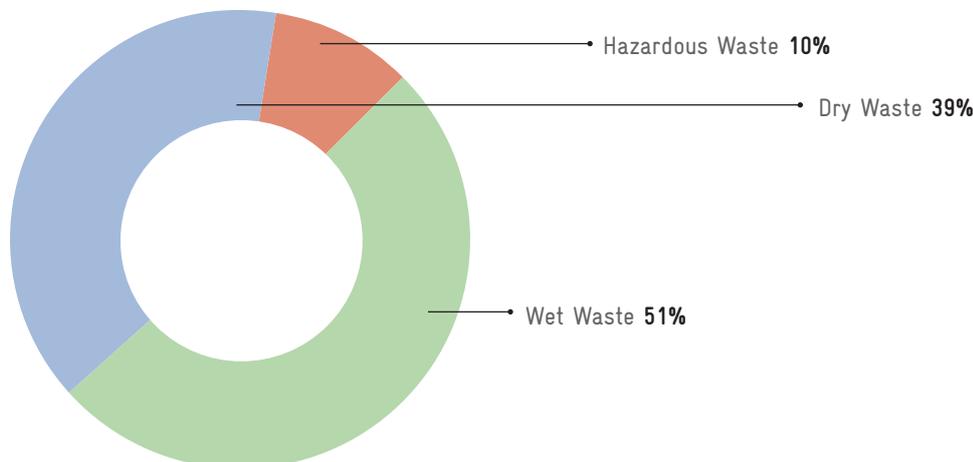
Types of audit	Purpose
Audit 1	Baseline to assess the situation in the societies before implementation of the project
Audit 2	Mid-line evaluation to understand the status of program and taking course corrective measures, if required.
Audit 3	End-line evaluation before Saahas exits to understand the level of segregation achieved during the period of support.

waste, 39% consisted of the dry waste and remaining 10% was of hazardous category. As a result of the program, 60% of the societies could achieve more than 90% waste segregation at source.

In case of 31% societies this stood between 75 to 90% segregation.

In 2 societies the percentage of segregation at source stood between 50 to 75%. The program is in the process of being implemented in one society and failed in another due to lack of ownership. Further, with 21 societies adopting wet waste composting under the program has led to increase in demand of services of professional wet waste processing organizations. Programs like Alag Karo has potential to further accelerate growth of social enterprises on solid waste management.

Figure 12: Quantity of segregated waste in residential societies





CHAPTER 5: CONCLUSION & RECOMMENDATION

Alag Karo program was implemented with a goal to achieve waste segregation at source and thereby assist in addressing the solid waste management problem in Gurugram. Started in 2017, it was implemented in 42 societies, out of which 25 societies (59.52%) have achieved source segregation level of more than 90% and at another 13 societies (30.95%) source segregation stands at more than 75%. Further, 17 societies (40.47%) now have fully functional in-house composting facilities. Additionally, 4 societies (9.52%) have adopted an offsite composting model where their wet waste is transported to a third party composting unit post initial processing on site. This model was developed to address the need of those residential complexes which do not have space for onsite composting.

By September 2019, these 21 societies were composting 8.9 tons of wet waste everyday which will help MCG save more than INR 3 million³² in tipping fee³³ annually by diverting this waste away from the landfill. Furthermore, this will result in reduction of GHG emission by 12,000 tons CO₂ equivalent per year with an estimated social cost of INR 42 million³⁴. This is not a small achievement in a state like Haryana where only 17.5% of the waste is successfully treated and recycled, while about 78% is sent to landfills. The remaining 4.5% is not collected³⁵.

As part of this study, 14 societies were covered out of which 13 societies could achieve source segregation level of more than 90% except Parsvnath Exotica, where the segregation level is between 75-90%. Out of the societies covered under the study, 6 were practicing on-site composting. RWAs interviewed on a sample basis indicated that on an average 5% of the households would fail to properly segregate waste at source. This could be attributed to the following factors:

- Attitudinal issues
- New residents and maids not aware about waste segregation
- Guests visiting the residents not aware about waste segregation

Overall, RWAs and residents interacted during the study expressed confidence in being able to sustain the program. This can be attributed to the approach adopted by the program with a focus on institutionalizing the practices through appropriate policies, systems and processes. The program followed 'train the trainer' model creating internal pool of volunteers who could further train anyone on SWM as per the future requirement of the program.

Saahas staff shared that to ensure successful implementation of the program, a person who could champion the cause in the residential society is crucial. This person could be a concerned RWA member or, passionate resident or, a diligent estate manager, etc. Such a champion helps in setting the agenda and driving the program from within.

RWAs onboarding is essential for financing initial investment and ongoing expenditure, driving implementation and institutionalization of SWM through framing policies and rules. This makes the program system driven, independent of an individual.

BY SEPTEMBER 2019, THESE 21 SOCIETIES WERE COMPOSTING 8.9 TONS OF WET WASTE EVERYDAY WHICH WILL HELP MCG SAVE MORE THAN INR 3 MILLION IN TIPPING FEE ANNUALLY BY DIVERTING THE WASTE AWAY FROM THE LANDFILL. FURTHERMORE, THIS WILL RESULT IN REDUCTION OF GHG EMISSION BY 12,000 TONS CO2 EQUIVALENT PER YEAR WITH AN ESTIMATED SOCIAL COST OF INR 42 MILLION

The program also requires a cadre of volunteers to mobilize all the relevant stakeholders to ensure end to end implementation. Further to ensure the sustainability, volunteers were trained to train different stakeholders. However, there were also societies that were able to drive it without much support from volunteers, through strict monitoring by the housekeeping team and RWA members.

This community driven self-sustaining model is effective in ensuring source segregation of waste. However, this program alone cannot provide a holistic solution to the MSWM issues of segregated waste collection, handling and disposal in an environment friendly and cost-effective manner. The program is limited in its scope and is unable to influence the complete value chain of MSWM. To extract maximum benefit out of such initiatives, we need an enabling environment in terms of facilitating policies and rules; assigning roles and fixing accountabilities; building capacities of the municipal officials, RWAs, waste workers and vendors, etc. on SWM; budgetary commitments and strict enforcement of rules. Programs like Alag Karo that are designed for long term sustainability, can be far more effective with these enabling factors in place.

Development sector organisations like Saahas which bring to the table both the technical knowhow and deep domain expertise through on-ground experience of implementing and managing such programs, play a crucial role in leading this transformation. This helps bring in rigour while avoiding wasting resources on reinventing the wheel. Few of the stakeholders interviewed as part of the study shared that they had attempted similar initiatives in their societies and offices in the past. However, they failed to achieve the desired impact as they did not have support of an expert like Saahas to guide and provide handholding support.

Today we have Solid Waste Management Rules 2016, Government initiatives like Swachh Bharat Abhiyan, Swachh Survekshan, etc. which require and encourage programs like Alag Karo to solve MSWM issues. We have positive examples like Bhopal, Indore, Surat etc. which have shown that this is achievable. What is required is localized context specific sustainable programs which cover complete value chain of MSWM. In view of the ever increasing burden of MSW, programs like Alag Karo need to be strengthened and supported.



ANNEXURE I

DATA COLLECTION TOOLS

1 QUESTIONNAIRE FOR THE DLF CLIENT

Basic Details
Name of Office
Name of interviewee/s
Effectiveness
1. Did you face any difficulty in adapting waste segregation? <input type="radio"/> Yes <input type="radio"/> No If yes, then why so?
2. Are you more sensitive about impact of waste on the environment post implementation of this project? <input type="radio"/> Yes <input type="radio"/> No
3. Have you been a part of the training sessions conducted by Saahas? <input type="radio"/> Yes <input type="radio"/> No
4. If yes, then : Frequency (No.of times/ days) Duration of training (each training) in hours
5. Do you think that the training has been effective in enabling your understanding on waste segregation and its impact?
6. Did you provide any training on waste segregation to the housekeeping staff?
7. If yes, then : Number of housekeeping staff trained Frequency (No.of times/ days) Duration of training (each training) in hours
8. What has been your capital investment so far for implementing Waste Segregation under Alag Karo?
9. Do you think that the housekeeping staff have to dedicate more time (as compared to "Pre-Alag Karo") for collecting waste segregated at source ? <input type="radio"/> Yes <input type="radio"/> No If yes, then how much more time (additional Man-hours per day)
10. Have you hired additional housekeeping staff? <input type="radio"/> Yes <input type="radio"/> No If yes, then how many?
11. Have you increased remuneration of the existing housekeeping staff? <input type="radio"/> Yes <input type="radio"/> No If yes, then how much in total?
12. Do you get any complains regarding waste segregation at source from the house keeping staff ? <input type="radio"/> Yes <input type="radio"/> No If yes, what are these complains typically about: <input type="radio"/> Resistance from the employees <input type="radio"/> Lack of infrastructure <input type="radio"/> Lack of adequate support from volunteers <input type="radio"/> Requires more time for implementation <input type="radio"/> More effort is needed <input type="radio"/> Others (please specify)
13. What kind of challenges (if any) did you face during waste collection ('Pre- Alag Karo')?
14. Has this new system (of waste collection) been able to resolve the challenges that you faced earlier? <input type="radio"/> Yes <input type="radio"/> No If yes, then how? If not, then why?

15. Which model do you follow for disposing waste? o You sell your waste o You pay to DLF/ Contractor/ Housekeeping for waste management o Eco-green collects it o Others (please specify)
16. How much waste was generated during "Pre- Alag Karo"? (Kg per day)
17. How much waste is being generated now (post "Alag Karo")? (Kg per day)
18. Out of the total waste, what is the quantum of wet waste, dry waste and hazardous waste? (% split or Kg per day of each)
19. Did you procure any additional equipments for the waste collection (Yes/No)
20. If yes, then: a) What are these equipments? b) How much did it cost? (INR)
21. How do you ensure that your staff / employees are segregating the waste properly?
22. Are you aware how your waste is getting processed after collection? o Yes o No
23. Do you face any challenges in implementing waste segregation as required under Alag Karo ? o Yes o No
24.If yes, what are these challenges?
25.What strategies are you adopting to resolve these challenges?
26.Before Saahas, did you ever receive trainings on waste segregation from any other organization? o Yes o No
27.Assess the contribution of the Saahas towards the success of this project in a scale of 1-7 (1being the lowest and 7 being the highest)
Sustainability
28.Do you conduct regular monitoring to ensure that the office staff are practicing waste segregation? o Yes o No
29. Will you continue to follow this process of waste segregation after Saahas exits? o Yes o No
30.Do you have any recommendations for improving the project?

2 QUESTIONNAIRE FOR ESTATE MANAGERS

Basic Details		
Name:		
Location	Society:	Zone:
Effectiveness		
1. Since when have you started practicing waste segregation at source? o Pre-Saahas o Post-Saahas		
2. What was your waste collection system before this project was implemented ?		
3. What is your waste collection system now?		
4. What are the reasons for change?		
5. Post this change, have you done any of the following ? a) Have you hired additional housekeeping staff? o Yes o No If yes, then how many? b) Have you increased remuneration of existing housekeeping staff? o Yes o No If yes, then how much? c) Where do you use compost?		
6. Did you procure any additional equipments for the waste collection (in numbers).		



7. What are these equipments?
8. If yes, then how much did it cost (INR)
9. Did you get any training on waste segregation by Saahas/ Volunteers? <input type="radio"/> Yes <input type="radio"/> No
10. If yes, then : Frequency (No.of times/ days) Duration of training (each training) in hours
11. Do you think that the training has been effective in enabling your skills on waste segregation?
12. Did you provide any training on waste segregation to the housekeeping staff?
13. If yes, then : Number of housekeeping staff trained Frequency (No.of times/ days) Duration of training (each training) in hours
14. How do you ensure that the households are properly segregating waste?
15. Do you think that the housekeeping staff have to dedicate more time (as compared to earlier times) for collecting waste segregated at source ? <input type="radio"/> Yes <input type="radio"/> No If yes, then how much (INR)
16. a) Do you get any complains regarding waste segregation at source by the house keeping staff ? <input type="radio"/> Yes <input type="radio"/> No b) If yes, what are these complains typically about : <input type="radio"/> Resistance from the residents <input type="radio"/> Lack of infrastructure <input type="radio"/> Lack of adequate support from volunteers / Saahas <input type="radio"/> Requires more time <input type="radio"/> More efforts required <input type="radio"/> Others (please specify)
17. What kind of challenges (if any) did you face during waste collection (Pre)?
18. Has this new system (of waste collection) been able to resolve the challenges that you faced earlier? <input type="radio"/> Yes <input type="radio"/> No If yes, then how? If not, then why?
19. Do you feel that 3 bins and on -site composting (if any) could have health impacts (positive and negative) on residents? <input type="radio"/> Yes <input type="radio"/> No If yes, what could be these impacts
20. Do you feel that you would have anyways executed this project any time soon, without the support from Saahas? <input type="radio"/> Yes <input type="radio"/> No
21. Which model do you follow for disposing waste? <input type="radio"/> Waste workers pay you for collecting the waste <input type="radio"/> The society pays the waste workers for waste collection <input type="radio"/> Others (please specify)
22. Rank the contribution of the Saahas towards the success of this project. Rank it in a scale of 1-7 (1being the lowest and 7 being the highest)
Sustainability
23. Do you conduct regular monitoring and follow ups to ensure that the housekeeping staff are involved in waste segregation? <input type="radio"/> Yes <input type="radio"/> No
24. How do ensure that the waste segregated at your society is not mixed up by the municipal waste collectors?
25. Will you continue to lead waste segregation in society, even after the exit of Saahas? <input type="radio"/> Yes <input type="radio"/> No
26. Do you have any recommendations for improving the project?
27. Will you also motivate/ educate the estate managers of others societies about waste segregation ? <input type="radio"/> Yes <input type="radio"/> No If no, then why so ?

3. QUESTIONNAIRES FOR HOUSEKEEPING STAFF

Basic Details		
Name:	Age:	Gender:
Location:	Society:	Zone:
Education level <input type="radio"/> no school <input type="radio"/> up to 5th grade <input type="radio"/> 6th- 10th grade <input type="radio"/> 10th to 12th grade <input type="radio"/> Graduation		
Marital status <input type="radio"/> Married <input type="radio"/> Unmarried <input type="radio"/> Separated <input type="radio"/> Widowed		
Relevance		
1. Do you think this new system of waste segregation is better for the environment than the earlier system where mixed waste was sent out? <input type="radio"/> Yes <input type="radio"/> No		
2. How has it affected your work load? <input type="radio"/> Increased <input type="radio"/> Reduced <input type="radio"/> No change		
3. How long does it take you to manage waste collection as compared to earlier times? How much more/ less (in hours/ minutes) More time <input type="radio"/> Yes <input type="radio"/> No Less time <input type="radio"/> Yes <input type="radio"/> No No change <input type="radio"/> Yes <input type="radio"/> No		
Effectiveness		
1. Did you get training on the following topics from Saahas? <input type="radio"/> Detailed procedures of segregated waste collection <input type="radio"/> Monitoring data sheets <input type="radio"/> Communicating with residents confidently and clearly <input type="radio"/> Handling new waste collection infrastructure <input type="radio"/> Others (please specify)		
2. a) Did you find the training effective in enabling you to understand how waste segregation is done? Yes <input type="radio"/> No <input type="radio"/> 3-4 1 hour b) If answer is no, then why?		
3. a) Did you find the training effective in enabling you to fill the monitoring sheets daily for ensuring compliance? Yes <input type="radio"/> No <input type="radio"/> b) If the answer is no, then why?		
4. a) Did you find the training effective in enabling you to collect segregated waste collection without making any mistakes? Yes <input type="radio"/> No <input type="radio"/> b) If the answer is no, then why?		
5. a) Did you find the training effective in enhancing your confidence level, particularly when you are communicating with the resident of the society? Yes <input type="radio"/> No <input type="radio"/> b) If not, then why?		
6. How helpful were the following in implementing Waste Segregation? Mode of engagement Effectiveness Information transferred through posters, banners, etc. (IEC) <input type="radio"/> Very helpful <input type="radio"/> Helpful <input type="radio"/> Not helpful Trainings provided in groups (FGDs) <input type="radio"/> Very helpful <input type="radio"/> Helpful <input type="radio"/> Not helpful One on One discussion with the Saahas team <input type="radio"/> Very helpful <input type="radio"/> Helpful <input type="radio"/> Not helpful		
7. Did / do you suffer medical injuries during waste collection? Frequency of injuries Expenditure incurred (If any) Time Loss (if any) Before Alag Karo 1-2 100 3-4 days After Alag Karo 0		
8. Were the trainings scheduled properly to make them easy to attend? Yes <input type="radio"/> No <input type="radio"/>		



9. a) Were you also practicing waste segregation prior to this training? Yes <input type="radio"/> No <input type="radio"/> b) If yes, how much time did you spend in waste collection per day? (hours/ minutes) c) How much time do you spend now in waste collection after Alag Karo? (hours / minutes) difference is 1 hour
10. Did you get any income from the mixed waste (before)? Yes <input type="radio"/> No <input type="radio"/> If yes, then how much (INR)
11. Do you get any income from selling segregated (dry / wet waste) (now)? Yes <input type="radio"/> No <input type="radio"/> b) If yes, then how much (INR)
12. If there is a problem in waste segregation, can you register your complaint with anyone? Yes <input type="radio"/> No <input type="radio"/> o supervisor
13. What kind of challenges do you face in practicing this new system? No <input type="radio"/> Resistance from the residents <input type="radio"/> Lack of proper bins etc. <input type="radio"/> Lack of support from RWA <input type="radio"/> Others (please specify)
14. Did you get enough guidance from Saahas during the implementation of 'Alag Karo'? Yes <input type="radio"/> No <input type="radio"/>
15. Do you feel satisfied with the support received from Saahas? Yes <input type="radio"/> No <input type="radio"/>
16. Rank the contribution of the Saahas towards the success of this project. Rank it in a scale of 1-7 (1being the lowest and 7 being the highest) Do you have any suggestions to improve/sustain Waste Segregation or on implementation of the program "Alag Karo"?
17. Do you feel that waste segregation at source using this 3 - bin system has any health impact (positive and negative) on you? Yes <input type="radio"/> No <input type="radio"/> If yes, then what kind of impact?
17. Do you feel that on - site composting (if any) has any health impact (positive and negative) on you? Yes <input type="radio"/> No <input type="radio"/> If yes, then what kind of impact?
Sustainability
18. Do you think there is good involvement from all stakeholders for this program to continue? Yes <input type="radio"/> No <input type="radio"/>
19. Post implementation of this project, do you experience an enhanced sense of dignity/respect? Yes <input type="radio"/> No <input type="radio"/> o new uniform, gloves, mask, - 8000/ month: (because you do not have to manually segregate the waste any more)
20. Have you talked to any friends/ family members, about the waste segregation? Yes <input type="radio"/> No <input type="radio"/>
21. Do you feel you have good understanding about waste segregation process and you can share this knowledge confidently with others? Yes <input type="radio"/> No <input type="radio"/>

5. QUESTIONNAIRES FOR THE IMPLEMENTATION AGENCY (SAAHAS)

Basic Details
Name:
Inclusiveness
1. What is the criteria for the selection of the following under this project such as: Pillars, Apartments, Commercial hubs, Schools, Locations for public events
2. Have you included the following types of societies? <input type="radio"/> High rise <input type="radio"/> Low rise <input type="radio"/> Societies with < 1000 residents <input type="radio"/> Societies with > 1000 residents <input type="radio"/> Societies with On-site composting <input type="radio"/> Societies without on-site composting <input type="radio"/> Others (please specify)
3. Has Saahas provided trainings to the volunteers ? <input type="radio"/> Yes <input type="radio"/> No
4. If yes, then: Frequency (No.of times/ days) Duration of training (each training) Volunteers

Relevance
5. What has motivated you to implement this project ?
Effectiveness
6. a) What is the number of households to be targeted for waste segregation (as mentioned in the MoU)? b) Was the household target met? <input type="radio"/> Yes <input type="radio"/> No c) If not, then what was the reason for it (according to you)?
7. a) How much were the total allocated funds? b) Did you utilize the allocated funds? <input type="radio"/> Yes <input type="radio"/> No c) If answer to the above question is 'No', then what was the reason for the same
8. a) Do you have a regular monitoring mechanism involving audits? <input type="radio"/> Yes <input type="radio"/> No b) If yes, then how many audits do you conduct? c) Could you meet the delivery timelines (as decided initially) for different activities under this project ? <input type="radio"/> Yes <input type="radio"/> No
9. Did you witness any decrease in the quantity of mixed wastes during the audits conducted? Type of waste Yes/ No Target reduction (quantity) Actual reduction (quantity) Mixed waste <input type="radio"/> Yes <input type="radio"/> No Others (please specify)
Convergence
10. Have there been any linkages of this intervention with government projects/ policies / priorities? <input type="radio"/> Yes <input type="radio"/> No b) If yes, then with which of the following policies has it been linked? <input type="radio"/> Swachh Bharat Abhiyan <input type="radio"/> Sustainable habitat mission <input type="radio"/> Haryana State Government Projects <input type="radio"/> Any other climate change initiatives Others (please specify)
11. Has this project facilitated linkage of the on-ground workers/ waste workers, etc. with any relevant government schemes? <input type="radio"/> Yes <input type="radio"/> No If yes, then what are these schemes?
Sustainability
12. What measures / efforts have you undertaken to ensure that the project remains sustainable once you exit the project?
13. Do you ensure that the end waste is not getting mixed? <input type="radio"/> Yes <input type="radio"/> No If yes, then how do you ensure that (monitoring)?
14. How do you ensure that the waste segregation happens at the household level on a day-day basis?
15. What are the challenges / difficulties that you face during implementation of this project?
16. What strategies have you adopted for resolving these challenges?
17. According to you, what are the factors contributing towards the success of this project? <input type="radio"/> Robust monitoring <input type="radio"/> Volunteering efforts <input type="radio"/> Incentivizing the stakeholders <input type="radio"/> Active participation of the members of RWA <input type="radio"/> Policy from the local government <input type="radio"/> Others (Please specify)
18. Rank the contribution of the Saahas towards the success of this project. Rank it in a scale of 1-7 (1being the lowest and 7 being the highest)
19. On an average, how much employment generation has happened in the societies?
20. What process have you put in place to ensure that the new maids, housekeeping staff and new estate managers are given training on waste segregation by the volunteers/RWA etc.? • New maids • New Housekeeping staff • New estate managers



6. QUESTIONNAIRE FOR THE RESIDENTS

Basic Details		
Location	Society	District
Beneficiary Name	Age	
Education level <input type="radio"/> no school <input type="radio"/> up to 5th grade <input type="radio"/> 6th to 10th grade <input type="radio"/> 10th to 12th grade <input type="radio"/> Graduate <input type="radio"/> Post graduate		
Marital status <input type="radio"/> Married <input type="radio"/> Unmarried <input type="radio"/> Separated <input type="radio"/> Widowed		
Effectiveness		
1. Did you face any difficulty in adapting to this 3-bin waste segregation? <input type="radio"/> Yes <input type="radio"/> No		
2. If yes, then why so? _____		
3. Do you feel a sense of pride in generating employment at the base of pyramid? <input type="radio"/> Yes <input type="radio"/> No		
4. Are you more sensitive about waste segregation post implementation of this project? <input type="radio"/> Yes <input type="radio"/> No		
5. Do you think that the awareness sessions conducted by the volunteers for you and your maids have been effective? <input type="radio"/> Yes <input type="radio"/> No		
6. How much time did you spend in attending these awareness sessions?		
7. Do you feel that you could have done something more productive during this time? <input type="radio"/> Yes <input type="radio"/> No		
8. How do you ensure that your maid is segregating the waste properly?		
9. Are you aware how your waste is getting treated at the end? <input type="radio"/> Yes <input type="radio"/> No		
10. Did you purchase new bins for this project? <input type="radio"/> Yes <input type="radio"/> No If yes, then how much did you spend (INR)		
11. Do you face any challenges in implementation of 3-bin waste segregation? <input type="radio"/> Yes <input type="radio"/> No		
12. If yes, what are these challenges? _____		
13. What strategies are you adopting to resolve these challenges? _____		
14. Before Saahas, did you ever receive trainings on waste segregation from any other organization? <input type="radio"/> Yes <input type="radio"/> No		
15. Rank the contribution of the Saahas towards the success of this project. Rank it in a scale of 1-7 (1being the lowest and 7 being the highest)		
Sustainability		
16. Will you continue to follow this process of waste segregation after Saahas exits? <input type="radio"/> Yes <input type="radio"/> No		

7. QUESTIONNAIRE FOR RWA

Basic Details		
Name:		
Location	Society:	Zone:
Inclusiveness		
1. What are the criteria for selection of the towers / households under this project?		
2. How do you tackle opposition/ resistance from residents?		
3. a) Due to project requirement, have you hired any additional housekeeping staff? <input type="radio"/> Yes <input type="radio"/> No b) If yes, how many staff have you hired? (Nos) c) What's their average monthly salary? (INR)		

Effectiveness
4. What was your waste collection system before this project- 'Alag Karo' was implemented ? <input type="radio"/> Chute system <input type="radio"/> Door -door collection <input type="radio"/> Floor bin /floor Others (please specify)
5. What is your waste collection system post implementation of "Alag Karo"? <input type="radio"/> Chute system <input type="radio"/> Door -door collection <input type="radio"/> Floor bin /floor Others (please specify)
6. What are the reasons for adopting 'Alag Karo'?
7.What challenges (if any) did you face regarding waste collection and disposal before 'Alag Karo'?
8. Has this new system (of waste collection) been able to resolve the challenges that you faced earlier? <input type="radio"/> Yes <input type="radio"/> No If yes, then how? If not, then why?
9. How much is the capital investment incurred by your society for procuring additional bins and infrastructure under 'Alag Karo'? (INR)
10. How do you ensure that the residents, maids and housekeeping staff follow the processes for source segregation? <input type="radio"/> Impositions of fines <input type="radio"/> Training <input type="radio"/> M&E <input type="radio"/> Others (please specify)
11. a) Do you face any challenge related to the implementation of waste segregation at source? <input type="radio"/> Yes <input type="radio"/> No b) If yes, what are these challenges : <input type="radio"/> Resistance from the residents <input type="radio"/> Lack of infrastructure <input type="radio"/> Lack of adequate support from volunteers <input type="radio"/> Lack of adequate support from Saahas <input type="radio"/> Others (please specify)
12. Do you feel that waste segregation at source using this 3 - bin system has any health impact (positive and negative) on you? Yes <input type="radio"/> No <input type="radio"/> If yes, then what kind of impact?
13. Were you already doing (3 bin's concept) waste segregation before Saahas intervened? <input type="radio"/> Yes <input type="radio"/> No
14. Would you have anyways executed this project sometime soon, without the support of Saahas? <input type="radio"/> Yes <input type="radio"/> No
15. How would you rate the contribution of Saahas in the success of this implementation? <input type="radio"/> Highly important <input type="radio"/> Very important <input type="radio"/> Important <input type="radio"/> Not so important <input type="radio"/> Not at all important
16. In what part of the implementation was Saahas's role most critical? <input type="radio"/> Trainings <input type="radio"/> Processes <input type="radio"/> Monitoring <input type="radio"/> Critical guidelines from prior experience <input type="radio"/> Continuous follow up to finish the implementation
17. Did you recieve any benefit on account of sale of compost to MCG? If yes, then how much (INR)
18. Post implementation, has there been any increase in monthly maintenance charges? If yes then how much (INR)
19. Rank the contribution of the Saahas towards the success of this project. Rank it in a scale of 1-7 (1being the lowest and 7 being the highest)
20. a) Do you have onsite composting facilities in the society? <input type="radio"/> Yes <input type="radio"/> No b) Do you think having it within the society motivates the household to segragate their waste ? <input type="radio"/> Yes <input type="radio"/> No c) If yes, then why so? (Ex. they can witness waste recycling) d) If no, then why so ? (Ex. creates smells and flies, which could also demotivate the households)
21. How much did you spend on composting infrastructure ? (Pre - Alag Karo)
22. How much do you spend on composting infrastructure ? (Post - Alag Karo)
23. Do you feel that the infrastructure created (on-site composting / location for 3 bins) occupies a space that could have been otherwise used for some other activity? If yes, for what kind of activities, it could have been used for ?
24. Do you feel that on -site composting (if any) has any health impact (positive and negative) on you? Yes <input type="radio"/> No <input type="radio"/> If yes, then what kind of impact?



Sustainability
25. How are you going to ensure waste segregation continues in your society?
26. How do you ensure that the waste segregated at your society is not mixed up by the waste collectors?
27. Will you continue to practice waste segregation in society, even after the exit of the Saahas? <input type="radio"/> Yes <input type="radio"/> No
28. Do you have any recommendations for improving the project implementation?
29. Will you also motivate/ educate other about waste segregation, your friends/ family members living in other societies ? <input type="radio"/> Yes <input type="radio"/> No If no, then why so ?

8. QUESTIONNAIRES FOR WASTE WORKERS

Basic Details		
Name:	Age:	Gender:
Location:	Society:	Zone:
Education level <input type="radio"/> no school <input type="radio"/> up to 5th grade <input type="radio"/> 6th- 10th grade <input type="radio"/> 10th to 12th grade <input type="radio"/> Graduation		
Marital status <input type="radio"/> Married <input type="radio"/> Unmarried <input type="radio"/> Separated <input type="radio"/> Widowed		
Relevance		
1. Is getting Segregated waste from apartments better than getting mixed waste? <input type="radio"/> Yes <input type="radio"/> No		
2. Has it helped improve overall hygiene at your work place? <input type="radio"/> Increased <input type="radio"/> Reduced <input type="radio"/> No change		
3. Time taken to sort waste now compared to earlier times when you collected mixed waste? Yes / No How much more/ less (in hours/ minutes) More time <input type="radio"/> Yes <input type="radio"/> No Less time <input type="radio"/> Yes <input type="radio"/> No No change <input type="radio"/> Yes <input type="radio"/> No		
Effectiveness		
4. Which of the topics have you got training from Saahas? <input type="radio"/> Rules and regulations around waste management and rights of waste workers <input type="radio"/> Identifying and handling hazardous <input type="radio"/> Maintaining health and hygiene in your work place <input type="radio"/> Others (please specify)		
5. Do you have complete understanding of the three waste categories dry waste, wet waste and hazardous waste? Yes <input type="radio"/> No <input type="radio"/>		
6. What did you do with the following from societies that do not segregate? <input type="radio"/> Dry Waste <input type="radio"/> Wet Waste <input type="radio"/> Hazardous Waste <input type="radio"/> Mixed Waste		
7. Were you getting segregated waste from societies before 'Alag Karo' program, if yes since when (in months)?		
8. a) Do you get more segregated waste now as compared to earlier? Yes <input type="radio"/> No <input type="radio"/> b) If Yes, could you please quantify in Kgs/ Tons Pre- 'Alag Karo' (in Kgs/Tons) <input type="radio"/> Dry Waste <input type="radio"/> Paper waste <input type="radio"/> Trash waste <input type="radio"/> Colored paper waste <input type="radio"/> Wet Waste <input type="radio"/> Stationary paper waste <input type="radio"/> Hazardous Waste <input type="radio"/> Mixed Waste Post 'Alag Karo' (in Kgs/Tons) <input type="radio"/> Dry Waste <input type="radio"/> Paper waste <input type="radio"/> Trash waste <input type="radio"/> Colored paper waste <input type="radio"/> Wet Waste <input type="radio"/> Stationary paper waste <input type="radio"/> Hazardous Waste <input type="radio"/> Mixed Waste		

<p>9. a) Has the quality of the following wastes improved? <input type="radio"/> Plastic waste <input type="radio"/> Metal waste <input type="radio"/> Paper waste <input type="radio"/> Others (please specify)</p> <p>b) Do you get higher prices for the wastes now? Yes <input type="radio"/> No <input type="radio"/> If yes, then how much: <input type="radio"/> 25 paise <input type="radio"/> 50 paise <input type="radio"/> 100 paise <input type="radio"/> others (please specify)</p>
<p>10. Did / do you suffer medical injuries during waste handling? Expenditure incurred (If any) Time Loss (if any)</p> <p>Before Alag Karo</p> <p>After Alag Karo</p>
<p>11. a) How much time did you spend on collection site (before 'Alag Karo')</p> <p>b) How much time do you spend on collection site now? (after 'Alag Karo')</p> <p>c) How much time did you spend on secondary sorting (before 'Alag Karo')</p> <p>d) How much time did you spend on secondary sorting (after 'Alag Karo')</p> <p>e) Do you utilize the time saved on: Economic activities: Yes <input type="radio"/> No <input type="radio"/> If yes, how much income is generated from the same? Social life: Yes <input type="radio"/> No <input type="radio"/></p> <p>f) Have you increased or decreased your manpower? Yes <input type="radio"/> No <input type="radio"/></p> <p>g) If yes, then how many (nos.)</p> <p>a) After collecting segregated waste from the society, what do you do with the following <input type="radio"/> Dry Waste <input type="radio"/> Paper Waste <input type="radio"/> Wet Waste <input type="radio"/> Hazardous Waste <input type="radio"/> Mixed House</p> <p>b) Destination for different categories of waste <input type="radio"/> Dry Waste (distance in kms) <input type="radio"/> Wet Waste (distance in kms) <input type="radio"/> Hazardous Waste (distance in kms) <input type="radio"/> Mixed House (distance in kms)</p> <p>c) What was/is your average per Kg income when you collected mixed waste (INR)</p> <p>d) What was/is your average per Kg income when you collect segregated waste (INR)</p> <p>e) Has there been any change in the number of trips conducted for waste collection?</p>
<p>Status Yes / No</p> <p>How many trips did you take before (Pre - 'Alag Karo')</p> <p>How many trips did you take now (Post - 'Alag Karo')</p> <p>Increased Yes <input type="radio"/> No <input type="radio"/></p> <p>Decreased Yes <input type="radio"/> No <input type="radio"/></p> <p>No change Yes <input type="radio"/> No <input type="radio"/></p> <p>f) Do you have any suggestions/recommendations for waste management at this society which would be of some help to you?</p> <p>g) Do you feel that 3 bin segregation system has any health impacts (positive and negative) on you? Yes <input type="radio"/> No <input type="radio"/></p> <p>If yes, then what kind of impact?</p> <p>h) Do you feel that on-site composting (if any) has any health impacts (positive and negative) on you? Yes <input type="radio"/> No <input type="radio"/></p> <p>If yes, then what kind of impact?</p>
<p>Sustainability</p>
<p>i) Do you have either of the following cards ? <input type="radio"/> Eco-green card <input type="radio"/> MCG id card</p> <p>j) Did you ever get fined by the police due to non-availability of MCG approved ID Card? Yes <input type="radio"/> No <input type="radio"/></p> <p>k) If yes, _____ times did you get fined and what was the typical fine amount each time_____?</p> <p>l) Has this ID card been of any benefit? Yes <input type="radio"/> No <input type="radio"/></p> <p>If yes, what benefit</p>



9. QUESTIONNAIRES FOR VOLUNTEERS

Basic Details		
Name:		Age:
Location	Society:	Zone:
Inclusiveness		
1. How do you involve all stakeholders – residents, RWA, housekeeping staff, maids, waste workers etc.		
Effectiveness		
2. What motivated you to volunteer for this project?		
3. Did you get adequate training / support from Saahas before going on field? <input type="radio"/> Yes <input type="radio"/> No If yes, what topics did the trainings cover? <input type="radio"/> Types and categories of waste <input type="radio"/> Why and how to segregate waste at source <input type="radio"/> Inputs on how to train other stakeholders (housekeeping staff, maids, etc.) <input type="radio"/> Others (please specify)_____		
4. Did you find the training effective in developing your understanding on waste segregation? <input type="radio"/> Yes <input type="radio"/> No If not, then why?		
5. Did you find the training effective to help you to address all concerns & questions of resident/ stakeholders? <input type="radio"/> Yes <input type="radio"/> No If not, then why so?		
6. Did you get any incentives from Saahas for executing this project? <input type="radio"/> Yes <input type="radio"/> No If yes, then what kind of incentives have you received? Monetary incentives <input type="radio"/> Yes <input type="radio"/> No Non-monetary incentives <input type="radio"/> Yes <input type="radio"/> No Others (please specify)		
7. How many trainings did you conduct for the following stakeholders? Frequency Duration of training (each training) House maid House keeping staff Resident		
8. How many trainings have you received from Saahas? Frequency (No.of times/ days) Duration of training (each training)		
9. Have you volunteered for any other social/environmental initiative? If yes, what		
10. a) Do you face challenges from any of the following stakeholders? Saahas <input type="radio"/> Yes <input type="radio"/> No RWAs <input type="radio"/> Yes <input type="radio"/> No Estate Management <input type="radio"/> Yes <input type="radio"/> No Housekeeping staff <input type="radio"/> Yes <input type="radio"/> No No Maids <input type="radio"/> Yes <input type="radio"/> No Residents <input type="radio"/> Yes <input type="radio"/> No Waste workers <input type="radio"/> Yes <input type="radio"/> No b) if yes, what are these challenges?		
11. What measure do you undertake to resolve complains/ challenges during the course of program implementation?		
12. Do you receive support from the following: Saahas <input type="radio"/> Yes <input type="radio"/> No RWAs <input type="radio"/> Yes <input type="radio"/> No Estate Management <input type="radio"/> Yes <input type="radio"/> No		
13. Are you satisfied with the support that you receive from Saahas ? <input type="radio"/> Yes <input type="radio"/> No		
14. Do you think volunteering in such initiatives could lead to any of the following? Appreciation from friends and family <input type="radio"/> Yes <input type="radio"/> No Improved job prospects <input type="radio"/> Yes <input type="radio"/> No Appreciation from the institutions (schools and colleges) that you are part of (if any) <input type="radio"/> Yes <input type="radio"/> No Housekeeping staff <input type="radio"/> Yes <input type="radio"/> No Others (Please specify) _____		

15. Do you think that your sensitivity to social or environmental issues has got enhanced, post your participation in this project? <input type="radio"/> Yes <input type="radio"/> No If No, then why so ?
16. Do you feel motivated to discuss this project with friends/ family members?
17. Rank the contribution of the Saahas towards the success of this project. Rank it in a scale of 1-7 (1being the lowest and 7 being the highest)
Sustainability
18. Do you participate in monitoring and follow ups to ensure that waste segregation sustains in your society? <input type="radio"/> Yes <input type="radio"/> No
19. Do you conduct refresher training for the housekeeping team? If yes, have you noticed any difference in the knowledge and awareness level of the housekeeping team?
20. What measures have you taken to ensure that the households/ maid/ housekeeping staff/ RWAs/ other stakeholders will continue doing segregation after Saahas exits?
21. According to you, what was your level of engagement with this program during the <input type="radio"/> Initial phase <input type="radio"/> High <input type="radio"/> Medium <input type="radio"/> Low <input type="radio"/> Medium phase <input type="radio"/> High <input type="radio"/> Medium <input type="radio"/> Low <input type="radio"/> Towards end <input type="radio"/> High <input type="radio"/> Medium <input type="radio"/> Low

10. QUESTIONNAIRE FOR DLF

Basic Details		
Name:		
Location	Society:	Zone:
Effectiveness		
1. Since when have you started practicing waste segregation at source? <input type="radio"/> Pre-Saahas <input type="radio"/> Post-Saahas		
2. What was your waste collection system before this project was implemented ?		
3. What is your waste collection system now?		
4. What are the reasons for change?		
5. Post this change, have you done any of the following ? a) Have you hired additional housekeeping staff? <input type="radio"/> Yes <input type="radio"/> No If yes, then how many? b) Have you increased remuneration of existing housekeeping staff? <input type="radio"/> Yes <input type="radio"/> No If yes, then how much?		
6. How much waste was generated during "Pre- Alag Karo"?		
7. How much waste is being generated now (post "Alag Karo")?		
8. Out of the total waste, what is the quantum of wet waste, dry waste and hazardous waste?		
9. Did you procure any additional equipments for the waste collection (in numbers).		
10. If yes, then what are these equipments ?		
11. If yes, then how much did it cost ? (INR)		
12. Did you get any training on waste segregation by Saahas? <input type="radio"/> Yes <input type="radio"/> No		
13. If yes, then : Frequency (No.of times/ days) Duration of trainng (each training) in hours		
14. Do you think that the training has been effective in enabling your understanding on waste segregation?		
15. Did you provide any training on waste segregation to the housekeeping staff?		



16. If yes, then : Number of housekeeping staff trained Frequency (No.of times/ days) Duration of training (each training) in hours
17. How do you ensure that the client offices are properly segregating waste?
18. Do you think that the housekeeping staff have to dedicate more time (as compared to "Pre-alag Karo") for collecting waste segregated at source ? <input type="radio"/> Yes <input type="radio"/> No If yes, then how much (INR)
19. a) Do you get any complains regarding waste segregation at source from the house keeping staff ? <input type="radio"/> Yes <input type="radio"/> No b) If yes, what are these complains typically about : <input type="radio"/> Resistance from the offices <input type="radio"/> Lack of infrastructure <input type="radio"/> Lack of adequate support from volunteers <input type="radio"/> Requires more time <input type="radio"/> More efforts required <input type="radio"/> Others (please specify)
20. What kind of challenges (if any) did you face during waste collection ('Pre- Alag Karo')?
21. Has this new system (of waste collection) been able to resolve the challenges that you faced earlier? <input type="radio"/> Yes <input type="radio"/> No If yes, then how? If not, then why?
22. What has been your capital investment so far for implementing Alag Karo (INR)
23. Which model do you follow for disposing waste? <input type="radio"/> Waste workers pay you for collecting the waste <input type="radio"/> The society pays the waste workers for waste collection <input type="radio"/> Eco-green collects it <input type="radio"/> Sell off the dry waste and compost the wet waste <input type="radio"/> Others (please specify)
24. a) Do you engage in composting of wet waste? <input type="radio"/> Yes <input type="radio"/> No If yes, then: a) How much have you invested in composting (INR) b) How much manure is produced from composting the wet waste (Kg tons) c) Do you sell the manure (obtained from composting) in the market? <input type="radio"/> Yes <input type="radio"/> No d) If yes, how much revenue do you get by selling the same?
25. Do you sell off the dry waste? <input type="radio"/> Yes <input type="radio"/> No
26. If yes, how much revenue do you get from selling the same? (INR)
27. Do you get any revenue from selling off the dry waste? <input type="radio"/> Yes <input type="radio"/> No
28. If yes, then how much? (INR)
29. If yes, how much do you get it? (INR)
30. Do you feel that 3 bins segregation (if any) could have health impacts (positive and negative) on residents? <input type="radio"/> Yes <input type="radio"/> No If yes, what could be these impacts?
31. Do you feel that you would have anyways executed this project any time soon, without the support from Saahas? <input type="radio"/> Yes <input type="radio"/> No
32. Attribute the contribution of the Saahas towards the success of this project in a scale of 1-7 (1being the lowest and 7 being the highest).
Sustainability
33. Do you conduct regular monitoring and follow ups to ensure that the housekeeping staff are involved in waste segregation? <input type="radio"/> Yes <input type="radio"/> No
34. How do ensure that the waste segregated at DLF is not mixed up by the municipal waste collectors?
35. Will you continue to lead waste segregation in DLF, even after the exit of Saahas? <input type="radio"/> Yes <input type="radio"/> No
36. Do you have any recommendations for improving the project?

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