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OVERVIEW

The statistics are truly staggering. Every day India generates a mind boggling 1.45 lakh metric tonne (MT)¹ per day of solid waste. Of this, 80 percent is unscientifically disposed without proper processing leading to a problem that threatens the environment, our health, and the planet itself. But what has led to this trash explosion? It is now widely recognised that urbanization, enhanced standards of living and changes in consumption patterns have contributed a great deal to the increased volume of waste. The situation is indeed grim and one that needs to be addressed urgently.

The government of India on its part has taken significant steps in this direction. The Solid Waste Management (SWM) Rules, 2016 serve as a strong regulatory tool to deal with issues pertaining to waste. Crucially, the importance of source segregation is highlighted in the Rules as fundamental to the process of waste management. This involves segregating waste at the source into pre-determined groups to facilitate resource recovery through recycling.

'Alag Karo', meaning 'do separate', was an awareness and implementation program for waste

segregated at source launched in Gurugram city, Haryana state. The initiative was supported by Coca-Cola India Pvt Ltd, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (Implementing agency on behalf of the German Government) and Tetra Pak India. Saahas, a not-for-profit organization working in the SWM sector since 2001, was the implementation partner. The program, launched in 2017, has played a key role in spreading awareness and promoting the practice of waste segregation at source.

Before launching the program, communities were identified for its roll out. The goal was to inspire, handhold and help execute segregation of waste at its source. To achieve this, the first step was bringing together communities for a common purpose. This was done by creating awareness among them, advocating for behavioural and attitudinal change in handling of waste. Included in this exercise were residents of housing complexes, educational and commercial establishments, and schools in the targeted areas.

The program crucially focussed on educating Resident Welfare Associations (RWAs) of housing complexes, and training househelp and housekeeping staff on how waste segregation

¹SHELTER. Volume 19 No. 2 October 2018. ISSN 2347; <https://www.hudco.org/writereaddata/Shelter-oct18.pdf>

is done at source. Feedback from them was monitored and help was provided to RWAs/ housekeeping administration to formulate their policies and systems to institutionalize source segregation. This meant setting up infrastructure to collect, store and process segregated waste.

The program sensitized around 35,000 households, and was put into practice in 42 societies covering 22,000 housing units. As a result, 60 percent of societies were able to achieve more than 90 percent waste segregation levels. 40 percent of societies now have fully functional in-house composting facilities and 9 percent have adopted an offsite composting model. Diversion of this wet waste away from the landfill resulted in reduction of GHG (greenhouse gases) emission by 12,000 tons of CO2 equivalent per year.

To transparently evaluate the impact of the program, an impact study was conducted by a third party, KPMG. The assessment was based on two frameworks: (a) IRECS --Inclusiveness; Relevance; Effectiveness; Convergence; Sustainability, and (b) SROI -- Social Return on Investment. The assessment was restricted to only RWAs and the impact on waste workers part of the program. Of the 42 residential societies, the study covered 14 selected on a sample basis.

IRECS is a tool that helps in gaining a qualitative understanding of the impact. SROI helps in quantifying the social, environmental and financial outcomes and its impact in financial terms. The program had an SROI of 2.66, in 2019-2020, which means that for every Indian rupee of investment, INR 2.66 of the social value attributable to the stakeholders was created. The SROI also reflects the additional economic and social benefits from the program. In this case, it included as increased income for waste workers (by selling dry waste) and better health for them due to lesser workplace injuries.

All in all, the program was a successful intervention. However, it was limited in its scope since it did not influence the complete chain of Municipal Solid Waste Management (MSWM). One of the conclusions that can be drawn is that

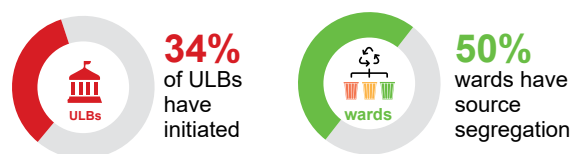
there is a need to scale-up the lessons from this program in city-level initiatives, and build on the capacities of municipal officials, RWAs, waste workers and vendors. Budgetary commitments also need to be upped by civic bodies for segregated waste management.

THE BACKDROP

In Haryana state only 17.5 percent of the total waste generated is successfully treated. The rest 78 percent is sent to landfills². The highly urbanised and industrialized Gurugram-Faridabad cluster accounts for almost one-fourth of the total daily waste generated in the state.

According to 2019 figures from the Haryana State Pollution Control Board (HSPCB), 1000 tonnes of waste is generated per day in Gurugram-Faridabad. It is projected that by 2041 this will increase to 2900 MT. The prognosis for other urban clusters nationwide is equally grim.

The response from Urban Land Bodies (ULBs) towards segregation of waste has, however, been inadequate across the country. This is despite the Solid Waste Management (SWM) Rules, 2016, requiring segregation of waste at source. So far, implementation of the rules has been weak. Only 34 percent of ULBs across the country have initiated source segregation in 50 percent of their wards³.



In order to plug the gaps in the implementation of source segregation, a multi-stakeholder collaborative program was launched in Gurugram city in 2017. It was a municipal solid waste management initiative called, 'Alag Karo'.

The need for Alag Karo: A baseline study on waste management was initially conducted to ascertain the existing KAP (Knowledge, Attitude, Practice) among people. The survey covered 200 citizens across 19 different

²Haryana State Pollution Control Board. (2019). Annual Report under Solid Waste Management Rules for 2018-2019.

³Ministry of Housing and Urban Affairs. (2020). Swachh Survekshan 2020.

housing societies. The study indicated that although most of the respondents were aware of waste segregation, close to 60 percent had never practiced the same. Only 20 percent were aware of the 2016 Rules pertaining to waste management.

This highlighted the need for a program to create awareness about different aspects of waste management at source, and to help implement the same. It was to fulfil these goals that the Alag Karo program was created.

Program objective: The idea was to inspire, support, guide and implement source segregation of waste. The target areas were residential complexes, educational and commercial establishments/communities. Additionally, the programme aimed at developing capacities of waste workers to collect and sort waste in order to maximise recycling. This would in turn reduce dumping and burning of waste in Gurugram city.

Identification of target group: The baseline study indicated that multi-storied apartments and gated communities are large bulk waste generators. But they lacked a workable model for sustainable waste management. The fact that they were gated housing complexes implied that implementation and management would be relatively easier. This was because of the structured mechanism they follow for housekeeping. These factors encouraged their selection as a target group.

Partners in the implementation: The program roped in private players such as Coca-Cola and Tetra Pak. Others involved in the initiative included International development agencies, GIZ and develoPPP.de, set up by the German Federal Ministry for Economic Cooperation and Development (BMZ) to foster the involvement of the private sector in areas where business opportunities and development policy initiatives overlap. Saahas, a non-profit organization with expertise in MSWM was brought on board for implementation. Government support came in through enabling policies and participation of the MCG (Municipal Corporation Gurugram). And finally, residential societies were motivated to implement the program in their campuses. Alag Karo focussed on 'training the trainer' to build

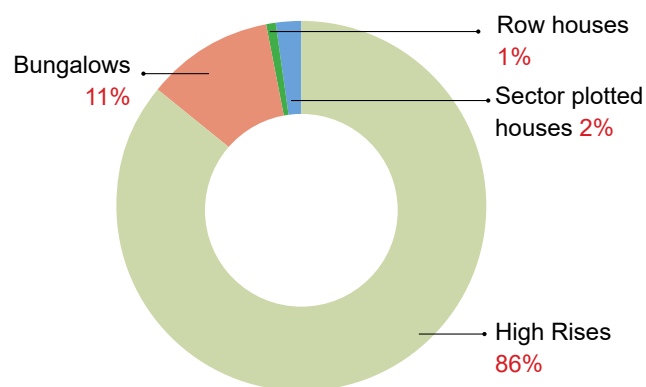
the capacity of different stakeholders and ensure sustainability of the program's objectives.

STRATEGY AND EXECUTION

Implementation typically started with getting the community ownership in place. It then had intensive educating and training the residents/occupants, domestic help and housekeeping staff sessions on how waste is segregated at source. Once the program took off, they were monitored and feedback collected. The RWAs/Housekeeping Administration were assisted in drawing up policies and systems to institutionalise source segregation. Help was also provided to set up infrastructure for collecting, storing and/or processing segregated waste.

Once segregated, the waste was further sorted by waste workers to maximise recycling. The programme intervened in the training of these workers, helping them to enhance their income and livelihood. It also empowered them with knowledge on how to handle waste safely in order to reduce injuries (refer Figure 9).

Figure 1: Categories of housing covered by the program



Strategy

Communication strategy plays an important role in programs that involve multiple stakeholders. Considering this, customised IEC material was developed and public campaigns such as games, marathons, music concerts and street plays, were organized to publicize the program and its features. The communication was built to keep it interesting, engaging, informative and fun. This helped in changing people's attitude towards waste.



Figure 2: Steps followed for programme execution

ALAG KARO RWA PROGRAMME DESIGN



Outreach: A total of 65 societies comprising of 35,000 households were sensitized, of which the program was implemented in 42 societies with 22,000 housing units.

Impact Evaluation Using IRECS and SROI

To evaluate the impact of the program, an independent study was undertaken⁴ which used two internationally accepted frameworks. These were: IRECS (Inclusiveness, Relevance, Effectiveness, Convergence, Sustainability) and SROI (Social Return on Investment). The former is widely used for evaluating impact of social development programs and is based on the OECD-DAC (Organisation for Economic Co-operation and Development - Development Assistance Committee) criteria. The latter provides an insight on programme impact beyond traditional economic evaluation tools. It is particularly useful when multiple stakeholders are involved⁵.

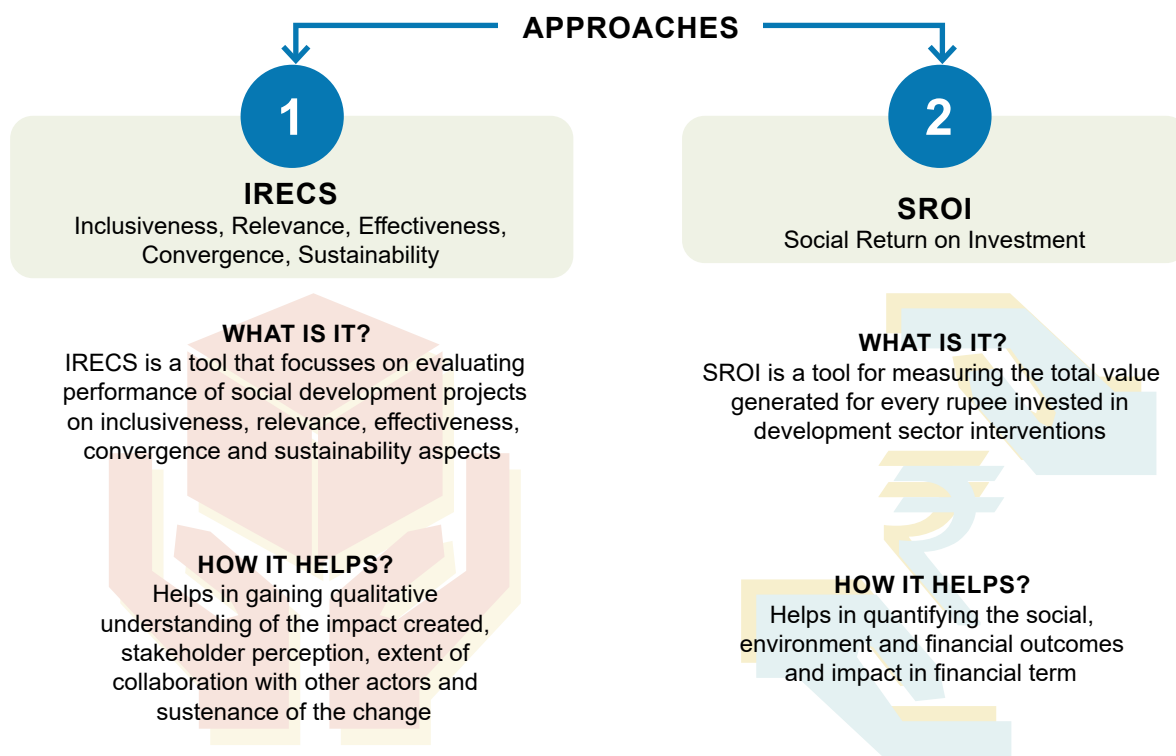
SROI has been used by other international development agencies and funding organizations such as the UNDP⁶ and the World Bank as a key performance indicator to measure project impact. Both IRECS and SROI provide detailed qualitative and quantitative insights on the overall performance of a program, which helps factor in its additional benefits.

Figure 4 showcases the sample size covered as a part of the study and Figure 6 briefly outlines the study's methodology.

Impact Assessment Using IRECS

Inclusiveness: The program, through awareness and capacity building, covered all stakeholders critical for ensuring segregated waste at source. These included residents, housekeeping staff, domestic help and waste workers (refer Figure 5).

Figure 3: Impact evaluation approaches



⁴Conducted by KPMG.

⁵Hamelmann C, Turatto F, Then V, Dyakova M. Social return on investment: accounting for value in the context of implementing Health 2020 and the 2030 Agenda for Sustainable Development. Copenhagen: WHO Regional Office for Europe; 2017 (Investment for Health and Development Discussion Paper).

⁶United Nations Development Programme Asia-Pacific Region Regional Project Document (2015-2020). Project Document Template (undp.org)

Figure 4: Sample Size

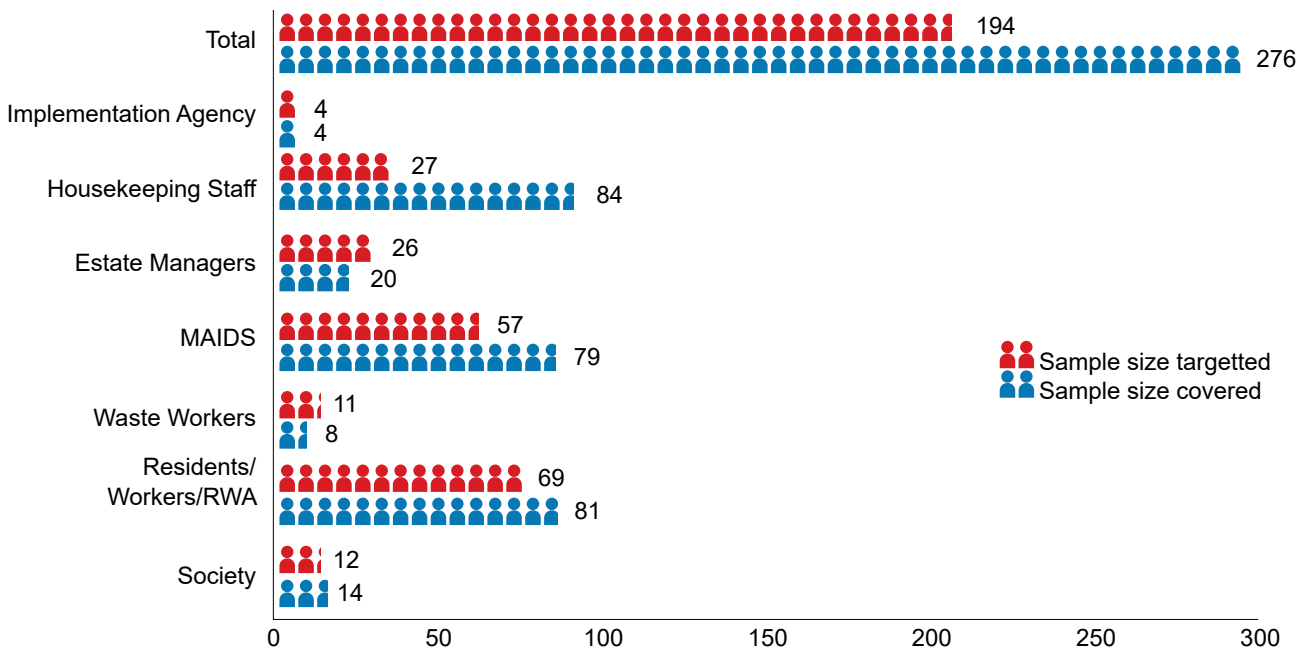


Figure 5: Methodology followed for the study

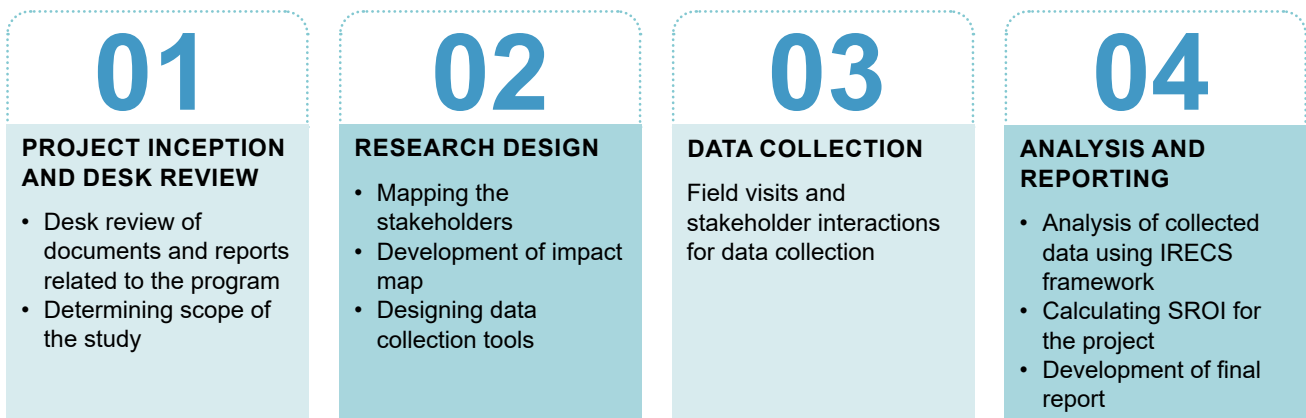
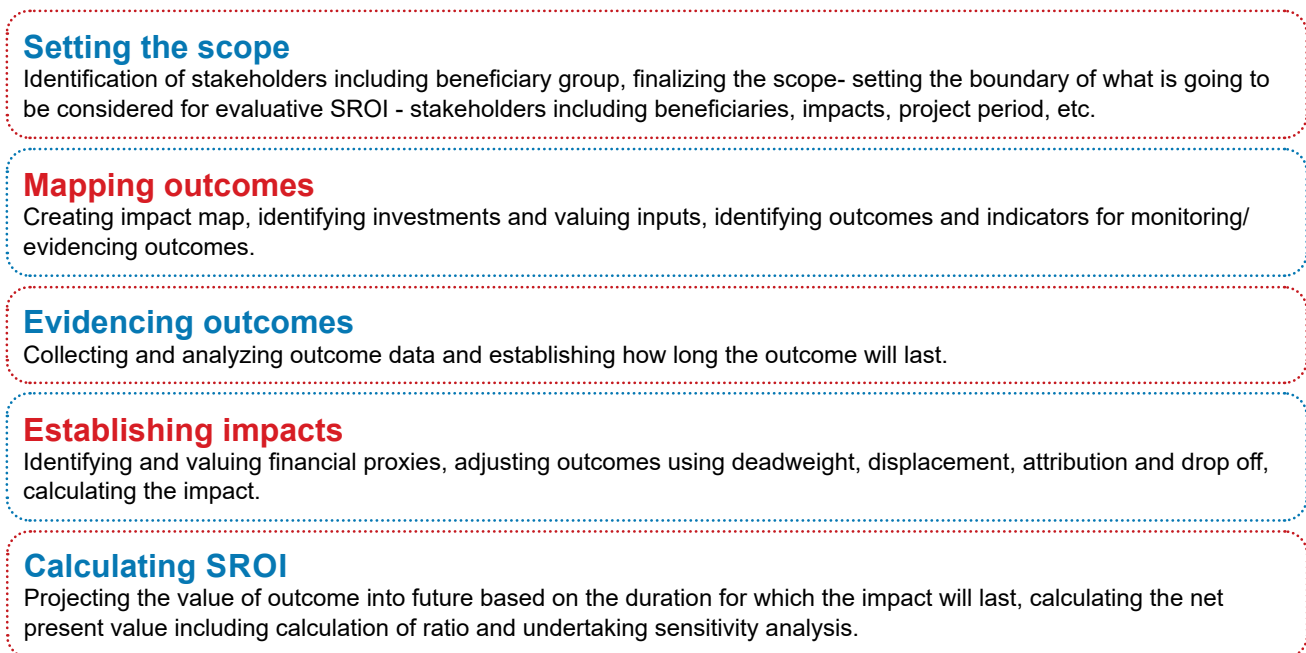


Figure 6: Methodology for conducting SROI





PARTNERS



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MEDIA PARTNER



ALAG KARO JOURNEY SO FAR...

- 40,000 people reached out to
- 6,000 Households segregating waste at source
- 300 Waste Workers trained on livelihood improvement



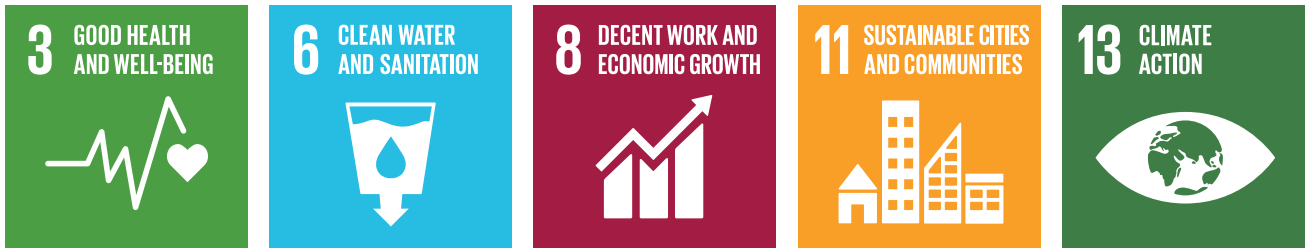
UPTO 90% IS A RESOURCE TO BE RECOVERED!

ONLY IF SEGREGATED

- COMPOSTABLE WASTE (60%)
- RECYCLABLE WASTE (30%)
- ENERGY RECOVERY/LANDFILL (10%)



Figure 7: SDGs achieved



Relevance: The program was aligned to the SWM Rules (2016) and met its objectives. In addition, it contributed in achieving Sustainable Development Goals 3,6, 8, 11 and 13 which deal with well being, clean water, sanitation, economic growth, sustainable cities and communities and climate action respectively.

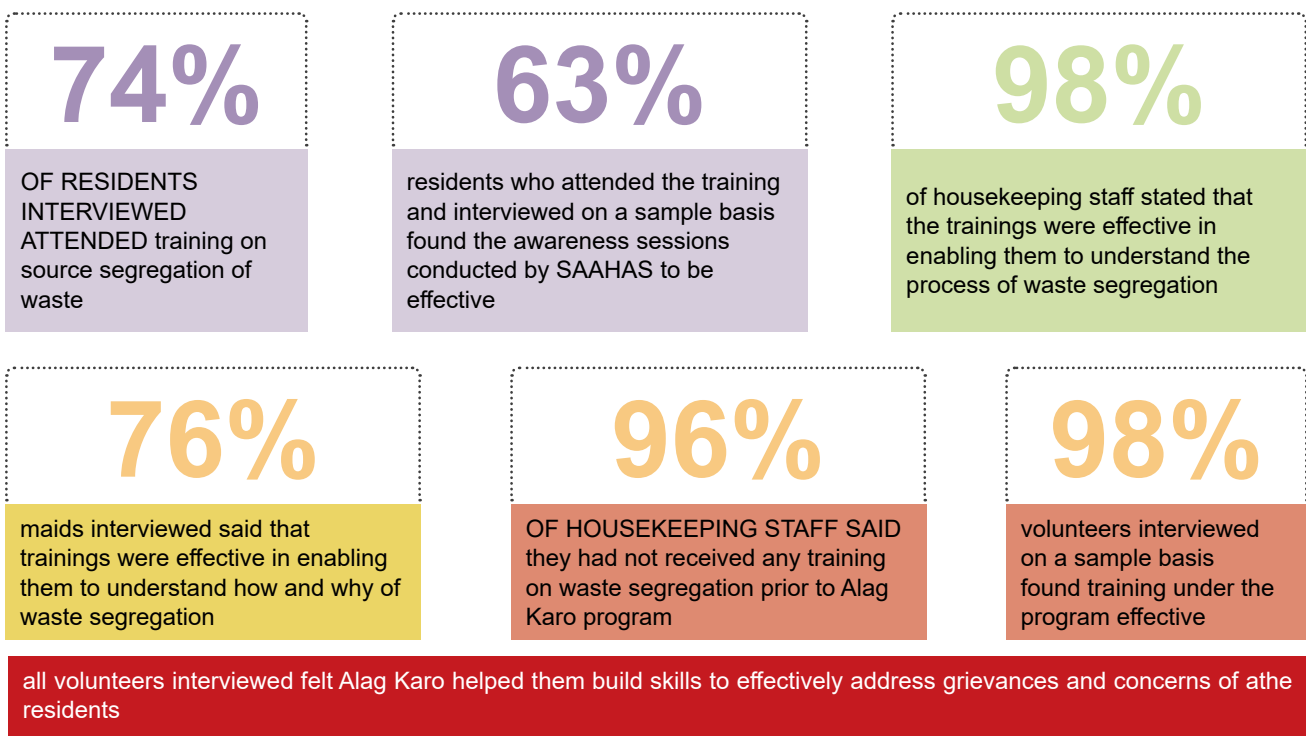
Effectiveness: In this case, robustness⁷ of the process (to evaluate effectiveness) was determined through behavioural change and capacity building of the stakeholders, as shown in Figure 8.

Convergence: The program facilitated the convergence of a range of stakeholders. This included private players like Coca-Cola and Tetra Pak, international development agencies like GIZ and develoPPP.de, Saahas, a non-

profit organization with expertise in MSWM, the Municipal Corporation of Gurugram and citizens. Through this strategy, the program helped achieve certain waste management objectives and provided policy inputs for the Swachh Bharat Mission, a national mission under the Ministry of Housing and Urban Affairs (Government of India).

Sustainability: It was essential to build an enabling environment to sustain the program. Its continuance had to be ensured even after the direct involvement of the implementation agency and the withdrawal of support from the donor. This required putting in place a governance structure, finance model and operating system.

Figure 8: Effectiveness scales across stakeholders



⁷Change in behaviour and the capacity to act accordingly will ensure long-term sustenance, hence robustness.

- **Governance:** The program has provided handholding support to RWAs in framing SWM related policies, rules and housekeeping staff contract terms. This has created a governance structure for the continuation of the program after Saahas' exit.
- **Operational:** Alag Karo adopted an approach which focused on building capacities of different stakeholders to implement the program. In addition, an internal pool of 235 volunteers was created which could provide further SWM training when required.
- **Financial:** The program through awareness generation around SWM Rules 2016 and MCG notification⁸, along with benefits of source segregation, motivated RWAs to commit financial resources.
- In addition to implementing source segregation and facilitating stakeholder integration, the programme produced the following economic and social benefits:

Economic Benefits

- It economically empowered waste workers by increasing their monthly income.
- It helped reduce the number of injuries among waste workers while collecting and

sorting trash. It saved time and money on accessing healthcare.

- At the city-level, there was a saving on tipping fee which was earlier paid by the MCG to vendors to clear waste from 21 societies. All these residential complexes now have an onsite compost facility.

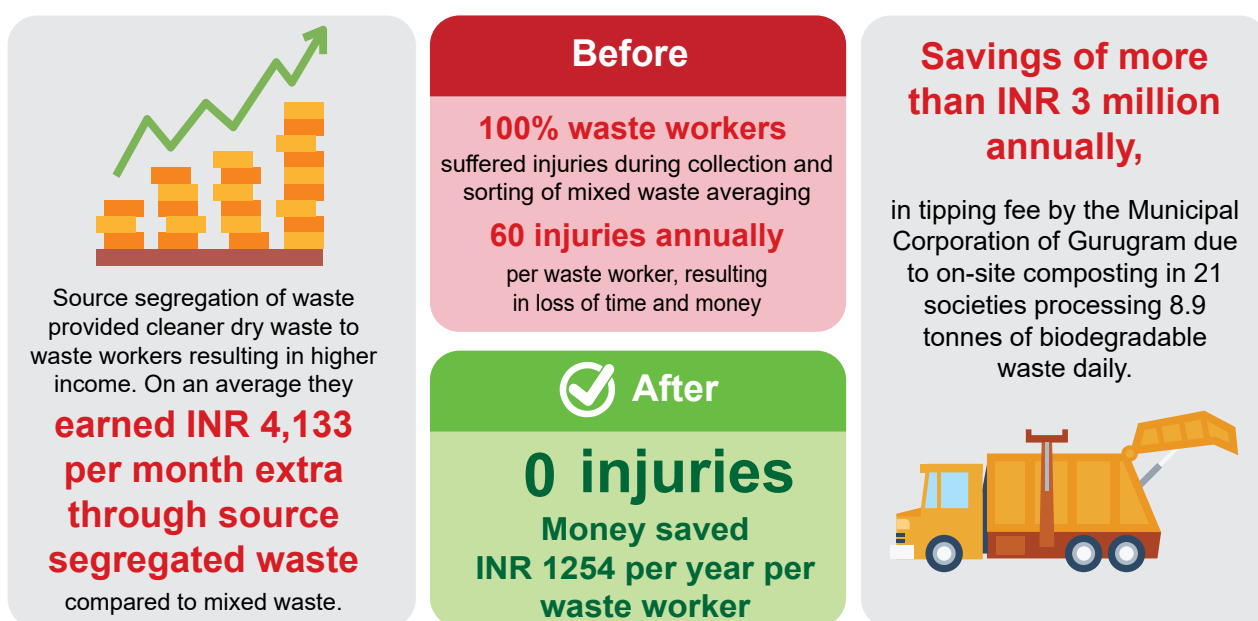
SROI: While calculating the SROI, all the benefits cited above were factored in to determine the total impact of the program. Cumulatively, they contributed to achieving an SROI of 2.66⁹. This implies that for every Indian rupee of investment by the stakeholders, INR 2.66 of the social value attributable to the stakeholders was created during 2019-2020. Therefore, in addition to addressing waste-related challenges in local communities, the program also created additional benefits that can be clearly accounted for.

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

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

Environmental impact: By 2019, 21 societies were composting 8.9 tons of wet waste everyday. This led to a reduction of GHG emissions by 12,000 tons CO₂ equivalent per year, with an estimated social cost of INR 42 million.

Figure 9: Economic benefits of the program



⁸MCG notification for imposing INR 25,000 for each instance of non-compliance of source segregation by a bulk waste generator.

⁹Impact is calculated from 2017 to 2020, and the impact value is adjusted to reflect the Net Present Value (NPV) of the outcome values.



Figure 10: SROI values achieved in the program

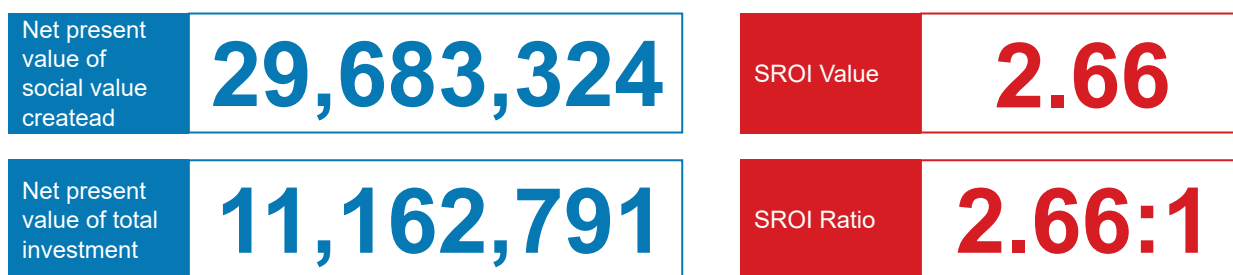


Figure 11: Survey results of this study

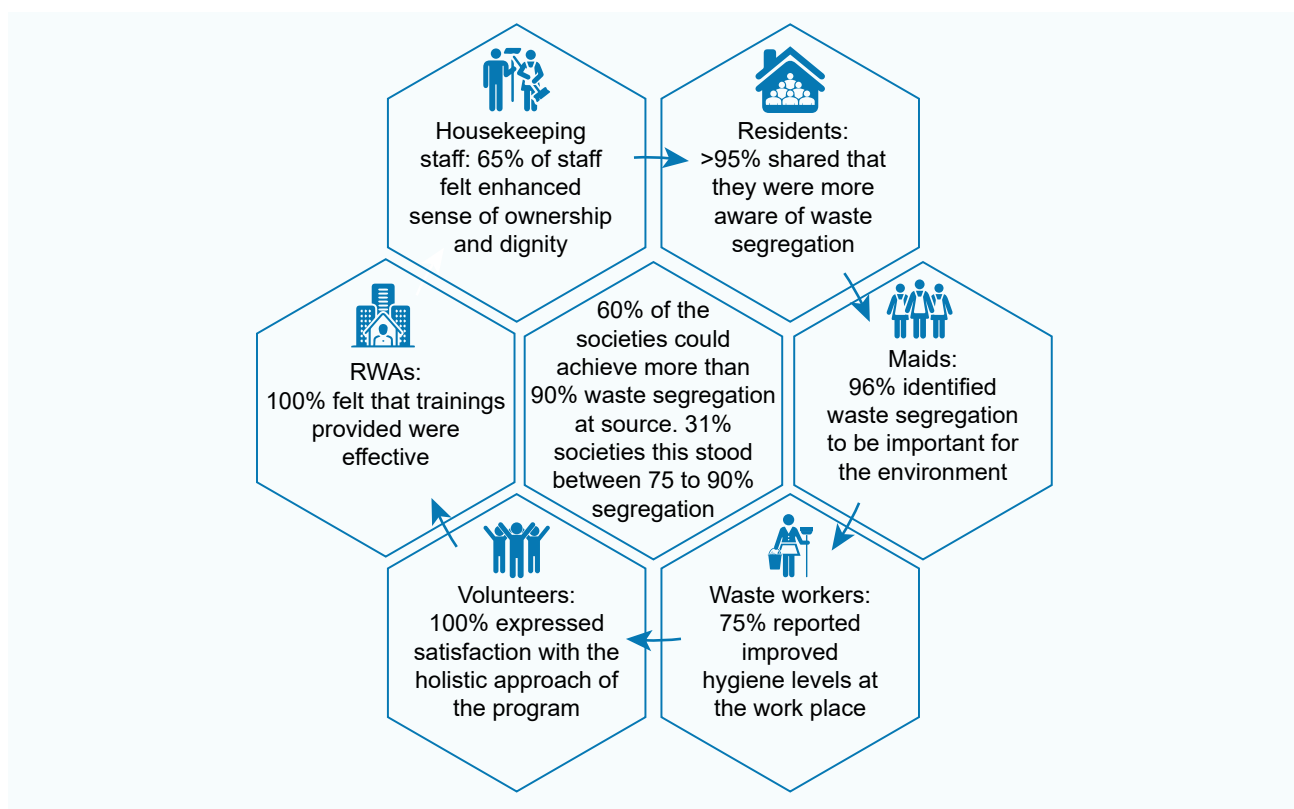


Figure 12: Program outputs, outcomes and impacts

Inputs	Output	Outcome	Impact
<ul style="list-style-type: none"> • Training sessions for stakeholders • Holding support through face to face meetings, WhatsApp messages and phone calls • Concurrent monitoring and waste audits. 	<ul style="list-style-type: none"> • Training sessions for stakeholders • Holding support through face to face meetings, WhatsApp messages and phone calls • Concurrent monitoring and waste audits. • 244 monitoring visits and waste audits 	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

Inputs	Output	Outcome	Impact
	<ul style="list-style-type: none"> Waste segregation program implemented in 42 societies. 	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
		Increased 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

Conclusion and Recommendations

The Alag Karo program has been instrumental in showcasing ways in which a collaboration between different stakeholders can produce positive results. In this case, each other's strengths were leveraged to provide an effective and sustained solution for solid waste management. The programme being a great success, provides immediate rationale for replication and upscaling for optimized results. In fact, Alag Karo emerges as a 'trend-setter' for waste management projects since it endeavours

to ensure on-ground sustained behavioural change among citizens. Ministry of Housing and Urban Affairs (MoHUA) promulgated the adoption of 'Alag Karo' in all municipal corporations across the country as a communication tool for waste management. This provides the program both longevity and viability.

The following table details specific stakeholder-wise recommendations. These will be of assistance in designing and implementing similar programs on different scales and across varying geographies.



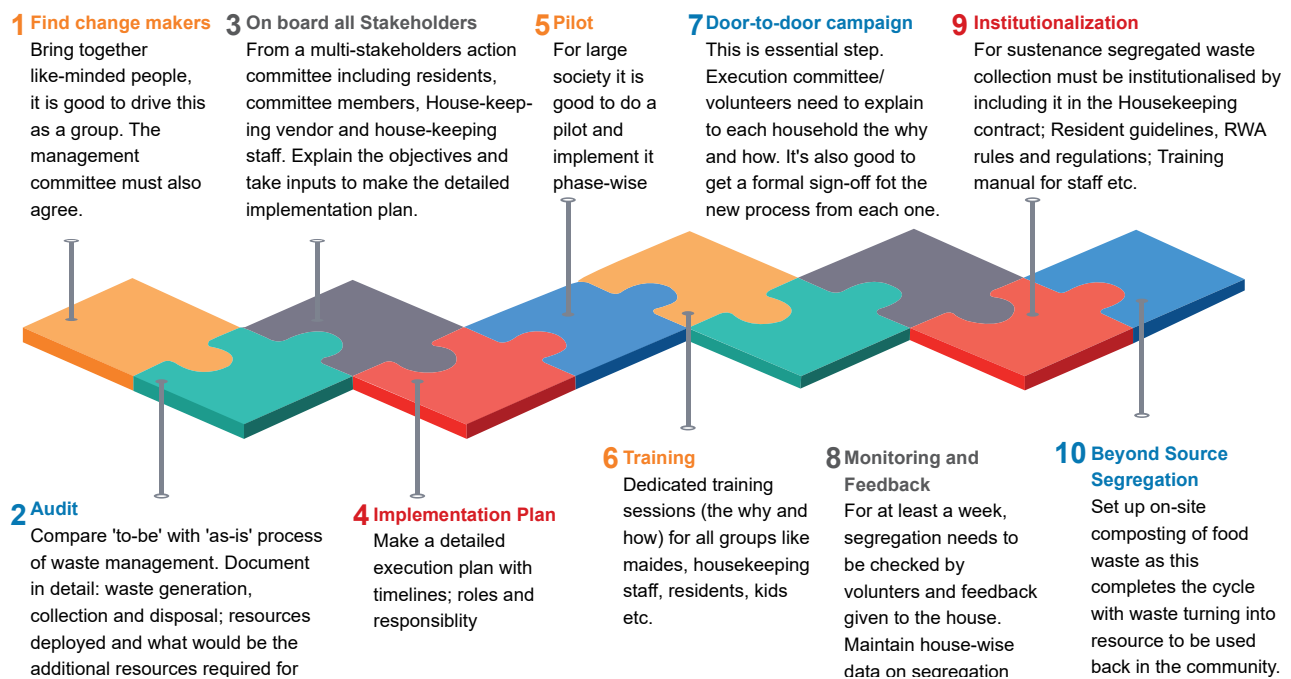
Table 1: Stakeholder-wise recommendations

Stakeholder	Recommendations based on learnings from the Alag Karo programme
RWAs	<ul style="list-style-type: none"> • Identify a RWA committee member who takes responsibility and leads communication and execution. • Chart a detailed implementation timeline with clear roles and responsibilities. Identify targets (using parameters such as households covered, volume of waste diverted from landfill etc.) against defined time periods. • Form volunteer groups within the RWA, and support them . • Formulate clear waste management rules in line with SWM Rules 2016 and educate citizens about them. • Identify volunteers to lead awareness campaigns. • Conduct timely monitoring and evaluation with inputs from volunteers and citizens by forming Whatsapp groups. • Provide customized training for each stakeholder group. This is critical. • Implement the program with discipline and rigour. • Ensure institutionalization of source segregation by upgrading RWA policies and rules in conjunction with service-providers and residents.
Volunteers	<ul style="list-style-type: none"> • Form a group of like-minded people. • Door-to-door campaigns are most effective. Make time and effort for them. • Use different modes of communication such as nukkad naatks (street plays), painting competitions, etc. to connect with all age-groups and stakeholders. • Ensure training programs are regularly conducted and get feedback from all stakeholders.
Municipalities	<ul style="list-style-type: none"> • Identify implementation partners such as non-profit organisations /NGOs, private sector, development agencies for support and accelerated action. • Implementation must be done in a phased manner instead of launching the program across the city in one go. This is critical. Implementation phases can be decided based on types of waste generators -- apartments, schools, offices etc -- or by locality eg. city wards. • Assign clear roles and responsibilities at each level of the Municipality pertaining to implementation of source segregation. Regular review at all levels is essential for a successful roll out of the program. • Ward level decentralised waste management of segregated waste helps. It acts as a big motivation for residents to start and to continue segregating their waste as they can visibly see the impact of their actions. • To begin segregated collection, the municipality can set up a separate collection channel for segregated waste. This can be a premier service for localities/ segments that start segregating. • Sustain action and communication for waste management on a long-term basis (minimum 2-3 years). • Use tools such as SROI and IRECS for independent evaluation of existing programs and use the findings to create a multiplier-effect.
NGOs/non-profit implementation/ action based organizations	<ul style="list-style-type: none"> • Prepare and support an execution strategy with RWAs, citizens and volunteers after examining existing waste management systems. • Create pilots with model processes and support building a sense of ownership among RWAs and citizens. • Build capacities of ULBs, RWAs and informal waste sector on sustainable waste management practices. • Put in place programs with a strong focus on long term sustainability and institutionalization

MoHUA	<ul style="list-style-type: none"> • Include phased implementation plan for Municipal Corporations in the Toolkit for Implementation of Solid Waste Management Rules, 2016' developed jointly by MoEFCC, MoHUA, CPCB and NPC. • MoHUA should notify that all Detailed Project Reports (DPRs) for waste processing must be approved based on a plan for monitoring Source Segregation. SBM funding to a city should be contingent strongly on source segregation measures adopted by a city.
FMCGs	<ul style="list-style-type: none"> • Identify and associate with programs and implementation partners that are able to bring about a sustained impact on waste management. • Prioritise collaboration with other FMCGs or with national/ international development agencies. • Leverage expertise and experience in communication and marketing to create engaging content and messaging. The focus must be on source segregation as it is the most important tenet of waste management. • Encourage employees to 'walk the talk' by practicing segregation at source. • Become leading examples of sustainable practices at their own premises and work places.

It provides clear steps that need to be followed for implementation programs like Alag Karo (refer Figure 13).

Figure 13: Step-by-step process to implement source segregation in local community



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