

**IMPLEMENTING SOURCE
SEGREGATION OF WASTE IN
RESIDENTIAL COMMUNITIES**
an initiative under the Alag Karo program in Gurugram



**SEGREGATION
IS AS EASY AS**

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Disclaimer:

The content of this report is based on the findings during the implementation of Alag Karo program in RWAs of Gurugram. The authors are responsible for the facts and accuracy of information provided in the report. The findings, recommendations and conclusions shared in this publication are those of the authors and not necessarily those of the sponsors. The sponsors undertake no liability for any contents in this document.



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FOREWORD

'Nothing is waste' is not merely a tagline for Saahas, it's the only solution to the growing problem of waste in cities of India. Our journey over the decades has reiterated this time and again that waste if managed well, will minimize adverse impacts on the environment and habitat. While the waste in our country continues to rise, we must understand that the solid waste management in the country has undergone tremendous reforms over the years and is still developing based on the sustainability principles.

However, dealing with the problem of waste requires multi-pronged approach and the importance of community involvement and participation in solid waste management cannot be over-emphasized. One must also be aware that situations in residential areas, from where most of our waste comes, are very dynamic and distinct from area to area and hence the solution to solid waste management also varies from area to area. Segregation of waste at source not only allows these aspects to converge but also helps in maximizing resource recovery from waste. It has often been found that many of the city's waste problems are caused by ineffective management of waste and lack of knowledge on waste management.

The Alag Karo program in Gurugram is aimed at bridging this gap. With this, an attempt has been made to strengthen city's waste management through source segregation and community engagement. This report is documentation of this process over the period since its inception in September, 2017. This report is intended as a tool to create a better understanding of source segregation and to provide the reader with more insight into the process of waste management in the gated communities, societies in the city. We hope that this report will contribute not only in promoting source segregation of waste, efficient planning and execution of waste collection systems but also help in minimizing the overall quantities of waste generated.



Ms Wilma Rodrigues
CEO & Founder
Saahas Waste Management Pvt. Ltd.

FOREWORD

I have great pleasure in writing the foreword for the 'Implementing Source Segregation of Waste in Apartment Complexes', an initiative under the Alag Karo program in Gurugram supported by GIZ, Coca-Cola India and Tetra Pak. Alag Karo, an initiative of Saahas has helped 32 apartment complexes in Gurugram realize the need for waste management, segregation of waste at source, storing them separately and processing the categories namely wet, dry and domestic hazardous waste close to the point of generation. It is a very valuable contribution to the study and achievement of cleanliness of Gurugram and the National Capital Region (NCR) of Delhi since Gurugram is not only a vibrant part of the NCR but by its proactive approach, it can influence the policy and master planning in this region.

I congratulate the Alag Karo program in taking the help from CSR programs of companies like Coca-Cola India, Tetra Pak and GIZ in increasing material recovery for not only wet waste but also dry waste and encouraging recycling, which needs to be enhanced from the level at which it exists now namely the *kabadi wala* or itinerant waste collector system to a more robust system of not only reducing single use non-biodegradable material for packaging but also recovering as many of these non-biodegradables using informal waste collectors and finding ways to increase collection and recycling.

This report is useful in understanding why, what and how communities can be approached, surveyed, communicated and convinced towards a more sustainable and inclusive waste management system in our evolving cities. Gurugram, with its young professional profile has pushed forward by doing waste management as a zero waste approach and adopting source segregation of the three categories as required by the SWM Rules 2016 at home, community and part processing through composting, dry waste and domestic hazardous waste management for all of us to emulate.

I once again congratulate and wish the Alag Karo program greater success in the coming years.



Dr Shyamla Mani
Team Leader, Swachh Bharat Mission
Solid Waste Management Project 2018-19
National Institute of Urban Affairs, New Delhi

A WORD FROM OUR PARTNERS

Coca-Cola India



On a regular morning, for many of us, it's the same routine. Our kids go to schools, we pack off our office bags and leave for our workplaces. We also send off our daily trash from inside our homes to go wherever. This "out of sight, out of mind" approach towards waste has had our streets, oceans, and waterways brimming with trash. The stinky, jumbled up mess then goes and finds place in a myriad of places including waiting inside landfills until some of it can be recycled and put to a useful application. But this can change. How? That's what we tried to demonstrate by raising awareness on source segregation and facilitating it by joining hands with Tetra Pak, GIZ and Saahas. There were many learnings along the way and we've listed them down for the future projects that can make use of these insights we've gathered through our experience of working with residential complexes in Gurugram.

Last year, we envisioned a bold, ambitious goal: to help create a "World Without Waste". This meant that by 2030, we will help to bring back every bottle or can into the recycling economy rather than abandoning it somewhere in the environment. The commitment of this magnitude for a global company like us necessitated that we started taking steps right then and there, without wasting even a precious few moments. "Alag Karo" is one those steps in realizing the "World Without Waste" vision.

What we saw with this collaborative campaign was that the biggest shift that's needed to make source segregation viable is the shift in the mindset and the attitudes of all of us and owning our actions towards our waste and environment. While difficult at first, the program managed to bring about positive change and raise public participation on the issue of waste segregation. We also learned that a seemingly herculean task is possible to accomplish by breaking it down into small chunks and going at it without losing motivation. The report attempts to bring out the learnings of implementing 'Alag Karo' in the residential societies of Gurugram and brings to life the journey of citizens who partnered in managing their waste in a responsible manner.

Alag Karo is a small step in our commitment towards a "World Without Waste" and we are positive about getting there by taking many of these steps at any given time. It's a collective journey and we all have to make steady strides towards creating a cleaner and more habitable world for ourselves. Here's to a great start to a world without waste!

Mr Ishteyaque Amjad
Vice President – Public Affairs,
Communications & Sustainability
Coca-Cola INSWA

A WORD FROM OUR PARTNERS



'Waste is wealth' is the philosophy that has driven us at Tetra Pak since we started building a recycling ecosystem in India more than 15 years ago. But we also realised early on in our recycling journey that while we set ourselves on the path of setting up the collection and recycling infrastructure, we need to overcome a more fundamental issue – lack of waste segregation at source. Only if the waste is segregated and enters the recycling value chain in a state that does not compromise its recyclability, can it be converted into wealth. And it's true value leveraged.

Most cities in the developing world face a high level of waste issues, and this is largely due to inadequate provision of basic services like waste segregation and collection. India is no exception. Changes in consumption patterns, lifestyles, economic development, urbanization and many other factors have resulted in an increase in the quantity and complexity of the solid waste generated in the country. However, the human, technical and financial resources needed to address this issue is humongous and this means that it cannot be relegated to just one stakeholder in the value chain. A participatory approach, where roles and responsibilities are shared among the municipality and citizens, is one of the most recommended approaches across the world.

The impact of increased source segregation goes beyond just recovery of recyclables resulting in saving of virgin natural resources. Source segregated waste also enables a hygienic environment for handling of waste by waste workers, thus supporting dignified livelihood opportunities. It has been seen that this simple act, which doesn't require any investment, can dramatically transform how people view waste and it is a strong driver for spreading the concept of 'Reduce, Reuse and Recycle'.

A very important, if not the most important, stakeholder in this value chain is the consumer and other waste generators like schools, offices, hotels, restaurants etc. To encourage people's participation in Solid Waste Management demands on-ground initiatives like Alag Karo which bring together the different stakeholders to inspire a behavioural change, and to make this change sustainable.

The Alag Karo program relies on a strategic mix of awareness and sensitisation campaigns through print and social media; events in public places like malls; workshops and training sessions for RWAs, Government officials; estate management and housekeeping agencies, to make sure that the message reaches the target audience through maximum possible touchpoints. The program strives to build strong community connect by working closely with volunteers and school and college students to bring about the required behavioural change. Another key component of the program involves working with waste workers and engaging them in the collection process to improve recycling rates and improve their livelihood conditions. It is a program that looks at the issue in its entirety, and not just through the lens of one stakeholder.

To set up a program like Alag Karo takes lots of application and effort, which we are sure will be amply compensated by the benefits that will be derived from it. We look forward to the next chapter in the Alag Karo journey.

Mr Jaideep Gokhale
Communications Director
South & South East Asia
Tetra Pak

A WORD FROM OUR PARTNERS



Waste management is a subject which should be addressed by every citizen of our country. It is not just up to the municipal authorities to take care of the waste that we generate. The Solid Waste Management Rules, 2016 notified by Ministry of Environment, Forest and Climate Change clearly states that waste generators shall, “segregate and store the waste generated by them in three separate streams namely biodegradable, non-biodegradable and domestic hazardous wastes in suitable bins”. However, managing our own waste is often neglected due to lack of interest, knowledge or responsibility. To address this issue German Agency for International Development (GIZ), Coca-Cola and Tetra Pak came together to support Saahas in bringing a behavioral change in citizens of Gurugram for segregating their waste at source.

In Hindi the word segregation is translated to ‘Alag Karo’. Hence, this report is rightly titled. Segregation of waste at the source is the most crucial activity in waste management process. Once mixed waste leaves our homes it negatively impacts the subsequent processes and people involved in its sustainable management. Mixed waste has to be handled manually for segregation. It affects waste workers’ health by exposing them to hazardous conditions. Mixed waste also loses its value for it cannot be composted or recycled and hence negatively impacts the stakeholders which are in the business of processing waste. Ultimately this mixed waste, with minimal resource recovery, ends up in landfills. With this background, this book is aimed towards creating interest, imparting knowledge and conveying responsibilities to citizens on segregating waste at the source. The report can be used as a ready manual by the Resident Welfare Associations (RWAs) to understand how to segregate and make source segregation work by institutionalizing it in communities. It also motivates by showcasing stories where RWAs have achieved 100% segregation of waste in the city of Gurugram.

Alag Karo is the product of continuous engagement by Saahas team with many RWAs across Gurugram to make segregation at source a way of life and an integral housekeeping process. I hope it will help many more RWAs across the country in contributing towards cleanliness of their cities and fulfilling endeavors of Swachh Bharat Mission.

Dr Ashish Chaturvedi
Director-Climate Change
GIZ India

CONTENTS

1 Introduction	7
2 Solid Waste Management in Gurugram	8
2.1 About the City	8
2.2 Waste Generation in the City	8
2.3 Solid Waste Management in the City	9
2.4 Bandhwari: Landfill Site of the City	9
2.5 Legal & Policy Framework for Solid Waste Management	10
3 Alag Karo Program	10
3.1 Background	11
3.2 Alag Karo Program in Residential Communities	11
3.3 KAP (Knowledge, Attitude, Practice) Survey	11
3.4 Information, Education & Communication (IEC)	12
4 Alag Karo - Outreach & Impact	13
4.1 Alag Karo Outreach	13
4.2 Alag Karo Impact	14
5 Steps to Segregate in Apartment Complexes	15
Step 1: Motivation & Drivers	16
Step 2: Assessment, Audit & Gap Analysis	16
Step 3: Team & Ownership	17
Step 4: Execution Plan	18
Step 5: Trainings	19
Step 6: Door to Door Campaign	21
Step 7: Pilot & Launch	21
Step 8: Monitoring & Feedback	22
Step 9: Institutionalising Source Segregation	22
Step 10: Beyond Source Segregation	22
Alag Karo Learnings	23
6 Case Studies	25
7 Testimonials	
8 Annexure 1: Definitions	
9 References	
10 Abbreviations	



1. INTRODUCTION

Urbanization is a global phenomenon and Gurugram is epitomizing this with one of the fastest growth rates in the region. This rapid growth has significantly stressed the existing infrastructure for public amenities.

Solid waste management, which is already a mammoth task in India, is becoming more complex with changing lifestyles and increasing consumerism. Financial constraints, institutional weaknesses, improper choice of technology and public apathy towards municipal solid waste have made this situation worse. The typical approach of dumping waste on the outskirts of towns/cities has created a serious environmental and public health problem.

Across the world, concepts of **Zero Waste** and **Circular Economy** have gained wide support and momentum. While large scale changes are required (and are happening) to implement these concepts, one critical and low-cost intervention that can bring about significant impact on how waste is getting managed is **Source Segregation of Waste**.

Source Segregation leads to higher recovery of recyclables hence saving the limited virgin natural resources and landfill space. Source segregated waste also enables a hygienic environment for handling of waste by waste workers thus supporting dignified livelihood opportunities.

Source Segregation of waste is being adopted across the world for its simplicity and high impact. It has also been made a rule in India as per Solid Waste Management Rules in 2016 as notified by the Ministry of Environment, Forest and Climate Change (MoEFCC). However, the compliance continues to be weak.

Alag Karo program was conceived with a focus on improving awareness and implementing source segregation of waste in the city of Gurugram.

The program, supported by **Coca-Cola**, **GIZ**, and **Tetra Pak** is being executed by Saahas in collaboration with the Municipal Corporation of Gurugram under their city-wide initiatives on **SWM** (Solid Waste Management).

This report presents the impact of source segregation of waste in residential apartment complexes that form a part of the Alag Karo program currently underway in *32 apartment societies (covering close to 20,000 houses)*. This report also documents a *10 step* process that an apartment community should follow to implement source segregation and sustain it. Also included are case studies providing details of challenges faced and solutions evolved during the program implementation.



2. SOLID WASTE MANAGEMENT IN GURUGRAM

The city of Gurugram has witnessed an exponential growth in terms of economic development and resulting influx of people over the past few decades. This has put severe pressure on the local environment, natural resources and urban infrastructure. Amongst these, solid waste management is turning out to be one of the biggest challenges not only due to the increasing volume of waste but also due to the lack of appropriate collection and processing infrastructure. This has resulted in illegal dumping of waste in open spaces / unused land / forest area / water bodies.



Due to minimal waste processing, the official landfill site, Bandhwari, is choking to its capacity. The city is struggling with options requiring serious call for action from all stakeholders including the citizens.

2.1 ABOUT THE CITY

Gurugram is in the state of Haryana, most popularly known as the 'Millennium City'. It is one of the largest urban centers in the National Capital Region (NCR). *The city has experienced phenomenal growth from a population of 0.72 million in 2001 to more than 2.50 million in 2017 and is expected to grow to 4.25 million¹ by the year 2030* (Department of Town and Country Planning, 2010). The city has the 3rd highest per capita income in India after Chandigarh and Mumbai². It continues to grow as the industrial and financial hub of the country.

The total area of the city is about 232 square km and it is divided into 35 municipal wards. Administratively, it comprises of three subdivisions Gurugram South, Gurugram North and Pataudi and five Tehsils – Gurugram, Sohna, Farrukhnagar, Pataudi and Manesar. It has 50 villages, 150 residential colonies and 2 Industrial Sectors.

2.2 WASTE GENERATION IN THE CITY



The official estimate of per capita waste generation in Gurugram is about 320 gm/day, which includes residential, commercial and institutional waste. In addition to this, the city also produces about 700 TPD of construction and demolition waste; 1.5 TPD of bio medical waste and **70,000 tonnes** of e-waste annually. The waste characterization study done in the city by the Municipal Corporation of Gurugram (MCG) showed that 71 percent is kitchen waste, 12 percent recyclable and 17 percent inert/rejects³.

The city produces more than **1,000 TPD (tonnes per day)** of solid waste. It is projected that the city's solid waste will increase up to **2900 TPD** by the year 2041.

2.3 SOLID WASTE MANAGEMENT IN THE CITY

MCG has been following a centralized approach and currently the solid waste service is outsourced to a private agency, Ecogreen Energy Private Limited. The agency's scope of work includes door-to-door collection, processing and disposal. *It is estimated that about 90 percent of the Municipal Solid Waste (MSW) is disposed off at the landfill in Bandhwari with little processing.* There are about 3,648 sanitary workers which includes both permanent and contractual workforce, supporting the city in collection and recycling of waste⁴. Given the amount of waste generated in the city and the limited availability of land and serious concerns on the air quality, MCG is working towards improving the waste management process by encouraging decentralized systems for bulk waste generators and at the same time improving the centralized system.



2.4 BANDHWARI: LANDFILL SITE OF THE CITY



The Bandhwari landfill site spread over **32 acres** of land is located on the Gurugram - Faridabad road. Waste from both Gurugram and Faridabad comes to this site. It is estimated that about **2000 tonnes*** of waste is dumped daily at this landfill-cum-waste treatment site⁵. Total waste received at this site is about **166 percent of its capacity**⁶. The legacy waste at this site is about **1,35,000 tonnes** presently⁷. The 40 feet waste pile is emanating foul smell, spilling garbage on the main road and tonnes of leachate and is fast becoming a public health hazard. Pollution from this site has triggered a public health crisis in the surrounding villages with leachate contaminating the groundwater causing serious fluoride, phenolic compound, cadmium and mercury poisoning. Besides, the high amount of methane released is adding to GHG load and is also a serious fire hazard.

In 2009-10 a Refuse Derived Fuel (RDF) facility was set-up to process waste at this site. However, this plant has been dysfunctional since November 2013 due to two major fire incidents⁸. *Subsequently, in August 2017, a contract was signed with Ecogreen Energy Private Limited to setup a Waste to Energy (WtE) plant with a capacity of generating 25 MW of power using 2500 TPD of waste. The plant is scheduled to be operational by August 2019, is yet begin to its construction and get its Environmental Clearance.*

2.5 LEGAL & POLICY FRAMEWORK FOR SOLID WASTE MANAGEMENT

MCG has brought in legislations/orders from time to time to facilitate effective waste collection and disposal through decentralized waste management and source segregation. *As per the Municipal Corporation of Gurugram Act 1994, there is penalty on littering. Solid Waste Management Rules 2016, mandate that citizens must practice three-way source segregation of waste.* Recently, fines have been imposed on the bulk generators including on the spot fine for non-compliance on source segregation.

User charges have also been introduced based on the plot size for door to door collection by the MCG. *In October 2018, all Resident Welfare Associations (RWAs) were asked to get registered as Bulk Generators and were asked to process their biodegradable waste on-site.* To further incentivize on-site processing, the MCG has taken steps to buy back the compost from RWAs at Rs. 5/kg; waive off user fee and levy no charges on collection of rejects.

3. ALAG KARO PROGRAM

When waste is managed at source it becomes a resource. There is no garbage to be disposed, only resources to be recovered and the cycle is complete.

Source Segregation is a concept where the generator of the waste segregates waste in pre-defined groups to enable higher resource recovery through recycling. It should be noted that this is *to be done by the generator and not the waste collector.* This grouping of waste ensures different categories don't contaminate each other and maintain high recycling potential. For example, when paper is mixed with food waste, it cannot be recycled. Source segregation leads to higher recovery of recyclables hence saving the limited virgin natural resources and landfill space. *Source segregated waste also enables a hygienic environment for handling of waste by waste workers, thus supporting dignified livelihood opportunities.*

The International Labor Organization (ILO) estimates that 15-20 million people worldwide earn their living from recycling waste. Today recovery of recyclables in our country largely resides with the informal waste collectors who collect, sort, trade and sometimes even process waste materials in products which has higher market value. While it provides livelihoods to the poorest in society, working with mixed waste exposes them to serious health hazard.

Source Segregation of waste is being adopted across the world for its simplicity and high impact. It has also been made a rule in India. As per Solid Waste Management Rules, 2016, the Municipal Solid Waste (MSW) which is waste generated in houses, commercial areas, institutions etc. is to be segregated at source in 3 categories.



However, the compliance continues to be weak. There is limited awareness among waste generators on 'why to segregate' and 'how to segregate'. There is general apathy of waste generators due to factors such as waste getting mixed during secondary collection or at end destination of disposal, no incentives or penalties, etc. Literature suggests that household waste contributes to about 70-80 percent of the total Municipal Solid Waste generated in a city⁹. Treatment of household waste can strongly influence over all waste management. Realising these very challenges, *Alag Karo program was conceived with a focus on improving awareness and implementing Source Segregation in the city of Gurugram.*

3.1 BACKGROUND

The program was *officially launched on 6th September, 2017* with the objective 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. Apart from implementing source segregation in many apartments, offices and schools, the program has also undertaken numerous public campaigns through print and social media; events in public places like malls; workshops and training sessions for RWAs (Resident Welfare Associations), Government officials; Estate management and Housekeeping agencies. The program is building strong community connect by working closely with citizens groups, schools, colleges and municipal corporation to bring about their behavioral change.

This program is supported by Coca-Cola, GIZ, and Tetra Pak and is being executed by Saahas in collaboration with Municipal Corporation of Gurugram under their city-wide initiatives on SWM.



3.2 ALAG KARO PROGRAM IN RESIDENTIAL COMMUNITIES

Gurugram has large number of multistoried apartments and gated communities, commonly referred to as **societies**. *These high-density residential areas are one of the largest single point waste generators as waste is aggregated at one point to be picked up by the Municipality.*

Additionally, as they are typically administered by **RWAs (Resident Welfare Associations)** that have members primarily from the residents, it is easy to formulate localized byelaws and set-up processes that all residents adhere to. Hence, implementing *Source Segregation* here is easier than in layouts where typically there is no single entity that manages local infrastructure.

The program evolved a detailed and systemic approach for implementing source segregation in multistoried apartments and gated communities which is discussed in the following sections.

3.3 KAP (KNOWLEDGE, ATTITUDE, PRACTICE) SURVEY

The Alag Karo program started with a baseline KAP (Knowledge, Attitude, Practice) survey that was carried out in early 2017. *Approximately 200 people were surveyed across 19 different societies.* The aim was to understand the *Knowledge, Attitude and Practice* around waste management in apartment communities. Following were the key findings from the survey:

- Roughly half of the people surveyed were aware of *source segregation* however, of these, about 60% had never practiced it
- About 20% of the people had heard of Solid Waste Management Rules 2016 notified by Ministry of Environment, Forest and Climate Change
- About 70% of the respondents knew what a landfill was and were aware of the environmental pollution it causes
- Close to 65% believed that proper segregation and disposal to designated collectors is the best way to manage waste while about 30 % also supported home composting
- About 80% of the people were willing to start source segregation. While they felt that it was challenging, they were willing to learn more about it and participate in waste segregation awareness programs.
- About 70% of the respondents thought that source segregation can be implemented in about a month's time frame in their apartments, while about 30% thought it could be implemented within one week. This shows that the citizens don't take it as a complex task if systems for source segregation are put in place systematically.

3.4 INFORMATION, EDUCATION & COMMUNICATION (IEC)

As awareness and engagement was a key objective, the Alag Karo program developed interesting, informative and engaging IEC (Information, Education and Communication) content in the form of a short animation film¹⁰ ; posters and banners; a dedicated website¹¹ ; engaging games around waste segregation and merchandise such as badges and caps etc. Customized training materials for different stakeholders such as Government Officials, Schools, Housekeeping Staff, Maids, Waste Workers etc. was developed, both in Hindi and English. For implementation in apartment complex, Dos and Don'ts; Draft Waste Management Policy; Program Implementation Tracker and other tools were also developed. Dedicated social media handles for the program further helped in widening the reach.

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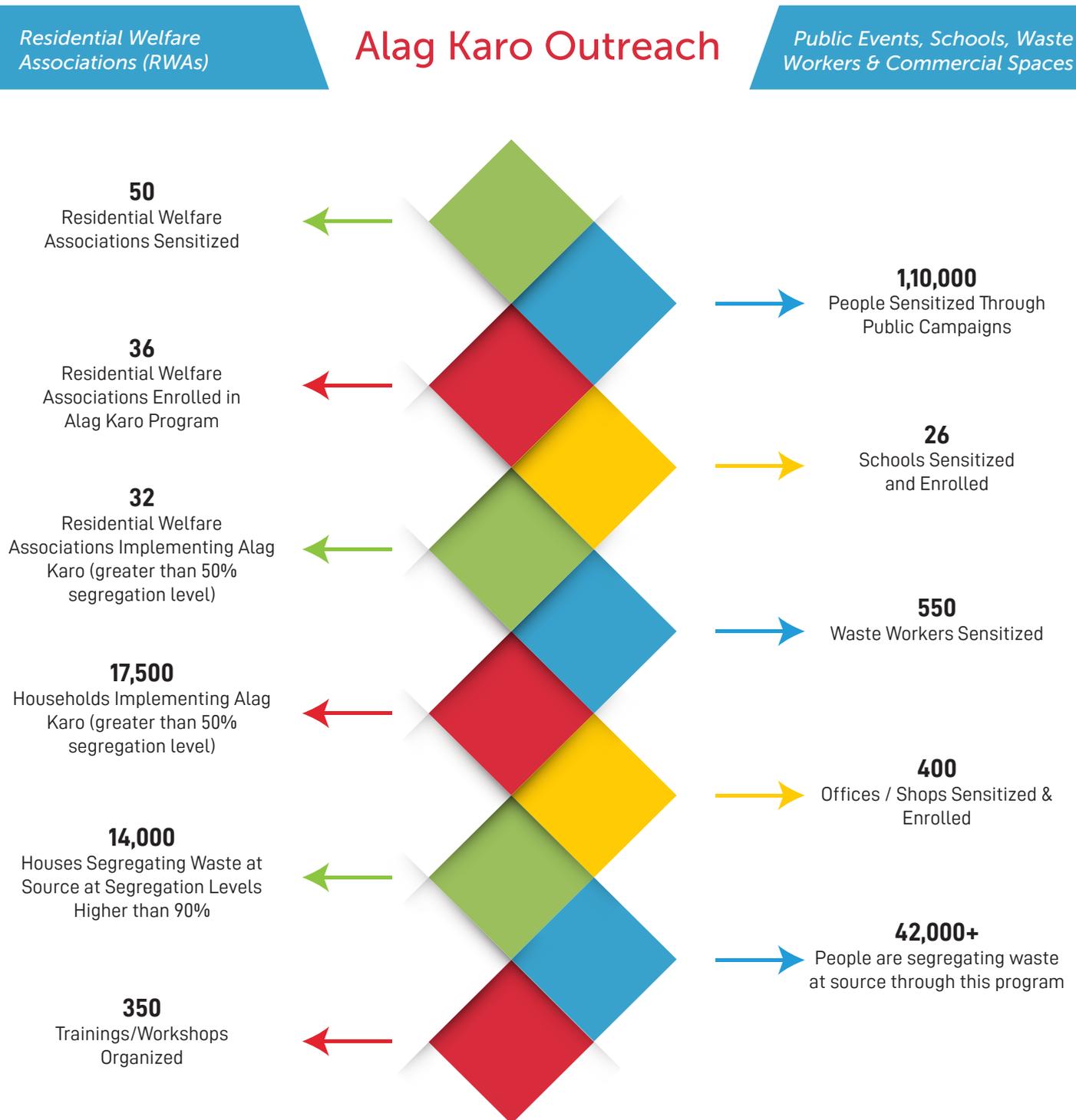


KAP survey helped in developing a targeted messaging through IEC (Information Education and Communication) material that formed a strong base. KAP also helped evolve detailed implementation processes; tracking and monitoring mechanism against which the program's progress and effectiveness could be assessed continuously. These are discussed in detail in Chapter 5.

4. ALAG KARO - OUTREACH & IMPACT

The Alag Karo program was officially launched in September 2017 although the team had started the ground work in terms of survey, assessment, early 2017. By the end of December 2018, through various public campaigns, **24,000 households** across **50 RWAs** had been sensitized on source segregation and more than **1 lakh people** have been made aware.

Currently, **17,500 households** across **32 RWAs** have adopted the Alag Karo program and of these **14 RWAs** (totaling **14,000 households**), have achieved more than **90% segregation levels**. This report captures the learnings and finding in relation to these **14,000 households**.



4.2 ALAG KARO IMPACT

The **32 apartment complexes** where the program is being implemented in the city are generating about **23,200 kgs** of waste per day. Of these **17,500 households** have achieved 90% segregation and are segregating waste amounting to a total of **18,400 kgs** daily.

With 14 apartment complexes having in-situ composting plants, they have been able to reuse their own wet waste by way of composting it. Furthermore, while the program has highlighted the importance of source segregation it has also been able to guide the communities in taking the next important step of on-site processing.

18.4 TONNES PER DAY
SEGREGATED WASTE

6.15 TONNES PER DAY
WET WASTE
PROCESSED ON SITE

9.2 TONNES PER DAY
IMPROVED RESOURCE
RECOVERY

SOCIAL IMPACT



A simple action of 'segregation at source' has a big impact on the waste workers. And with cleaner waste to work with, the waste worker can sort a higher number of recyclables, thereby improving the earnings. In addition, with no mixed waste, the work area is cleaner without foul smell. The waste worker gets both dignity and better livelihood.

The implementation statistics also show that for every 250 kgs of wet waste composted 1 job is created.

ECONOMIC IMPACT

Due to source segregation, we have seen better resource recovery from dry waste. In addition, 14 apartment complexes (a total of 6,215 households) have started on-site composting. *Total waste recovery is approximately 9.2 tonnes daily, which means,*

- Diversion of more than 9 tonnes of waste daily from landfill for recycling and resource recovery
- Saving of approximately Rs 2.8 lakh per month for the municipality on account of tipping fee.
- Benefit to the RWA on account of sale of compost to MCG @ INR 5/- per kg



ENVIRONMENTAL IMPACT



Source segregation of waste has not only helped in improving the recycling of waste generated in the city, it has also made positive impact on the environment. If we consider that approximately 4 percent of MSW is paper, *for every one ton of paper recycled, 7 trees are saved, thereby the segregated dry waste in the apartments is contributing to saving an average of 12.5 trees per day.*

In addition, lowering GHG emissions and diversion of waste from the landfill further increased the positive impact on the environment.

5. STEPS TO SEGREGATE IN APARTMENT COMPLEXES

As mentioned earlier, under the Alag Karo program a meticulous **10 step process** was developed for implementing *Source Segregation* of waste so that it became a way of life for the residents and the staff working in the society. A standardized template was used which was at times customized with respect to *the structural layout (towers, builder floors etc.)*, *type of waste disposal systems in place and the infrastructure available* at the respective residential societies. This process also ensured that the program sustained through changes in the resident welfare association or the housekeeping service provider and so on. This chapter details this **10 step approach**.



STEP 1: MOTIVATION & THE DRIVERS

Key Objective: *Defining and stating the key motivation and formation of the core group*

Typically, it was either the volunteers or the RWA members that approached the Alag Karo team to help with the implementation. Often the trigger was growing concern of the citizens towards environment and the desire to do something towards it by way of managing their own waste. In some cases, the implementation was initiated by the RWA triggered by a notice from the Municipality to ensure waste segregation; a legal compliance towards Municipal Solid Waste Management Rules 2016. The reasons for this head start may be diverse but *it is noticed that impact is more comprehensive and long lasting when the motivation supersedes legal compliance and desire to be part of the solution and contribution towards improvement of the environment is high.*

It is important to bring together like-minded people by sharing some successful examples; their impact and more details on how our environment is being seriously harmed by mixed waste. If not adults, the initial momentum can be built by children. We found in many societies such as *Harmony Homes, Ireo Uptown, The Palms*, the children played a very important role in bringing people on-board.

Once a core team of volunteers is formed, they need to get members of the RWA on board. Collection of segregated waste will need changes in the current system, which will need the RWA's support. Showing some other examples in the city are good confidence building measures for RWA members. For many societies, having a team like Alag Karo was very helpful at this stage. RWAs felt more confident partnering with Alag Karo because of the depth of experience and their official association with MCG.



STEP 2: ASSESSMENT, AUDIT & GAP ANALYSIS

Key Objective: *Baseline audit to understand the existing systems of waste collection and determining the capital expenditure and operational expense for implementing segregated collection.*

A detailed assessment of the present process of solid waste management is important, this broadly includes:

- Mechanism of waste collection and storage; primary (door-to-door collection from individual households) & secondary (internal transportation & storage within the campus and transportation from the society)
- Number of staff and supervisors involved in waste collection and management
- Infrastructure/tools (buckets, bins bags etc.) used
- Time and duration of different activities related to waste management
- Monitoring mechanism
- Cost of different activities related to waste management including what is paid to the waste contractor
- Approximate estimate of the waste quantity being generated to plan for the additional infrastructure required
- Assessment for composting feasibility within the premises of RWA and its related expenses

One of the most important points to keep in mind while conducting the preliminary audit is to thoroughly understand the existing model of daily waste collection method (for ex. chute system, floor-wise bins system, door-to-door collection etc.). As this will enable the implementation team to come up with a good collection system once the residents start disposing of segregated waste. In this regard we would like to mention here that, our work in other cities has clearly brought out that 'Door to Door' collection is a must for sustainable source segregation which was further reinforced in Gurugram.

The Ideal Collection System:

Out of the 32 societies, 5 had chute system; 14 had floor level common bins and 13 had door-to-door collection systems. When some apartments tried to continue with common bins, the segregation level remained very poor and subsequently had to switch to door to door collection. When the primary collection was a chute system or a floor level common bins system, residents did not have to align with 'fixed time door-to-door' waste disposal mindset. Though door-to-door collection may increase the manpower cost for waste collection, there is an improvement in overall hygiene and a reduction in the cost of maintaining and cleaning chutes / common floor bin areas.



The key requirement to implement door-to-door collection is requirement of additional bins to collect three categories of waste instead of one. Because of the three bins (or 2 bins and 1 bag) a trolley to carry the bins / bag is required. There are logistic challenges that must be kept in mind such as the new trolley must fit in the lift. Lifts get blocked for a longer duration, so the timing of waste collection might require some change.

Under the Alag Karo program the infrastructure, process and resources were analyzed in stages. Each of the society deliberated and came up with their customized solutions to suit their building layout, resource, funds availability and so on.

This is a critical stage where the RWA must make decisions. While the process must be as inclusive and democratic, but we have seen that no solution has 100% acceptance of residents. However, keeping the greater good in mind, decisions have to be taken and one must move ahead.

RWAs of The Palms, South City 1 and Grand Arch discontinued with the chute system and appointed staff for door to door collection. This clearly communicated the serious intent and commitment of the RWA to various stakeholders, hence ensuring sustainability of the new process.

It is imperative that the collection process and infrastructure be made ready before the awareness campaign is undertaken and segregated waste collection commences. *The time duration between awareness campaign and segregated collection date should be restricted to not more than 7-10 days to ensure 'awareness is followed up with action'.*

STEP 3: TEAM & OWNERSHIP

Key Objective: *Putting the team in place with buy-in from volunteers and on boarding of the RWA.*

Source segregation works effectively only with everyone's participation hence it requires strong support of all key stakeholders. *Buy-in of the officials of the RWA is very crucial for ensuing its institutionalization and sustainability.* Besides, the entire initiative must be led and owned by them. They provide capital investment required for additional bins and other infrastructure. Their word carries more weight in getting the housekeeping team and addressing naysayers and defaulters during the roll-out phase. *Volunteers play a critical role in bringing behavioral change in residents and staff.*

In most societies, active *volunteers played a critical role in reducing the time of implementation and were engaged in almost all stages of the implementation.*

Forming a team with clear responsibilities helps in smooth implementation. Following are some aspects that should be considered for team formation:

- An RWA committee member must be given the official responsibility for implementing source segregation
- Housekeeping / Estate Manager / Supervisors must also be actively involved and must be part of the core execution team. In all societies, the estate managers played a very important role.
- Volunteers should be enthusiastic, with good communication skills. Should be able to give at least 4-6 hours per week for the program. It is good to have a mix of volunteers, across age groups, to be able to reach out to different people
- Good to have suggestion and feedback sessions for all groups such as residents, housekeeping staff, house maids, security guards as this helps get a buy-in and ownership from all quarters
- Everyone in the team must clearly understand the why and how; must be able to answer what goes in each bin
- It is very important for the team to be open to feedback and discussion as the program should be adopted by all residents for it to last. Hence, any decision-making process should be kept democratic as far as possible
- Reliable, transparent and seamless communication channels should be setup for the group (WhatsApp usually works very well)

STEP 4: EXECUTION PLAN

Key Objective: *Devise a detailed plan (customized for the society) for implementation of source segregation*

Once the core execution team is formed, the execution plan needs to be finalized by the team. This broadly consists of the following activities:

- Infrastructure upgradation and timelines for the same based on the outcome of the baseline audit
- Key stakeholder feedback and suggestion meetings
- Number and type of awareness and training activities for all stakeholders (volunteers, residents, housemaid, housekeeping staff, cooks, etc.) and their schedules
- Door to Door campaign team and schedule
- Backend collection and storage process changes and its infrastructure
- Penalty / fees etc. to be imposed
- Segregation level monitoring plan and responsibility
- Complaint redressal mechanism for the residents and housekeeping staff
- Resources, planning and budgeting for all the above
- Overall program monitoring and tracking mechanism and responsibility

An activity tracker was shared by the Alag Karo team for planning and tracking source segregation implementation.

STEP 5: TRAININGS

Key Objective: *To ensure all stakeholders are aware of the why and how*

Multiple trainings need to be conducted for specific target groups. It has been our learning that each target group should be trained separately so that they feel comfortable to raise doubts or give suggestions. Hence, the Alag Karo team conducted separate training sessions for each of the groups such as volunteers/housekeeping staff/residents/maids/security and so on.

Volunteer Training

As volunteers are the bedrock of this campaign hence *their training needs to be done first and thoroughly*. Apart from what goes in which bin, they also need to clearly understand the 'Why', 'How' and 'What' of source segregation to address all concerns and questions of any resident or any other stakeholder.

A few key points to focus on:

- What is waste? What are the types/categories of waste
- Scale of the waste problem - at all the different levels; global, national, state-wide, city-wide, and at their own community level (waste-audit report findings)
- Basic knowledge on what happens to waste once it is source segregated; on resource recovery and recycling
- In-depth knowledge on why and how to segregate waste at source
- An elevator pitch (3-4 mins long) on why and how to segregate at source
- FAQs and their corresponding answers
- Execution plan in the apartment



Housekeeping Team Training

Housekeeping team is the front-end team of this program hence they need to be very well trained. *As they need to keep a check on what who is disposing and whether it is completely segregated or is mixed, they need to know the categories very well. They are to be given monitoring data sheets and trained to use them regularly.*

Confidence building is the other crucial aspect as they must handle the residents confidently and patiently. The trainings have to help empower them and instill a sense of ownership and accountability during the monitoring phase of the program. It must be ensured that proper processes are laid down in order to tackle any issues that may arise

A few things to keep in mind while training them are:

- Estate Manager & Supervisors should be trained thoroughly such that they are able to train the new hires themselves
- Housekeeping staff undertaking daily collection should be able to communicate in the local language
- Housekeeping staff should be able to mark on daily monitoring sheets about compliance and non-compliance
- Housekeeping team should be well trained in the detailed procedures and operations of daily waste collection

- Hands-on demonstration of the new collection process with a sample of the new collection infrastructure
- Mechanisms to check housekeeping staff's work on filling the monitoring sheet daily
- Provide the 'Big Picture' of why this is being done to help get all buy-ins

Note: *We have learned from experience that housekeeping staff should be treated well and respected as equals and made to feel that they are an integral part of this program and our community in general for the success and sustainability of this program*

Household Help (Maid) Training

As housemaids handle domestic waste in the households, they should be fully trained on 'how to segregate', 'what goes in which bin'. They should also be empowered with the knowledge as to why segregation is being initiated and why it should be done. Careful tracking needs to be done to ensure each maid is trained. *A systematic way to achieve this would be to mark the gate pass of each maid who attends the training sessions. Conducting multiple trainings at different times of the day ensures 100% participation without much pressure on their existing work commitments.* Some simple segregation games keep these sessions engaging and informative; and some refreshments may also be provided.

Resident Training

Spreading awareness among all the residents of the RWA is very critical as source segregation starts with them. Efforts should be made for reaching out to every resident of the RWA. Here, the volunteers play a crucial role in reaching out to the residents by building consensus. For the residents, social media also acts as a good medium to spread awareness. *Door to Door has been the most effective way to bring the residents on-board.*

For these 32 societies, under the Alag Karo program, **244 training sessions** were taken. 46 sessions for residents, 44 for volunteers, 53 for housekeeping staff and 101 for the maids and house help.



STEP 6: DOOR TO DOOR CAMPAIGN

Key Objective: To reach out to all the residents on one on one basis for sharing of segregation guidelines and project timelines

Door to Door campaign is the most effective way of reaching out to the residents. In this process, each household is reached out to and informed about source segregation, and individual concerns are addressed. It's typically a volunteer led initiative; the message coming from their own friends and neighbors is taken seriously. Additionally, when the residents see their fellow residents putting in so much effort they feel that at the very least they should practice segregation. It is also recommended that after the whole program is explained, the resident physically signs on a document stating that they have understood it well and would be willing to participate in this whole heartedly. Follow a systematic approach to ensure all houses are covered. Before every Door to Door session ensure that all the volunteers are on the same page by conducting a small briefing. Involving children is also a good idea in spreading the word.



Note: Depending on the number and availability of volunteers and the houses to cover, the process may take anywhere between few days to few weeks. Although door to door campaigning may sound cumbersome and time-consuming, we cannot stress enough on how important it is for the success of the program. All 32 societies conducted 100% door to door coverage.

STEP 7: PILOT & LAUNCH

Key Objective: Launch source segregation in a few apartments before scaling up

In larger societies, the project is typically launched in stages. Pilots are done to gauge the response and assess the effort and resources required for implementation. Further, scaling up is done in multiple phases depending upon the size of the society. Pilot can be very useful as a confidence building measure where the RWA or some residents are skeptical. The RWAs of Orchid Petals and Orchid Island launched Alag Karo in phases which not only helped in identifying what works and what doesn't but also has been able to plug gaps if any.

It was observed that a society of 200-300 houses were able to launch the program in 1.5-2 months from the initial meeting, whereas it took 2-3 months for larger ones.



STEP 8: MONITORING & FEEDBACK

Key Objective: *Monitoring at individual household level and overall program*

This phase is crucial for the long-term sustenance of the program. The onus typically falls on the volunteers and housekeeping staff, who should work in coordination to be able to identify defaulters and handle them tactfully. *Daily reporting sheets from the housekeeping staff are very helpful and also act as proof.* A polite, non-accusing chat with the residents with genuine interest to understand and address concerns of defaulters helps in the successful implementation of the process. Apart from this, *volunteers should randomly pick days and go on rounds during daily waste collection to further enforce the idea and to check segregation levels.* WhatsApp messages with photos of mixed waste are also shared with the residents. For some very challenging cases, one needs to involve friends / neighbors who are in cordial terms with the defaulting resident. Confrontational stance is generally to be avoided.

After 1-2 weeks, the RWA can formally announce that mixed waste would not be picked up and instruct the house keeping accordingly. Of the 32 societies, majority had put in place 'no mixed waste collection' policy and fine impositions were implemented in 3 societies.

STEP 9: INSTITUTIONALISING SOURCE SEGREGATION

Key Objective: *Monitoring at individual household level and overall program*

To ingrain source segregation of waste in the operations and management of the housekeeping services

To maintain the continuity, it is important that the program is institutionalized through:

- Within the RWA, waste management should be designated as a separate function and responsibility assigned to an RWA member just as other functions (such as security, utilities etc.) are assigned
- Segregated waste collection, segregation level monitoring, MIS reporting and daily compliance reporting should be included in the housekeeping contract
- Segregated waste awareness and training should be compulsory for any new joiner in the housekeeping team; in fact, there should be refresher classes taken by the supervisor/manager or volunteer
- Waste management policy should be formulated, drafted and published as a part of the RWA's rules and regulations
- New residents must also be handed over a 'waste management and segregation guidelines' sheet as a part of their welcome kit

STEP 10: BEYOND SOURCE SEGREGATION

Key Objective: *In-situ composting of wet waste in adherence to the SWM Rules, 2016*

Successful source segregation implementation inspires many societies to take the next step and set up on-site composting systems. *Of the 32 societies, 14 are managing their wet waste on-site. As on date, 6 tonnes of daily wet waste is composted.*

During the process of the project, it is witnessed that societies with composting on-site are more likely to continue the practice of segregation on a long-term basis as they can see the impact themselves. Those that are sending waste outside often question their effort as a big amount of this waste gets mixed again by the waste contractor once it goes outside their premises.

According to MSWM Rules, 2016, all the citizens/communities/commercial establishments/industrial zones must practice three-way segregation of waste. Additionally, the bulk waste generators must manage their biodegradable (wet) waste on-site.

There are various vendors providing many different solutions for different types of constraints, situations and with different types of payment options.

Caution: *Today the market offers 24 hour composting solutions which are nothing but 'waste burning' machines that consume lot of power and what comes out is not compost rather ash. Composting is a process which takes 25-45 days. Please be informed and always refer to reliable technical support before taking any decision regarding composting/biogas solutions.*

ALAG KARO LEARNINGS

The Alag Karo evolved a very meticulous approach for implementing source segregation in apartment complexes. Each step in the process is further reinforced in the following chapter on case study where select societies are discussed in detail. The key aspects that have emerged during the process implementation in apartments complexes are as follows:

1. Bringing about overall Attitudinal Change

The participation of urban community in waste management is critically dependent on its attitude towards this issue. Alag Karo program through its various public campaigns was able to bring about this change and raise public participation. It has also been able to instill a sense of ownership among the citizens about their city. They were also sensitized to the plight of the waste workers who scavenge through their mixed waste. The residents are taking responsibility of their own waste by way of source segregation. 14,000 households have adopted Alag Karo and are segregating 18.4 tonnes of home waste.



2. Role of Door-to-Door Collection

During the program, it was experienced that door to door collection of waste was critical in hitting 90% plus levels of source segregation as the collector was able to pinpoint the defaulters and give feedback to the specific residents.

3. Effective IEC for the success of the project

Interesting and engaging IEC including games and competitive activities ensured strong positive engagement with the program. This demonstrates the importance of education and publicity in the source segregation of waste.

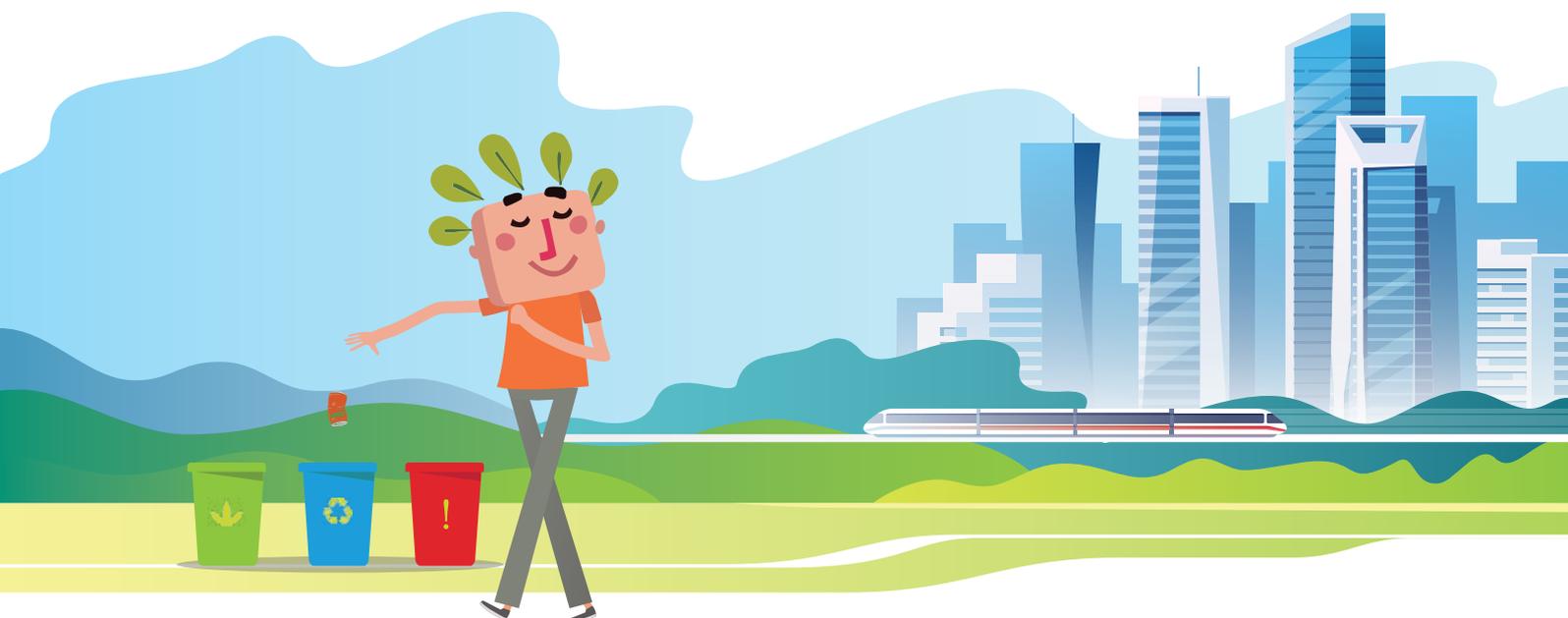


4. Strong Coordination between the RWA & Volunteers in the program

It is important that the RWA and volunteers work in tandem to ensure successful implementation of the program. Additionally, the leadership of RWA is critical for program sustenance.

5. In-situ composting helps in building the sustainability of the program

Currently 14 apartment complexes out of the 32 are implementing on-site composting of their wet waste. It has been observed that it brings out a sense of ownership and pride among the residents of these apartments as they are witnessing 'waste to resource' and are part of the process. They also feel proud of being able to generate employment at the base of the pyramid which has led to an improvement in source segregation of waste in these apartments.



CASE STUDIES

In order to describe the nuances of this processes, we present here eight case studies that highlight the **unique challenges faced and approaches adopted by different communities**. While 6 of them discuss successful implementations, two case studies detail the examples where the program was unsuccessful, one where it did not take off and another where it collapsed after achieving good segregation levels due to an external factor. We have also included here a case study outside Alag Karo to demonstrate how, when driven by a strong volunteer group and RWA, Source Segregation can even be implemented without the support of a team like Alag Karo.

The underlining message from all these case studies is that there is no short-cut to the steps detailed in the previous section. The discipline and rigour with which they are followed would decide the success and sustenance of the program in the longer run.

1. COHESIVE EXECUTION TEAM & ROLE OF THE ESTATE MANAGER

Tarika Apartments, Sector 43, Gurugram			
No. of Household	72	Total Waste Generated (kgs per day)	84
Total Residents	280	Total Wet Waste (kgs per day)	50
Total Area of the Property (acres)	1.5	Total Dry Waste Recycled (kgs per day)*	12.6
In-situ Composting	Yes	Separate E-waste collection (kgs per month)	0.3
Waste Diverted from Landfill: 74% of the total waste generated			

* Presently the city does not have a destination for co-processing, hence close to 30% of waste which could be used for energy recovery, goes to the landfill

Tarika has seven towers accommodating around 280 residents. The program was ably led by a small team of an estate manager, two very committed volunteers and three hardworking housekeeping staff. It took about 2.5 months after our first meeting, for the volunteers to convince the RWA members, but after that it was a quick turn-around. In another 1.5 months, more than 90 % segregation levels were achieved. It took a total of four months to hit 97% segregation level. On achieving these high levels of segregation, the RWA was motivated to go for on-site composting as well.

The volunteers were closely involved in various activities such as waste audits; door-to-door awareness campaigns and also acted as a *helpline* to address the doubts and the initial resistance from residents/naysayers. Volunteers also conducted house-maid and housekeeping staff training with minimal support from the Alag Karo team.

Being a small community, the execution team was also small as a result they were able to work cohesively and seamlessly. The housekeeping staff, estate manager and volunteers were able to quickly reach out to each other and close things. The **estate management team played a very critical role** in re-organizing the overall schedule of waste collection and monitoring of source segregation of waste.

Key Learnings:

- For smaller residential communities, the task becomes relatively easier as the execution team is also small and there are no misunderstandings or communication gaps. Even for larger communities, seamless communication amongst the execution team members is a critical factor in the success of the program, regular meetings must be organised to enable this.
- A strong buy-in by the Estate Manager can quickly bring in strong alignment from the whole housekeeping team. The program execution team must make all efforts to get the Estate Manager on board and put him/her on the driving seat.

2. CRITICAL ROLE OF ALAG KARO & ITS TRAINING SESSIONS

Heritage City, Sector 25, Gurugram			
No. of Household	850	Total Waste Generated (<i>kgs per day</i>)	1600
Total Residents	3400	Total Wet Waste (<i>kgs per day</i>)	800
Total Area of the Property (acres)	24	Total Dry Waste Recycled (<i>kgs per day</i>)	420
In-situ Composting	Yes	Separate E-waste collection	Yes
Waste Diverted from Landfill: 69% of the total waste generated			

Heritage City is a fairly large residential apartment complex. Due to the size of this society, the program was executed in a **phased manner**; few towers at a time. The complex had a **chute system** for waste collection. The RWA decided to do a pilot launch in 2 towers out of the 49 as they felt that door to door collection would be a major shift for the residents and housekeeping and they wanted to see the response to the new system. Active participation of the volunteers, support of the RWA, housekeeping staff and the willingness of the residents helped in tackling these challenges and lead to a relatively smooth roll out of the program in spite of the huge size of the community.

Since this society had just about two active volunteers, the Alag Karo team provided extensive support for trainings and door-to-door campaigns. The Alag Karo team conducted a total of 18 training sessions for the residents, volunteers, housekeeping and maids, to ensure objective of the program and the new process was well understood by every resident and staff of the complex. The RWA was able to strictly implement 100% trainings for maids, residents and the housekeeping staff and also pushed *no bin liners policy (eliminating almost 700 plastic bin liners every day!)*

The awareness campaigns were so effective that from the very first day of segregated collection, 95% of waste was segregated. The strong support of Alag Karo team helped in implementing the program in 3 months flat, which otherwise could have taken 5-6 months for a society of this size.

It needs to be highlighted here that regular monitoring and follow up was also carried out by the Alag Karo team. A well-trained housekeeping team provided house to house data and also managed grievance redressal for the residents. The RWA allowed the housekeeping staff to take high value recyclable waste which kept them motivated to report on defaulters and also ensured disciplined collection.

In line with SWM Rules 2016 and the MCG notifications, the RWA has also set up an on-site composting facility for treatment of their bio-degradable waste.

Key Learnings:

- Motivating the housekeeping team with revenue from dry waste can be a very effective tool to ensure they keep a watchful eye on segregation as their earnings are proportional to level of Source segregation.
- The role of a team like Alag Karo becomes critical when there are few volunteers in a large society. Also the importance of training sessions cannot be emphasised enough, meaningful sessions focussing on the why and how of the program are a must.

3. ROLE OF RWA & CRITICALITY OF DOOR TO DOOR COLLECTION

Orchid Petals, Sector 49, Gurugram			
No. of Household	1532	Total Waste Generated (kgs per day)	1900
Total Residents	6128	Total Wet Waste (kgs per day)	1000
Total Area of the Property (acres)	37	Total Dry Waste Recycled (kgs per day)	700
In-situ Composting	Yes	Separate E-waste collection	Yes
Waste Diverted from Landfill: 95% of the total waste generated			

Orchid Petals is one of the largest apartment complexes in Gurugram having 25 towers and 32 villas. It took about 7 months to implement the Alag Karo program and achieve above 95% segregation levels.

While the program was initiated by a group of volunteers, RWA members quickly got involved and were in the driving seat.

The program was launched in a phased manner starting with a pilot in a single tower. The RWA was not very convinced if door to door collection was a must hence it was decided to also **experiment with common floor level bins**. However, within 20 days, the RWA saw that common bin system was not working out in spite of the training and regular monitoring.

RWA took further steps to help **institutionalise the process**, they set up an on-site composting unit with a capacity of 1 ton per day and also documented and passed a waste management policy. The housekeeping contract was modified to include source segregation as part of their SOP which also meant adding more housekeeping staff. Orchid Petals apartment has been able to implement an end to end waste management program and for this they were *recognized by the Municipality with "Swachhta Award" on 26th January 2019.*



Key Learnings:

- RWA plays the biggest role in sustaining the program by institutionalising it.
- Door to door collection process is a must during the early stages of implementation when people are still getting habituated to the concept of Source Segregation. Once it is practiced widely, common bins could be used. Additionally, although door to door collection adds to the collection cost, when the effort required to maintain common floor bin areas is accounted for, the increased cost is not as significant.

4. MANAGING CYNICISM AND RESISTANCE

The Palms, South City 1, Gurugram			
No. of Household	499	Total Waste Generated (<i>kgs per day</i>)	498
Total Residents	2000	Total Wet Waste (<i>kgs per day</i>)	250
Total Area of the Property (acres)	11	Total Dry Waste Recycled (<i>kgs per day</i>)	273
In-situ Composting	Yes	Separate E-waste collection	Yes
Waste Diverted from Landfill: 73% of the total waste generated			

The Palms is one of the early and very well know condominiums in Gurugram. Alag Karo team saw this as a great opportunity to bring on board a landmark residential society of the city.

Palms had taken some steps in 2016 itself, driven by a strong sense of responsibility to do something about the growing problem of solid waste management and also to adhere to the SWM Rules 2016. Many volunteers worked on this initiative and they had also set up on-site composting in 2016. However, in-spite of all the effort, the segregation levels remained poor.

To achieve the goal of 90% and above segregation levels, few volunteers of the complex approached the Alag Karo team for a re-implementation and restructuring of the back end process and infrastructure. Largely driven by a strong volunteer team, of approximately 30 members, the program was implemented with vigour and rigour, following the Alag Karo implementation plan to the tee.

As the **program had not succeeded earlier**, there were many cynics the volunteers had to patiently handle. The approach was not to get confrontational and genuinely address the concerns. Some of them were pulled into the execution team which made the program more inclusive and significantly reduced opposition from these groups. Children of the society also played a very active role here, extending the awareness beyond Source Segregation to the 3Rs - Reduce, Reuse and Recycle.

One of the significant achievements here was the complete closure of chute system right from the beginning which significantly helped improve the working conditions of the HK Staff.

Key Learnings:

- When faced with a large number of cynics, the team needs to tread cautiously and slowly. Getting people on-board should be prioritised above fast track implementation. The approach must remain non-confrontational. Email and WhatsApp debates must be avoided and the execution team must reach out to people in person and have face to face discussion to sort things out.

5. ROLE OF ON-SITE COMPOSTING FACILITY

Uniworld Gardens 1, Sector 47, Gurugram			
No. of Household	500	Total Waste Generated (<i>kgs per day</i>)	733
Total Residents	2000	Total Wet Waste (<i>kgs per day</i>)	400
Total Area of the Property (acres)	13	Total Dry Waste Recycled (<i>kgs per day</i>)	248
In-situ Composting	Yes	Separate E-waste collection	Yes
Waste Diverted from Landfill: 72% of the total waste generated			

This implementation was led by the RWA team as **there weren't many volunteers**. RWA worked closely with the Alag Karo team and the housekeeping team for trainings, door to door campaigning, framing guidelines for solid waste management and day to day monitoring of the program.

The Alag Karo team also provided support in listing out infrastructural requirements for source segregation, training of the residents, housekeeping staff, maids and security guards. The housekeeping staff was instructed to maintain daily compliance report sheets and repeat offenders were given warning notices from the RWA office and/or the Building Management office. Door to door campaigns ensured that every resident was made aware of source segregation guidelines. They were also informed that mixed waste will not be collected after the launch of program.

The turning point for the program came when a very aesthetically designed on-site composting facility was set up. It got lot of media attention as well. This made the residents very proud and the program has since sustained very high levels of source segregation of waste. Uniworld Gardens 1 is often quoted widely as a model waste management site in the city of Gurugram and is frequently visited by other residential communities trying to emulate this model.



Key Learnings:

- The end destination for wet waste, i.e. on-site composting is a great motivation for resident to sustain high levels of segregation.

6. EXTERNAL FACTORS LEADING TO ROLL-BACK

Colony in HUDA Sector*			
No. of Household	1800	Total Waste Generated (kgs per day)	1933
Total Residents	7200	Total Wet Waste (kgs per day)	1200
Total Area of the Property (acres)	25	Total Dry Waste Recycled (kgs per day)	450
In-situ Composting	Yes	Separate E-waste collection	Yes
Waste Diverted from Landfill (when Alag Karo program was active): 91% of the total waste generated			

**name has been kept confidential*

This is a plotted colony with individual houses of 1 to 3 stories

The program here was largely driven by the RWA president and MCG (Municipal Corporation of Gurugram). MCG was keen to showcase some examples of community composting and fast tracked setting up the infrastructure at a community center. 40 honeycomb brick tanks were built in a park of the Community Centre to manage about 750 kgs of wet waste daily.

The waste collection was being done door to door by the informal sector using carts/rickshaws. They were provided with additional bags to manage segregated collection.

Alag Karo team had a herculean task of managing the door to door campaign. There were no common areas where training sessions could be taken, door to door was the only option. It was taking very long as there were multiple families staying in one unit and a large number of people were not aware of the issues around sustainable waste management, we did not get any local volunteers. The team roped in many college students and trained them for door to door campaign. It took approximately 2 months to complete the campaign, achieving above 90% segregation levels. Approximately 1200 kgs of wet waste started going daily to the composting site. Very soon it was running at full capacity.

While segregation at source and collection continued well for 4-5 months, *the composting unit was mismanaged due to under capacity, design flaws and lack of ownership*. With the onset of monsoons/rains the situation worsened, leading to strong foul smell. Nearby residents and villagers protested and one day the composting unit was vandalized. As the waste workers did not have a destination for wet waste they became irregular with collection and didn't bother keeping the wet waste separate, soon the residents too stopped segregating their waste. Multiple meetings with the villagers and residents for corrective actions did not help, and finally the whole system and process was stopped.

Key Learnings:

- It is imperative that an on-site composting facility is very well designed and managed as any slip up can lead to the issue of smell and flies. It should be managed by a trained staff and closely monitored by the RWA.

7. INTERNAL FACTORS IMPACTING TAKE-OFF

Sector 43, Gurugram*			
No. of Household	271	Total Waste Generated (kgs per day)	320
Total Residents	1084	Total Wet Waste (kgs per day)	N/A
Total Area of the Property (acres)	2.8	Total Dry Waste Recycled (kgs per day)	N/A
In-situ Composting	Yes	Separate E-waste collection	No
Waste Diverted from Landfill: 74% of the total waste generated			

**name has been kept confidential*

This complex had tried implementing source segregation multiple times earlier even partnering with few NGOs. This was evident in the fatigue of the residents, its housekeeping staff and the maids. Even Alag Karo was seen as 'just another program' about waste. The initial meetings were successful in on-boarding the residents and the RWA elected body. However, the recommendations made with regard to infrastructure improvement based on the baseline audit, could not be incorporated due to disagreements among the residents and the RWA body.

RWA was reluctant to increase manpower for door to door collection and waste processing as was suggested in the Alag Karo audit report. In addition, the number of volunteers were very less. However, the Alag Karo team went ahead with the awareness campaign based on the assurance that recommendations would soon be implemented. In the middle of all this, the RWA got changed and the new team did not show much enthusiasm. Their approach was to place common dustbins on alternate floors and placing the onus on the maids to segregate waste. Maids and the housekeeping staff had to segregate waste instead of *Source Segregation*. This was against the premise of the Alag Karo program. This resulted in the program coming to a standstill and the residents went back to disposing unsegregated waste.



Key Learnings:

- Lack of direction, purpose and ownership by the RWA can be a death knell for a program like Alag Karo.

8. PROGRAM OUTSIDE ALAG KARO

The Summit, Sector 54, Gurugram			
No. of Household	228	Total Waste Generated (kgs per day)	350
Total Residents	850	Total Wet Waste (kgs per day)	200
Total Area of the Property (acres)	2	Total Dry Waste Recycled (kgs per day)	161
In-situ Composting	Yes	Separate E-waste collection (kgs per month)	50
Waste Diverted from Landfill: 96% of the total waste generated			

In March 2016, right around the time when the Solid Waste Management Rules came out, volunteers from The Summit took up the task of starting waste segregation at source within their society. They formed an ECO Team with representatives from different blocks of the society. This group played a critical role of getting buy-in from the RWA and the estate management. The team started organizing environment focused sensitization events for spreading awareness about the issues emerging from growing waste problems; its impact on environment and how as a community they could provide a solution. Kids were also roped in to spread the message.

The IEC material and instruction manuals were designed and printed and a door to door campaign was undertaken with the help of volunteers (majority of whom were ladies and kids). The purpose of the awareness program was to make people 'environmentally ready' and work towards its improvement by way of source segregation. They conducted trainings on how to segregate for the residents, housekeeping staff and the maids in the society. Training were actively followed up with door to door campaign, redressal of grievances and announcing dates for launch of the program. The volunteers spent about 2 to 3 hours per week, putting in place systems for source segregation of waste and its processing.

The Summit has put in place a four-way segregation- Wet, Dry (sanitary goes with this wrapped in paper), Dry Recyclables (high value) and E-waste. Dry recyclable waste (majorly cardboard, paper, glass, plastic, bottles) are stored in a **Recycling room within the premises** and periodically sold to a vendor. This generates a monthly revenue of about Rs. 7,000 to Rs. 10,000.

Within 6-8 months of its launch, The Summit was able to achieve about 90 percent segregation levels and also implemented open bin composting. However, the newly elected RWA body decided to discontinue composting on grounds of smell and lack of any governmental enforcement towards onsite composting. The source segregation of waste is still continuing with wet waste now going to landfill along with hazardous waste. Dry waste is being sent for recycling. Although there has been small drop in segregation level but it is still above 90 percent. The main reason for this success has been detailed documentation and strict adherence to Standard Operating Procedures.

Any new resident, housekeeping staff, maids in the society are given induction training. A welcome kit with segregation manual is also shared with the residents. With MCG coming out with a notification directing all bulk generators to practice onsite composting, the volunteers in the society are actively pushing for onsite composting once again. As on date, preparations are underway to get the composting systems up and running.

Key Learnings:

- Have a more holistic environmental awareness program before pushing for source segregation of waste as people relate to it better. HK Staff and maids should be made an integral part of the project and trained in a way that they become partners in the program and not just following orders.
- The process of waste management should be made easy and convenient for all stakeholders involved to ensure its sustainability.

TESTIMONIALS

The Alag Karo team engaged with our RWA in each phase of source segregation of waste. The program conducted baseline survey on waste, organized training/ awareness sessions and shared IEC and relevant knowledge materials. It also shared the model policy on SWM at the RWA level. The team made us feel very connected to the cause of source segregations and brought about sense of ownership about the whole initiative. You feel like connected, you feel like in a team! Much required for beginners like me, who want to do something for our society. Alag Karo is like "EK ALAG SOCH"!

- Pranav
RWA President - Uptown

Today our society is much cleaner and is better equipped to deal with the growing menace of solid waste. We have now developed a sense of connect with our city in making it waste free and look better. This has been made possible by the process suggested under the Alag Karo program based on source segregation of our household waste. A dedicated group of volunteers and estate management team worked towards awareness through transparent flow of information and communication. Regular monitoring has been able to bring it into our daily habit of disposing our waste. Feels great in doing our bit for our environment!

- Dayachand
Estate Manager Tarika

Right from the day we were introduced to the, "Alag Karo" team members, starting with Sonia going on to Shahnawaz and others, we were thoroughly impressed with their dedication to the Program, their Professionalism in the execution of all the elements which had to be drawn together to have an effortless beginning. An induction, i.e. educating the three crucial human elements starting from home: the home owner's kitchen the first place where segregation starts; the maids / helpers; to the garbage collectors. The presentation was impressive even to the, "educated" group who thought they knew it all. The team shared very colorful and succinct self-explanatory posters and banners which gave a festive air to our get together and meetings as well as it gave a sense of purpose to the group participation and community feeling, which was exciting. Most of the ladies and men in our society had seen the horrifying and Nightmarish mountains of garbage with circling carrions and children playing nearby inhaling the noxious fumes. They very well realized the doom like implications for our future generations. Even so it was in some ways an education all right. The training of maids and helpers at home and collectors was done in friendly and relaxed atmosphere where they realized why it should be done in the first place and therefore felt important and needed. The time scale was well thought out after consultation with, leaving enough time for the owners in collection of funds and purchase of three Agha bins for good rotation. The Alag Karo team was with us coordinating at every step.

- Volunteer, Vista Villa

Alag Karo is an excellent initiative. In the past so many years we in Heritage City had been only thinking about the segregation and minimizing dump of waste but couldn't do much! This program along with the team was a great help in getting towards the whole segregation in process along with the proper infrastructure planning and helping in setting the end destination. Alag Karo project is an immense need for the City of Gurugram. Thank you Saahas for helping us.

- Volunteer, Heritage City

TESTIMONIALS

Propagation of the need for source segregation of waste has helped a great deal in closing the loop on effective waste management. Alag karo team's extensive training modules for volunteers, house helps and residents and a passionately conducted door to door awareness campaign helped the housing society to reach source segregation above 85% in the very first week of starting the compost plant in UniWorld Gardens 1 and since then there is no looking back. These compost plants have also been able to provide employment to about 20 people in composting plant and in various capacities.

- Rahul Khera, Founder & CEO
Balancing Bits, Providing Composting Solutions

Source Segregation as witnessed by me in Gurugram is indisputably the most important step in waste management. That can be achieved only by a human who is also the generator of the waste. In this regard, the Alag Karo initiative, as witnessed by me in Gurugram, is a successful awareness and outreach program on waste segregation that is much needed in residential complexes,

- Saurav, Founder & CEO
Green Bandhu, Provides Composting Solutions

Alag Karo program helped in generation of awareness among people in understanding about segregating E-waste individually. It was only post the awareness drive done by Alag Karo did people start giving segregated E-waste. We received calls from most of the places where Alag Karo awareness drives were held. It helped us in getting increased amount of E-waste post the drives.

- Namu, E-waste Recycler

ANNEXURE 1: DEFINITIONS

Segregation* means sorting and separate storage of various components of solid waste namely biodegradable wastes including agriculture and dairy waste, non-biodegradable wastes including recyclable waste, non-recyclable combustible waste, sanitary waste and non-recyclable inert waste, domestic hazardous wastes, and construction and demolition wastes;

Biodegradable waste* means any organic material that can be degraded by micro-organisms into simpler stable compounds;

Non-biodegradable waste* means any waste that cannot be degraded by micro-organisms into simpler stable compounds;

Domestic hazardous waste* means discarded paint drums, pesticide cans, CFL bulbs, tube lights, expired medicines, broken mercury thermometers, used batteries, used needles and syringes and contaminated gauge, etc., generated at the household level;

Sanitary waste* means wastes comprising of used diapers, sanitary towels or napkins, tampons, condoms, incontinence sheets and any other similar waste;

Dry waste* means paper, plastic, metal and glass. Waste other than bio-degradable and domestic hazardous and sanitary waste.

**Definitions are as per the Solid Waste Management Rules (2016)¹²*

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ABBREVIATIONS

3Rs	Reduce, Reuse, Recycle
CEO	Chief Executive Officer
D2D	Door to Door
FAQ	Frequently Asked Question
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GHG	Greenhouse Gas
HH	Household
HK	Housekeeping
HUDA	Haryana Urban Development Authority
IEC	Information, Education and Communication
ILO	Indian Labor Organization
KAP	Knowledge, Attitude and Practice
MCF	Municipal Corporation of Faridabad
MCG	Municipal Corporation of Gurugram
MIS	Management Information System
MoEFCC	Ministry of Environment, Forest and Climate Change
MSWM	Municipal Solid Waste Management
MW	Mega Watts
NCR	National Capital Region
RDF	Refuse Derived Fuel
RWA	Residential Welfare Association
SS	Source Segregation
SWM	Solid Waste Management
TPD	Tonnes Per Day
WtE	Waste to Energy

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