Saahas Zero Waste

SARVAM

Bringing together a holistic system to address plastic waste

ISO 9001 TÜV SÜD ISO 14001 ISO 45001

Quality, Environmental, Occupational Health & Safety Management System
certified to ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018

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1. Background

Sarvam is an effort to bring about a holistic collection, sorting & aggregation system for dry waste generated by households in urban local bodies.

The primary objective is to introduce and implement a system for addressing post-consumer plastic waste. This system will introduce a comprehensive management of the supply chain from collection to sorting, aggregation and finally implementing circular solutions that bring the plastic waste back to the consumer. Additionally, Sarvam is also looking to strengthen the entrepreneurial mindset so that we build business models that are integrated into the management of plastic waste. Through these business models we will also enhance livelihood options

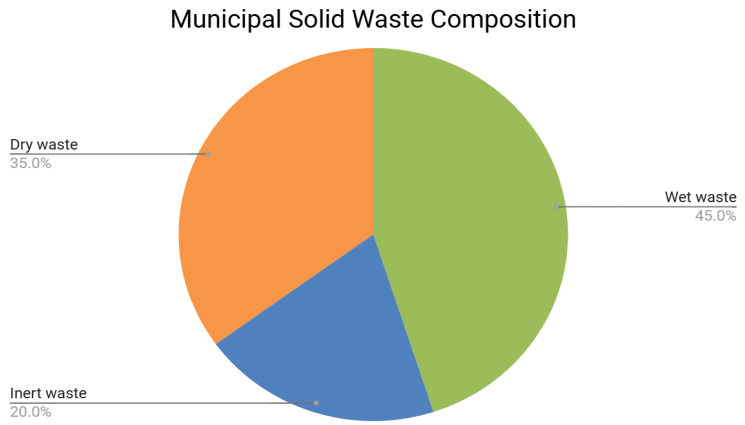

Figure 1: Graphical Representation from MoHUA Circular Economy- MSW Report

2. Understanding plastic and dry waste

Plastic waste is included as a dry waste fraction along with paper, metal, glass and other materials. Dry waste is also referred to as recyclable waste since many of the materials included under this broad category can be recycled. Recycling for each of these materials is specific. In this context plastic waste cannot be addressed in isolation. We have to also address the other waste streams including paper, metals and glass as well as the organic waste.
What happens to the waste that is collected from our bin? The dry waste typically goes to an interim center (Dry Waste Collection Center) where basic sorting takes place into 7-10 different categories of waste. Figure 2 gives details of the types of waste including plastic fractions generated through this sorting in a collection center.

This data is representative of waste which we received in one of the dry waste collection centers located in Hebbagodi in Anekal. The waste was received through a door to door collection from households that was carried out through a service provider engaged by the Hebbagodi TMC. The contractor is known to encourage the collection staff pick out certain waste types which have better economic value (eg rigid plastic bottles , aluminium cans etc..) the rest of the waste is then brought to the collection center as mixed dry waste and sorted as seen below. After the first level of sorting and aggregation, this waste is sold to an MRF.

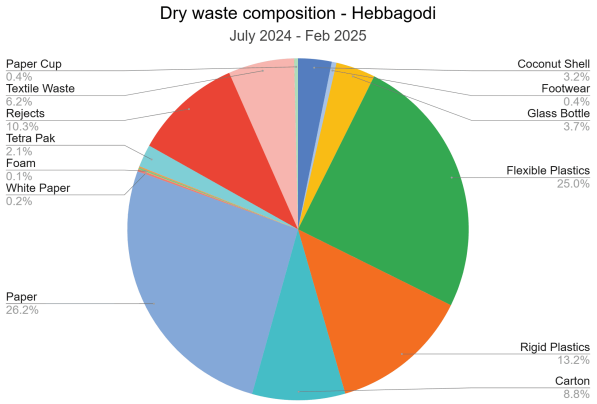

Figure 2: Dry Waste Composition in the Hebbagodi CC.
The center currently receives 1.4 Metric Tonnes (MT) of waste per day.

The table below captures the economics of the different waste streams in terms of revenues that they generate for the collection center.

Material Category	Ex-works sale Rate[1](Rs/kg)
1. Rigid Plastics	15
2. Flexible Plastics	
a. Low Value Plastics	0
b. HM	9
c. Milk Pouches	15
d. Multi layered plastics	2
e. PP Woven bags	5
3. Paper	6
4. Carton	12
5. Glass	4
6. TetraPak	5
7. Other Dry Waste	
a. Coconut Shell	6
b. Thermocol	21

Table 1: Sale rate in Rs/kg for various waste categories

[1]Ex-Works is an international trade term where the seller makes goods available at their premises, and the buyer assumes all costs and risks for transportation.

The complex system and journey for plastic waste can be understood further through an economics lens.

There is intense operations required to sort dry waste such that there is a recovery of plastic.

Moreover, the economic value of post-consumer plastic waste is limited. The Hebbagodi center receives rigid plastics (PET water bottles, HDPE etc) equivalent to just 13% of the total waste received. A significant portion of the flexible plastic consists of low-value plastics, which lacks a viable market due to poor material quality, contamination, or complex composition. These plastics, often non-recyclable or requiring costly processing, end up as RDF for co-processing in cement kilns—a disposal method that comes at an additional cost rather than generating revenue for collection centers. Typically, this gap should be supported by brands through the Extended Producer Responsibility (EPR) regulations. Unfortunately, brand support through EPR continues to face challenges the result is that this grade of plastic has poor economic value and therefore a liability to collection centers.
However, SZW does have a partnership with rePurpose Global, a plastic credit company that supports responsible management of plastic waste. This partnership supports the sorting and ethical management of Low Value Plastic.

India's waste management crisis is both an environmental and economic challenge. Of the **62 million tons of waste generated annually**, only **75-80% is collected**, and just **22-28% is processed**, leaving **31 million tons indiscriminately dumped in landfills**. The plastic waste scenario is even worse, with **9.3 million tons generated annually, 43% of which is single-use plastic**, and **68% remains unaccounted for** (CPCB, 2022). Due to **high collection costs, poor segregation, low value of recycling**- low quality and high cost of processing, **lack of infrastructure, and limited incentives for recyclers.**

3. Defining the holistic system

Going back to the starting point, the system that we are developing has two broad components –

- Front-end framework
- Back-end destinations

3.1 The front end

- The MSW rules over the last twenty-four years (links to MSW Rules 2001) insists that waste should be segregated at source
- The next step is to ensure that this waste segregated into wet, dry and domestic hazardous fractions is also collected in a segregated manner.

3.2 The back end

- Dry waste is brought to collection centres for sorting and then to a Material Recovery Facility (MRF) for aggregation and final dispatch to authorised recyclers
- Wet waste fractions are processed through composting or sent to bio-CNG
- Domestic Hazardous waste is incinerated in authorised facilities

4. The Sarvam Journey- starting point

Sarvam began its journey in Anekal Taluk, a sub-district which is located on the outskirts of Bangalore in May 2024.

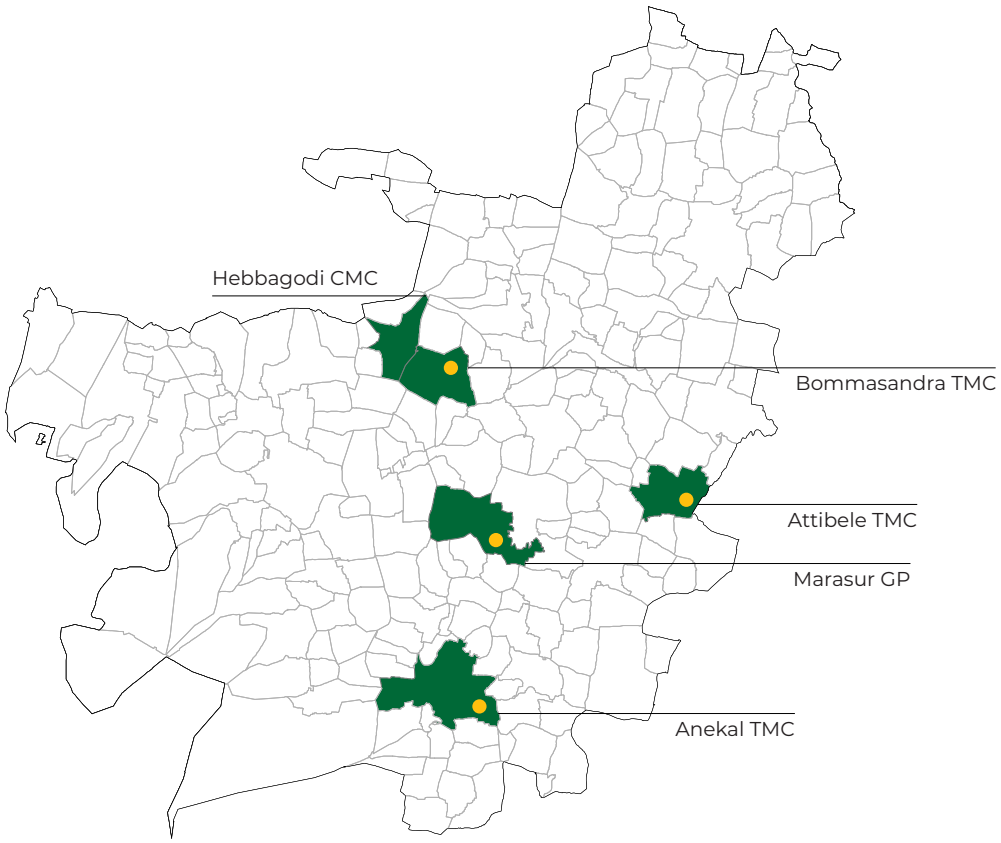

Figure 5: Anekal's Map with Operational Collection Centers

Anekal Taluk (group of 112 villages) with 1 CMC (City Municipal Council), 5 TMCs(Town Municipal Councils) and 28 GPs(Gram Panchayats). With a population of 5,17,575 as per 2011 Census.

It was chosen as a project site after exploring several other Taluks around Bangalore. The decision to choose Anekal came from the fact that the administration ie TMC in most of the wards were extremely supportive.

The different wards within Anekal already had a door-to-door waste collection as part of their routine operations. However, segregation at source was not enforced. Small quantities for dry waste which had better economic value (rigid plastic bottles, cardboard boxes, aluminum cans) were pulled out and sold directly to local informal scrap dealers. The larger fractions of waste were not sorted or aggregated. The result was poor levels of resource recovery and very high levels of waste dumping.

The administration was willing to accept its limitations and allocate space for dry waste collection centers and utilize effective budgets made available from the central and state governments for introducing basic infrastructure to operate these collection centers effectively.
The alignment to Sarvam was critical and therefore Anekal was chosen as a project site.

5. 8 months later..

As of January 2025, the Sarvam Project has made significant progress to introduce and implement a structured system for resource recovery of plastic and other dry waste.

The local administration has been very supportive. They have identified space and set up collection centers for the dry waste to be sorted before it is sent to aggregation points for recycling.

They have also ensured all the door to door collection vehicles drop the dry waste to the collection centers. Around 189 people are engaged in this door to door collection of waste from 80,000 households

Seven collection centers have been set up and six entrepreneurs have signed up to run these centers with a clear business model.

Figure 6: Marsuru Collection Center with a 900 kg/day Capacity

Figure 7: Hebbagodi Collection Center with a 1.4 MT/day: capacity

Collectively these centres have employed 31 field staff who are engaged in sorting of waste at each collection center.

During the period May 2024- January 2025, the centers have sorted and recovered 532 Metric Tonnes (MT) of waste. Sarvam has now collectively from all centers a touched a landfill diversion rate of 71%. 26 authorized recyclers are now enrolled as end destinations. However, a significant percentage ie 29% still going out as a reject. Some collection centers are doing better. Hebbagodi for example is currently at a 10% landfill diversion.

Besides these hard numbers there are many stories related to social impact which are also emerging. The benefits to the field team who are now getting a stable monthly salary of Rs 15K* a month. The increasing confidence of young entrepreneurs who are encouraged and supported to make a monthly P&L (Profit and Loss) statement. In this initial stage, they are shielded from a loss. The project understands that sale of waste in the first year will not meet the total cost of operations. The project therefore provides a cushion in the form of a Viability Gap Funding (VGF) to each entrepreneur.

On the road to a system change; we will need to ensure that a service fee is built into the model that will replace the VGF. We will also have to ensure that better value waste does not get leaked into a side system but is brought to the collection centers and enhances the revenue of the collection centers. We will need to ensure that the collection staff who are providing door to door services get paid adequately so that they do not need to cherry pick the waste and thereby weaken the supply chain.

*Currently we're paying 15k inhand. 18k CTC will be provided once the ESI/PF is registered in each CC.

In the months ahead, Sarvam is also setting up a larger MRF and a Plastics Recovery Facility. These facilities we believe will bring further value to the supply chain and support the P&L of the entrepreneur.

One thing is clear. The system's approach is our hope and we have to stay anchored in our operations and commitment if we have to move away from the problem of plastic waste.

For more details, Contact:

Bhawana Bhargava

Associate Lead - Strategic Projects

bhawana@saahaszerowaste.com | +91 998 033 3004

Saahas Zero Waste

Address
#32, 5th B Cross, 16th Main Rd,
MCHS Colony, Stage 2,
BTM Layout, Bengaluru,
Karnataka 560 076

Phone
1800 258 6676

Mail
info@saahaszerowaste.com