

# WEAVING SOLUTIONS

Understanding The Textile Crisis In Bengaluru



## **Acknowledgments**

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### **Picture Credits:**

Pinky Chandran, Akbar A, Vishwanath C, Indha Mahoor.

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## 1. BACKGROUND

Bengaluru, like all cities in India, is facing a massive influx of textile waste. According to the Indian Textile Journal, it is estimated that more than 1 million tons of textiles are thrown away every year, with households discarding the highest proportion. However, lack of reliable data makes the problem difficult to comprehend.

Bengaluru has implemented a streamlined process of dry (inorganic) waste management by institutionalising Dry Waste Collection Centres (DWCCs)<sup>1</sup>. DWCCs collect dry waste from individual households and small commercial establishments, through a door-to-door collection system. The centres are run by informal waste pickers, hereinafter referred to as DWCC operators. They are instrumental in collecting, sorting, grading and trading dry waste. Because of the separate collection of dry waste by DWCC operators, it allows for data collection of material recovered based on proportions and quantities of waste and this includes textile waste.

In addition, this has led to the emergence of many innovative solutions of the aggregated dry waste that is collected. For instance, coconut shells, which were not a major commodity for collection and aggregation, have today become one of the main sources of income for DWCCs and waste pickers on the street. The instructions by Bruhat Bengaluru Mahanagara Palike (BBMP) that mandates three-way segregation of waste (Wet, Dry and Reject), directs citizens to segregate coconut shells in the dry waste category even though it is otherwise considered an organic matter. This was possible because of the experiments done in aggregation of dry waste. Thermocole is another commodity that was otherwise destined for landfills, but now because of proper source segregation and lack of contamination, can be reconstituted into pellets for reuse.

Until recently, there was no consensus of the scale of the problem, as most recyclers were using post production textile waste as input feed or would

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<sup>1</sup> Dry Waste Collection Centres (DWCCs) are neighbourhood recycling centres at the ward (administrative division) level, collecting dry/inorganic waste from the ward households on a regular schedule. The dry waste is then sorted into further categories (paper, metals, types of plastic) and sent to local aggregators/recyclers.

import their waste from other parts of the world to fulfil their need. A Deccan Herald article in December 2021, stated that ‘Textiles are the third largest source of municipal waste, 73% of textiles end up in landfills and are not recycled and that the textile industry is the third biggest consumer of plastic<sup>2</sup>. The scale of textile waste came to light in Bengaluru, as DWCCs started reporting about the challenges in storing textile waste given the volumes and the space it occupies. And so to make a case for better infrastructure for post-consumer textile recycling,

and to allow the DWCC operators to participate in the circularity of textiles, there was a need to document the incoming textile waste to build an understanding of the quality, quantity and constitution of the materials.

In 2018, Hasiru Dala piloted an initiative titled ‘Hasiru Batte’ to find alternatives to textiles that were discarded. In 2019 and 2021, Hasiru Dala analysed the data from the DWCCs to build an understanding on the issues of textile waste.



## 2. Hasiru Batte (Green clothes): An Initiative of Hasiru Dala

Given that segregating textile waste, once mixed with other dry waste, is an expensive proposition and further compromises the quality of tradable textiles, in 2018, Hasiru Dala experimented with a separate collection of good quality garments and other clothes like bed sheets, pillows etc. in collaboration with the Resident Welfare Association (RWA) in ward no. 112, Domlur in 2018.

Clear instructions were given on how to segregate cloth and give it to the collector, specific dates for collection was also mentioned.

The initiative, titled ‘Hasiru Batte’, meaning Green Clothes, was dedicated to finding new alternatives for textile waste. The initiative had twin goals: a) Identify markets and techniques for textile waste, away from landfills and incinerators and b) Help waste pickers create new business models for traditionally unrecyclable textile waste.

For the entire study and details of the pilot, (read the Hasiru Batte Report in Annexure), which looks at the present condition of cloth disposal, opportunities and the business model canvas.

<sup>2</sup> The high price of our obsession with fast fashion, Deccan Herald <https://www.deccanherald.com/specials/insight/the-high-price-of-our-obsession-with-fast-fashion-1064782.html>

# 3. HASIRU DALA CLOTH AUDIT 2019

A cloth audit was conducted by Hasiru dala in four wards of the city on the request of Almitra Patel<sup>3</sup> in 2019. The audit was conducted over three days on the 10th, 11th and 12th of January 2019.

Ward No	Ward Name	Number of Households*
41	Peenya Industrial area	19,919
111	Shanthala Nagar	6,252
150	Bellandur	31,183
24	HBR Layout	15,940

Figure 01: The details of the wards

\* The number of households are taken from the micro plan given by BBMP to carry out door to door collection. However the numbers are much higher in actuality.

## 3.1. METHODOLOGY

In Bengaluru, Dry Waste (inorganic waste) is collected from all the households twice a week. For the study, we considered three days of waste collected that would cover 1 day waste for all households in the ward. Three days 10th January (Thursday); 11th January (Friday) and 12th January (Saturday) 2019 were chosen. The incoming quantity of dry waste and total quantity of textile waste was weighed separately.



Post that, the textile waste was separated into two categories and weighed again

- Post consumer Reusable (repairable or reuse-as-is) cloth waste
- Post consumer non-reusable (end-of-life) cloth waste

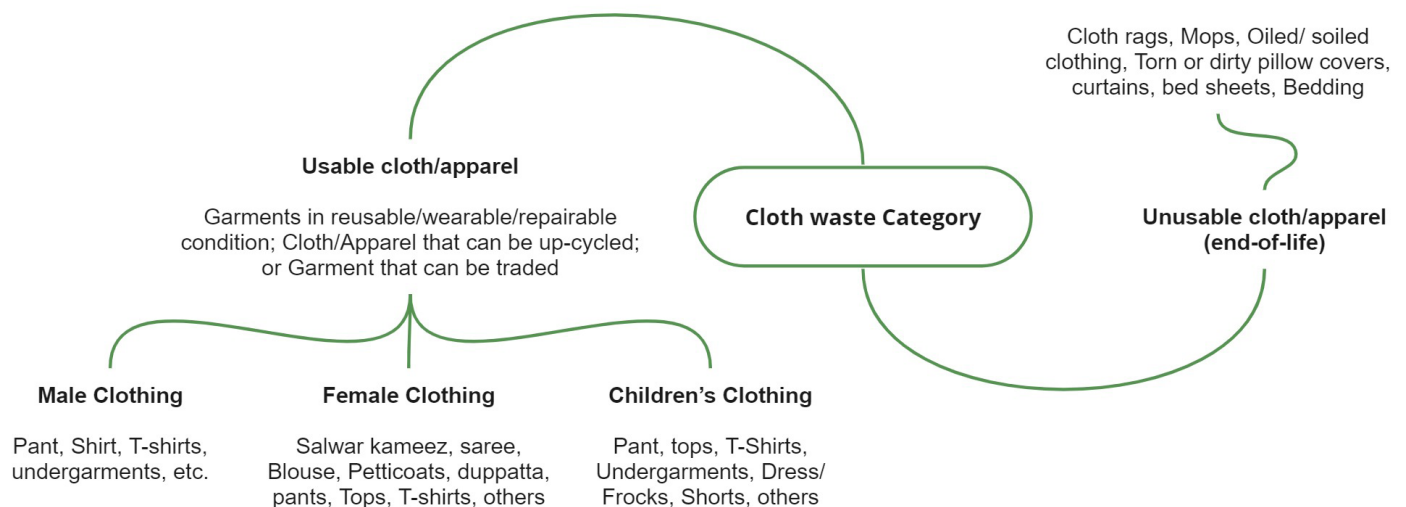


Figure 02: Cloth waste category

<sup>3</sup> A chemical engineer by profession, filed a Public Interest Litigation in the Supreme Court of India which resulted in the first Solid Waste Management Rule 2000 under the Environment Protect Act.



## 3.2. FINDINGS

The survey conducted in all four wards shows that they receive an average of 3.5% of cloth waste from the total dry waste collection. For further understanding, Ward 41 Peenya, being an industrial area, received an average of 9% of cloth waste with 19,919

households, which is 3.3 times higher as compared to ward 150 Bellandur, a residential area, which received an average of 2.7% of cloth waste with 31,183 households.

\* The cloth waste by weight (In Kilograms)

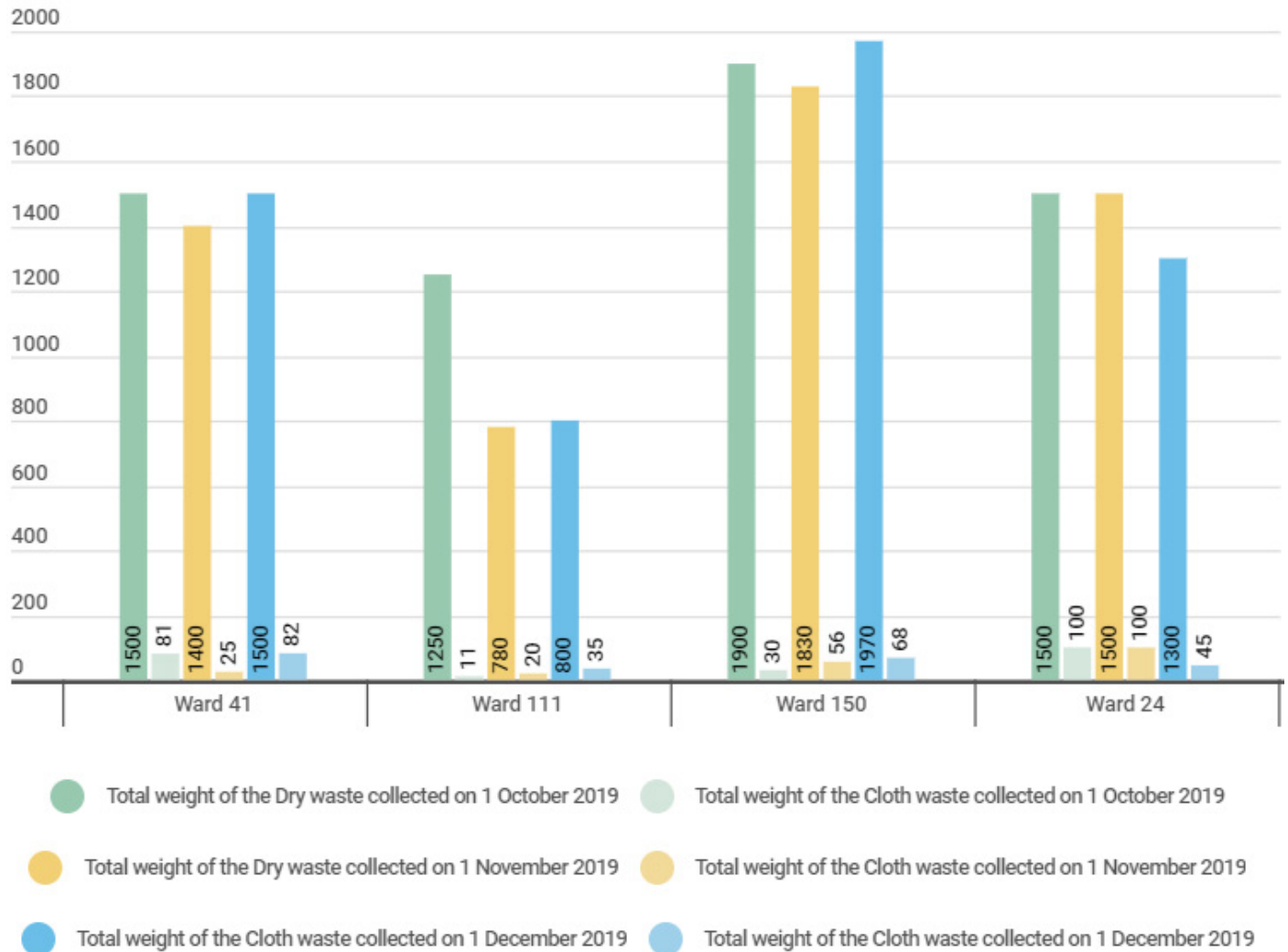


Figure 03: Outcome of Hasiru Dala Cloth audit 2021

**Total 1,410 cloth pieces counted during cloth audit 2019**



**Male**  
**511**



**Female**  
**422**



**Children**  
**272**



14.5%

Unusable



85.5%

Usable

It has been noticed that from the total cloth waste generated, only 14.5% cloth waste can not be recycled or is otherwise Unusable; while there is a scope of recyclable/usable of the remaining 85.5% of cloth waste.

When it comes to categories, menswear was predominant with 42.41%, second was womenswear with 35.02%, last was children's wear with 22.57%. The difference between the three of them was minimal.

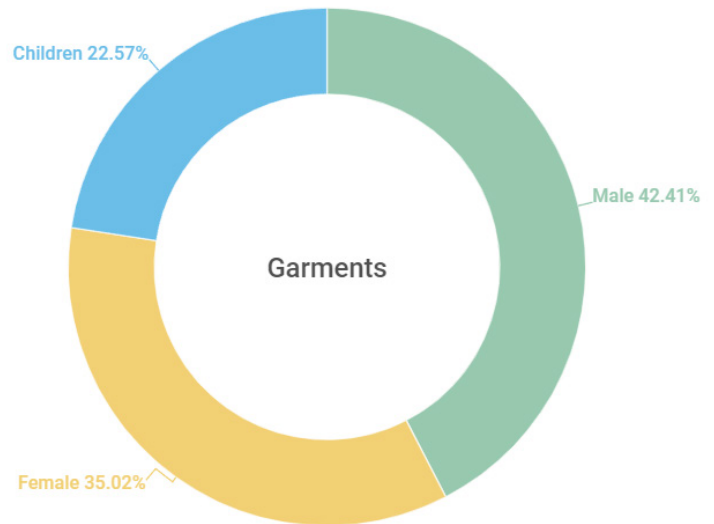


Figure 04: Cloth Waste Category

### 3.3. DESTINATIONS FOR TEXTILE WASTE, POST SORTING AT DWCCs

Most of the textile waste collected was used or disposed in the following ways:

- a. In some cases, clothes in wearable conditions were first used by the sorters in DWCC
- b. Some were sold in low income communities or construction workers' camps
- c. Some were sold to the aggregators who visit DWCCs for buying reusable cloth
- d. Some were given to the BBMP compactor drivers collect cloth waste from DWCCs and pack the door of the compactor so the leachate from the mixed waste compacted can be absorbed to avoid leaking on the road during the journey to landfills or quarries
- e. Some of the DWCCs sent off non-reusable textile waste to cement kilns for co-processing





## 4. THE STATE OF CLOTH WASTE IN 2021

### Overall composition of Domestic Inorganic (Dry) Waste in Bengaluru

From the data of 68 Dry Waste Collection Centres (DWCCs) supported by Hasiru Dala in 2021, a total of 15,596 MT of dry waste was collected from 14.47 Lakh Households. The material from the incoming domestic dry waste was classified into 11 broad

categories that are predominantly found in door to door collection. There is a data limitation on textile waste as many of the clothing materials are in poor condition, and cannot be traded and hence were mixed in with non-recyclable materials.

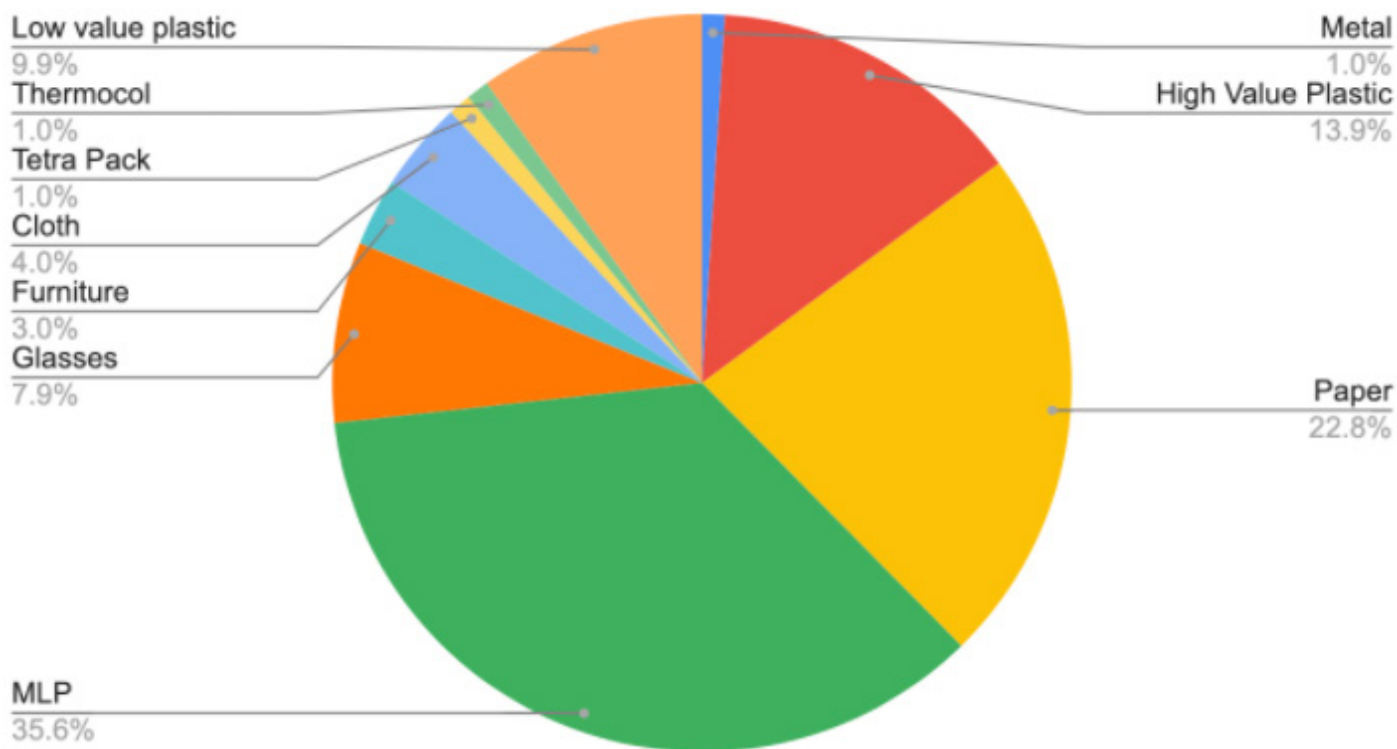


Figure 05: Overall composition of Domestic Inorganic Waste in Bengaluru



## 4.1. CLOTH WASTE IN 2021 FROM 15 DWCC

The data of 15 DWCCs that is supported by Hasiru Dala (submitted to the BBMP) from wards with a robust source segregation and a fully functional DWCC, shows cloth waste comprises 7-12% of the total dry

waste collected. The variance in percentage of cloth waste is owing to better quality source segregation and better reporting of the waste composition from the DWCCs.

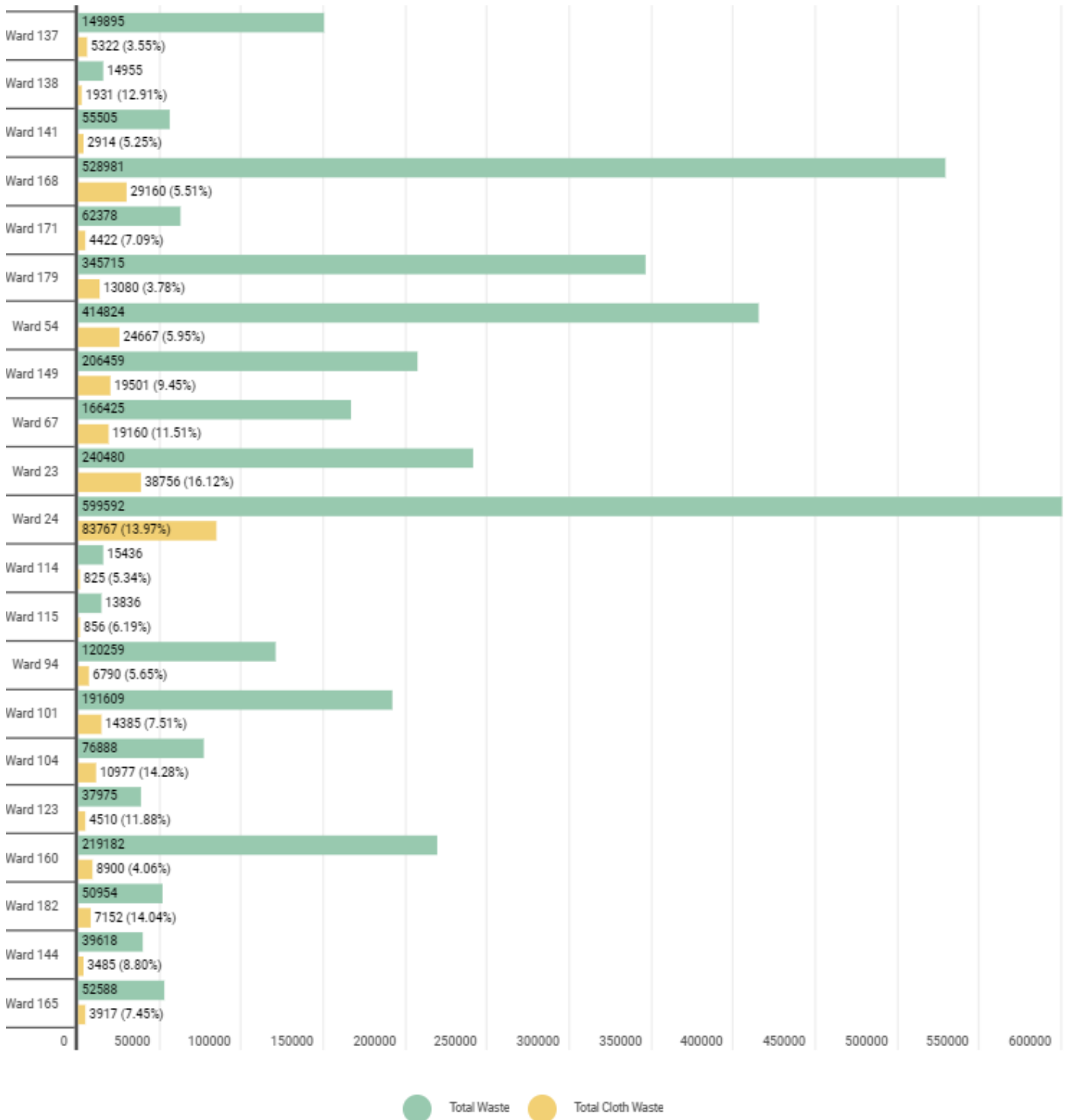


Figure 06: Cloth Waste in 2021 from 15 DWCC

## 5. OBSERVATIONS

Our analysis reveals that post consumer textile waste is burgeoning. It is a large shift away from historical patterns - previously, when cotton was the predominant textile material, and was easily recycled.

Management of textile waste, especially at DWCCs, need holistic solutions such as destinations with appropriate technologies, need to improve economic viability through better cost coverage and streamlin-

ed segregated collection systems. For this to be a reality, textile waste needs to be treated as a separate stream; with necessary investments in infrastructure and investments to scale operations. Most stop-gap methods such as landfilling or incineration end up displacing work for the informal sector, and cause serious environmental problems of air, water and soil pollution.

### Our experience in managing large amounts of cloth waste shows that

- a. Lack of systematic collection:** The lack of systematic collection of textile waste, as a separate stream makes it very difficult to find a market for reusable textiles.
- b. Mixed Collection of Textile waste, along with dry waste:** Textile Waste mixed with dry waste collection streams further compounds the problem, as even usable garments are further soiled and are dirty, and often end up in waste dumping yards.
- c. Diversity in the range and blend of textiles:** The diversity and heterogeneity of textiles makes it difficult to process or dispose and ends up as Refuse-Derived Fuel (RDF) in co processing units or is dumped in landfills
- d. Informal supply chains:** Bengaluru had a long tradition of a barter system for cloth waste. The itinerant buyers would go door to door and collect reusable clothes, sarees with zari<sup>4</sup> borders and in exchange would earlier give steel kitchen utensils, later moved to plastic utensils. As the housing pattern changed from individual homes to housing complexes access to consumers reduced for the itinerant buyers. Now, they go to known areas, DWCCs and buy clothes per garment or by weight. These are sorted, cleaned and sold. The markets that are available to the traders are flea markets, also called Sunday markets in BVK Iyengar Road. If they get a large consignment they sell the clothes on pavements at these markets. One of the largest markets is construction workers camps. Traders go from one camp to another on Sundays to sell their cleaned garments.



<sup>4</sup> Zari is an even thread made of fine gold or silver in traditional Indian, Bangladeshi and Pakistani garments. The thread work is called zardozi



**e. Incomplete solutions of RDF and co-processing solutions:** Almost all post-consumer non-reusable textile waste ends up either in landfills or as part of RDF (Refuse Derived Fuel) that works as a small percentage of replacement for coal or natural gas. This is economically not feasible as the cement kilns are far from Bengaluru. Clothes are mixed with other combustible fragments from waste like non-recyclable (difficult to recycle) plastics, multi-layered plastic (MLP), rexine, old furniture etc. In reality, clothes are not efficient for co-processing because of their low calorific value compared to other combustible fragments. A sustainable circular economy strategy such as investments in technology to recover yarn from garments and reuse it in textiles would be a preferred method.



**f. Imported Textile Preferred:** Our conversations with textile waste recyclers and associations of recyclers indicate their general preference for input feed from imported clean segregated cloth waste, post-production waste, post-consumer clean reusable waste. Small and medium entrepreneurs pick up post production waste that is used for filling for beds and pillows. They are reluctant to use post consumer waste for the fear of customers' non acceptance of once used clothes and the changes in their own production system. This in turn results in no takers beyond the landfills/ dump yards, the incinerators. Most recyclers require cloth that is clean and free of contamination so as to not stress their processing streams, effective source segregation and handling of textile waste that comes a natural input into the recycling streams. The better the quality of input feed, the more cost effective it would be to convert it to recyclable and reusable material. Participation in the circular textile cycle would also incentivise waste pickers into collecting and handling of textile waste without sending it to the landfill/ dump yards.





## 6. THE ROAD AHEAD

Extended Producer Responsibility (EPR) imposed on textile manufacturers would help incentivise recovery of the harder to manage cloth waste; from collection, sorting, recycling or end of life solutions, while providing fair, livable wages to those engaged in collection and segregation. An inclusive system, with an organised approach would also help bring accountability and transparency to the circular

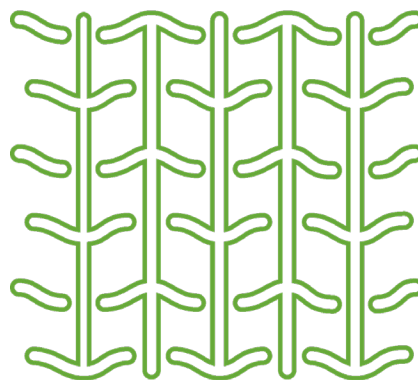
supply chain.

As observed from our work in Bengaluru, textile waste when collected separately through the DW-CCs, can ensure a consistent quality of input feed for recyclers. This will further the participation of waste pickers and other informal actors in the textile recovery cycle for a robust circular economy.

**The European Union's Waste Framework Directive for the textile and apparel industry, mandates EU member states to set up separate collections for used textiles and garments by January 1st 2025 and directs that this waste can no longer be sent to landfill or incinerated, with Extended Producer Responsibility as the desired financial instrument**

**France has had a national EPR scheme for textiles and footwear since 2007 through the introduction of Article L-541-10-3 of the Code de l'Environnement- 2007**

There is no denying that EPR for textile waste is need of the hour; however, till the policy is introduced, we recommend that synthetic fabrics (such as polyester, acrylic, nylon, spandex and acetate) that are all made from nonrenewable fossil fuels and are a derivative of petroleum, these materials be included in the Plastic Waste Management Rules, 2016 (as amended) Thus making it mandatory for the producers to accept the responsibility of the non recyclable cloth material. This will help invest in research on better materials, reduce use of petroleum and increase the responsibility of the producers and brand owners to take responsibility at the end of the cycle of the product. Under the EPR system, investments in infrastructure for collection, and recycling must be earmarked for better recovery.



# 7. ANNEXURE

## 7.1. List of the 68 Dry Waste Collection Centres (DWCCs)

SL NO.	WARD NUMBER	WARD NAME	DIVISION NAME	ZONE NAME
1	23	Nagavara	Sarvagnanagar	East
2	24	HBR Layout	Sarvagnanagar	East
3	27	Mahalakshimpuram	Sarvagnanagar	East
4	28	Shakthi Ganapathi Nagar	Sarvagnanagar	East
5	29	Shankar Matt	Sarvagnanagar	East
6	30	Vrisabhavathi	Sarvagnanagar	East
7	31	Kushal Nagara	Pulakeshinagar	East
8	32	Kavalbyrasandra	Pulakeshinagar	East
9	43	Nandini Layout	Mahalakshmi Layout	West
10	44	Marappana Palya	Mahalakshmi Layout	West
11	47	DJ Halli	Pulakeshinagar	East
12	48	Muneshwaranagar	Pulakeshinagar	East
13	49	Lingarajapura	Sarvagnanagar	East
14	54	Maruthi Seva Nagar	Mahadevapura	Mahadevapura
15	59	Maruthi Seva Nagar	Sarvagnanagar	East
16	60	Sagayapuram	Pulakeshinagar	East
17	61	S.K.Garden	Pulakeshinagar	East
18	67	Nagapura	Mahalakshmi Layout	West
19	68	Mahalakshimpuram	Mahalakshmi Layout	West
20	74	Shakthi Ganapathi Nagar	Mahalakshmi Layout	West
21	75	Shankar Matt	Mahalakshmi Layout	West
22	78	Pulkeshinagar	Pulakeshinagar	East
23	82	Garudachar Palya	Mahadevapura	Mahadevapura
24	83	Kadugodi	Mahadevapura	Mahadevapura
25	84	Hagadur	Mahadevapura	Mahadevapura
26	85	Dodda Nekkundi	Mahadevapura	Mahadevapura
27	86	Marathahalli	Mahadevapura	Mahadevapura
28	89	Jogupalya	Shanthinagar	East
29	94	Gandhinagara	Gandhinagar	West
30	101	Kamakshipalya	Rajajinagar	West
31	102	Vrisabhavathi	Mahalakshmi Layout	West
32	104	Govindaraja Nagar	Govindarajanagar	West
33	111	Shanthala Nagar	Shanthinagar	East
34	112	Domlur	Shanthinagar	East
35	114	Agaram	Shanthinagar	East
36	115	Vannarpet	Shanthinagar	East
37	116	Neelasandra	Shanthinagar	East
38	117	Shanthi Nagar	Shanthinagar	East
39	123	Vijayanagara	Vijayanagar	South
40	135	Padarayanapura	Chamrajapet	West
41	136	JJR Nagar	Chamrajapet	West
42	137	Rayapuram	Chamrajapet	West
43	138	Chalavadi Palya	Chamrajapet	West
44	139	SKR Market	Chamrajapet	West
45	140	Chamarajpet	Chamrajapet	West
46	141	Azadnagar	Chamrajapet	West

47	144	Siddapura	Chickpet	South
48	149	Varthuru	Mahadevapura	Mahadevapura
49	150	Bellanduru	Mahadevapura	Mahadevapura
50	160	Rajarajeshwari Nagar	Rajarajeshwarinagar	RajarajeshwariNagar
51	165	Ganesh Mandir ward	Padmanabanagar	South
52	168	Pattabhiramanagar	Jayanagar	South
53	169	Byrasandra	Jayanagar	South
54	170	Jayanagar East	Jayanagar	South
55	171	Gurappanapalya	Jayanagar	South
56	177	J P Nagar	Jayanagar	South
57	178	Sarakki	Jayanagar	South
58	179	Shakambari Nagar	Jayanagar	South
59	181	Kumaraswamy Layout	Padmanabanagar	South
60	182	Padmanabha Nagar	Padmanabanagar	South
61	183	Chikkalsandra	Padmanabanagar	South
62	184	Uttarahalli	Bangalore South	Bommanahalli
63	185	Yelchenahalli	Bangalore South	Bommanahalli
64	191	Singasandra	Bangalore South	Bommanahalli
65	192	Begur	Bangalore South	Bommanahalli
66	194	Gottigere	Bangalore South	Bommanahalli
67	195	Konankunte	Bangalore South	Bommanahalli
68	196	Anjanapura	Bangalore South	Bommanahalli

## 7.2. HASIRU BATTE (Green Cloth(es)):

An initiative of Hasiru Dala and UW Grand Challenges Impact Lab.

“Roti, kapada, aur makaan” is a popular phrase in India used to define the three basic needs of humans. Roti, being food, Kapada meaning clothes, and makaan denoting house. While food and shelter have always been a focal point, clothing often goes unnoticed. With people buying billions of pieces of clothing every year, clothing waste is bound to become a problem<sup>5</sup>. Where does this waste go? Or, more importantly, where should it go?

### BACKGROUND

In 2010, the Bruhat Bengaluru Mahanagara Palike (BBMP) commissioned the Dry Waste Collection Center (DWCC) to decentralize the waste management system in Bengaluru. In the bi-party agreement between the BBMP and the DWCC operator, the BBMP provides land, infrastructure, and ensures inflow of dry waste where the the operator manages the day to day operations of collecting, segregating and recycling/selling of the dry waste<sup>6</sup>. As of today, 189 of the 198 wards in Bengaluru have a DWCC with a capacity between 1 to 4.5 ton per day<sup>7</sup>. The DWCC could be operated by a waste-picker, scrap dealer, Non-Governmental Organization (NGO) or a Civil

Society Organization (CSO). The dry waste is collected door-to-door (residential) by the operators, and dropped off at the centers by formal/informal waste-pickers which they collect from houses or black spots around the city. Since February 2017, it is mandatory for residents to segregate their waste into wet waste, dry waste and reject waste. The DWCC operators are suppose to go to every house to collect the dry waste twice a week. The BBMP defines Dry Waste as non-biodegradable wastes and includes paper, plastic, glass, metal, thermocole, cloth, and wood<sup>7</sup>.

### PROBLEM

For the past four weeks, our team of four students have been visiting DWCCs throughou Bangalore on behalf of Hasiru Dala to collect data on infrastructural issues and best practices. By conducting interviews with DWCC operators and waste pickers, we have both gained a better understanding of the local solid waste management system and identified an additional problem imbedded within these infrastructural challenges: Until three months prior, the majority of the non-recyclables ending up at DWCCs would be sent to a cement factory for incineration. However, due to a surplus, the cement factory will no longer accept non-recyclable waste for free, causing tons of non-recyclables to pile up at DWCCs. Furthermore, DWCC operators cannot refuse the collection of these material because BBMP requires

them to collect it with the agreement that BBMP pays for and provides appropriate transportation of the non-recyclable material to landfill. However, BBMP has yet to follow through on this agreement, therefore adding to this growing problem. Thus, this unexpected accumulation of non-recyclable dry waste has created consequential problems for DWCC operations, including consuming valuable storage and storing space for recyclables and safety hazards.

Of the non-recyclables, clothing waste is a major component. Clothing waste accounts for about 3.5% to 4% of dry waste collected by weight and they represent little to no value to these operators<sup>8,9</sup>.

<sup>5</sup> “Blog.” Lessening the Harmful Environmental Effects of the Clothing Industry - Planet Aid, Inc., [www.planetaid.org/blog/8-little-known-facts-about-our-clothing-habits](http://www.planetaid.org/blog/8-little-known-facts-about-our-clothing-habits).

<sup>6</sup> 2015, Pinky Chandran, Sandya Narayanan - A Working Observation on the Dry Waste Collection Centers in Bangalore

<sup>7</sup> BBMP. “DWCC.” BBMP-SWM, [bbmp.gov.in/BBMPSWM/Forms/swmplan.aspx?Page=Dry](http://bbmp.gov.in/BBMPSWM/Forms/swmplan.aspx?Page=Dry).

<sup>8</sup> BBMP. “Waste Generation.” BBMP-SWM, [bbmp.gov.in/BBMPSWM/Forms/Publicwastestream.aspx?Page=index](http://bbmp.gov.in/BBMPSWM/Forms/Publicwastestream.aspx?Page=index).

<sup>9</sup> Indha. “Indha’s Clothing Data.” Dry Waste Collection Centers, Jan. 2018.



## ENVIRONMENTAL IMPACT (Planet)

Our team identified the need for a better disposal cycle for clothes. Incinerators and landfills cannot be the only option for these textiles. Incinerators at factories are used to create energy, similar to waste to energy plants<sup>10</sup>. Waste to energy plants burn waste to create energy, but they have been experiencing issues all over India and are always on the verge of shutting down. These waste to energy plants fail because of “poor waste segregation, seasonal variations in waste composition and properties, inappropriate technology selection and operational and maintenance issues”<sup>11</sup>. If industrial plants with the

sole purpose of creating energy get shut down, incinerators cannot be any better as they are privately controlled industries, hidden away from the enforcement of rules and regulations. Unfortunately, the clothing waste going to landfills is no more environmentally friendly than incineration. Most of the textiles which end up at landfills release toxins as they decompose, where some textiles even take as much as 20 years to decompose<sup>12</sup>. Textile waste disposal is a serious environmental issue, but it is one that can be solved with a step in the right direction, even at the level of a DWCC in Bangalore.

## FINANCIAL SINKS (Profit)

As of now, all dry waste is collected at DWCCs through door-to-door service or drop off. At DWCCs, all types of dry waste materials deemed “recyclable” are segregated, aggregated by the kilogram, and sold to various other markets. “Recyclable” in the context of a DWCC operator includes any dry waste material which have some marketable value, bringing the business revenue. Some examples include PET bottles, milk packets, and paper that sell

anywhere between 2-4 rupees per kg<sup>10</sup>. Likewise, “non-recyclable” materials include mixed dry waste which has no marketable value. These non-recyclables majorly include multi-layered plastics (MLPs), textiles and mattresses. Within the tons of non-recyclable material building up at these centers, one type in particular sits as an untapped source of revenue: all of the contaminated yet reusable clothing.

## CREDIBILITY (People)

Our team accompanied the DWCC operator Mansoor on a door-to-door collection of dry waste. By observing and interacting with residents during the collection, we noticed people were throwing away clothes that were in completely usable condition along with the rest of their dry waste. This experience also showed us a new relationship we had not realized before: waste pickers had low credibility in the eyes of these residents. The residents said that they would not separate out the clothes from rest of

the dry waste for waste pickers, as they do not want them to make any extra money from the clothes despite the fact that many residents agreed on giving the clothes separately if they could trust that the clothes were going to people in need. Goonj, a nationally recognised NGO, said that they do not and would not accept the clothes from DWCC as the clothes are contaminated, adding to the fact that waste pickers did not have much credibility, even in the eyes of nonprofit organization.

### Problem Statement:

Reusable clothes are getting contaminated at DWCCs and are forced to go to incineration plants and landfills.

<sup>10</sup> Batte, Hasiru. “DWCC Manual Notes.” Dry Waste Centers, 24 Feb. 2019. Interview Notes

<sup>11</sup> Indo-UK Seminar Report. 2015. Sustainable solid waste management for cities: opportunities in SAARC countries.

See [http://www.neeri.res.in/Short%20Report\\_Indo-UK%20Seminar%20\(25-27th%20March%202015.pdf\)](http://www.neeri.res.in/Short%20Report_Indo-UK%20Seminar%20(25-27th%20March%202015.pdf)) (accessed 24 February, 2019)

<sup>12</sup> Remake. “Are Our Clothes Doomed for the Landfill?” Remake, 6 Feb. 2019, [remake.world/stories/news/are-our-clothes-doomed-for-the-landfill/](http://remake.world/stories/news/are-our-clothes-doomed-for-the-landfill/)



### | Solution |

We are Hasiru Batte, a nonprofit organization dedicated to finding new alternatives for textile waste. We believe in creating new markets for traditionally low value textiles which have consistently ended up in landfills or have been incinerated. We are the missing link between the commercialization of textile reuse/recycling and untapped revenue streams for Dry Waste Collection Centers.

**Hasiru Batte is a brand within Hasiru Dala with a triple bottom line goal:**

**Planet:** Identifying markets & techniques for clothing waste to divert it from landfill and incinerators.

**Profit:** Help waste pickers identify new markets and create business models for traditionally unrecyclable clothing waste.

**People:** Providing credibility for the waste picking community.

## PIOLT

A pilot program focusing on the segregation of clothing at the source by collection of clothing through door-to-door service took place with planning and execution by Hasiru Batte and several waste picker stakeholders. The entire process for this pilot program began with outreach; please refer to “The Story So Far” on page 16 of the Appendix for further detail. Hasiru Batte created a poster flyer for Ward 112 residents about door-to-door collection of unwanted, used clothing. The flyer includes guidelines on what the quality of the discarded clothing should be in when given with dry waste. For further details on the content of this flyer, please refer to page 19 in the Appendix. The flyer was shared with Shivkumar, a member of the Residential Welfare Association, who sent it in a WhatsApp group message to

approximately 100 residents in Ward 112 on the 21st and 22nd of February. Hasiru Batte joined waste collectors from Krishna’s DWCC on Saturday, February 24th for the established door-to-door collection for several hours. By joining the waste pickers during door-to-door collection, we ensured that the clothes were kept separate from other dry waste. Clothing collection continued for the rest of the day, unmonitored. The clothing collected was then surveyed, folded, and stored in the office space of Krishna’s DWCC. Further evaluation of the total clothing collection will be held on Tuesday, February 26th including total counts of usable and unusable cloth and weight of each material type. From there, markets will be determined for the cloth.

## PIOLT OUTCOME

We discovered that not many residents had received the poster flyer in the whatsapp message. Thus, our outreach technique needs to be reconsidered and we will be coming up with an elaborate outreach plan in the coming week.

Our DWCC operator Krishna also pointed out how it meant extra work for his guys during collection to keep the clothing segregated from other to keep the

clothing segregated from other dry waste, inferring that proper segregation may not continue in our absence. He said that collecting the clothes during daily collection and storing them over a long period at DWCC is not a very feasible strategy as he does not have enough space and rodents might damage the clothes. Thus collecting the clothes once or twice in a month would be a better way to do it. For detailed feedback, please refer to page 25 of the Appendix.

# Don't Dispose, Give Your Clothes!

Give your unwanted, used clothing to someone in need—not a landfill.

## DON'T GIVE:

- Torn, stained or dirty clothes.
- Undergarments or socks.

## DO GIVE:

- Washed, cleaned & ironed.
- Separate your clothing from other Dry Waste.

**Ward 112**  
Clothing collection will occur along with usual Dry Waste collection.



Thank you for your contribution!

## ● Waste-to-Energy Plant

The BBMP is planning to create waste to energy plants using the non-recyclables to feed the incinerators for energy production.

The BBMP wants to pay the DWCC for these non-recyclables Rs 0.5/kg.

The DWCC operators are demanding Rs 4/kg.

Thus we have to find a market for these clothes where the DWCC makes at least Rs 5/kg.

## Cost-Benefit Analysis

There are three present markets for clothes (along with other non-recyclables):

### ● Cement Factory

Amount paid by Cement factory to DWCC for non-recyclables = Rs 3-4/kg .

Amount DWCC would have to pay for transportation to cement factory= Rs 10/kg.

Thus, the DWCC would make a loss of Rs 6-7/kg.

### ● Landfill

The BBMP is suppose to take the non-recyclables to landfill for no cost nor profit. Thus, the DWCC operators would make no money in that scenario.

If the DWCC wanted to send the non-recyclables to landfill to free up space for sorting, they would have to pay Rs 2/kg

## NEXT STEPS

First, we will come up with a thorough outreach plan. Pitching our idea to all the RWA members in Ward 112 and subsequently the Corporator would help us reach more residents. We will also meet up with the outreach manager of Daily Dump, a wet waste composting organization in Bangalore to learn about best outreach techniques. Once we maximize our outreach, we then plan to do another collection drive on 7th of March.

Meanwhile, we will test our potential markets. In order to verify whether there is a market for used clothing, we will reach out to various clothing related NGOs, donation centers, second-hand markets, fabric shredding factories, and local buyers. For a detailed list of potential markets, please refer to page 20 of the Appendix.

In order to ensure longevity of Hasiru Batte, there are several more steps we must take: We will create a mission, vision, and value statement also branding Hasiru Batte. We will create logo to brand Hasiru Batte for legitimacy purposes. A brand logo for Hasiru Batte will provide credibility for waste pickers to explore their future markets. We need to establish a permanent team of employees. As a student intern team with only three more weeks left in Bangalore,

we need to arrange for someone to take our place. Considering our desire to keep this nonprofit organization within the waste picking community, we will be focusing on employing passionate and capable members within the waste picking community such

as DWCC operators, collectors, and ward residents. We will also search for skilled business professionals that have exceptional work experience with other startups and NGOs. We will educate our new employees as needed.

## FUTURE SCOPE

For the future scope of this project, we plan on scaling up Hasiru Batte to all other wards associated with Hasiru Dala. From there, we would like to expand this practice to all other dry waste centers in Bangalore. If possible, the expansion of clothing collection at dry waste collection centers would scale nationally.

Furthermore, we would like to develop a chain of second-hand clothing stores associated with the Hasiru Batte brand run by the DWCC operators and waste picker community. They would use these stores to sell the clothing they receive in usable condition. Along the same lines, a website to sell these clothing items would be another form of expansion

that could maximize revenue.

Most importantly, we would like to research and create an in-house shredding operation for the unusable clothing and fabric pieces. So far, we have identified several companies invested in the full-circle recycling of fabric. Generally, the process includes shredding of unusable fabric/cloth, purifying of the shredded material, addition of chemicals to separate fabric that creates a slurry, then the remaking of fabric sheets. While we have a brief understanding of this process, we plan on reaching out to these industries for a complete answer so as to inform our operators on their next steps.

## APPENDIX

### Potential Markets Identified

- Organisations which take donated clothes like Goonj, R.K. Foundations, Vidyanarayan, Indest Kindess Wall, Bangalore Hospice Trust.
  - Traders buying second hand clothes per kg.
  - Second hand markets, Sunday markets.
- Wholesale fabric markets : Ramachandrapuram, Bangalore.
- Thrift shop (run by Hasiru Batte and DWCC operators), online sales through Hasiru Batte website.
  - Clothes shredding companies.





## THE STORY SO FAR

STEP 1: Visited DWCCs to identify infrastructure issues for creating a DWCC construction manual.

Problem: Low value non-recyclables like multi-layered plastic (MLP), mattress and clothes take up a lot of space at the DWCCs impacting the sorting efficiency.

Why does the problem exist?

The ACC cement factory used to take the high calorific value non-recyclables like clothes, MLP, mattresses to feed their incinerators. They paid for transportation. But the factory now has surplus and so refused to pay for transportation. The cost of transportation to the cement factory comes out to be Rs 100/Kg. the cement factory pays Rs3-4/Kg. Thus, the DWCC operators would make a loss.

The BBMP is suppose to send a vehicle to take these non-recyclables to landfill. But they are not doing so.

Solution: Find ways to divert clothes (one of the three major non-recyclables) from DWCCs to be free up space.

STEP 2: Visit Goonj, an NGO collecting second hand clothes to donate to people who need them in rural villages. Door to door survey with Mansoor, asking people id they would give the clothes separate from rest of the dry waste, observing what kind of clothes do they receive with dry waste.

Problem: Planet: Reusable clothes stacking up at DWCCs, ultimately ending up in landfill/incinerators.  
People: The DWCCs do not have a lot of credibility in the eyes of homeowners and Goonj and so homeowners wouldn't separate clothes for DWCCs and Goonj would not accept clothes from DWCCs as they are contaminated  
Profit: These reusable clothes are an untapped revenue source for the DWCCs.

Solution: Hasiru Batte, a non-profit would train the DWCCs to collect clothes separately from the rest of the dry waste, help them find markets for these clothes ; donate a portion of these clothes to organisations like Goonj.

STEP 3: Prototype 1

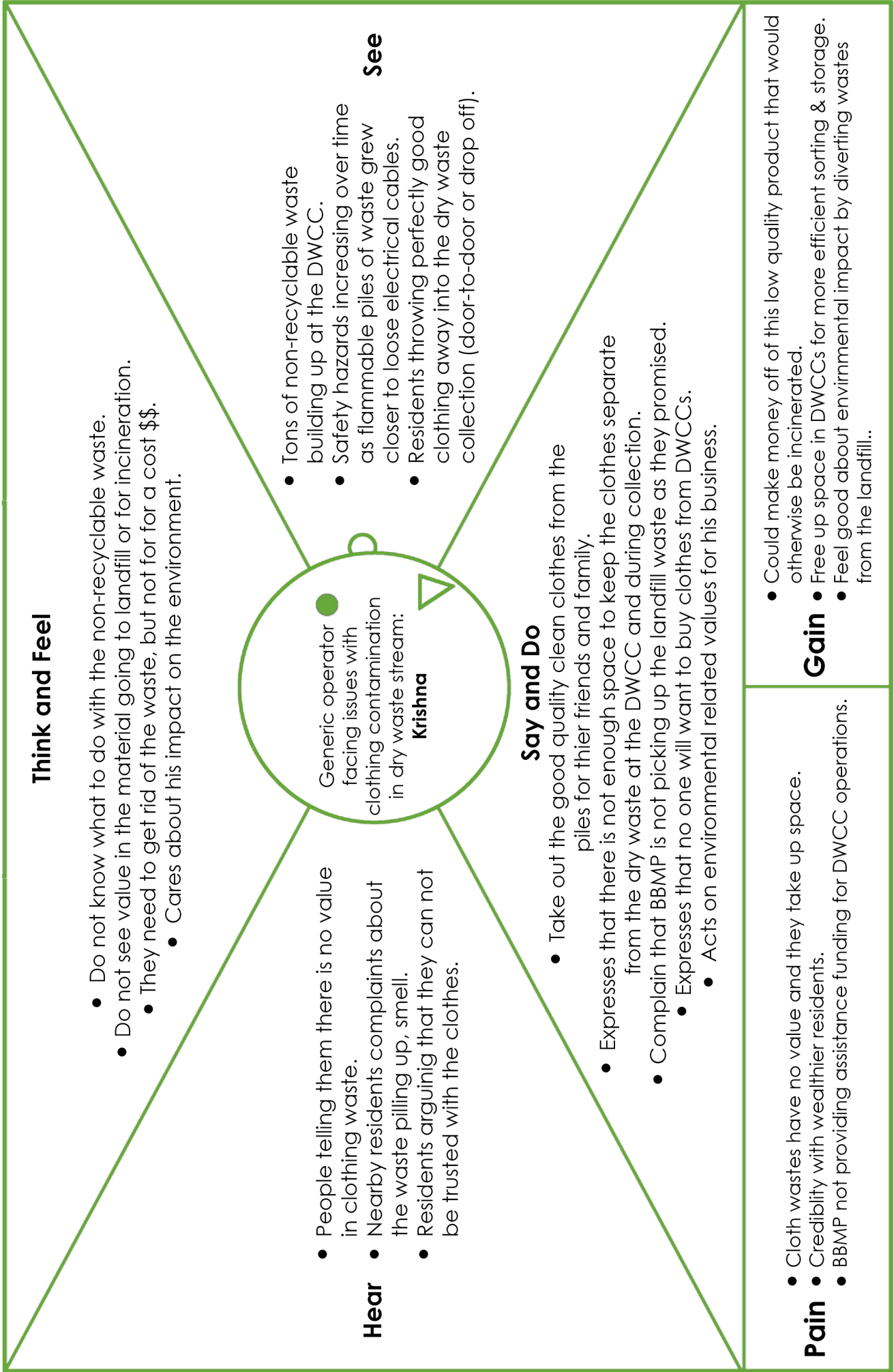
Make a flyer and distribute it through WhatsApp groups (by RWA), asking residents of ward 112 to give the clothes washed and separated from the rest of the dry waste.  
Go with the DWCC collection van on Sunday, to see the response to flyer and interact with residents.

Results: low response rate, need to change the outreach.  
Collecting clothes while collecting the rest of the dry waste and storing clothes separately for a long time at DWCCs is not very feasible. Received a lot of unusable clothes as well. Thus fining methods to recycle unusable clothes as important as finding markets for reusable clothes.

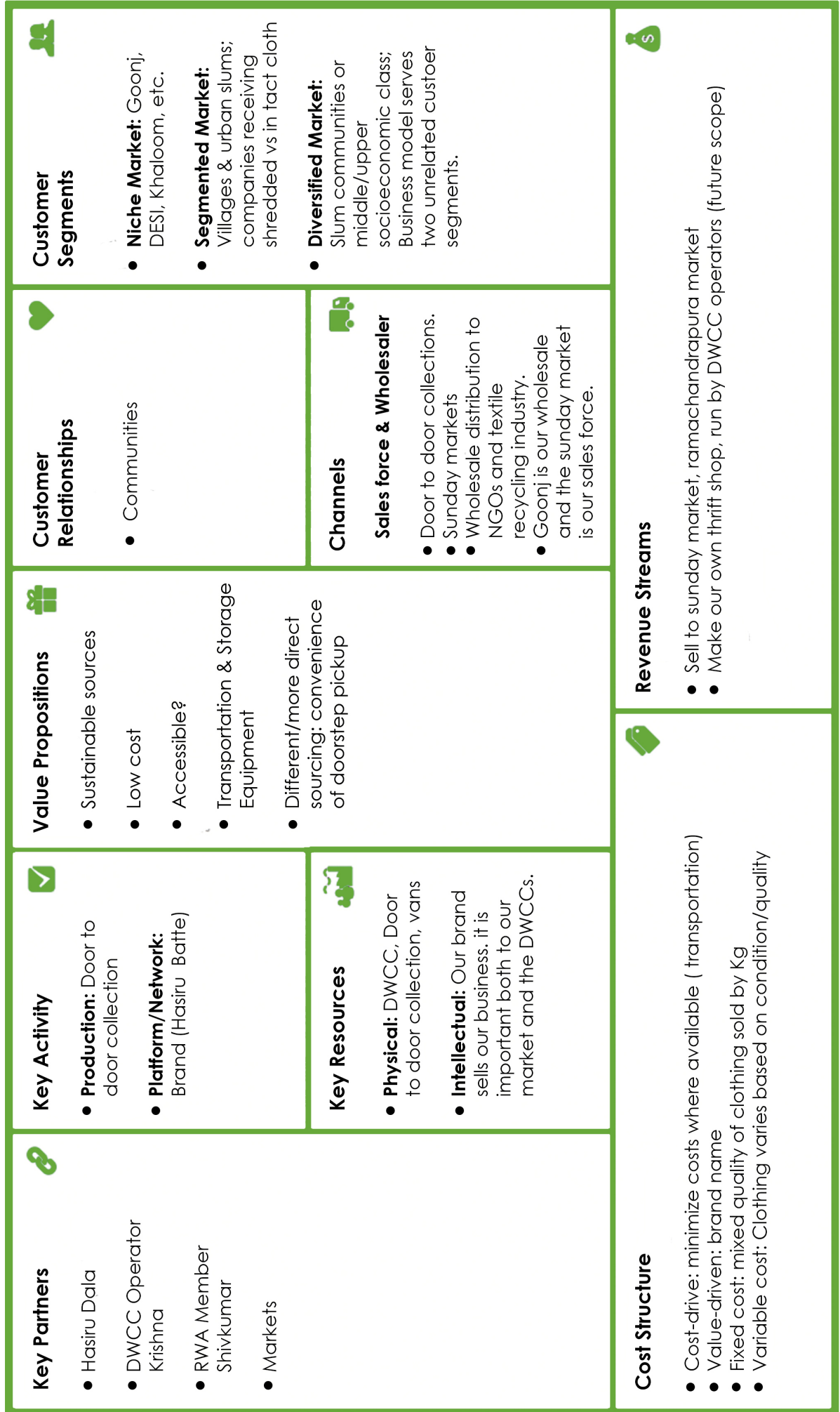
# THEORY OF CHANGE

I want to clarify my priorities by defining my goals and the path to reach them





# BUSINESS MODEL CANVAS





## RANDOMIZED CONTROL TRIAL

### Intervention: Outreach to residents.

One of the randomized control trials that Hasiru Batte can conduct will involve the amount of clean reusable clothes received from door to door collection. The control variables of this test are the number of households in the ward, duration of collection and the amount of resources used to complete the door to door collection such as vehicles and number of workers. The test will provide one of the DWCC operators with educational outreach materials for the residents regarding how to prepare their clothing waste for collection while another ward will not

receive any educational outreach materials; that will be the dependent variable for the test. These educational materials can be flyers distributed through an effective channel, or channels, to the residents who will know how to segregate clothing wastes in a way that waste pickers can easily collect, sort and recycle them to different markets provided by Hasiru Batte. In the end, the difference in the amount of revenues generated with the clothes collected will determine the effectiveness of this intervention.

## RROTOTYPE FEEDBACK

The feedback received for this prototype involves how much clothing waste we successfully diverted from contamination of other dry waste. In addition, these wastes were to be segregated and cleaned according to the guidelines described by the flyers sent out to resident WhatsApp group. The feedback received for this prototype involves how much clothing waste we successfully diverted from contamination of other dry waste. In addition, these wastes were to be segregated and cleaned according to the guidelines described by the flyers sent out to resident WhatsApp group.

Who is giving feedback?	What is the feedback?
Our team: Hasiru Batte	Although we got some reusable clothes, it was because we were lucky that some residents were throwing away clothes bagged separately from the dry wastes that weren't too dirty to reuse. Only one person out of the two hundred households saw our poster in the WhatsApp group. However, the residents might not have enough time to notice and act on our message. We still should to look into alternative channels to reach the residents within these wards. More collection day in the future will be needed to evaluate the effectiveness of this prototype.
Krishna: DWCC Operator	Changes like this do not happen overnight.
Residents during DtD	I have not received this message. You are doing great work, keep it up!
Nalini, Indha, & Karthik: Hasiru Dala staff	Scheduled for meeting on Tuesday 2/26
GCIL Peers	The idea is good and look forward to seeing what's next.
GCIL Staff	The idea is good and look forward to seeing what's next.
Daily Dump Outreach Coordinator	Scheduled for meeting on Thursday 2/28

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Hasiru Dala is a social impact organization that works with wastepickers and other waste workers in informal economy of waste.



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