

A Qualitative Analysis of purchasing and waste disposal behaviour patterns of residents in slums / low income households in Chennai

Introduction

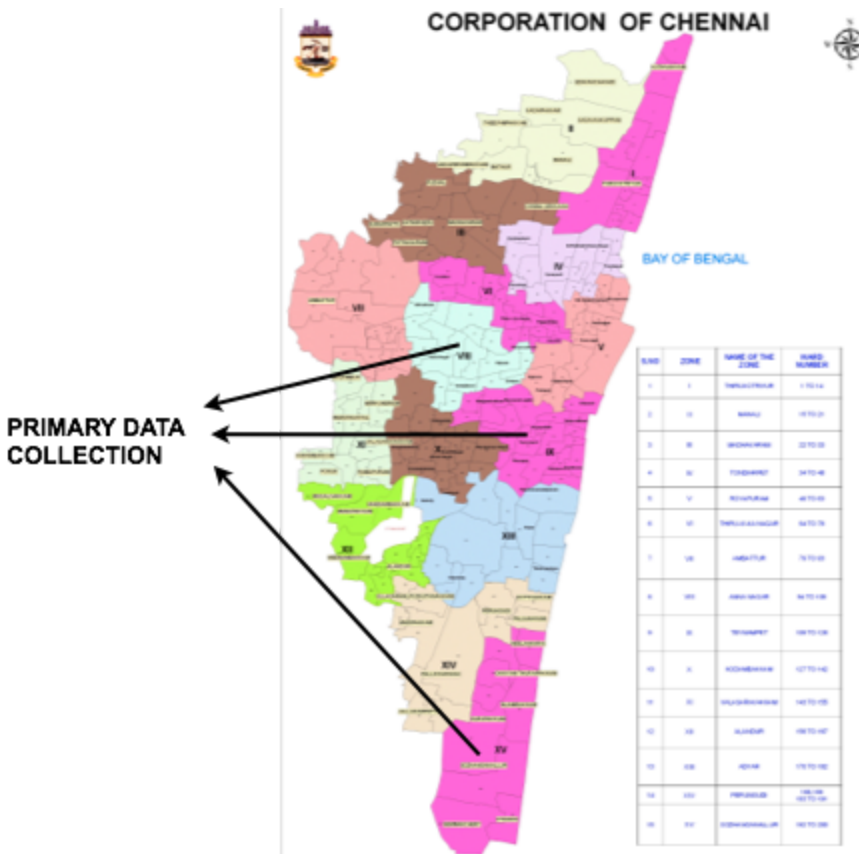
The Zero Waste International Alliance defines the idea of Zero Waste as *the conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health.*¹ To study the composition of garbage generated from an individual household, it's essential that one also studies what is brought into a household that ultimately gets consumed or used and exits the household. With the concept of zero waste also being about our responsible purchases, it's pertinent to focus on elements that influence purchasing behaviour of an individual household. No study into civic services and how citizens access it is complete without factoring the socioeconomic conditions of the citizens. The Citizen consumer and civic Action Group (CAG) has a long history of working in the fields of public participation and solid waste management, hence it is apparent that we assess how vulnerable communities access civic services like garbage collection. The researchers at CAG were keen to learn how communities who were socioeconomically disadvantaged were purchasing essentials, what factors influenced these choices, how were they using these products and how were they disposing of the leftovers or packaging.

CAG's work with the Greater Chennai Corporation's (GCC) Solid Waste Management (SWM) department, to help achieve Zero Waste Cities objectives and its outreach work had brought to the surface a number of issues faced by low income communities when it comes to garbage collection and disposal. There has also been an excess of problem materials like single use plastics and sachets observed in the garbage generated in slums / low income communities. With the purchasing behaviour of the residents contributing to this garbage menace, it was essential to study the complete process of purchasing, usage and garbage disposal behaviour of residents of these communities. With the landfills and garbage dumps in the city more likely to be located in proximity to these vulnerable communities, it would be insightful to study how socioeconomic factors have a direct impact on the type of garbage generated in a city. CAG researchers tried to assess the research problem with a series of in depth interviews with residents and neighbourhood provision shops. Mapping the neighbourhoods and brand audit of residents' pantry were the other data collection methods. The exercise retraced how an individual household was budgeting for the purchase of provisions, who makes the decision to purchase a certain brand of the provision, why branded products are preferred over products sold in loose, what role does ration shops play, how the presence of children in a household influences choices, how garbage is handled and disposed, and the overall awareness of the household on environment, health, sanitation and waste management.

¹ Zero Waste definition, Zero Waste International Alliance, December, 2018, <http://zwia.org/zero-waste-definition/>

Study sites

For the primary data collection of the study, four slums/low-income neighbourhoods were randomly selected from the limits of the Greater Chennai Corporation (GCC). The neighbourhoods were spread out between South Chennai and Central Chennai and were located in three administrative zones out of the 15 of the GCC. The three zones were Zone 15 (Sholinganallur), Zone 9 (Teynampet) and Zone 8 (Anna Nagar). The neighbourhoods were a mix of Tamil Nadu Slum Clearance Board's (TNSCB) multi-storeyed tenements for the Economically Weaker Sections, independent houses with 250-350 sq.ft floor area and squatter settlements on government and private land, whose titles were legally in dispute. Some of the neighbourhoods were proximate to natural water bodies. The neighbourhoods included locations where GCC's garbage collection services were active, to locations where GCC was partially active (i.e swept adjoining roads, placed dumpsters and collected from it, but refused to collect door-to-door from homes) and locations where GCC offered no services, by not sweeping the neighbourhood, nor placing dumpsters or collecting garbage door-to-door.



Kannagi Nagar [Zone 15- Ward 195]

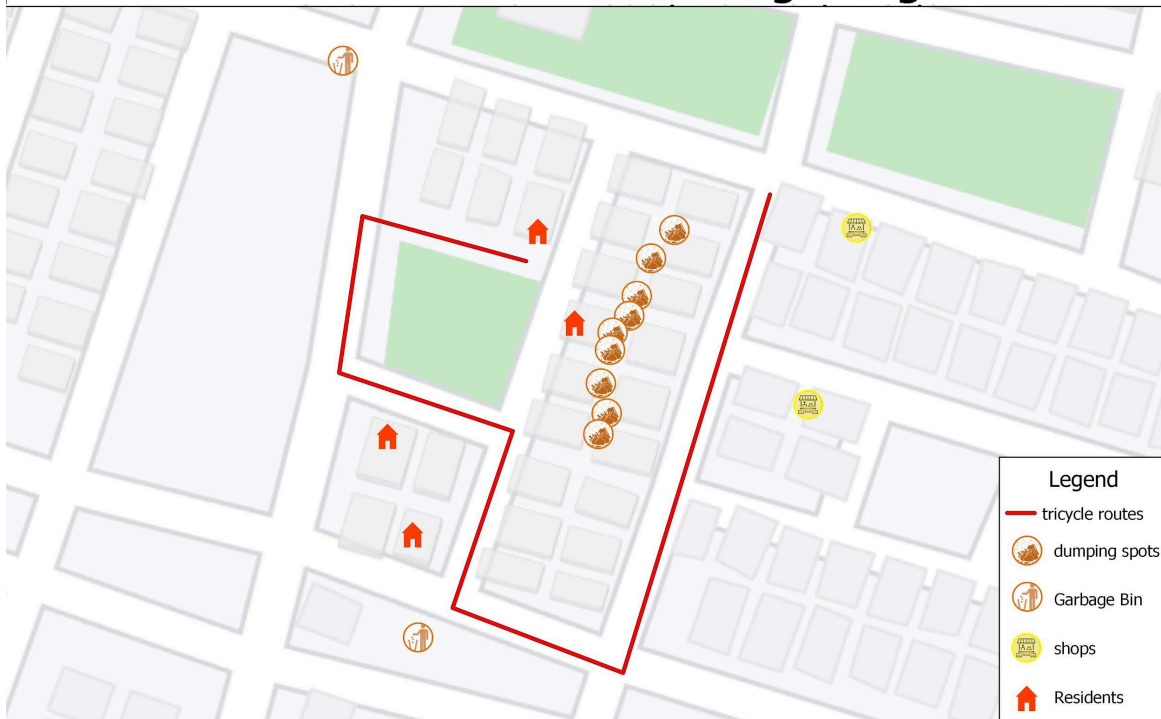
Kannagi Nagar, a TNSCB resettlement tenement is located in the southernmost part of Chennai city near Karappakam and around the Old Mahabalipuram Road IT corridor. The neighbourhood comprises two and three-storied apartment complexes, where people from various former slums and squatter settlements around Chennai city were accommodated. Kannagi Nagar has 15,000 plus households with the residents predominantly belonging to economically weaker sections of the population. Most of the residents had originally resided 25 km away in the heart of the city, but were forcefully evicted and relocated in Kannagi Nagar.

The neighbourhood is served by GCC and conservancy workers, who visit the houses and collect the garbage door-to-door. The schedule of the services is every morning, but this is irregular, when there is a shortage of staff, as mentioned by the conservancy workers. There are 16 main roads at Kannagi Nagar and cross streets branch out from each of these main roads. There are also narrow alleyways behind apartments, which residents can use, to take a short cut to the next cross street. These alleyways are inundated with garbage, mainly from packaging and wrappers thrown by residents on the top floors. As the sewage lines too run under these alleyways, when it gets blocked, the sanitary workers clear the sewage lines and leave the debris there, which has been collected over a long period of time. For the data collection, residents on 8th main road and 11th & 12th Main road were interviewed. Streets, garbage dumps and dumpsters were mapped and neighbourhood provisions stores were interacted with.² During the data collection at Kannagi Nagar, CAG researchers also encountered many residents, who worked as contract conservancy workers for the GCC. They had earlier resided in a slum outside the Reserve Bank of India office in Burma Bazaar before being resettled here. The researchers recorded their detailed statements about their work life, the challenges they encounter at work, how they have been constantly denied work benefits and their struggles for it and how they feel their neighbourhoods were unfairly treated when it comes to garbage collection and sanitation when they compare it to wealthy neighbourhoods where they work.³

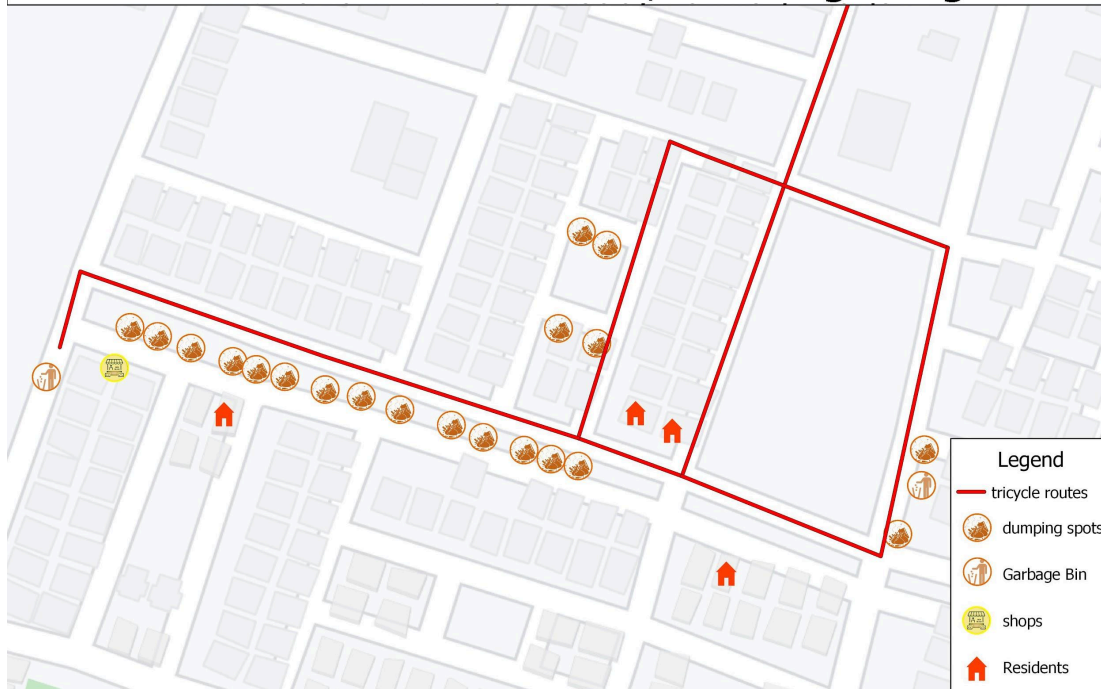
² Pictures from Kannagi Nagar [Zone 15, Ward 195], CAG, December 2019, <https://drive.google.com/open?id=1E-MIOSftSJs4TcEWJoPPzL1md7OZsE4D>

³ Conservancy worker statements, Kannagi Nagar, CAG, December 2019, <https://drive.google.com/open?id=122fjiwFQTee919RKXQABWj3OgLitCGBnoyTpMKTlgKU>

Ward 195 8th Main Road Kannagi Nagar



Ward 195 11th & 12th Main Road, Kannagi Nagar

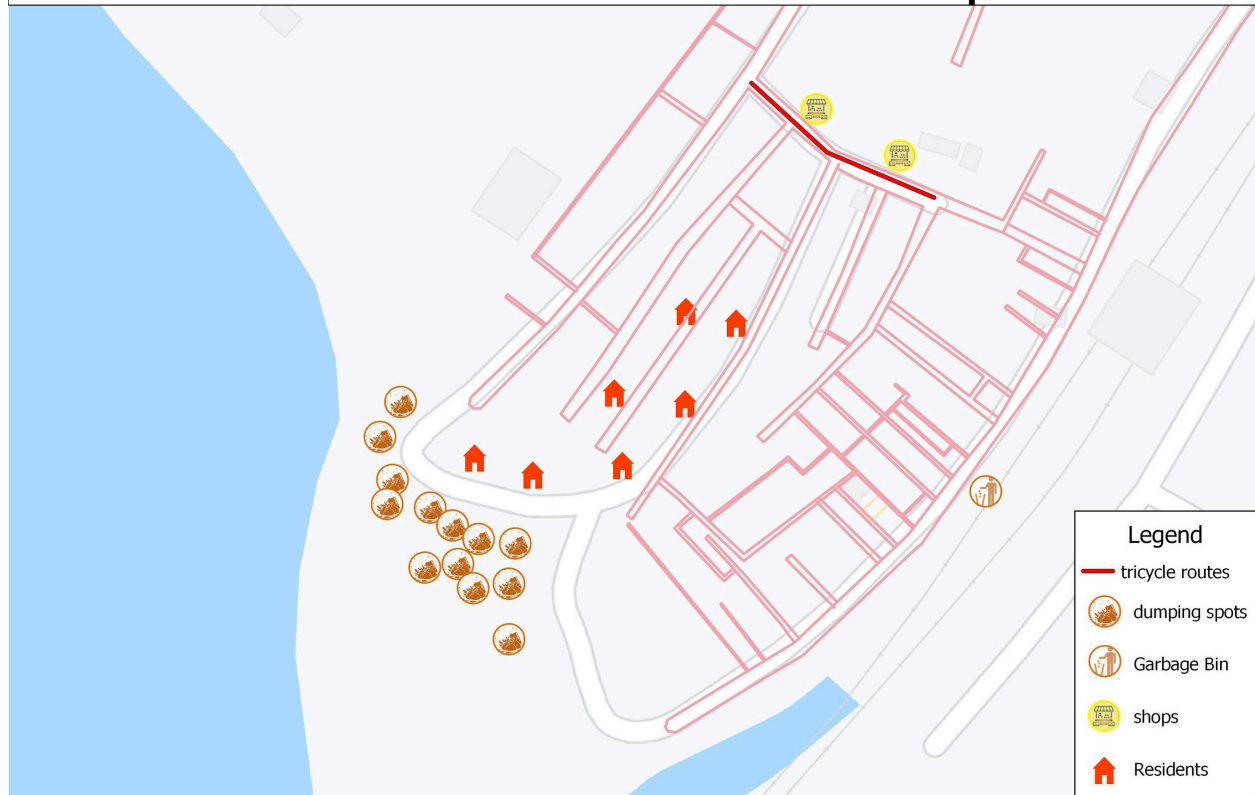


Dr. Radhakrishnapuram Slum Area [Zone 9- Ward 122]

Dr. Radhakrishnapuram Slum Area is located on the coast of Adyar River and Buckingham Canal adjacent to the Greenways Road railway station. The neighbourhood is surrounded by high-income neighbourhoods including the Adyar Boat Club Road, which is one of the most expensive real estate locations in South India. The neighbourhood is sandwiched between Greenways Road on the east and Pughs road on the west. It has a main street- Gandhi street, which branches out perpendicularly into multiple lanes named Chozhan, Cheran, Pandian, Pallavan and Anna. The Gandhi street is wide enough for water lorries, goods carriage vehicles and GCC tricycles to come in, while the lanes are narrow to an extent of two metres, which would allow the passage of only a motorcycle at a time. The houses are built closely, are multi-storeyed, have no front or backyard and have a floor space of 250-300 sq.ft. The neighbourhood consists of low-income households with the majority of women residents working as housemaids in the neighbouring high-income neighbourhoods like Adyar, Kotturpuram and Mylapore. Most of the men work as daily wage earners in construction, delivery staff and small traders. The residents have been living in this neighbourhood from 15 years to over 3 generations and have been locked in a dispute with a temple trust, who allege they are squatters. There have been warnings from the local MLA that the neighbourhood might be evicted, but the residents didn't seem worried. The Adyar river and Buckingham Canal flows along the neighbourhood and the residents recollect a time 30 years ago when the water was clean. The water completely turned into sewage with the connection of toilets into the canals. The Public Works Department (PWD) had verbally warned the residents that they will cut their sewage lines that lead into the river as part of cleaning up the river. There is an empty ground at the end of the lanes, which some residents use as a dumping ground. Some garbage is also tossed into the Buckingham Canal. Walls are being built by PWD, but the residents still fling it over the walls. CAG had earlier worked with the community and had donated pots for composting wet wastes and had organised awareness programmes about the segregation of wastes.⁴

⁴ Pictures of Dr. Radhakrishnapuram Slum Area [Zone 9, Ward 122] CAG, December 2019, https://drive.google.com/open?id=1XUB5golonDfns_BL-m9Vh0iHJn8mgjnJ

Ward 122- Radhakrishnapuram



MGR Colony [Zone 8 - Ward 100]

MGR Colony at Keezh Naduvankarai is located at the western end of Anna Nagar bordering the Cooum River. Anna Nagar 7th Main road passes along the neighbourhood and 13 streets are perpendicularly connected to the 7th Main Road. All these streets, named Gandhi street, Anna Street, Nehru Street, Kamaraj Street, Periyar Street, VOC Street, lead to the banks of the Cooum River. These streets are narrow with a two-metre distance across, which can only allow a two-wheeler to pass through at a time. The houses are an average of 200-300 sq.ft in floor space and are built close with no front or backyard. Only houses that are located close to the Cooum river have some space in front of them that faces the river. Right across the 7th Main Road are the wealthier neighbourhoods with 2000 sq.ft independent houses and multistoried apartments. The residents of MGR colony are economically weaker with women residents working as maids in Anna Nagar homes or selling flowers in the nearby temple while their husbands worked as construction workers and drivers. Kamaraj Street is built over a large stormwater drain pipe that empties stormwater drainage from Anna Nagar into the Cooum River. The residents of Kamaraj Nagar (especially the homes located at the Cooum River end side) dump garbage into the path of these drains with the hope that the garbage would be washed into the river and away from their homes.

GCC conservancy workers pass through the 7th Main road with their tricycles and turn into the wealthier neighbourhood across the road to collect garbage door-to-door, but do not come into MGR Colony. There are multiple dumpsters placed on 7th Main Road, where houses located close to the 7th Main Road dispose of their garbage, but the houses located in the middle of the streets and the end always dump garbage into the Cooum River. The neighbourhood is a permanent settlement and is in no threat of eviction, but 200 huts at the end of the street right on the banks of the Cooum River were evicted by the PWD and the families were relocated to Padappai and Semmancheri TNSCB tenements. As the evicted areas now lie vacant, the current residents have also used up these spots as garbage dumps. The garbage dumps remain there around the year until September/October or December when the rains wash away the garbage into the river. The residents have been insisting to place a dumpster near the Cooum river and build a wall bordering the river to prevent dumping and to prevent anti-social elements from loitering and drinking along the river bank but the requests remains unfulfilled by the GCC.⁵



⁵ Pictures of MGR Colony, Naduvankarai, [Zone 8, Ward 100] CAG, January 2020, https://drive.google.com/open?id=1207Rvidwg-KOK8DWJi0AogyG1w9_Upai

Muthu Mariamman Nagar/Lane [Zone 8 - Ward 105]

Muthu Mariamman Nagar lies sandwiched between Poonamallee High Road and Cooum River in Arumbakkam. The neighbourhood is located right next to the Tamil Nadu Pollution Control Board Office. This is a squatter settlement and the residents are locked in a legal dispute with the TNSCB, who want to evict them and relocate in Kannagi Nagar. The residents had lived here for three generations and wanted to be resettled at the same location in a multi-storied apartment complex, which the TNSCB has opposed. The neighbourhood is named after the Muthu Mariamman Temple, which earlier stood in the neighbourhood, but this was demolished by the TNSCB 12 years ago to follow up with the eviction of the slum, which was abruptly stopped after the involvement of local social workers and politicians. Muthumariamman Nagar originally had 300 plus households, but 80 households located close to the Cooum River were evicted and residents shifted to TNSCB's Padappai apartment complex. The remaining 250 households reside in one-storied built houses with an average floor space of 180-250 sq.ft. *CAG researchers also recorded a detailed statement of a resident, who was at the forefront to prevent the eviction of the settlement. The detailed statement can be accessed.*⁶

The lanes of the neighbourhood are so narrow that it can only accommodate a person to walk through. There is anxiety and confusion among the residents about their likely eviction and their future in the neighbourhood. The majority of residents work as cleaners and housemaids and their husbands work as daily wage labourers and small traders. There are only a handful of houses with individual toilets; the rest share toilets between 4-5 families and take turns once a week to clean them. The toilet wastes are all connected into the Cooum River, which the GCC dismantled a few years ago, but the residents rebuilt it and continue letting their sewage into the river. GCC is not involved in collecting garbage or sweeping the streets of Muthu Mariamman Nagar. A lone dumpster is placed on the Poonamallee High Road along the neighbourhood, but this is used by businesses on the main road and is always full, so all the residents dump their garbage into the banks of the Cooum River and into it. There have been repeated representations made to the GCC to place an exclusive dumpster for the neighbourhood, sweep the streets and collect garbage door-to-door, but the GCC says that they are working on it. When the residents get agitated and confront the local GCC office about their lackadaisical attitude, the GCC officials counter that by saying that the neighbourhood is marked for eviction, hence none of the essential services would be offered there.⁷

⁶ Devi, Muthumariamman Nagar statement on eviction, CAG, January 2020
<https://drive.google.com/open?id=13yzWi9OahwX6q5W7AEYMH5sSwkS1t0cexQTQppJEDgQ>

⁷ Pictures of Muthumariamman Nagar [Zone 8, Ward 105] CAG, January 2020,
<https://drive.google.com/open?id=1BgqqJOk0R5kbwtICn8MUf-ag2NiMDYrB>

Ward 105 - Muthu Mariamman Nagar



Methodology

Post-identification of the four study sites, CAG researchers mapped the neighbourhoods, location of respondents' homes, location of neighbourhood provision shops frequented by the respondents, placement of dumpsters, garbage dumping grounds, water bodies and the garbage route taken by conservancy workers. After the neighbourhood was mapped, shopkeepers in the neighbourhood were asked a select set of questions and observations were made on purchasing behaviour in the stores. The shopkeepers were enquired about the following: most selling products, prominently displayed products, average customer walk-ins, average billing of a customer in a single visit time, customer purchasing behaviour, packaging offered, shopkeepers choice of products to sell and garbage generated. An average of 3-4 shops in each neighbourhood was visited and interviewed around the respondents' homes.

For the primary data collection among residents, an interview guide⁸ was prepared. The interview guide captured the following:

- 1) **Household demographics:** Family members, age and genders, size of residence at the study site and sources of income
- 2) **Purchasing behaviour:** Food items, household cleaning products, personal hygiene and medicinal products purchased, brands preferred, the reason for these choices, packaging preferred and disposal methods
- 3) **Garbage disposal (if garbage was collected by GCC):** Garbage storage at home, segregation, how garbage exits the household, attitude towards conservancy workers, garbage collection process, garbage handling methods and reasons, suggestions to improve the current waste management system
- 4) **Garbage disposal (if garbage was not collected):** Garbage storage at home, garbage emptying schedule or frequency, segregation, how garbage exists the household, waste disposal on public grounds/water bodies, reasons for dumping, GCC responses and actions for change
- 5) **Health and environmental impact:** How garbage impacts the respondent and his/her families' health and sanitation, awareness about segregation and the handling of different types of garbage, its practice and non-practise, the environmental impact of garbage, mediums where knowledge about the environment is accessed.

The purchasing behaviour of the respondents was captured in a datasheet⁹ that listed 32 products used by an average household. These were divided into food items, household cleaning, personal hygiene and medicinal products. The respondents were enquired about the choices they make, when purchasing those products and what factors influence them when making these purchases. All the respondents were women, as they were solely responsible for the purchasing household essentials and for disposing the garbage generated. Even in households interviewed, which had a stay-at-home male adult due to ill health or retirement, they weren't responsible for purchasing and waste disposal as their spouses managed that.

Twenty-eight interviews were conducted with residents, who gave consent to be audio recorded. The interviews were conducted across the four study sites. An average of three to four respondents were also casually interacted with and notes taken in each study site, as they weren't consenting to be audio recorded during the interview. These respondents either feared that they may be held accountable for what they say on record in the future, or they weren't ready to speak on record without the consent of their husbands, who were away at work. Some feared that confessing to dumping garbage on record would attract fines in the future. The residents who consented to be audio recorded were administered a Tamil translated version of the interview guide.¹⁰

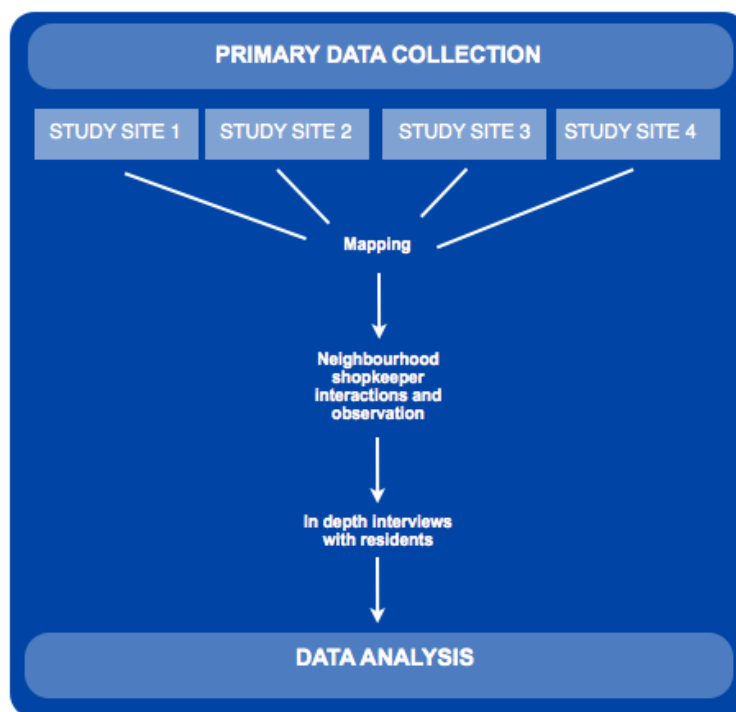
⁸ Slum/low income HHs purchasing and garbage disposal behavior_Interview Guide_English, CAG, December, 2019,
https://drive.google.com/open?id=1ZVKO_p74s0bH3hQGqrZdL9lLgB-3hIrMq6zjiTmeBIM

⁹ Appendix 2, Purchases list of respondents, CAG, December 2019,
<https://drive.google.com/open?id=1x9uT8Par5rwWY1MiHn7FiEmhScn4Cp54C7DtKDWcPtc>

¹⁰ Slum/low income HHs purchasing and garbage disposal behavior_Interview Guide (TAMIL), CAG, December, 2019,
https://drive.google.com/open?id=1xAs1a8RQYVw1Ve-vb3MVu3eVueVxTi686Y71_ZfAUh0

The interviews lasted at the least 20 minutes and the longest was 1.5 hours. The interviews were mostly conducted sitting in the pathways outside the respondent's homes and on rare instances inside the respondent's home, when there was a presence of a male partner or children. The respondents were more comfortable sitting outside, while they took the researchers around their homes, toilets and the location where the garbage can was placed or garbage dumped, post the interview. The interview discussions were always diverted by the respondent to other civic issues like the irregular supply of drinking water, the uncertainty about being evicted (respondents in squatter settlements) resentment that the government had abandoned them on the outskirts of the city (resettled slums) and a general feeling of apathy with regards to elected representatives and government officials for not caring enough about the neighbourhood.

All the audio recordings of the interviews had been converted into mp3 formats for easy access, labelled with code names and uploaded into the audio files folder.¹¹ The individual interviews were transcribed and data entered into the datasheets.¹² The individual interviews had been code-named and responses attributed to the code names to maintain confidentiality and protect the identity of the respondents and not match them with their responses in the future.



Findings

¹¹ Audio Files, Interviews of respondents from slums / low income Households, CAG, December 2019, <https://drive.google.com/open?id=11b8w0cCg92BG6rC0er51pCIHAsFF-Tmv>

¹² Data Sheet, Slum/ Low Income Household Interviews, CAG, January, 2020, <https://drive.google.com/open?id=12WaEATHNftMcwJVCr2iLT9NjgLdnVZ7xllnd0Qgm2L8>

Neighbourhood shopkeeper interviews

All the shopkeepers interviewed, confirmed that milk packets were the most sold product in their shops. The milk packets, bought everyday by all the households, could be a half-litre packet or two packets of half litre depending on the size of the family. The Government of Tamil Nadu-owned Aavin Milk was the most purchased milk brand. Aavin being only available in a half litre packet priced at Rs.27 at its smallest quantity, poorer households opted for Arokya and Thirumala Milk, which were also sold in 200 ml packets priced at Rs.10/- After milk packets, Lays and Bingo chips packets sold at Rs. 5 were the second most sold products, which were usually bought by children themselves or by parents for the children. Children specifically asked for Lays or Bingo and did not pick indigenously packed snacks available in loose. Aachi curry masala packet sold for Rs.10 too was bought widely by the women folk, for the household's last minute cooking needs.

The shopkeepers prominently displayed products, which were priced from Rs.1 to a maximum of Rs.5 as these were fast moving. These include shampoo sachets like Clinic Plus (Re.1), Chic Shampoo (Re.1), snacks like Veanus Cornpuffs (Rs.2) Kelloggs Chocos (Rs.5), cooking essentials like Aachi Turmeric Powder (Re.1), Aachi Chicken masala (Rs. 10), dry fish packets (Rs.10), cleaning products like Surf Excel (Rs. 2), Power liquid detergent (Rs.2) and pickle sachets like Pandian pickle (Re.1) and Ruchi Pickle (Re.1). Customers have a strong brand affinity, especially towards the most advertised international brands and prefer it over locally made, indigenously packed and loose products. There is no price factor for choosing locally made products, as all the branded products are priced as low as the locally packed ones.



An average customer spends Rs.50-100 during a single visit of the store. The stores see a lot of customers as meal time approaches, as a lot of the purchases are last minute food ingredients like vegetables, curry masalas and snacks to be had on the side. Evenings see a lot of milk purchases for the evening tea/coffee. Three to 10 customers can visit a store in a 10-minute duration.

A customer comes with a clear list of products, usually three to five in number, to be bought and purchases the same. He/she is brand loyal but settles for the lowest available quantity. If the customer is accompanied by a child, there is pressure to purchase a packet of chips or cake or chocolate, usually priced at Rs.5/-. There is an overwhelming brand loyalty among children towards brands like Perk, Lays and Bingo, which the children always prefer over locally made snacks available in loose. Children, too young to recognise brands are not drawn to it, but settle for snacks depending on the money they have in their hands. In these situations, it's the shopkeeper who chooses the product for the child, depending on the Rs.2 or Rs.5 coin they have in their hands. The neighbourhood shops are seen as a last-minute buying place for most of the residents, except for poorer households, who do not go for the monthly shopping in bulk and solely buy on a need basis from these shops. There are also a lot of imitation chocolates and snacks that mimic the packaging of popular brands like Dairy milk and Gems. As the customers preferred smaller sachets over larger bottles, the shopkeepers didn't stock larger volume products. There is credit offered in these stores, which helps poorer households sustain themselves till they get their next pay. Customers were sometimes mindful of rounding off their credits and bought snacks for the same. A typical customer's shopping basket from these stores contained tea packets, loose vegetables, loose daal and milk packets.

All the shops visited offered no plastic bags but reuse the plastic packaging they usually end up with after buying products in bulk. Newspapers are also used for packing loose products. Women customers either bring plastic wire bags (*Koodai*) or carry their purchases bound to the end of their sarees.

Shopkeepers opine that commercials play a major role in people to choose products, a lot of indigenously made products are tried, but the customers never prefer those and always go back to the branded products. In Kannagi Nagar it was observed that no company distributors supplied products directly to the stores. As the neighbourhood was generally considered unsafe, the companies didn't prefer to risk their staff's lives as they may be waylaid, when they return from collections, which might even go up to a lakh sometimes. Because of this, shopkeepers bought small quantities personally from wholesalers and sold them in the store. All shopkeepers, who had over two decades of experience running their store, mentioned that there was a thriving loose market earlier, as in they sold almost all products in loose, where the customers brought glass bottles and utensils to purchase products. But now, since all brands have introduced their products in miniscule quantities, the whole market of selling in loose has vanished. The shopkeepers also earned a better profit in loose, but it's no longer viable as people are used to the branded products in smaller quantities. For example, earlier Horlicks bottles were only available for over Rs.150, but now Horlicks sachets are offered for Rs.5. Cooking oil was earlier sold loose, but now Gold Winner offers 100 ml of oil in a packet for Rs.11.

Household demographics

All the 28 respondents interviewed were women and the majority of the households interviewed had a family size of 4 members. At the lowest, there were childless families of just the husband and wife, to the highest of 13 family members, which consisted of three generations living under the same roof. Out of the 28 respondents, 17 had two children, while the rest had a mix of one and three children. Kannagi Nagar

being a TNSCB tenement built 20 years ago, the respondents were living in the neighbourhood for under 20 years, while the rest of the neighbourhoods had respondents who had lived there from 20 years to up to three generations. Out of the 4 neighbourhoods interviewed, two were lawful settlements, while two were situated on land, whose ownership was disputed. Majority of the respondents worked as maids, followed by cleaning staff and small traders who sold flowers or eatables by the roadside. The majority of respondents husbands' worked as daily wage earning labourers in construction, followed by drivers and small traders. There were 3 single income households out of the 28 as the respondents' spouses were injured and physically unable to work or were bed ridden with tuberculosis or diabetes.

Purchasing behaviour

Price: 26 out of the 28 respondents collected provisions every month from the ration shops. One respondent, who worked as a government school teacher with a working husband and no children was economically well off and didn't find the need to collect ration supplies. Another respondent had lost her ration card and had been running pillar-to-post for a reissue and had to settle for provisions at regular rates from the private shops. On an average, provisions at ration shops were priced a fourth of what was offered in private provision shops, but it couldn't sustain for a month as the quantity was barely enough. All the respondents then opted to shop at a wholesale shop to compensate for the ration shop supplies shortage. These wholesale shops (in the nearest neighbourhood or T-Nagar, if there was a direct bus service) offered products at rates below the MRP, and on an average a household shopped in bulk for Rs.1,500-2,000. After the provisions bought at the whole sale shops had exhausted, which is usually by the last week of the month, the respondents then bought on a need basis from the neighbourhood shops, where it was sold at MRP. Respondents, who were impoverished, bought in ration shops and skipped the wholesale purchases and went straight to the neighbourhood shops for sustaining the rest of the month. Two respondents also confirmed that they were buying monthly provisions on a weekly EMI, as they could only afford that and the facility too was offered by a few shops.

Bulk Vs. Top-up of provisions: All the interviewed respondents confirmed that they try for a single bulk purchase every month. These purchases dwindle as they near the end of the month. This cycle isn't always from the 1st to 30th of a month, as some respondents do not receive pay in the first week as some are self-employed and daily wage earners, whose income depends on the work they are able to find. Till the bigger pay comes in, top-ups from the neighbourhood stores are used to sustain the needs of the family, as the neighbourhood stores also allow some credit. The neighbourhood stores have a sense of the financial condition of a household. Perishables like milk, curd, eggs and vegetables are always bought from the neighbourhood stores. Respondents of a single study site had one single wholesale store that everyone from their neighbourhood shops accessed. Four respondents expressed that they never bought provisions in bulk and only relied on the neighbourhood shops for need-based purchases as they could barely find money for bulk purchases. One lone respondent, who was financially stable who sold flowers in the nearby temple, didn't like venturing out to buy provisions and relied on the neighbourhood store. When the provisions run out, only groceries are purchased, while cleaning products, personal hygiene products are all postponed to the next bulk purchase.

Storage

In two of the four study sites, two to three households shared a bathroom/toilet, which made them unable to leave behind shampoos or toiletries. Due to these conditions, shampoo sachets were used, which could be left behind after a single-use. These used sachets too were tossed out through the bathroom ventilation, littering the alleyways outside. Even in study sites which had individual bathroom/toilet for the household, the respondents felt that small sachets were specially made for poor people to satisfy their budget, so they always opted for it. The presence of children also influenced respondents to buy sachets as they feared children would waste it by playing with it in the bathroom and ending up using up excess of it. Using sachets gave them a sense of how much should be used for a shower as large bottles could give out an excess of liquid for a single usage. Even respondents, who expressed that they bought toiletries in bulk, meant they were buying 10 pieces of Re.1 shampoo sachets.

Availability

A mix of larger quantities and smaller sachets were available at bulk purchase stores, but the families chose smaller quantities. The neighbourhood stores always stocked smaller quantities as only those get sold. One study site was a high crime neighbourhood, which meant no distributor directly served the area as they feared they might be robbed when the agents came to collect money. Due to this, the storekeepers bought the products by themselves in bulk from Parrys. Their choices solely depended on what would sell faster, which was always smaller packets. Provisions could be bought at a much cheaper price from T-Nagar or Parrys, but this depended on the availability of direct bus routes from the neighbourhoods. Milk is purchased daily from the neighbourhood stores by 26 of the 28 respondents interviewed. One respondent opined that she was too poor to afford milk and they consumed just black tea. The presence of children in the household increased the purchase of milk. 50% of the respondents bought Aavin 500 ml packet for Rs. 27, while the rest of the respondents preferred Thirumala, Aarogya, Vijay and Dodla milk because they offered a 200 ml packet for Rs. 10. Respondents were willing to buy milk in loose, but three out of the four study sites didn't offer milk for sale in loose. Even in the one study site, where loose milk was sold, it was priced Rs. 6 higher than packaged milk. The respondents didn't opt for it, as they were fine to pay a rupee or two in extra, but not six rupees. Even with the prices, few respondents felt that it was a hassle to handle and store loose milk and also alleged that loose milk was always watered down by the sellers. The thicker packaged milk allowed them to add water and get more milk out of the money spent. Study sites, which bordered affluent neighbourhoods, had more local shops to purchase from. Which means, they still maintained brand loyalty and moved to another shop if a shop didn't have their preferred brands. One study site, a squatter settlement, which was highly impoverished compared to the other study sites, only had a single rudimentary neighbourhood store. The store only sold cheaper branded and locally made products and the respondents had to settle for that as they had no other choice.

Health





All the respondents interviewed felt that palm oil supplied by the ration shops was unhealthy. They felt its clouded content was unhealthy and impure and considered Gold Winner Sunflower oil as the healthy alternative. More economically weaker respondents mixed palm oil and sunflower oil, while some sold



the ration palm oil to the neighbourhood stores to buy sunflower oil. All the respondents confirmed that they got this knowledge from commercials or from other residents in the neighbourhood. As all the respondents and their spouses worked in physically demanding jobs, they suffered from body aches and knee pain on a regular basis. Due to this Amrutanjan pain balms and locally made *thailams* were stocked at home and applied often. Up to 20 respondents mentioned that they opted for branded chocolates, snacks and biscuits over locally packed snacks for their children as they felt it was healthy. They mentioned that they get this information from television commercials. A lone respondent received advice from a school, in which her children studied that junk food and snacks should be avoided and children should be fed a diet rich in fruits. Hence, the respondent bought bananas, dates and guava as it was cheap compared to other fruits. Bleaching powder had completely given way to Harpic toilet cleaning liquid as the respondents felt that the smell of bleaching powder was too strong for them. One lone respondent opined that rice from ration shops were healthy as they were unpolished compared to private brands, while all the other respondents felt that ration shop rice was barely edible. Some even used it as chicken feed.

Taste

All the respondents except one informed that rice and daal from the ration shops were of poor quality and would spoil within a few hours after being cooked. Sambhar made from ration daal becomes like a paste, so respondents had to buy higher quality daal from the neighbourhood shops. Few respondents also opined that children refused to eat cooked rice bought from the ration. Branded snacks are preferred over locally made snacks and branded biscuits are chosen for taste though priced higher. Children solely decide what snacks are consumed, which is usually from the neighbourhood stores. Tastes/ personal preferences extended to bathing soap and shampoos too as each member of the household were noted to be using different brands. These tastes are driven by television commercials and all respondents confirm 'chemicals' in bathing soap are harmful though they failed to clarify what chemicals they were. It was observed that the respondents decide on a soap or shampoo brand after trying and testing and finally settle on a brand that best suits their skin. In times of extra income, respondents mentioned that their spouses usually bought parcels from fast food shops for the family to consume, some even bought pastries from local bakeries. Some respondents were able to buy beef and chicken once a week, when there were funds as the children would only eat fully when there are non vegetarian dishes.

WIDELY USED BRANDS

Food Items		<p>Gold Winner refined sunflower oil is used by 19 out of 21 residents interviewed as they believed it was healthy and prevents cholesterol and high BP issues. All of them considered palm oil to be unhealthy, which was supplied at the ration shops. Commercials and eating healthy is observed to be attributed with the popularity of Gold Winner.</p>
		<p>Packet milk is consumed daily by all the residents and Aavin dominates the preferred brand. Tirumala, Doodla and Vijay milk is also preferred when there is a cash crunch as there is a 200 ml packet for Rs.10. The residents also opine loose milk is complicated to handle compared to plastic packaged milk.</p>
		<p>Chips, especially Rs. 5 Lays is the fastest moving product in all the stores, which are usually always chosen by the children. When Lays runs out, Bingo for Rs. 5 too is bought to compensate for it. All the stores prominently display it in front of their stores and other indigenously made biscuits and snacks are chosen only if the child has less than Rs. 5 with him or her.</p>
Personal care/hygiene		<p>Clinic plus is the most preferred sachet shampoo as it works well on the hair, is priced at Re.1 (Only two shampoo brands are priced at Re.1) and is widely available. There are pantene and Dove sachets too, but they are priced Rs. 2 and 4.</p>

Household Cleaning		Bleaching powder has completely given way to Harpic in all the neighbourhoods and the residents cite that the non-pungent nature of Harpic compared to bleaching powder and they seeing it on television and its quality in cleaning the toilets had made them shift to Harpic.
		Sabena powder has completely given way to Vim bar as residents see it on TV and feel it works better than the Sabena though Sabena is much cheaper. Only one resident, too poor to afford a Vim bar still used Sabena powder. It's ability to clean non-vegetarian dishes too had contributed to the shift.

Rice

All the respondents expressed that they don't rely on rice from the ration, as its supply is unpredictable and the quality inconsistent. All the respondents purchased rice in private either in bulk or from the neighbourhood store. This choice depended on the money in hand that month. If in times of excess money or festival times, a 25kg bag of rice costing Rs.1,000 to Rs.1,500 could be bought. Rest of the time, one or two kilos of rice was bought loose from the neighbourhood store. Few respondents confirmed that ration rice was used as idli batter, while two confirmed that the rice is used as *Kolam* (Wet rice flour rangoli) while one lone respondent used ration rice as chicken feed as the children refused to consume it.

Sugar

Ration shops supplied sugar, which is considered of good quality by all the respondents, but respondents from households of over 5 members considered the quantity of 2kgs a month inadequate to sustain. In these instances, loose sugar is bought from the neighbourhood store, which costs Rs. 3 for 50gms. One lone respondent who was too poor to afford extra sugar compensated for it by using jaggery.

Cooking Oil

21 out of the 28 respondents regularly bought Gold Winner Sunflower cooking oil as they considered it a healthy alternative to the palm oil supplied in ration shops. Respondents who were short of money mixed the palm oil with Gold Winner and also kept the Gold Winner for adults, while children were given food prepared in palm oil. All the respondents bought palm oil, but privately bought Gold Winner because they felt it prevented heart diseases and cholesterol. The clear nature of Gold Winner oil was considered

pure, when compared to Palm oil which was usually cloudy. The respondents got this knowledge from commercials and from word of mouth from other residents and concluded that Gold Winner is the best option and was synonymous to healthy living. Some respondents considered Gold Winner to be expensive as it was sold for Rs.109 for a 1-litre packet, but as the brand had introduced 100 ml and 200 ml packets for Rs. 11 and 22, more respondents were buying it.

Dishwashing liquid/bar

20 out of the 28 respondents confirmed that they used Vim bar after learning about it from commercials. Five respondents used Exo, Power soap and Patanjali Soap and three respondents, too poor to spend money for the dishwashing bar, bought Sabena powder for Rs. 10 and used cloth washing soaps like Power and Ponvandu for washing dishes. Other respondents had used cloth washing soaps for dishes earlier, but they now felt Vim was better as it cleaned utensils spotlessly and it has natural lemon in it, which aids in the thorough cleaning of non-vegetarian dishes.

Toilet cleaner

21 of the 28 respondents interviewed confirmed that they used Harpic for cleaning their toilets. The respondents had used bleaching powder earlier but had now moved to Harpic as the brand also offers small bottles for Rs.35 now. The rest of the respondents used Domex, phenyl and bleaching powder. Two respondents out of it used locally bought bleaching powder for Rs.10 as they were too poor to spend money on Harpic.

Shampoo/ Shiyakkai

24 out of the 28 respondents confirmed buying shampoo sachets on a need basis from the neighbourhood stores when they were about to have a head bath. Chik and Clinic Plus shampoos dominate the choice as they are being sold for Re. 1, while Pantene and Dove are sold at Rs. 2 and 4. The respondents considered Re.1 sachets in 10 numbers as bulk and never went for the bottle, which was usually priced over Rs.100. There was a Clinic Plus small bottle launched for Rs.35-40, but this was rarely available. The respondents felt that the sachets are good to ration the use of shampoo. In houses in Kannagi Nagar and some parts of Muthu Mariamman Nagar, where toilets are shared, it wasn't considered wise for the respondents to carry bottles into these bathrooms. The presence of children meant the respondent chose sachets and children were noted to waste shampoo by playing in the bath. One respondent who worked as a teacher and was salaried bought bottles as she was comfortable with using bottles and the respondent had no children in her household. The neighbourhood shopkeepers never stock bottles as they feel they never get sold. Two respondents expressed that they used *Shiyakkai*, which was Meera Shiyakkai or was prepared at home.

Ointment/ Thailam

16 out of 28 respondents confirmed that they bought pain relief balms of some sorts. Some bought Amurtanjan, Zandu Balm, Tiger Balm for Rs.35, while some bought locally made *thailam* for Rs. 2. All the respondents who were working confirmed that they often had headaches, body aches or pain in the arms or legs that they had to use pain balms often to relieve the pain. These purchases were not regular and could last over a two-month period.

Door-to-door garbage collection

Out of the 28 respondents interviewed, 14 had GCC collecting garbage from their doors. Out of the four neighbourhoods studied, one had 100% door-to-door collection as it was a new TNSCB tenement with a wide road access and space, which could allow the GCC tricycles to enter and exit with ease. The presence of a GCC ward office in proximity also increased the change of door-to-door collection. Two of the four neighbourhoods studied had narrow streets, which made it impossible for GCC tricycles to enter, so the tricycles stopped at the end of the street and expected residents to come and drop their garbage in the tricycle. The respondents at the end of the streets always resorted to dumping in the public ground at the end of their street as they missed the garbage route. The farther a household from the garbage route or dumpster, the more likely they were to dump their garbage in an open ground or water body. The last squatter settlement was not serviced by GCC garbage collection service in any manner. There were no door-to-door collections, street sweepings or a dedicated dumpster for the neighbourhood. Due to this, the neighbourhood completely dumped the garbage in the Cooum River flowing at the edge of their neighbourhood. Repeated representations by the neighbourhood to place a dumpster or collect garbage door-to-door had been ignored by the GCC, on insistence, the GCC officials always concluded that it is a squatter settlement, which is likely to be evicted soon, hence it was fruitless to service it.

Garbage in the house

There was an equal share of respondents, who placed their garbage can inside and outside their homes. Respondents, who placed outside feared cows, dogs, cats and rats would dig into their garbage and litter the entrance of their homes, while respondents, who left it inside felt that mosquitos and flies would swarm the garbage can. Residents with children were also worried about keeping the garbage can inside as their children had contracted fever, which they always believed was from mosquitos, which breed in the garbage. The garbage cans used were mostly plastic buckets, paint containers and water cans with the necks sawed off. A wooden plank or plastic plate or vinyl sheet was placed over the garbage cans. One respondent opined that it was inappropriate to keep the dustbin in the same room where there was God's picture. If there was a narrow compound wall enclosure around the homes, garbage cans were usually left there. Respondents along the Cooum River were observed to not even maintain a garbage can as it would attract more mosquitoes plus they could just walk up to the river and dump their garbage whenever there was waste to be disposed of. Placing the garbage can inside or outside the home also depended on the size of the home and the number of family members. In these situations garbage cans are placed inside the home during the day and kept outside at nights when the family members have to make space to sleep on the floor.

Garbage leaving house

Out of the four neighbourhoods studied, only one had a complete door-to-door collection of garbage for the entire neighbourhood. Dumpsters were usually placed at either end of the neighbourhood and conservancy workers arrived with their tricycles every alternate day, sometimes this is not fixed as they mentioned that they were assigned another route or there was a shortage of staff. Garbage is usually

deposited to the conservancy worker's tricycle, but when they don't turn up, the respondents walk up to the dumpster and dispose of it there. The other two neighbourhoods had only one dumpster for the whole neighbourhood. Given the narrow lanes and limited space, residents always objected to dumpsters being placed near their homes, as they would always overflow with garbage, which would be swept inside their homes with the wind. Conservancy workers visited these neighbourhoods daily and collected garbage. Interior lanes were unable for the tricycle to access, but the conservancy workers walked into the lanes and alerted the residents to come and dispose of their garbage. Residents who missed this collection schedule threw garbage in the dumping ground behind their neighbourhood, few residents who get dropped by their husbands for work, also take the garbage out in plastic bags and toss it in the nearest dumpster. The location of the respondent's residence determined their garbage disposal behaviour. The respondents with houses closer to the dumpster always disposed of their garbage in the dumpster, while respondents living further away dumped it into the nearest water body or public ground. Dumping grounds always emerged at the extreme end of the location where dumpsters were placed. Respondents felt that it didn't make sense for them to walk 20 metres into the street and dispose of garbage in the dumpster, when they could just walk a few metres and dispose of garbage in the river. Meat/fish wastes were always dumped right away into the banks as it wasn't stored in the house due to its smell. In the lone neighbourhood, which was completely ignored by the GCC garbage collection services, the entire neighbourhood tossed their garbage into the river. The dumpsters in the main road were always filled as fast foods and roadside eateries fill it up with their garbage, leaving little space for the residents. The respondents felt that they were not to blame and placing a dumpster near the Cooum River will solve all the garbage issues in the neighbourhood, which the GCC never obliged.

Food/Vegetable wastes

18 of the 28 respondents interviewed confirmed leaving out food wastes and vegetable peels on the street for animals to consume. The respondents felt that it was the right thing to do as it was sinful to waste food. The food wastes were always spread out on the streets by vehicles or people walking and the respondents didn't think too much about it or felt that they were contributing to the littering. In neighbourhoods where the lanes were too narrow for the respondents to leave the food wastes outside, as it might dirty their neighbours houses, the respondents placed it into the plant pots. Respondents who did not have plant pots deposited it with the conservancy workers' tricycle unsegregated or dumped it in the open ground or water body. Two respondents had noted they would tie the food/vegetable wastes separately in a plastic bag and dispose of it in the dumpster so that the conservancy workers can segregate it later. Three respondents used the food/vegetable peels for the roots of plants as they knew it would benefit the plants.

Used menstrual pads

All of the respondents interviewed, who had access to GCC garbage collection services mentioned that they placed used menstrual pads into a plastic bag and disposed of it with the daily garbage. Two respondents mentioned that they washed their menstrual pads, one by not touching it, but using just the foot to wash it off its blood stains before placing it into the dumpster. All respondents of the squatter settlement with no garbage collection service, placed the pads into a plastic bag and flung it in the middle of the river far away from the regular garbage with the hope that it would be washed away. The respondents made these attempts as they felt infections could be spread from the pads, dogs might drag

the pads around the neighbourhood or it was embarrassing to leave menstrual pads openly. Two respondents believed that if reptiles came in contact with used menstrual pads it would affect the fertility or marriage chances of women to whom the pad belonged. One respondent also placed the used pad into a plastic bag and placed a stone inside it before disposing of it off in the river as the pads were known to float to the surface.

Waste collection feedback

All the respondents of the neighbourhood, which had 100% door-to-door garbage collection, were satisfied with the way the garbage was collected and wanted the conservancy workers to come daily without fail. All the respondents were thoroughly disappointed with how the streets were not properly swept and how their back alleyways always remained two-feet deep in garbage. The respondents expressed that their repeated requests to clean their alley ways were never heeded to by GCC. The drainage blockage clearance work was done by sanitation workers, who refuse to carry away the debris they bring out as they said it was the conservancy worker's work, while the conservancy workers said it was the sanitation worker's responsibility.

All the respondents of the neighbourhood which had narrow lanes were satisfied with the garbage collection methods. Though the conservancy workers didn't enter the lanes to collect the garbage, the respondents were aware that they had built houses imposing into the lanes thereby making it hard for water lorries or ambulances or garbage vehicles to come in. The respondents were complaining about the wall being built around behind the neighbourhood, which was denying them access to the dumping ground and Adyar river.

In another neighbourhood the respondents who lived in close proximity to the dumpster didn't complain about garbage collection as they could just walk up to the dumpster and dispose their garbage, but the respondents further away and closer to the Cooum River, expressed dissatisfaction about GCC for not sweeping their streets or collecting garbage. But the residents also confirmed that they had always dumped their garbage into the rivers and this wasn't something recent. The respondents wanted GCC or PWD to build a wall and seal them off from the Cooum River as residents could be kept away separate from polluting the river.

All respondents of the squatter settlement not served by GCC were very disappointed with the GCC and the government for not caring enough about their neighbourhood. Garbage collection was just one of the issues that was bothering them, but the anxiety of whether they would be evicted dominated their thoughts. The respondents confirmed that they repeatedly complained to GCC to place a dumpster solely for the neighbourhood, mostly along the banks of the river, so that residents would be forced to dispose of garbage in the dumpster rather than dumping in the river. There were complaints also to sweep the neighbourhood, which was never carried out. The respondents also felt that the denial of garbage collection to their neighbourhood was a ploy to make their life here further difficult, so that they would consider moving away to a TNSCB tenement far away from the city.

Awareness on biodegradable and non-biodegradable wastes

23 of the 28 respondents interviewed were aware of the differences in biodegradable and non-biodegradable wastes. They knew it should be separated and that biodegradable waste would be consumed by the soil, which is good for the environment and would help water to regenerate in the soil. Two respondents, though aware about the segregation of wastes, weren't sure why people do it. The respondents got this knowledge from television PSA on Swachh Bharath and from apartments, where they worked as maids, where segregation of garbage was mandatory. Three respondents from the squatter settlement confirmed that they had no idea about segregation of garbage and they were used to disposing everything together into the river. Half of the respondents confirmed that irresponsible dumping of garbage leads to the breeding of mosquitoes and ultimately results in the spread of diseases which affects their children though they could do little about it.

Conclusion

Analysis of the purchasing behaviour data showed a strong deficit in quality and quantity of provisions supplied in loose through the ration shops. The state Civil Supplies department must take measures to remedy this so that the low-income communities can stop relying on private purchases, which are always sold in plastic packaging. A thriving essentials market, which was selling products in loose has been made redundant by brands, which had started selling products in small volumes. The shift to packaged products was also driven by the adulteration of loose products practised by traders. Brands need to be brought to account under the Extended Producers' Responsibility (EPR) clauses to innovate products that could be supplied in tamper-proof packaging that could be sold in loose to low-income communities according to their needs. For eg. Tamper-proof refillable beer kegs could be an inspiration for brands to offer their products in loose. There should be tax concessions offered to products sold in loose. Milk packets, one of the widely sold products, should rethink and innovate their designs into glass bottles or making loose milk widely available. Health fads dominate purchasing behaviour, which has no real effect on their health except making communities spend more on private brands. Awareness campaigns need to be organised in low-income communities to bust health and food myths and the Advertising Standards Council of India need to reign in misleading television commercials, which are the sole source of information for these communities for their purchasing behaviour.

As there is an overwhelming knowledge about the difference between biodegradable and non-biodegradable, composting should be localised in the communities. There needs to be a behavioural change from laying out food and vegetable peels on the streets for animals to disposing it in the locally installed composting bins. This should reduce littering, reduce the breeding of flies and mosquitoes and earn the community an income by the sale of manure. In spite of knowledge on segregation, it is rarely practised, as low income community residents can't afford space nor bins to maintain two types of garbage. GCC or NGOs need to offer them smart garbage bins so segregation can be practised sparing space and expenses. All the communities shared a widespread empathy towards conservancy workers, due to the hard work they do. Urban Local Bodies need to make local conservancy workers the face of their anti-littering and anti-dumping campaigns to make people attached to the cause and who their negligence might affect. In spite of GCC's insistence to reduce the placement of dumpsters, some residents dumped garbage in the river and open grounds only because there were no dumpsters and garbage collection. The

dumping was inversely related to the availability of dumpsters, hence the GCC need to take efforts to place dumpsters near identified dumping grounds. This also needs to be followed up with CCTV surveillance, which has to be installed to monitor these dumping grounds. SWM, 2016 fines can follow, if residents still fail to dispose of garbage in the bins in spite of its availability. GCC needs to offer its garbage collection services irrespective of whether the neighbourhood is a squatter settlement or not, as it still contributes to dumping if garbage collection is absent. The policy that stopping essential services will be an impetus for the residents to vacate their squatter settlements is unsound and needs to be abandoned. Swachh Bharat Mission animators need to be locals and should work closely with the community to address their garbage issues, but currently there seems to be a lack of liaison by the Animators in the community. The respondents have a strong resentment that they get an unfair treatment even in waste management plans and garbage collection, so waste management strategies and processes need to be reworked and customised according to feedback from low-income communities.
