



## **Facilitating Decentralised Waste Management and Integration of Waste pickers in Delhi: A Technical report by Main Bhi Dilli Campaign**



*Source: Rashmi Chaudhary for WIEGO*

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Main Bhi Dilli is a people’s campaign aiming to envision and enable a more inclusive city. It is a collective of civil society organisations, activists, researchers and others who work on diverse issues of housing, livelihood, gender and other rights. Visit [www.mainbhidilli.com](http://www.mainbhidilli.com) for more information on the campaign.

## **TABLE OF CONTENTS**

<b>S No.</b>	<b>Heading</b>	<b>Page no.</b>
I	Introduction	3
II	Rationale and aims of the report	3
III	Waste management in MPD 2021: What does it say and why is it inadequate?	4
IV	Recommendations for MPD 2041	5
VI	References	11

## **I. Introduction**

Estimates suggest that Delhi produces over 10000 tons of waste per day (CSE, 2017). The city's three landfills have far exceeded their capacities, and have become towering mounds symbolic of the city's waste problem. While it has been established that the way to tackle this is through decentralised management, there have been no significant steps in this direction at all. Rather the system is even now geared towards non-segregation at source, centralised processing and disposal in unsanitary landfill sites. The environmental and economic costs of these are both huge and unsustainable.

Recycling, which is considered to be the most optimum approach to the rising challenge of waste after reduction and reuse, is not promoted by the city. Several studies have shown that only a very small portion of waste generated in Delhi is getting recycled at the moment (10-20%), the bulk of which is being done by the informal sector (CSE, 2017) (UN, 2010). It is estimated that informal waste pickers collect 15-20% of total waste and recycle about 2000 tons per day (Chintan,2018). They collect waste from households and shops, retrieve discarded waste from community bins and streets, and process it in different ways like washing and dismantling it, before selling it as recyclables. A single waste-picker is estimated to collect, sort, and transport 10-15 kilograms of waste a day in Delhi, while those with tricycle carts can collect 50 kilograms a day.

The Solid Waste Management Rules, 2016, provides the overall legal framework for the waste sector, and gives a clear mandate for shifting towards decentralised management of waste (MoEFC, 2016). It also talks about integration of the informal sector as they play a significant role in solid waste management. Both these principles are however yet to be operationalised in Delhi. Though the Rules have been drafted for the city, this is not satisfactory in ensuring the implementation of the law. As the city's three landfills are operating well beyond capacity and hence unable to take in more waste, there has been a shift in recent years to rely on Waste to Energy plants that are set up and operated by private companies. This policy shift has resulted in denial of collection rights to waste-pickers, no source-segregation, shutting down or replacement of dhalaos with compactor machines which further reduces possibility of material recovery, and high energy and monetary costs for the municipality.

## **II. Rationale and aims of this report**

In the course of extensive consultations held with various waste-picker groups and waste management experts as part of the Main Bhi Dilli campaign, it emerged that the Master Plan can be a key instrument to enable decentralised solid waste management in Delhi.

The proper implementation of the SWM Rules 2016 can be strengthened by appropriate land allocations in the Plan in a decentralised manner. A key step to integrate waste pickers into the municipal waste system would be to assign formal spaces to them for the sorting and segregation services they are providing. Such steps could also ensure that maximum materials can be recovered

for recycling which would be a cleaner and greener outcome for all citizens as it would allow for neighbourhood level wet and dry waste segregation and thus reduce overall quantity of waste which requires further processing or disposal.

This technical proposal aims to identify and articulate how the next Delhi Master Plan 2021-41 can intervene to reframe solid waste management in Delhi using a decentralised multi-tiered system that is labour-intensive to protect and promote the work of waste pickers who are the city's 'forgotten environmentalists'.

### **III. Waste management in MPD 2021: What does it say and why is this inadequate?**

- **Centralised allocation of land for waste processing and disposal**

The present Master Plan reserves 10,000 hectares (6.74% of total land) for the purpose of solid waste disposal (sanitary landfill and statutory green belts). Allocation of this large parcel of land shows the orientation towards centralised processing and disposal rather than the required allocation of land at different scales to accommodate the varying functions (collection, processing, disposal, recovery and resale) in the waste chain.

- **Reliance on landfills**

DMP 2021 gives a list of 24 landfill sites of which 16 are already filled up, 4 are said to be in operation (Ghazipur, Bhalaswa, Okhla, GT Karnal road crossing) and 4 are new (Jaitpur, Puthkhurd, Bawana to Narela road and Sultanpur Dabas). It notes that it is becoming increasingly difficult to find such large stretches of land for this purpose. Many studies have shown the detrimental environmental effects of landfills. It is therefore imperative that the focus of waste management must shift away from these sites to more decentralised solutions. This is critical for reducing the quantity of waste which will need to be disposed of in landfills by ensuring that the bulk of waste which can be processed through other methods is done so.

- **No concrete space allocations for sorting and segregation of waste at the local level**

At present, the Master Plan only gives vague recommendations that segregation should be done at the community and neighbourhood level. The only allocation for this is one dhalaos of 200 sqm for a population of 10,000. Private waste collection companies dump mixed waste from households in dhalaos while the waste collected by informal waste pickers goes through primary sorting. However, since this has to be done either on their carts or on the side of the road and in limited space near dhalaos, waste pickers face immense harassment and are able to recover only a limited quantity of waste. With proper space allocations, they have the potential to recover and recycle much more. As privatisation of waste collection

continues, denying waste pickers collection rights in the process, even this limited recovery will soon not be possible. Private companies are only interested in increasing the tonnage of waste (as this determines their payment from the municipality) and so encourage bad practices like non-segregation of waste and diversion of recyclables.

- **No guidelines or requirements placed on waste generator groups**

The SWM Rules 2016 suggests guidelines for different waste generator groups which are not currently reflected in the Master Plan. This includes bulk generators (eg-apartments, gated colonies, hotels etc.), markets and other commercial establishments, medical establishments, government bodies etc. Depending on the nature of waste generated in these sites, there would be requirements for specific guidelines and land allocation for appropriate processing facilities.

#### **IV. Recommendations for MPD 2041**

##### **I. Comprehensive waste management plan starting with spatial survey of entire waste chain**

Collection of data along the entire waste chain from generation to disposal has to be initiated which also maps out the quantity and composition of waste, sites of work, actors and processes that are involved at each stage in the waste chain. This would be the first step to formulate a concrete action plan for waste management in Delhi which can meet the spatial and infrastructural requirements of the sector. It is crucial that the elected officials from state government to urban local bodies and citizen stakeholders like informal waste-pickers are considered key partners in this.

##### **II. Decentralised allocation of land in MPD 2041 as per the mandates laid down by SWM Rules 2016**

The city master plans must make provision for the setting up of processing and disposal facilities for solid wastes. The Rules are clear on the approach which is to be followed starting with enabling source segregation, processing wet waste within premises or close to the point of generation, and encouraging maximum material recovery through

neighbourhood level sorting and segregation. MPD 2041 may enable the implementation of this approach through a multi-tiered spatial allocation as follows<sup>1</sup>:

	<b>LEVEL</b>	<b>FACILITY</b>	<b>AREA</b>	<b>NO. OF UNITS</b>
a	Housing area Population- 5000	Composting	150-200 sqm	6-7
b	Neighbourhood Population- 10,000	Dhalao	200 sqm	1
c	Community (ward) Population- 1,00,000	Material recovery facility (MRF)	1000 sqm	1
d	Zonal/ Sub-city Population- 10,00,000	Transfer station	10,000 sqm	1

**a. Space at colony level- Composting facility:**

The SWM Rules mandate that town planning departments have to ensure that a separate space for segregation, storage and decentralised processing of solid waste is demarcated in the development plan for group housing or commercial, institutional or any other non-residential complex exceeding 200 dwellings. The Master Plan norms need to reflect this mandate by providing for adequate land allocation for waste management at the colony level which should also be reflected in the DCRs. This would include space for:

- Primary sorting of wet and dry waste – Segregation levels in Delhi are extremely low and it is the informal waste collectors who do much of the segregation. Even in the scenario that stricter compliance of segregation is ensured from users, there would still be a need for a designated space close to pick-up points for primary sorting of wet and dry waste.
- For wet waste processing- According to SWM Rules 2016, wet waste should be processed, treated and disposed of through composting or bio-methanation within the premises as far as possible. As over 60% of the municipal solid waste generated is wet and can be treated with these methods, decentralised processing of such waste will reduce the amount requiring transport for further processing, and thus reduce economic and environmental costs.

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<sup>1</sup> All calculations are per present population estimates for Delhi and assumption of per household waste generation per day to be around 900 gm of wet waste, 200 gm dry waste and around 100 gm of other waste.

- Total space required per 200 households: 4 pits of 25 sq. ft size (total 100 sq. ft) + 50 sq. ft space next to each pit for primary segregation of wet and dry waste (total 200 sq. ft) = 300 sq. ft.
- This facility should ideally be a shed covered on top to protect the process from rain water and excessive sunlight. It must be mandated within premises for gated communities. For non-gated residential communities, appropriate unused open spaces or a corner of the neighbourhood park may be used for this purpose.
- Each waste picker services over 50 households and hence each facility would provide employment to three or four waste pickers. Along with the space for sorting and aggregation of dry waste, provision for handwashing has to be part of the design of the facility.

**b. Space at neighbourhood level- Dhalao:**

Dhalaos, the neighbourhood waste collection point, are the main sites of waste work in Delhi. These are concrete structures which are about 20 feet in length and 15 feet high with walls on three sides which are used for further sorting and aggregation of collected dry waste. The present Master Plan mandates 1 dhalao per neighbourhood population of 10,000. The MPD 2041 must protect and promote this dhalao infrastructure based on following principles.

- The present standard of allocation is a good norm which must be continued. Existing dhalaos must be protected against closure. Further, calculations must be made based on projected figures for population and waste generation to ensure adequate space allocations for them.
- Dhalaos are to be seen as primarily a space for waste pickers to sort and aggregate dry waste collected from households, markets, roads and other public areas in the neighbourhood.
- They should not be converted to mechanised spaces through installation of compactor machines. This is bad for both the waste pickers' livelihood and also encourages bad practices like non-segregation and mixing of waste from which recyclable materials cannot be recovered.
- In the ideal scenario, no wet waste would need to come up to the stage of dhalao as it will be dealt with at the community level. In the interim till these practices are established, the municipality must make adequate arrangements to collect wet waste from the dhalaos and transport it to the nearest facility for processing.
- The design of the dhalaos should be worker-friendly. This must be ensured through adequate ventilation, handwashing facility, seating area, toilet and changing room, and some space for overnight storage of materials.

**c. Space at ward level- MRF:**

The SWM Rules defines Material Recovery Facility (MRF) as a facility where non-compostable solid waste can be temporarily stored in order to facilitate segregation, sorting and recovery of recyclables from various components of waste. The sorted dry waste from neighbourhood centres would undergo secondary sorting and processing here which is required before it can be sold to recyclers. The establishment of one MRF in each of the 272 municipal wards can ensure maximum material recovery and provide lucrative livelihood for upto 10 waste pickers who can be entrusted to manage each centre.

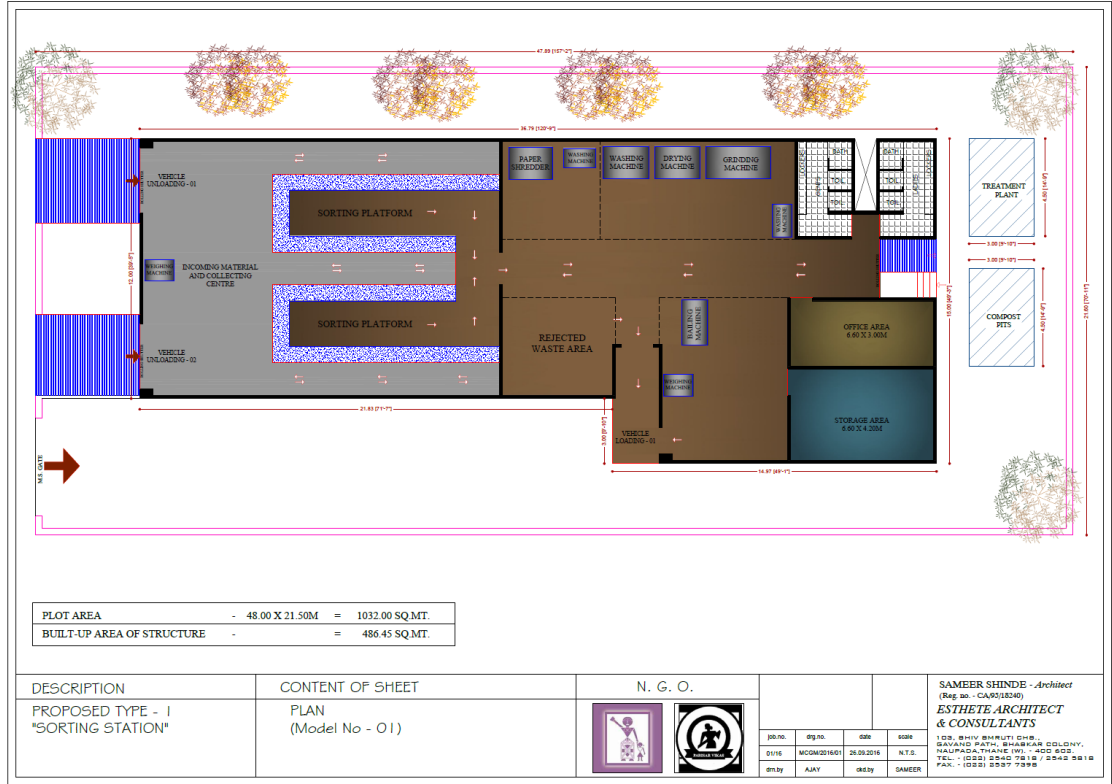
Suggested space requirement: 1000 sq. m per ward (estimated 1,00,000 population)

Design of the facility to include:

- Storage for pre and post processed waste
- Office, toilets and changing rooms for workers
- Mechanical sorting and baling machines
- Weighing machine
- Record keeping facility
- Rate card of material prices
- Cubbies for workers to store items
- Fire extinguisher

There are many best practice worker-led models of dry waste collection and recovery centres. Sample drawings of similar facilities operating in Mumbai and Bengaluru are given below.

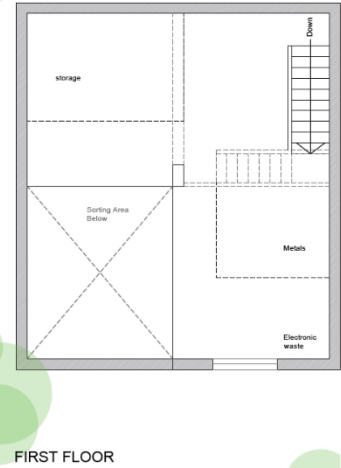
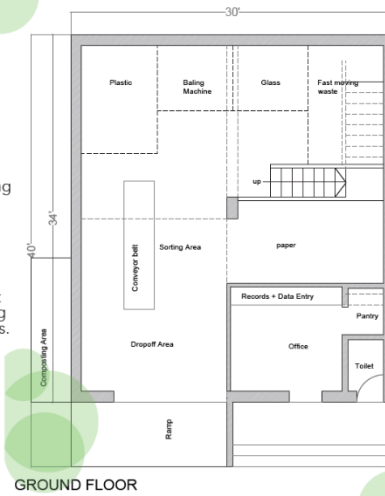




Source: Model of sorting centre by Stree Mukti Sanghatana

### Facilities

- Storage for pre and post processed waste.
- Mechanical Sorting and baling machines for quick and efficient sorting.
- Weighing machine.
- Record keeping
- Display of boards that depict process, types of waste being sorted and other functionings.
- Rate Card of material prices.
- Office + Changing rooms
- Toilets
- Cubbies for workers to store items.
- Fire extinguisher.



Garden with Insect Resistant plants

Hasiru Dala  
1/1-1, Atria Towers,  
Palace Rd,  
Bengaluru,  
Karnataka 560001  
+91 80 2235 5553



Source: Model of Dry Waste Collection Centre by Hasirudala

**d. Space at zonal level-Transfer stations:**

SWM Rules 2016 defines transfer stations as a facility created to receive solid waste from collection areas and transport in bulk in covered vehicles or containers to waste processing or disposal facilities. As the wet waste is composted at the community level and dry waste is recovered for recycling at the ward level, the only waste which should be brought to the transfer stations is the non-recyclable or non-compostable inert waste which needs to be compacted for further transport and disposal. It is suggested that facility for one Transfer Station each be made at a zonal level with allocation of 10,000 sq. m area. It should be noted that the use of compactor machines is only preferred at this stage and not in the scales before this.

**e. Landfills:**

Schedule 1 of SWM Rules 2016 lays down detailed guidelines on sanitary landfills including site selection, processes to be followed and norms to ensure no-pollution of the natural environment. Based on the five-tier system of waste management only such waste should be dumped in the landfill which cannot be processed in any other way.

**III. Promotion of recycling sector**

The recycling sector in Delhi is largely informal consisting of waste pickers, itinerant buyers and kabadiwalas, junk dealers and recyclers. Each of these actors are important links in the recycling chain whose work must be protected and promoted. This can be through:

- Based on a survey in around 100 wards in Delhi, Chintan: Environmental Research and Action Group estimates that there are around 17 waste dealers per ward who require 850 sq. ft of space each. Further, recycling units should be identified and minimum 3000 sq. ft space provided to each of these in different wards of Delhi (Chintan, 2018).
- Natural waste material markets are places where sellers and buyers have traditionally congregated for the sale and purchase of waste materials. These are crucial for the informal supply chain and should be protected through appropriate land use norms as a key green industry which is also providing jobs.
- SWM Rules 2016 directs developers of Special Economic Zones, Industrial Estate and Industrial Parks to earmark at least 5% of the total area of the plot or minimum five plots or sheds for recovery and recycling facility. This should be reflected in MPD 2041 norms for industry as well.

**IV. Decentralised waste management infrastructure norms for bulk generators**

According to SWM Rules 2016, “bulk waste generator” means and includes buildings occupied by government departments or undertakings (Central, states and local bodies, public sector undertakings or private companies, hospitals, nursing homes, schools, colleges, universities, other educational institutions, hostels, hotels, commercial establishments, markets, places of worship, stadia and sports complexes having an average waste generation rate exceeding 100kg per day. It is mandated that such users have the primary responsibility for managing their waste in a decentralised manner including on-site treatment of wet waste and diversion of dry waste for recycling through authorised service providers. MPD 2041 should also ensure reflection of this mandate through appropriate space and infrastructure norms in the Development Control Regulations for such users and layouts.

## V. References

Chintan. (2018). Waste pickers: Delhi's Forgotten Environmentalists? . Delhi: Chintan Environmental Research and Action Group.

CSE. (2017). Recommendations for Long Term Action Plan for Solid Waste Management in Delhi. Delhi: Centre for Science and Environment .

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