

## **The Role of Resident Welfare Associations in Neighbourhood-Level Solid Waste Management and Composting: New Delhi, India**

**Chitra S. Jain.**

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Architect Planner  
E-mail: [chitra594@hotmail.com](mailto:chitra594@hotmail.com)

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I clearly recall how my grandmother, a diabetic with high blood pressure and hence on many of medicines, carefully segregate and store used medicine strips, as well as milk pouches, milk bottle caps and bottles, in addition to newspapers and magazines. Very little plastic was used then, and no packaged food was available. Anything that could be recycled was segregated and meticulously stored, and this process was religiously followed by one and all in our home. Vegetable and fruit peels, as well as dry leaves from trees, were thrown into a pit in one corner of the garden. It all seemed so easy then. I now try to follow her example, but it does not seem so easy. I tried home composting for a while, and continue to recycle to reduce waste. A few of my present neighbors expressed interest in home composting, but even fewer took it up in all its seriousness. It was then that I discovered community composting, and felt that it is definitely worth attempting at the neighbourhood level.

A major challenge that urban India faces today is solid waste management. The 2016 Solid Waste Management Rules list factors such as waste generators and their duties, the time frame for implementation and review, while the 2016 National Action Plan for Municipal Solid Waste Management clearly lays down the planning, implementation and monitoring mechanisms required. However, the Central Pollution Control Board has estimated that of the 1.41 tons of solid waste generated per day in the country, almost 90% is collected, but a mere 27% is actually processed, with the rest presumably reaching landfills. Clearly, there is a huge gap between the waste generated and in its scientific handling. The norm in most urban areas is "dumping" solid waste out of sight if possible, with scant regard for its impact on ecological and environmental degradation.

Solid waste from residential areas consists of 40-45% bio-degradable elements coming from kitchens and gardens which can be composted, thereby reducing the load on sanitary landfills. At least 30% of the non-biodegradable waste consisting of paper, plastics, fabrics, and metals can potentially be recycled.<sup>1</sup> Solid waste from households, meanwhile, can be very effectively segregated for reuse, recycling and composting. Traditionally, most individual households did segregate recyclable waste like newspapers, magazines, cardboard boxes, bottles, plastics, and metals, which were sold to the local waste recycling merchant, or "kabadiwala," for a small monetary consideration, and some continue to do so. However, most urban households today do not have neither the space nor time to segregate, store, and dispose of their solid waste. They find it simpler to hand it over to the door-to-door garbage collector. Some households began home composting, but only the most committed were able to sustain the initial momentum. Therefore, solid waste management

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<sup>1</sup> **Source:** National Action Plan for Municipal Solid Waste Management, 2016.

and composting at neighbourhood level is a more feasible and sustainable model. Educating, encouraging and ensuring segregation at the household level is the first step in this direction.

Residential neighborhoods in Delhi, as in many Indian cities, have a Residents Welfare Association (RWA), a volunteer group of residents who come together for the welfare of the neighborhood, but who do not possess any statutory power. Almost all RWAs coordinate with the concerned urban local bodies (ULBs) to improve security, parks, roads, drainage, street lighting, water-supply, and electricity, while some also look into other community facilities like health and education. RWAs also bring the community or neighborhood together through social events centered around festivals. They often take grievances and complaints from residents to the concerned ULBs. Most RWAs share information with and update their residents about important government policies, as well as organising property tax collection, domestic help verification, etc. Membership of residents to their RWA is voluntary, and funds in the form of annual subscriptions are collected from the registered members.

Over the last two decades, successive governments in Delhi have recognized and acknowledged the importance of RWAs as the last mile of connectivity in local governance. While collection of solid waste from households is to be done by the ULB, in this case the Municipal Corporation of Delhi, in many residential areas the RWAs have taken on the responsibility of door-to-door collection and transportation to the local "Dhallaos," or garbage collection spots. Here, all recyclable waste which has a commercial value is segregated and sold, and the rest transported in trucks to the landfills. To reduce the amount of waste reaching landfills, a few RWAs have begun composting at the neighborhood level, and New Friends Colony, where I live, is one of them.

**Map 1:** Location - New Friends Colony



Source: [www.maps.google.com](http://www.maps.google.com)

New Friends Colony (NFC), a plotted residential neighbourhood in South Delhi, is close to the Yamuna River and surrounded by three urban villages: Bharat Nagar, Taimoor Nagar, and Khizrabad. NFC's A, B, and C blocks, with around 1500 households, have three dhallaos handling the solid waste from the colony, as well as the surrounding urban villages. Ever-overflowing dhallaos are thus a common sight. Our RWA works relentlessly to monitor the dhallaos to ensure that solid waste is cleared daily.

Our RWA decided to initiate composting at the neighbourhood level in an attempt to reduce the load on the dhallaos and landfills. The project began by identifying a location to set up the composting pits. With no land allocated for such an activity, we found an incidental open space designated as a park, located on the periphery of the colony, which till then was underutilized. We approached the Municipal Corporation of

Delhi for assistance, and with their help soon had four brick-lined pits of 9'0" x 6'0" x 3'6", at one end of this park. Our RWA started working on the composting project in the month of April, 2016, and the actual composting began in the month of August.



**Picture 1:**  
The compost left to dry

Source: Author



**Picture 2:**  
The compost worker sifting the almost ready compost.

Source: Author



**Picture 3:**  
The compost worker spraying EM solution on the waste

Source: Author

The RWA then informed the residents of its intent to begin composting at the neighbourhood level, and requested them to segregate

their waste into organic and recyclable. The garbage collectors who do door-to-door collection were provided with partitioned carts, and trained to segregate as they collect from the households. Once it reached the composting area, the organic waste was again sifted to ensure no plastics, foils, coconut shells, bones, or other inorganic material reached the pits; however, some quantities of paper and cardboard pieces which helped blot out extreme moisture were retained. The organic waste was then spread inside the pit with a shovel. During monsoons when the organic waste remained very moist, causing unpleasant odor, a solution of EM(Effective Microorganism),<sup>2</sup> unrefined sugar (Gur), and water was sprayed to prevent odor and flies (1). The waste was then mixed with a shovel or rake. Once the first pit was full, it was covered with jute mats. During summer, when the waste became very dry, the pits needed spraying with plain water once a day, and once in three days the waste in them needed tossing inside out with a rake or shovel to ensure even drying (2). After three months, the waste turned a deeper purplish color and crumbled on touch. It was then removed from the pit, and placed on a big mat under the sun to completely dry it. Once dried, it was sieved to remove finer impurities, and then this rich organic manure was ready to be weighed and packed into bags for distribution. After ten months, two pits matured, and their organic manure was ready for use in gardens, while the other two are in progress. Our initiative started with collecting organic waste from about 60 homes, and today we have over 275 homes segregating their kitchen waste to be used for composting. Currently, the RWA is running a door-to-door campaign to encourage more residents to segregate in order to scale up operations.

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<sup>2</sup> **EM (Effective Micro-organism):** EM is a liquid concentrate (brownish liquid suspension made by collecting and growing natural micro-organisms, available from Toxiclink, New Delhi. The micro-organisms are chiefly Lactobacillus, photosynthetic bacteria, yeast, and filamentous fungi. This technology was developed at the university of Ryukus, Okinawa, Japan, by a distinguished professor of horticulture, Dr. Teruo Higa.

Based on our RWA's limited experience, I can see a great potential in composting at neighborhood level, since it is very easy to get information on the segregators/non-segregators from the garbage collectors. It also takes less time to get the organic waste to the composting pits. If several neighborhoods take up composting, it will translate into reduced trips to the landfills, or waste to energy plants. I view the challenges in implementing neighborhood level composting at two levels: the micro-level, i.e., the neighborhood, and the macro-level, i.e., the city. At the micro-level, the primary task is ensuring segregation of household waste at source. The reasons stated vary from reluctance to use more than one garbage bag or bin to not making an effort to train domestic help. Therefore, our RWA had to intervene and request the waste collectors to decline unsegregated waste. This was not very successful, as all households paid their waste collection fee to the RWA in advance. The second challenge is in organising financial resources to manage the process. Our RWA has hired 24 garbage collectors and two compost workers. The running costs of a composting project today are high, and we are yet to offset the same by the sale of the garden manure we generate. The third challenge is having adequate space to scale up operations in order to make composting financially sustainable.

At the macro-level, to encourage neighborhoods to take up composting it is imperative to involve the RWAs, an aspect missing in the National Action Plan and Solid Waste management rules. Incentives in the form of reduction in municipal property taxes may encourage adoption of neighborhood-level composting, as well as ensuring cooperation and resident participation. Guidelines to carry out micro-level composting would need to be framed and outlined by the municipal corporation. Space requirements in future planned residential areas also need to be spelt out. A monitoring cell to check and ensure adherence to norms will also be required.

In conclusion, our RWA's composting project can be very easily replicated by any RWA willing to align its objectives with the larger goal of reducing the load on landfill sites while giving useful manure back to the residents for their gardens. It is a small step, but composting at neighborhood level would go a long way in making solid waste management sustainable, while reducing ecological and environmental degradation