Why Densification Makes People Vulnerable to a Waste Crisis

Of the many learnings from the recent outcry around the National Buildings Construction Corporation (NBCC) group housing redevelopment projects (GHRP), one was about the challenges of handling large quantities of waste generated in a dense cluster. Despite the progress made in handling waste in India, the question one might ask is this: how does densification impact our vulnerability to waste?

Let's take the case of Sarojini Nagar (SN, to follow its colloquial name), one of the 7 colonies for redevelopment, right in the heart of the city. According to plans, a redeveloped SN will have five residential type buildings of 231 towers with combined basement and total dwelling units of 17,944, along with service apartments, office blocks and other social infrastructures such as schools, post offices, police stations and a banquet hall. [1]

Let's also use the accepted norm to calculate the amount of waste being generated by the household units: approximately 500 grams of waste daily per capita [2], in a typical 5 member-household [3]. By this yardstick, the total waste generated by the dwelling units in Sarojini Nagar totals 45 tons of waste daily, at the very least. According to government statistics [4], this is what the entire city of Gangtok and its adjoining areas generate daily. Similarly, if we were to calculate the future waste generation by the 4882 households of Netaji Nagar, it would total 12 tons of waste daily. [5] If we were to also include the waste generation of the other social infrastructures in this area, the number rises to 19 tons of waste daily per locality. [6] In Nauroji Nagar, where the redevelopment of a commercial complex will take place, an estimated 19 tons of waste will be generated. [7] (We must note here that these waste generations numbers are highly conservative, the actual numbers may be even higher.)

So we have the waste equivalent to 2 Gangtoks in these 3 areas alone. Except that these 3 colonies only will take 5.78 square kilometres [8] and Gangtok is 19.2 square kilometres in area [9], and two Gangtoks mean 38.4 square kilometres, or nearly 7 times bigger than these redeveloped areas, once they are done.

In a scenario where so much waste is being generated in such a small place, **a whole new set of problems arise**. We know that the waste management system in our cities is far from being perfect. Strikes, (as in East and North Delhi), lack of funds, technical glitches, unpredictable weather (such as continuous heavy rains) etc. can all contribute towards waste accumulation after it is locally collected within the premises.

Waste comprises a whole lot of materials and is known to emit fine dust and other particles that disperse close by, causing respiratory issues and allergies. Already, this will be exacerbated by the air pollution externally from vehicular sources, including such vehicles that will carry away the non-recyclable waste. Waste, especially mixed or organic waste, serves as an ideal medium for flies, mosquitoes and other vectors to breed in, even when kept contained. The more the waste, the more the surface area for breeding. This will add to disease and reduce local hygiene.

Although decentralized composting is the best option, and is mentioned in the plans, but even the best facilities in India sometimes cannot compost everyday due to several factors. Some are as mundane as a shortage of workers due to heavy rains or fog. This will lead to the

problem of waste emitting methane, as it rots. Apart from stinking, methane is a potent greenhouse gas that easily catches fire. **Much wiser is to encourage households to compost at home, providing them with composters and buying off the compost from them as an incentive.**

There is also an added threat of the waste collected in these colonies catching fire from other causes. Fires, in fact, are an issue even developed countries are struggling to contain. Daily removal and adequate, covered storage of dry waste is one way to reduce the possibilities of fire. For this, adequate space and infrastructure is essential-something not accounted for in the plans. Besides, who will pay for these?

All these problems are valid for your local, tiny waste dump as well. But they can be better managed. The smell may be overpowering, but it can be contained by sprinkling various enzymes, covering it and sending emergency vehicles to pick it up. The aerosol particles are limited and very local. That's why it's the waste workers who face more health issues than the waste generators.

In these much larger quantities from densified housing, the story is likely to change. It will be a menace that's hard to control with the kind of real-world problems we might encounter. The pressure to create the much-touted financially self-sustaining model only exacerbates these problems, because contractors won't invest in additional manpower, extra vehicles etc. if they won't be paid for it. Instead, we need to be acutely aware that a back-up system will cost, as will extra labour. These have to be part of an investment that cannot be repaid.

In a newly densified hotspot, where the carrying capacities of our cities reach their saturation points, the impact of any glitch in waste management will be exacerbated. Even with good collection, composting and transportation, the sheer quantity of waste in a small area will leave residents vulnerable to poor health and environment. National experience shows how imperfect even good systems are, and how imperfections are smelly, ugly and buzzing with flies. This is the challenge. Home composting, involving wastepickers for recycling and high-quality infrastructures are a way ahead. But these still aren't foolproof.

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[1] NBCC (2017. EIA Report, Sarojini Nagar, http://environmentclearance.nic.in/writereaddata/Form-1A/TOR/BOVR2LM1112420171NBCCSarojiniNagarToRLetter.PDF

[2] Times of India (2014) https://timesofindia.indiatimes.com/city/chennai/Chennais-per-capita-waste-at-0-7kg-highest-in-country/articleshow/28256852.cms

[3] ArcGIS (2013) https://www.arcgis.com/home/item.html?id=6cf22970ea8c4b338a196879397a76e4

[4] Envis Centre: Sikkim (2016) http://www.sikenvis.nic.in/Database/SolidWaste_789.aspx

[5] NBCC (2017). EIA Report, Netaji Nagar. http://environmentclearance.nic.in/writereaddata/EIA/06092017YF8XBYW9EIAReport.pdf

[6] *Ibid*

[7] NBCC (2017). EIA Report, Nauroji Nagar http://www.environmentclearance.nic.in/writereaddata/EIA/06092017LFWUE49VEIAReport.pdf

[8] NBCC (2017). EIA Reports, Sarojini Nagar, Netaji Nagar and Nauroji Nagar

[9] Google Maps (2018)