

Environmental and Social-Economic Impact of Existing Domestic Solid Waste Management and Sustainable Smart Actions- A Case Study for Pune City

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Abstract : *Since the arising of local public authorities, waste management is being handled by them as of sole responsibility. Years and years flew away, the scenario of civilization became smart in individual and institutional levels, but social cleanliness and waste management by local authorities and cleanliness culture of citizen in respect of social places are still as it is or rotten up. Due to which more or less all over, the crises due to waste management is taking big toll and the individual faces of every civilization mostly urban areas are lost, as waste issue is very common for every city and town. Every waste dumping site and population around it are in combating position at every local authority. Continuation of such practice will ruin all the smarter aspects of modern civilization with big impact on Environment. New sustainable approach is required to change our habits in daily routine. In current study we will go through the existing practice of domestic solid waste management at Pune city and its extents in respect of operating local authority, crises due to same, Individual and Institutional level awareness and participation, nature of current Civilization, and possible sustainable smart practices to minimize the heat of current practice with creation of foundation for smart environmental practice in city which will lead as bench mark for all urban authorities Nationwide.*

Keywords: Domestic Solid Waste Management, Sustainable Smart Actions, Awareness, Participation, Environment.

A. Solid waste – Story of Pune city-

Pune and Pimpri Chinchwad joint city is having almost highest growth rate in Maharashtra. At present approximately 50lacs people are residing in these cities. This is same population residing in countries like Denmark and Ireland have wide area, now we can judge what population density we have and its loading on service providers. In recent years most of the time the news of waste management has its place in newspapers like how to dispose this garbage? Villagers stopped waste transporting vehicles, agitations by villagers, fire cached at Kachara depot, etc.

In recent days this issue took a way of war in local municipal authorities and local residents residing around the Kachara depot. In which Urali villagers and PMC has the tough on. Since last 10 years these people are fighting for their rights. In September 2000, India framed its first Municipal Solid Waste (Management & Handling) Rules 2000, which lets both cities and their citizens know their duties and responsibilities for hygienic waste

management. This urged statutory bodies to comply with the Report's suggestions and recommendations. These also serve as a guide on how to comply with the MSW Rules. But unfortunately maximum implementation not happened fruitfully, the stacking of unprocessed garbage gone increasing day by day, at present both cities are generating approximately 2000 Mt waste daily.

The consequences of dumping solid waste at Urali devachi can be summarized as below.

1. Due to large heap created at depot due to continuous dumping of unsegregated solid waste the leachate generated in and around area on sub surface and also percolated in ground water, which has polluted nearby wells, bore wells, streams and ponds. More than permissible limit the concentration of chromium and zinc has been observed. The water is not possible to use for drinking, open bathing, agriculture and domestic use.
2. It's observed that the people living in this area are facing health & Hygiene problems such as allergic, asthmatics, bronchitis, skin irritations and gastrointestinal diseases.
3. In summer, the heat causes methane in organic solid waste to burn, the unburst firecracker's collected in waste from road sweeping act like gas stove lighter to ignite this heap, and fire cached goes continuous for more than weeks creating air pollution in and around nearby area, smoke, suspended particle matter in air, which invites respiratory and asthma diseases.
4. The area has been attracted by birds, rodents, stray dogs and fleas to the waste dumping sites created unhygienic conditions.
5. The area is lost his commercial value of land and property cost also the issue created social impact that people are not ready to marry the boys and girls of this village.
6. Health hazards of people working in present situation of waste management are really worst.



Picture – 1 : Present SWM situations at Pune City

This can be representative is case, Most of the cities and towns are travelers of same train, at present same battle has started at Dehu, Talegaon, Aalandi, Lonawala etc.

This is story where at least waste collection is happening, rest in periurban towns, road /railway track sides, open plots and river/stream sides are full of garbage, mostly Plastic. This is scene of almost every city in India.

B. Wet waste

Wet waste is major player when we deal with domestic waste. Each average family of 4 people produces approximate 500 grams wet waste and both cities generate average 700 to 1000

MT wet waste daily. Maximum segregated and decentralized handling of wet waste will be key success for Domestic SWM. To happen this awareness and sharing of responsibility (Citizen and Municipal authority), Proper awareness program and making feasible environment by sensitizing citizen, people will start responding to appeals.

Wet waste - uncooked – being natural this part of wet waste is most easy to handle as not processed, contains almost 70% of water by weight. Shredding enough and mixing with soil it get merged and composted, and also with conventional composting.



Picture-2 Ccomposting at Authors home

Cooked food – Composting, vermin composting and methane production.

At present marvelous techniques are available for conventional and mechanical composting, biogas as the bio -technology available is well developed. Vermin-composting is really best and also useful for individual and group.

At Indian institute of Science and research (IISR) Pune campus total uncooked food waste being managed by vermicomposting and all cooked food waste is picked daily by pig farm.

Difficulties for promotion of wet waste processing.

1. Sharing Responsibility - In recent day's urali villagers Taken stand "we suffered lot, now enough is enough" we will not allow to enter a single vehicle of UN segregated waste only for dumping to urali, and stacks of waste hold the city for many days. Then PMC Forced societies to manage own wet waste, that day was a golden day for history of SWM in Pune. As PMC noted and accepted their limitations and citizen noted only by paying tax we cannot pollute as we want. This distribution of responsibility need to be enhanced for success of effective solid waste management. This will promote vendor development in wet waste management.

2. Development of manpower for Handling of wet waste – As PMC forced societies to manage their wet waste, people started searching for service provider in this sector, the scene changed totally opposite, till date the NGO, private partners were requesting people to allot the task and no one was entertaining them as everything was getting lifted and disappearing they produce in any way. Now societies are requesting and as usual Wet WM players are in less in count as there was no demand. Now for its need of time to develop the manpower for effective and healthy implementation of decentralized WWM.

a. Most of the people knock the doors of internet, and it's very difficult to come out with a proper solution (as huge firing of information available).

b. By making availability of proper inputs/ information, raw material, and trained manpower to implement the wet waste, we can expect from people to implement the wet waste management at personal and society level.

c. By making available the trained manpower, we can address the issue well and also the people are good chance to survival in ref of employment.

d. Mass working in private gardening area can be pulled easily in this field and they will get additional skill/remunerations.

e. Most of the house wives can get trained; onward they can run franchisees of well running professional groups.

f. Mass working in housekeeping, cleaning, sweepers, can also train and pulled in this sector.

3. Polluters to Pay - Specific case oriented management can be formed for Vegetable markets, slaughter houses, fish markets, fruit and food processers, big dining and marriage halls, hotels and restaurants, caterers , dairies etc as they can define and design their own way to manage WWM.

C. Dry Waste

Dry waste not creates any emergency as of wet waste, and it can be collected weekly or 2 to 3 times in week, or for specific item dates can be decided like only plastic & thermaocol, only cardboard & papers, only cloths etc, clean and segregated waste will lead to reuse, recycle and recovery process can be promoted, in this regards also PMC can promote private partners and develop vendors by sharing responsibility. At present for handling hazardous waste, oil, and paint waste, licensed vendors from MPCB are working; in same way vendors can be

developed to handle thermaocol, plastic, cardboard, cloths and many more things.

Mass working in rag pickers, scrap collectors, can be register, licensed and for this work, which help them to work with honor and dignity. At present "Swatch" group is working with their almost 9000 thousand manpower, also KKKPK (Kagad kach patra kastkari panchayat) working on above thoughts and helping pune for clean & green pune.

An Pune based NGO runs "Sagarmitra" abhiyan in 90 schools, in which every student collects plastic came in his home and at define date handover it in schools, where the volunteers of NGO collects it from school by paying some specific rate and one vendor recycles it for making secondary plastic products.



Picture-3 Segregated Plastic Waste, Helping hand for recycling plastic waste from river.

D. Awareness – The most Important thing in waste management

There is a lot to do on awareness front, most of educated people are also not aware, where the stuff kept outside the door goes and what happens with it.

In most of the societies, people keep the bins outside their door and the matter gets closed for them. Daily we just look at the garbage collecting person with pity, as he handles the mixing of wet & dry waste with expressions of anger and helplessness on his face.

Singapore Case – First national campaign "Clean Singapore" as an independent nation, Launched on long back on 1st Oct 1968, by PM Lee kuan yew, which was continued then as national program. It's not enhanced the environment and quality of life but also cultivated national pride which attracts foreign investors and tourist to Singapore. Today's Singapore is the result of consistent efforts of 45 Years. We have started "swachh bharat abhiyan" just now and we can count the miles to go with our way of doing things.

In 1960 Singapore PM started clean Singapore campaign.
We can see the results...



Ground Reality - Last year, it took more than 1 hour for me to explain this story of waste and so called kachara depot to one of my well educated neighbor, and also discuss why there are crises like urali and Fursungi happening, then what expectations can be kept with the people, who are fighting for their daily bread and butter. There is lot of work need to be done in awareness only, as most common citizen just fill and forgot the dust bin case. Also like developed nation we never love our common social places, rather they are meant to litter commonly.

To cultivate the social cleanliness & proper waste handling culture, we need to set up a dedicated full time awareness cell who will do work only for creating awareness continuously, innovatively, technically, and consistently with social heart and technical and administrative brains. Who work will be extended in planned iterations considering the results of present work.

Expected work by awareness cell can be enlisted below.

1. With help of NGO or private partners creating documentaries which will show the consequences present handling of waste management.
2. Showing such documentaries in all area of city by dedicated team to reach up to maximum people of all class i.e. from slum to high class societies. Which will result people will at least start segregating and sorting waste at source, which is most important foot step of successful waste management. This will set the mindset for correct pyramid of SWM.

3. Program –films & documentaries prepared and designed for Schools, colleges, institutions. In this regards participation and reach to every institution and class will be ensured with definite road map and timelines to be achieved with consistent review.
4. Social groups and institutions – Like Elder citizen groups, warkari sampraday, mahila sanghtanas, can be appealed to join. Private organizations also asked to extend support.
5. Promoting use of cloth bag by arranging road shows and rewarding existing real users on spot in markets.
6. Appointing brand ambassador's to convey the appeals for specific cause in relation with SWM and social cleanliness for city only.
7. Once while in Pune city “1st Nov bus day” was a successful event, based on same thought the small mile stone events can be planned with help of Media and private association.
8. Making authentic small films and clips which can be making viral on present media like face book and w'app.
9. Since last two year in Dehu gaon near PCMC is doing “clean dehu” campaign consistently, promoting such self-driven groups in every area.
10. Good things can be spread as viral and proved.
11. Creating manpower for wet and dry waste management handling.

E. Conclusion

Fortunately winds of smart city are on high tide and smart thoughts are need to implement in SWM, what happened in past can be left and out of box thought need to iterate to integrate the futures SWM.

SWM is not an isolated matter that can compartmentalized and solved with innovative technology as being urban issue its closely related directly and indirectly to number of issues like planned and unplanned developed constructions, different lifestyles, resource consumption pattern, jobs and income levels, other socio – economic all these issues need to be brought together on common platform in order to ensure long term solutions.

All sectors of society Local authorities, NGOs, private sectors, corporate sectors, citizens, Media, need to be an active part of this solution. Let's walk the green Path.





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