Addressing the Solid Waste Management Challenge in India

Dr. Anjali Gaidhane

Associate Prof. and Head

Department of Political Science

Hislop college, Nagpur

Abstract **-**Solid waste management is the most significant challenge that we as human society are facing in the 21st century as urbanization, industrialization and economic growth have resulted in generation of huge solid waste which is growing at an unprecedented scale on daily basis. Solid waste management has emerged as one of the greatest crises as there is a sharp contrast between the waste generated and safe and sustainable ways to dispose it off. The problem is further compounded by the fact that there is a huge gap between the increasing population generating waste and inadequate means and services available to dispose it. The inefficiency of current solid waste management mechanisms is posing a serious threat to public health, environment and quality of life of the citizens. The per capita waste generation rate is increasing on an everyday basis due to changing lifestyles and increased purchasing power of people in general, adding a huge stress on available natural, infrastructural and financial resources. Almost 21 months of COVID 19 pandemic has added bio-medical waste to the already existing grave situation of waste management.The present research paper looks into the various challenges posed by waste management, success stories and issues associated with the same.

Keywords –Solid Waste Management, Segregation, Municipal Corporation, Challenges, Waste Management, Recycling, Waste Disposal.

Introduction - Article 21 of The Constitution of India guarantees ‘Right To life and Liberty ‘and can be fulfilled by maintaining clean environment and surroundings. The annual quantity of solid waste generated in Indian cities has increased from six million tons in 1947 to 48 million tons in 1998(CPCB, 1998) and stands at a whopping 55-65 million tonnes as in 2021. (CPCB,2021) In India, the volume of waste generation has been increasing rapidly over the last few years. In India, the Government of India made MSW Rules 2000and in 2016 (MSW Rules, 2016) to regulate the management and handling of municipal solid waste (MSW)and to provide a framework for the treatment and disposal of MSW. However, even after two decades since the issuance of MSW Rules 2000, the state of MSW management remains a major concern all over the country. According to the “Swachhata Sandesh Newsletter” by the MoHUA, as of January 2020, 147,613 metric tonnes (MT) of solid waste is generated per day, from 84,475 wards. (Swachhata Sandesh Newslette,2020)

Now for the first question, what is waste? Wasteis defined as any material that is not useful and does not represent any economic value to its owner, the owner being the waste generator. Any material which is not needed by the owner, producer or processor is waste. Classification of wastedepends on the physical state of waste categorized into solid, liquid and gaseous. Solid wastes are categorised into municipal wastes, hazardous wastes, medical wastes and radioactive wastes. Municipal Solid Waste is defined as any waste generated by household, commercial and/or institutional activities and is not hazardous. Solid waste managementincludes the generation of waste, storage, collection, transportation, processing and final disposal. Once items are discarded as waste, they need to be collected.Population explosion, coupled with improved life style of people, results in increased generation of solid wastes in urban as well as rural areas of the country. Indian cities which are fast competing with global economies in their drive for fast economic development have so far failed to effectively manage the huge quantity of waste generated. The quantum of waste generated in Indian towns and cities is increasing day by-day on account of its increasing population and increased GDP.

However, everything is not wrong with waste. We can dispose the waste or reuse the waste and can earn money through proper management.In a common man's eye anything that is unwanted or not useful is garbage or waste.Though generally, waste is defined as the end of the product life cycle and is disposed of in landfills and most businesses also define waste as "anything that does not create value" (BSR, 2010), scientifically speaking there is no waste as such in the world. Almost all the components of solid waste have some potential if it is converted or treated in a scientific manner. Hence, we can define solid waste as "Organic or inorganic waste materials produced out of household or commercial activities, that have lost their value in the eyes of the first owner but which may be of great value to somebody else." (Robinson, W.D.1986). So, the problem is not the waste, but how we manage it. This research paper highlights various such initiatives in India that are working towards cleaner and greener future by waste management. The efforts of these initiatives have to be integrated with the existing hierarchy of the formal structure and develop a wholistic, integrated structure of waste management. There are success stories in India like Indore, Allappy in Kerala, Mysore, GIFT (Gujarat International Financial Tec) City in Gujarat, Tirumala in Tamil Nadu in India that have succeeded in managing waste successfully and those models can be applied to the problem of growing magnitude. Similarly, there are examples from Sweden, San-Francisco etc. that have set examples in managing waste.

Success Stories of Waste Management in India and abroad - Interestingly, some cities in India and some cities and countries of the world like Sweden have achieved remarkable progress in SWM and have been the role model for others to follow.Indore has succeeded in becoming India's cleanest city since 2016 by sheer administrative and political will and resolved 90 % of its solid waste challenge. Indore's municipal corporation (IMC) has eliminated garbage dumps, ensured 100% household-waste segregation and converted waste to usable products, such as compost and fuel. It partnered with nongovernmental organisations for an awareness campaign to change the behaviour of its citizens, contracted private companies to run some waste management operations, used technology, and improved municipal capacity to ensure the implementation of its waste management plan. (Shreya, K .2 October ,2019). Moreimportantly,

Indore has succeeded in converting waste into a resource generating resource. Decentralized handling of waste from the vegetable, fruit and flower market in Choithram mandi through bio-methanation facility converts organic waste to methane. Around 20 tons of waste is gathered each day and changed over into 750-800 kg of bio compressed natural gas (bio-CNG). The gas created is utilized to run city transports and sold as a cooking fuel to hotels and the Indian Institute of Management, Indore at a financed rate. Squander from the flower industry is kept independently (1-2 tons every day), and blended in with slurry to produce compost. 3.(SinghR , 2021) Example of Indore is significant because it offers us hope that if managed properly, waste cannot be managed but can also generate revenue, compost , fuel and bio-gas .We have similar success stories of Allappy in Kerala, Mysore, GIFT (Gujarat International Financial Tec) City in Gujarat, Tirumala in Tamil Nadu in India .SWM is a global and human concern beyond man made boundaries. Many remarkable individual initiatives are also underway. One such initiative is Rhino Bricks Community Project by Manish Kothari that is involved in making bricks from waste sand dust and plastic from society, hospitals, industry etc. Many such initiatives have been taken for cleaner and greener India. (Kothari.M, 2020)

On similar lines, some cities in the US and country like Sweden have achieved a state of zero waste status. Sweden has outsmarted all other countries by recycling trash through 32 waste management plants producing heat for 810,000 Swedish households and providing electricity for 250,000 private houses. (Parker T, 2020)In the US, San Francisco is the king of recycling — with the city diverting 80% of its discarded waste from landfills since 2013.Its ultimate aim is to be a zero-waste city by 2020 — with none of its rubbish going to landfill sites or for incineration. As part of this work, it introduced rules in 2009 that made recycling and composting a requirement for all businesses and residences. TheSemapauu landfill in Singapore has been developed in a bio-diversity hotspot that is home to flourishing mangroves, rich coral reefs and capital of birds and marine life. Several initiatives have been taken up at individual levels as well. Columbia offers a recycling solution by giving rewards and incentivizing every recycled item through ECOBOT (A reverse vending machine located in shopping malls, institutes and public spaces and encourages the process of recycling PET bottles).

Challenges in Waste Management–

Most of the cities on the other hand, as far as waste management is concerned, have failed miserably in managing waste successfully.Waste collection in most parts of the world as in India is centralized and all kinds of waste generated by a household or institution are collected together as mixed wastes. Mixed waste is waste that is not segregated and has combination of waste types like plastic, metals, glass, biodegradable waste including paper, textile etc. Majority of municipal solid waste collected in India is disposed of in open land or dumped in unsanitary landfills. Such unsanitary landfill pollutes ground and surface waters, emits greenhouse gases and pollutes air. Pests and other vectors feeding on such solid waste is a nuisance and a breeding ground for disease causing organisms. MSW dumped in landfills also generates greenhouse gases like methane, which has 21 times more global warming potential than carbon dioxide.

The present crisis of solid waste management is because all over the country is that the waste is not segregated and dumped directly in the landfills. Not only it has high impact on public health, environment and quality of life but is also associated with the problem of treatment and proper disposal of waste. Mixed waste is hazardous and compost from mixed waste was found to be of very low quality and contaminated by heavy metals like lead, chromium etc. which if used in agriculture can introduce 73,000 tons of heavy metals in the soil. Mixed waste has high calorific value and is also not suitable for energy generation. The informal sector,the waste pickers,can play an important role by collecting recyclables collected informally with several initiatives which need to be integrated into the formal system. However, waster pickers, who are the key workers in the industry, lack legal status and protection, and are hardly effective or capable of enforcing systems in the collection and segregation of waste.

To enhance the efficiency of Solid Waste Management (SWM) in India, citizen participation should be promoted, especially in source segregation and treatment processes. The policy agenda for sustainable SWM must drive behavioural change amongst citizens, elected representatives and decision-makers, minimise wastage and littering, and increase reuse and recycling. Community awareness and a change in people's attitudes towards solid waste and their disposal can go a long way in improving India's SWM system.Prof. Sudha Goel suggests use of technology for designing an efficient SWM system.To improve SWM practices in the country, Goel recommends establishing a centralised database on ULB experiences in SWM, and using modern tools and technology such as remote sensing, GIS and mathematics optimisation. (Goel, S,2008)

More effective implementation of laws,private public partnership, addressing institutional and financial issues,behavioural change amongst citizens, elected representatives and decision-makers,incentivised systems where producers minimise waste and take responsibility for the reuse and/or recycling of used products can go a long way in improvising solid waste management status in the country.

Learning from those who have succeeded in eliminating waste like Indore and developing a model of waste management can be one solution. The places that are managing waste successfully look at waste as a 'resource 'and have successfully managed waste in a way that it is no longer a waste, but a resource. It will continue to remain a problem and a menace as long as we are unable to manage with it inadequately. Ultimately, whether waste will constitute a problem or a resource all depends on how we manage it. Not urgently looking into trash can suffocate cities and be home to disease, ill health and pollution of water bodies. But at the same time, if we are able to manage waste using latest technology and integrated approach to waste disposal through empirical approach, it can generate revenue and turn trash to treasure.

Conclusion –The problem of waste management has almost reached our door steps and it is not in the interest of human society to ignore it for too long. The problem is like a Pandora box and hence the reluctance to open it up is always seen. It is therefore that a short-term solution has been chosen and the result is piles and piles of unsanitary dumping grounds in the form of landfills. Out of sight is out of mind, and so we continue mindlessly to add on tons and tons of waste everyday while 'Legacy Waste 'lies unattended creating, diseases, polluting waste bodies and air. An erroneous perception is that it is the responsibility of Municipal Councils and Municipal Corporations to solve the problem. In fact, it is the duty of every citizen, academician, researcher, corporators, NGO's, media, politicians and everyone to take up this responsibility. Present research paper draws attention towards the most urgent problem of our time towards solid waste management and coping mechanisms to manage waste.

An integrated and wholistic approach to waste management is required and this can be achieved if the Municipal bodies join hand with the citizens and are able to create a circular, integrated and sustainable model of waste management.

References

Central Pollution Control Board of India (CPCB) (1998), "Status of solid waste management in metro cities".

Central Pollution Control Board of India (CPCB) (2021), 'Draft Plastic Management Rules', 1

"Swachhata Sandesh Newsletter" by the MoHUA, as of January 2020

ITC's Solid Waste Management Initiatives, https:www.itcportal.com/sustainable solid waste management initiatives.

Robinson, W.D. (1986). The Solid Waste Handbook: A Practical Guide, John Wiley and Sons, Chichester.

Business for Social Responsibility (BSR) (2010). "The New Frontier in Sustainability", The Business Opportunity in Tackling Sustainable Consumption.

Singh R.(2021) Municipal solid waste management in the City of Indore – A case study .CivilEng. Environ Sci 7 (1): 008-017.DOI:10.17352/2455-488X.000039

Parker,T.How the world's best waste management cities recycle their rubbish,23 March.2020,https://www.nspackaging.com/analysis/worlds-best-waste-mangement-cities/

Five Countries that revolutionised the way they tackle waste/https://wwwnspackaging.com/analysis/worlds-best -waste-management-cities

Kothari,M. 2020, Rhino Bricks Community Project: The story Behind -rhinomk , Utubevideo,https://youtu.be/GKZ1Nm3o1Q

Source: Census of India and City Development Plan

Source: Population projection by Arcadis.

Times of India ,2021Municipal Commissioner visits Bhandewadi site.

.https://timesofindia.indiatimes.com/city/nagpur/city-still-dumping-80-mixed-garbage-in-bhandewadi-yard/articleshow/74107312.cms

Goel,S.Municipal Solid Waste Management in India: A Critical Review, *Journal of Environment, Science and Engineering* 319, no. 50 (2008)

Joshi,R and Ahmed,S.Status and Challenges of Municipal Solid Waste Management in India: A Review.*Cogent Environment Science* (2016), http:// researchgate.net/publication/295258981_Status_and _Challenges_of_municipal_solid_waste_in_ India_A Review.

Shreya Khaitani ,2 Oct,2019, How Indore became India ‘s cleanest city and how others can follow. (Delhi: Bookwell, 2015)

https://timesofindia.indiatimes.com/city/nagpur/state-approves-nmcs-garbage-composting-recycling-projects/articleshow/83382696.cms and Others.

Krishna,G. Why Urban Waste Continuous to Follow the Path of Least Resistance. *Economic & Political Weekly* LII, no. 17 (2018)

Singh,S. Decentralized Solid Waste Management in India: A perspective on Technological Options in *Cities: 21st Century India,* ed. Satpal Singh (Delhi: Bookwell, 2015).