

# A Review on Solid Waste Management & its Recycling

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**Abstract** This research was performed to understand waste generation rate & its consecutive management approach using qualitative technique in the Nashik city area. Waste is a continually growing problem at global & regional as well as at local levels. Solid waste arises from human activities that are normally discarded as useless or unwanted as a result of rapid increase in production & consumption, urban society rejects & generates solid material regularly which leads to considerable increase in the volume of waste generated from several sources .the simplest way to reduce waste & needs to be treated as a resources that can be reused or recycled this will help to conserve resources , reduce pollution , save energy , & help the earth cope with human demands . In future there could be drastic reduction in waste, if more manufactures design & produce more durable goods that are made easily taken apart , repaired , reused or recycled

**Index Terms-** Solid Waste Management, Reduce, Reuse, recycling.

## I. INTRODUCTION

In the early days of civilization human have used the earth's resources & disposed of wastes .In ancient time waste disposal was not a big problem because population is small & land available is abundant. Now a day's waste disposal is a big problem due to people congregate in larger communities that's why population is increased & land available is less. Due to this the waste is throwing on the unpaved streets which causes pollution. In the growing cities population growth & its fundamental demand's attribute to environmental pollution. Now a day's increasing pollution & solid waste generation is concerning issue. This gives negative impact on environment. Solid waste management system has developed now a days to make healthier environment.

The Nashik district city is located in the northwest of Maharashtra State in India. The population of Nashik city in 2016 was 2.16 million with a total area of 259 km<sup>2</sup> which is increases continuously.

## II. RESEARCH METHODS

### **Study Area:**

The study was conducted at the Nashik city of Maharashtra. It is the most industrialized city in Maharashtra after Mumbai and Pune. There are around 71 acres of land with the Corporation at the outskirts of the city near the highway.

In 2000, the Ministry of Environment and Forest, GoI, (MoEF) notified the Municipal Solid Waste (Management and Handling) Rules (MSW (M&H) Rules) for all Indian cities.

The study was conducted from September 2017 to October 2017. The qualitative & quantitative data were collected by feedback assessment test. A complete questionnaire was contained demographic information , waste generation &management approach, information about solid waste collection & management approach. Near around 350 tons of waste are composed from the city each day.

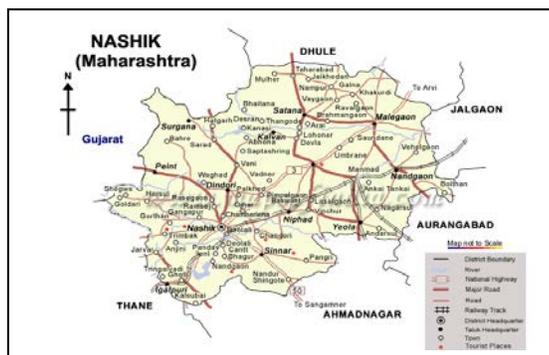


Fig 1: Shows Location of study area

### **Qualitative Research Technique:**

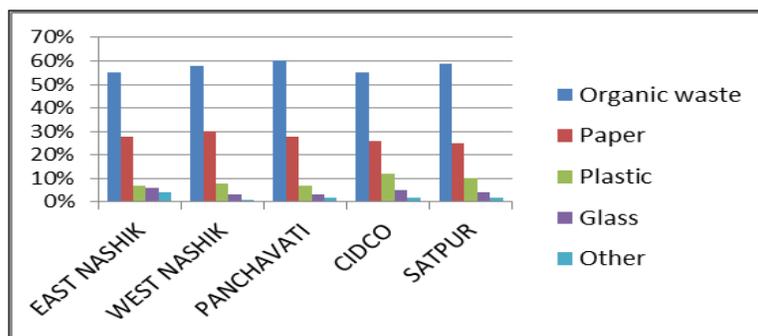
A qualitative research was performed on solid waste generation & management approach to make clean & healthy environment in study area.

A total number of 150 questionnaires were distributed to waste picker, waste collecting, & recycling shops in four different study areas of Nashik city like East Nashik, West Nashik , Panchavati, Cidco, Satpur & Nashik road. These shops collect every solid waste items like organic waste, plastic , paper, glass, metal etc. By observing the questionnaire it is observed that the among solid waste the percentage of organic waste is more than the other solid waste material. The solid waste collected per day in study area is observed .

Table1: Division wise waste collection per day (2017)

SW /DAY	EAST NASHIK	WEST NASHIK	PANCHAVATI	CIDCO	SATPUR
Organic waste	55%	58%	60%	55%	59%
Paper	28%	30%	28%	26%	25%
Plastic	7%	8%	7%	12%	10%
Glass	6%	3%	3%	5%	4%
Other	4%	1%	2%	2%	2%

Below figure shows the Graphical representation of solid waste of various divisions of Nashik city per day.



Graph 1: Solid waste generation per day

**Solid waste Management:**

**By Reduce, Reuse & Recycle in Nashik City:**

The all solid waste material like Glass paper , metal, organic solid ,construction debris are collected by Ghatagadi workers . Around 350 tones of waste are collected from the city every day. The municipal solid waste management treatment plant is situated at Pathardi, Nashik. There are around 71 acres of land with the corporation at the outskirts of the city. The corporation land can be used to expand operations when required to treat the most amount of waste & produce energy from it.The solid waste collected by Ghantagadi workers is transported to corporation area at Pathardi to reduce, recycle the waste. The solid waste is sorted first & then recycled by different process like Bio-methanization, inert processing, Windrow processing, Refuse Derived Fuel(RDF)Plant. The rejected, non-recyclable solid waste is passed to sanitary landfills.

**Some other ideas to Reduce, Recycle & Reuse solid waste:**

**Organic solid waste:** Organic solid waste is split down naturally when exposed to micro-organisms heat, and oxygen. Recycling organic waste into a nutrient-rich, workable material is called composting. The material produced through composting can further be added to soil to enhance the fertility of the soil. By recycling the organic waste it helps to decrease the pollution and creates healthy environment.

**Paper:** Instead of using tissue papers that are made from trees, it is better to use handkerchiefs, we can reuse a piece of cloth by washing it again and again. We can also save paper that has print on only one side. This paper can be reused in different ways- for writing notes, drawing or coloring paper for Childs, useful for many unprofessional written purposes. If we avoid toilet paper rolls, that can be useful for many other purposes, like school or home art projects. They can also be used for starting seeds. Another paper saving fact is about tissue wrapping paper- Once it is used for wrapping any gift, it can be reused for wrapping another gift.

**Plastic:** Reprocessing and reuse of waste plastics have various advantages. 1. Reprocessing and reuse of waste plastics cause to a depletion of the use of natural materials and of the use of energy, hence also a depletion of carbon dioxide excretions. Monetarily, in some cases, plastics reprocessing may be profit making. 2. Depleting your dependence on pre-packing goods give up beverages that come in plastic bottle. Reuse plastic berry containers to store leftovers. 3. Carry with you old plastic bags to the any store instead of asking for new ones. we can reuse empty containers of foods as seeding pots for plants. 4. We can also reused plastic bottles of water for hanging garden. It is said that “Prevention is always better than a cure”. Therefore, waste prevention is always better than the waste generation. It not only keeps the environment healthy but also keeps the oceans clean.

**Glass:** The process of glass recycling involves the collection & sorting of glass by its colors. It is useful for the manufacturing of new glass containers. The raw glass material which cannot be recycled but crushed can be sent to landfills, it reduces the volume of waste. The colored pieces of glass can be used on the wall compound of house or any type of building. Doing this will provide good looking of the wall as well as protection from the outsider.

**III. CONCLUSION**

This study was conducted to evaluate solid waste generation & recycling approach in Nashik city corporation area of Maharashtra. We need clean & green Smart city, for which to improve the waste pickup system in our city as well. Nashik is the one of the city in Maharashtra which has taken lead towards scientific management towards municipal solid waste in abundance of MSW rules 2000. The Nashik Municipal Corporation (NMC) has a challenge ahead to ensure proper collection & segregation of waste.

Nashik was among the 20 cities in the country which were nominated for the award instituted by the first Smart Cities Council. Therefore, it is necessary to manage solid waste and recycle, reduce, & reuse the solid waste to make the city clean & make the environment healthy.

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