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URBAN WASTE MANAGEMENT

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ABSTRACT

Urban waste is defined as solid trash that is gathered by municipal authorities or on their behalf and disposed of using a waste management system. Waste management system is not related to defuse the urban waste but it is also related to reduce the generation of solid waste. One of the laws that must be observed in order to prevent pollution and protect the public's health is waste management. Today's globe has more waste because of the growing population. Urban waste fluids have an influence on the water's biodegradable content and the amount of nutrients they provide, which causes eutrophication. In India, a wide variety of technologies are used for the disposal of solid waste, however none of them are practical for managing solid waste due to their diverse benefits and drawbacks. Open dumping, ocean dumping, sanitary land filling, composting, vermicomposting, and incineration are some of these techniques. Waste management can also benefit from some potential disposal techniques, such as the 3R's (Reduction, Reuse, and Recycling). The study is based on primary and secondary data that was gathered from internet sources as well as through personal observation and an online poll. The study focuses on highlighting the basic overview of waste and waste management in the urban sector, with a specific emphasis on solid waste. According to the information, the case study in Gurugram Local concentrated on the degree of understanding of waste management in relation to city norms and regulations. This paper is divided into some sections in which Section 1 of this paper introduces the term urban waste management and describes the types, Section 2 is the case study of MCG (Municipal Cooperation Gurugram) and reviews the survey, Section 3 talks about the conclusion of the survey and sources of waste generation, Section 4 tells the steps by government and the development of urban waste management, Section 5 focus on the problems then with the solutions comes the conclusion. If no option for management is used or classified, waste will always be a problem.

(Picture taken from a very famous place Sadar bazar near vegetable market behind the MCG office that comes under urban area in old Gurugram)

Keywords - urban waste, system, management, Gurugram

INTRODUCTION

Urban wastes are a severe problem that calls for extensive technological innovation. Urban Waste management is, one of the key issues surrounding any municipality. Municipal solid waste (MSW) is a problem that has to be addressed on a worldwide scale more and more as the world population continues to increase along with consumption levels, necessitating the disposal of food waste, packaging, paper, and other components that make up the various waste streams. In order to ensure access to raw materials, it is also necessary to make better use of the resources present in waste streams. However, the issues with the growth of municipal waste management have also given developing nations a chance to create solutions for bettering urban waste management by utilising cutting-edge and appropriate technology and disposal methods, as well as by using better governance techniques. Good practises from several towns and locations throughout the world have illustrated these challenges. In order to meet this requirement, this study examines the most recent research on municipal solid waste management in a selection of emerging nations and areas with high rates of population growth. The different urban waste management systems are described, together with an analysis of practises and challenges, based on a thorough literature and data examination. In order to effectively use waste management systems for enhanced urban ecological infrastructure, the function of governance is taken into consideration. The paper pays special attention on urban solid waste which is discharged from a variety of sources as a result of human activity. These wastes are the result of several activities. Different types of garbage produced in metropolitan areas make up solid waste. The goal of waste management systems is to limit the production of solid trash, not just defuse urban garbage. The trash gets thrown out because it is useless. It is made up of a variety of trash that has been released from metropolitan areas, including biological waste and waste from the mining, industrial, and agricultural sectors. It is possible to dispose of waste in a variety of ways, including open dumping, ocean dumping, sanitary land filling, composting, and burning. These techniques are widely used in our nation. Following garbage creation, effective solid waste management includes waste collection, transportation, and disposal.

METHODOLOGY

This paper audits the ascent of urban waste management. The paper comprises of a review directed. The review was through google Structures, a web based platform that helped us collect and analyse the data, directed an orderly, closed-ended survey. In the survey people were asked questions about the things they knew about urban waste management and some questions on the solid waste. Then we analysed that how urban waste is managed and is improving stages by stages. Paper also reviews the published reports in mass media literatures focusing on the rise problems caused by urban waste and the steps taken by the government to tackle some issues. The information was also collected from different source and scholar. articles and news outlets. This Paper mainly focuses on trying to explain the observed problems in urban area regarding the waste management and the improvements done until now, which also impacts on the social crises

RESULT AND DISCUSSION

Urban waste can be defined Solid garbage collected by or on behalf of municipal authorities and disposed of through the waste management system. Urban waste fluids have an impact on the water's biodegradable content and the amount of nutrients they provide, which causes eutrophication.

What is the main category for waste?

- ✓ Solid waste includes food scraps, garbage from the kitchen, and other trash.
- ✓ E-Waste is the term for discarded electronic equipment such computers, TVs, music players, etc.
- ✓ Water used in several businesses, including tanneries, distilleries, and thermal power plants is considered liquid waste.
- ✓ Plastic waste includes bottles, buckets, bags, and other items. Metal waste includes scrap metal and wasted metal sheet.
- ✓ Nuclear waste is made up of leftover components from nuclear power

Three groups can be made from solid waste:

1) Biodegradable garbage or organic waste (food and kitchen waste, green waste such as flowers, leaves, and fruit, etc.),
2) Inert and non-biodegradable waste (such as building and demolition waste, dirt, rubble, etc.), and
3) Recyclable waste (plastic, paper, bottles, glasses, etc.). The growing problem of plastic garbage has grown significantly, and it plays a key role in the deterioration of the ecosystem.

Municipal waste management

It includes garbage from houses, including bulky waste, equivalent rubbish from business and industry, office buildings, institutions, and small enterprises, as well as yard and garden waste, street sweepings, the contents of litter receptacles, and market cleaning waste if managed as domestic waste.

According to the waste segregation guidelines of MCG posted in 2008, segregation is as followed -

- WET / ORGANIC
  Kitchen Waste, Green Waste and Others
- DRY
  Plastic, Paper, Metal, Glass, Other Dry Waste
- OTHER HARARDOUS & REJECTS
  Sanitary, Hazardous Waste, Sharps and Other Hazardous Waste or Rejects
- CONSTRUCTION & DEMOLITION
  Depose only through mcg empanelled vendor
- E-WASTE
  Electronic + Electrical

According to MCG Haryana, Haryana as a state has total number of 1496 wards and has total 4783 total waste generation. So to know more about the waste management of Haryana as a state taking some of the districts we conducted a survey by creating a questionnaire on Google Forms with total 22 questions from which 7 were the personal information like name, age, qualification, occupation, their district and state with under which locality their municipal cooperation resided and rest 15 were some questions for the urban waste management. For the survey, the link to the form was distributed to people, who were asked to fill it and forward it on so that we could cover maximum number of responses. This survey received total 82 responses, and the researcher analysed the survey based on these 82 responses.

Analyses to the survey of 82 responses are:

- The responses received were from different age groups:

AGE GROUP	NUMBER OF RESPONSES
15-17	7 (4.9%)
18-29	64 (78%)
30 and above	14 (17.1%)

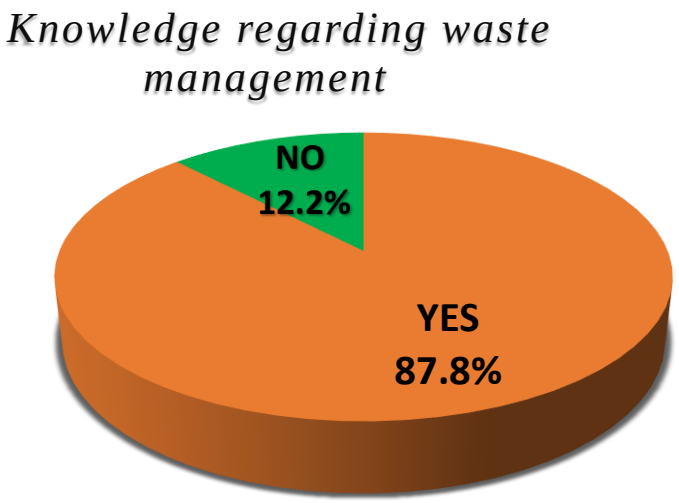
- The responses received had different qualifications:

QUALIFICATION	NUMBER OF RESPONSES
Never schooled	2 (2.4%)
Secondary school	13 (15.9%)
Graduation	47 (57.3%)
Post-graduation	20 (24.4%)

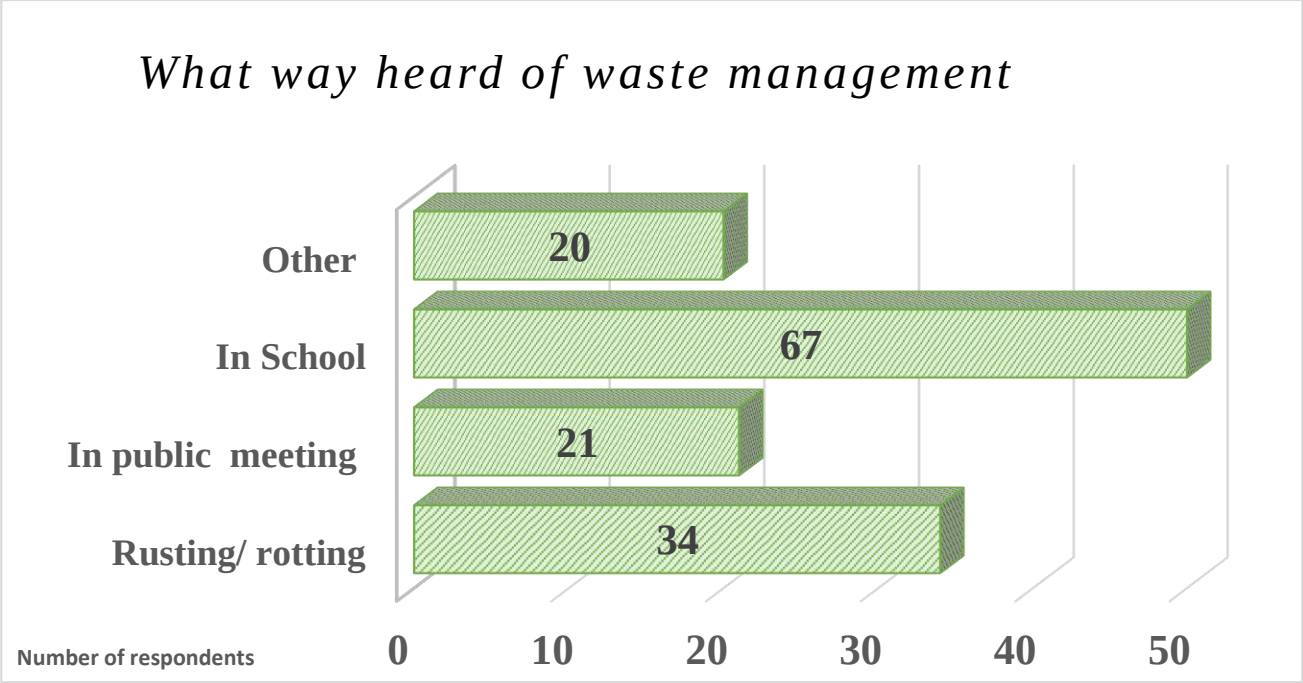
- The responses received were from different occupations:

OCCUPATION	NUMBER OF RESPONSES
Student	65 (79.3%)
Home maker	3 (3.7%)
Employed Professional	14 (17.1%)

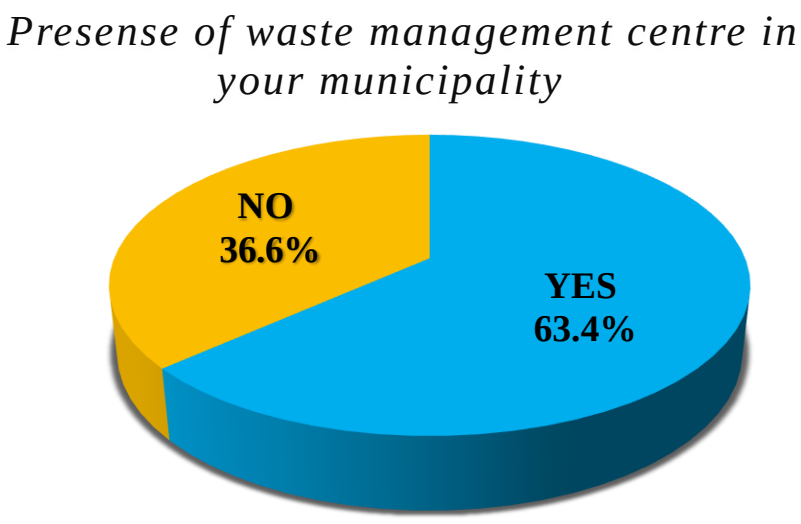
Survey



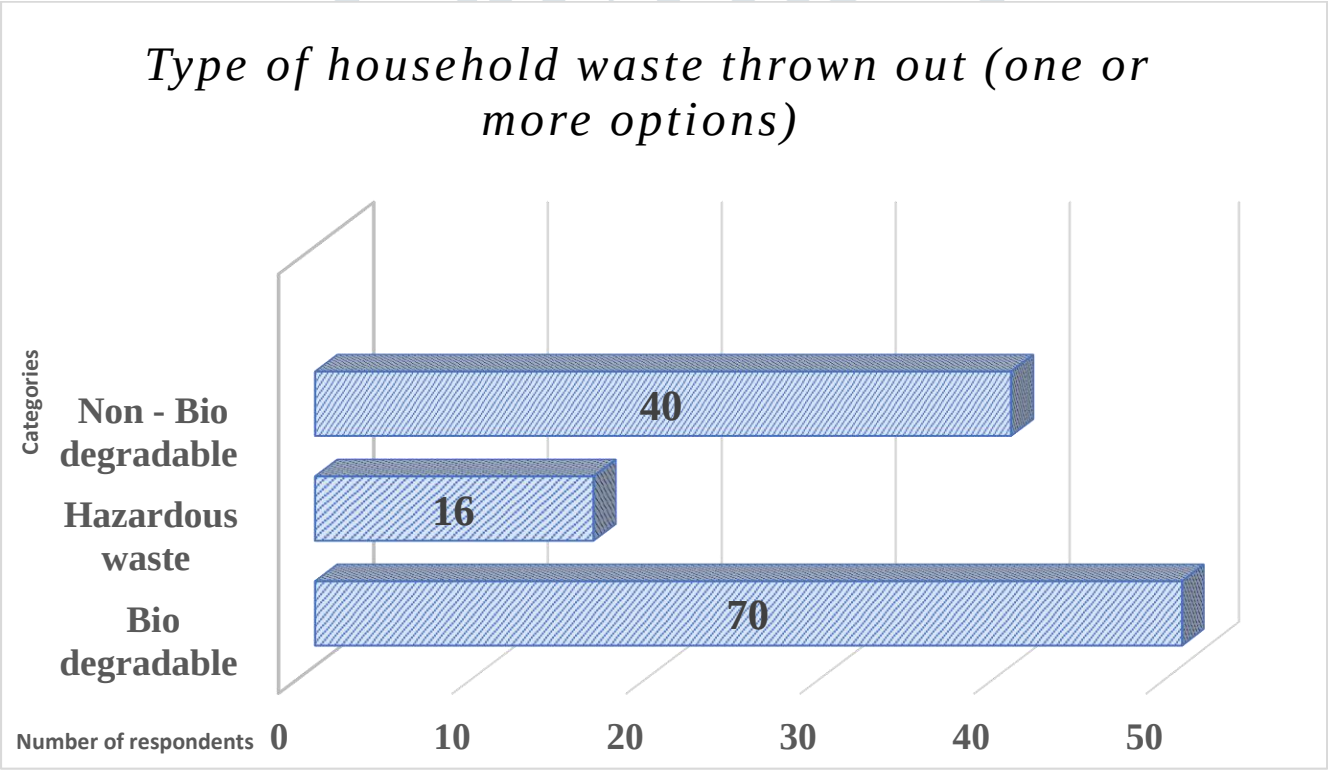
(Source: Data Computed from google form 2022, which tells from 82 responses about the percentage of people who have heard were 87.8% (72 respondents) and people who still haven't heard about the waste management were 12.2% (10respondents))



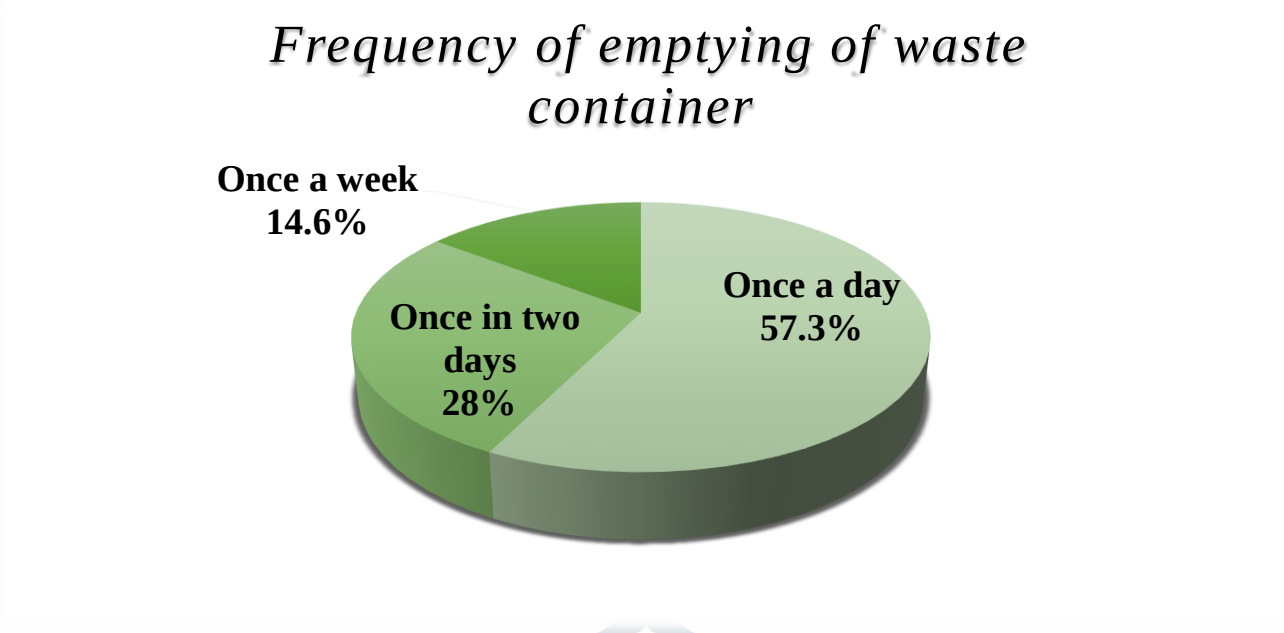
(Source: Data Computed from google form 2022, which tells from 82 responses about the percentage of people who have heard about waste management in what way were 41.5% (34 respondents) have heard over TV or radio, people heard in public meeting were 25.6% (21 respondents), People heard in school were 69.5% (57respondents) and rest heard in other places or who haven't heard yet were 24.4% (20 respondents))



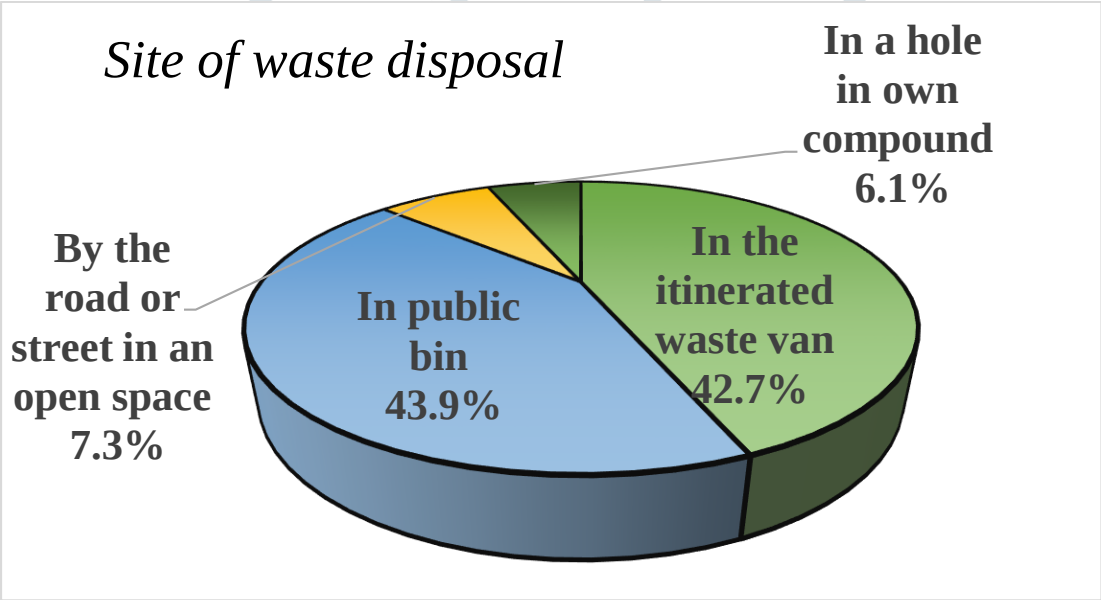
(Source: Data Computed from google form 2022, which tells from 82 responses about the percentage of people who know if there is a waste management centre in their municipality were 63.4% (52 respondents) and people who didn't knew were 36.6% (30respondents))



(Source: Data Computed from google form 2022, which tells from 82 responses about the percentage of the types of solid waste that comes out from their houses, Bio degradable 85.4% (70 respondents) Hazardous waste 19.6% (16 respondents) and non-bio degradable 48.8% (40respondents))

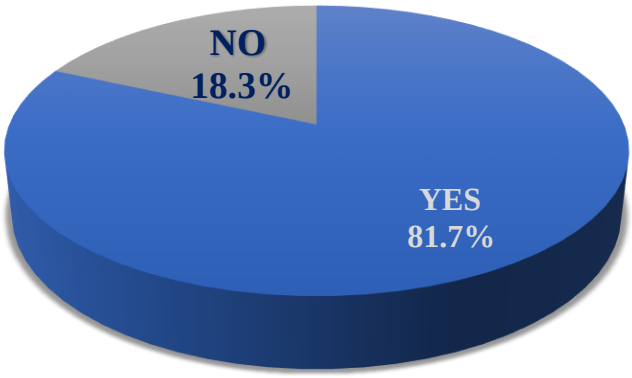


(Source: Data Computed from google form 2022, which tells from 82 responses about the percentage of how often is the waste container emptied, Once a day 57.3% (47 respondents), Once in two days 28% (23 respondents) and Once in a week 14.6% (12 respondents))



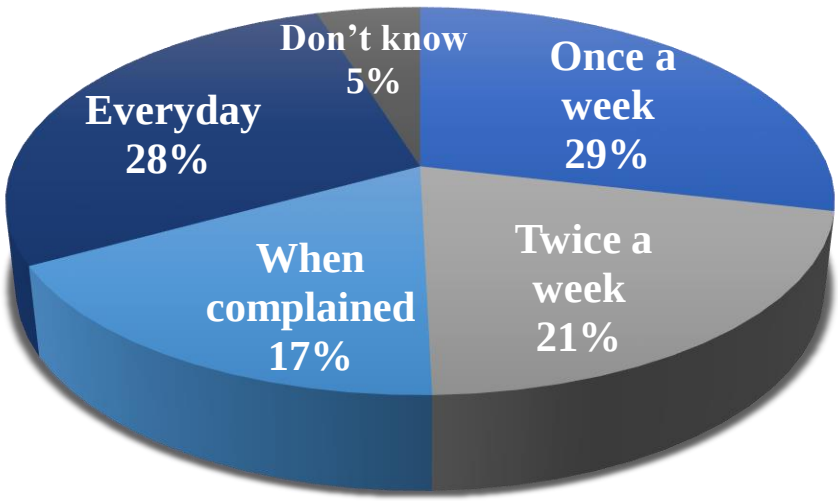
(Source: Data Computed from google form 2022, which tells from 82 responses about the percentage of where do the people usually put away collected waste, In the public bin 43.9% (36 respondents) , In the itinerant waste van 42.7% (35 respondents), by the road or street side in an open space 7.3% (6 respondents) and In a hole in own compound 6.1% (5 respondents))

Followed waste segregations

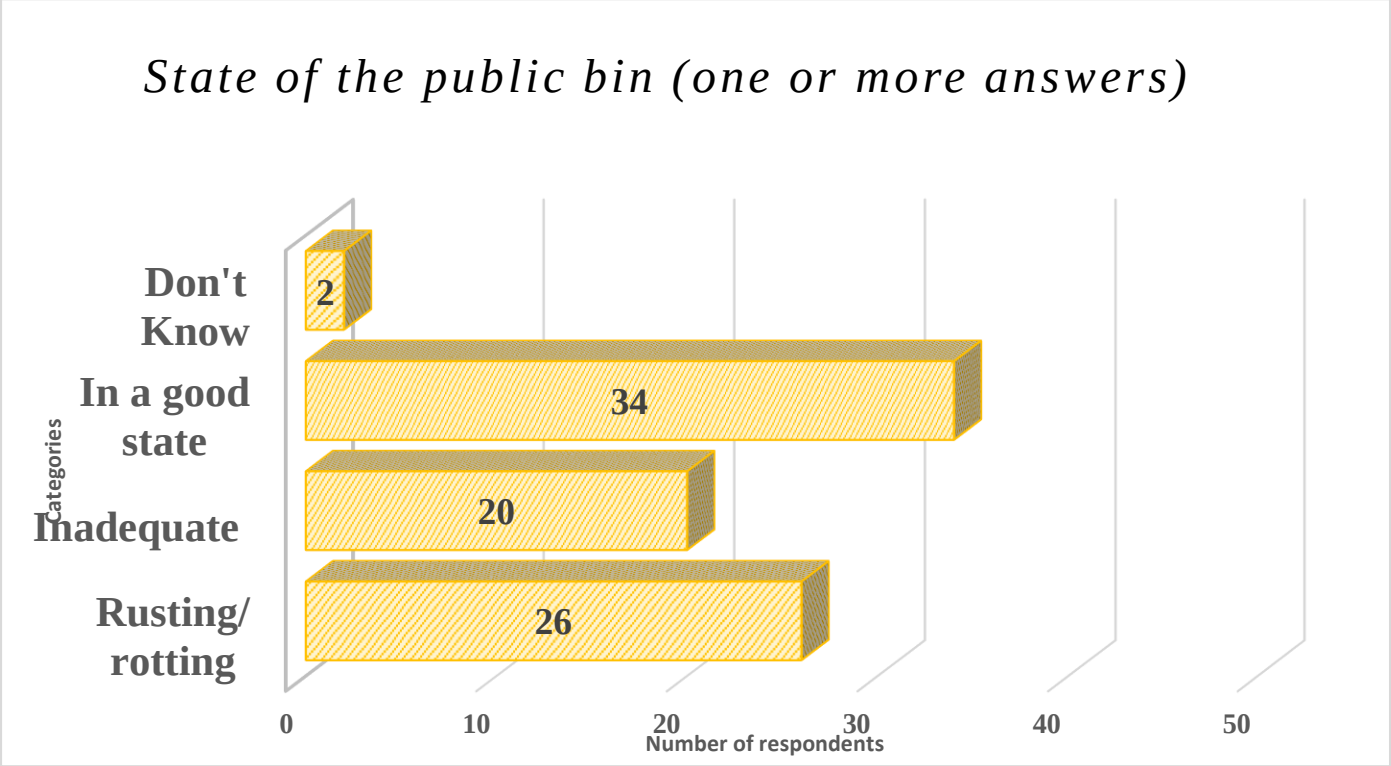


(Source: Data Computed from google form 2022, which tells from 82 responses about the percentage of people who follow waste segregation 81.7% (67 respondents) and people who don't follow were 18.3% (15 respondents))

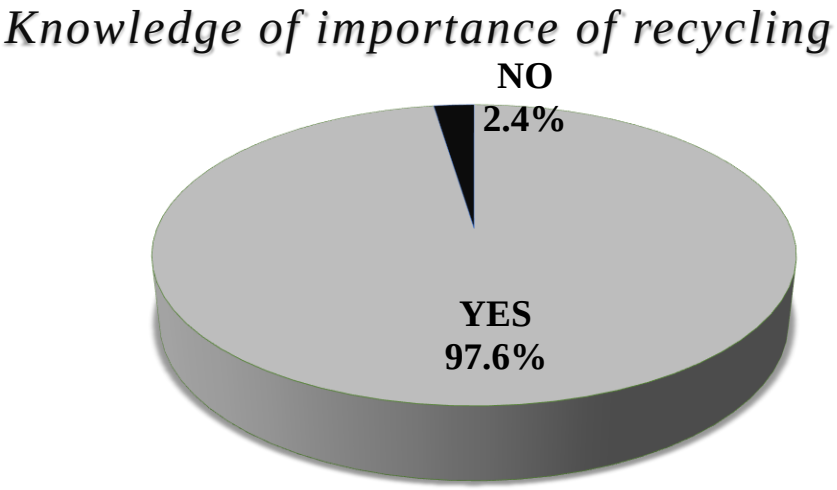
Frequency of emptying of nearest public bins



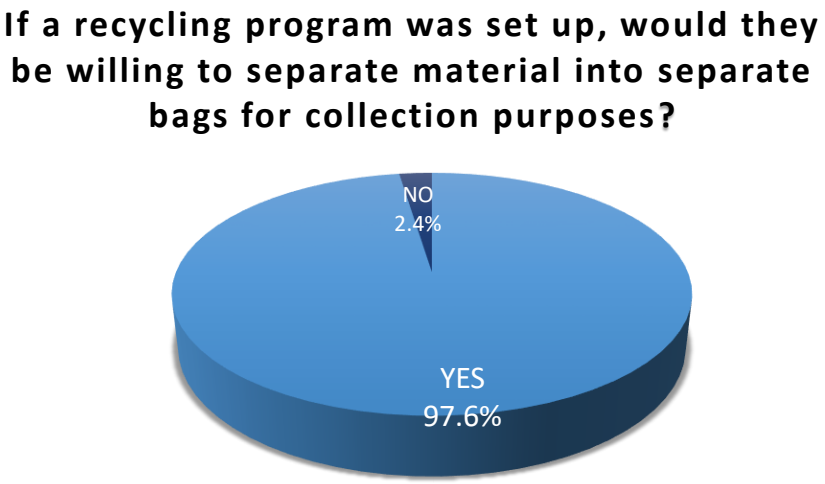
(Source: Data Computed from google form 2022, which tells from 82 responses about the frequency of emptying of nearest public bin which is found that usually once a week it is emptied according to 29% respondents, everyday according to 28% respondents, twice a week according to 21% respondents, when complained according to 17% respondents and about 5% respondents don't know)



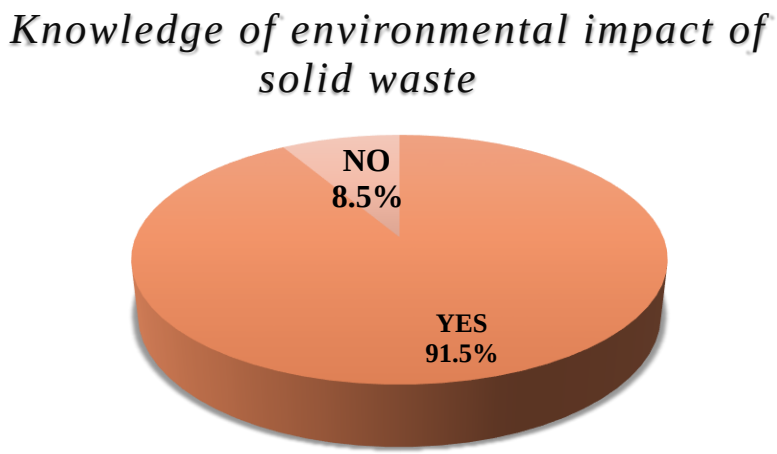
(Source: Data Computed from google form 2022, which tells from 82 responses about the percentage of what is the state of public bin according to people, in a good state 41.5% (34 respondents), rusting or rotting 31.7% (26 respondents), inadequate 24.4% (20 respondents) and didn't knew were 2.4% (2 respondents))



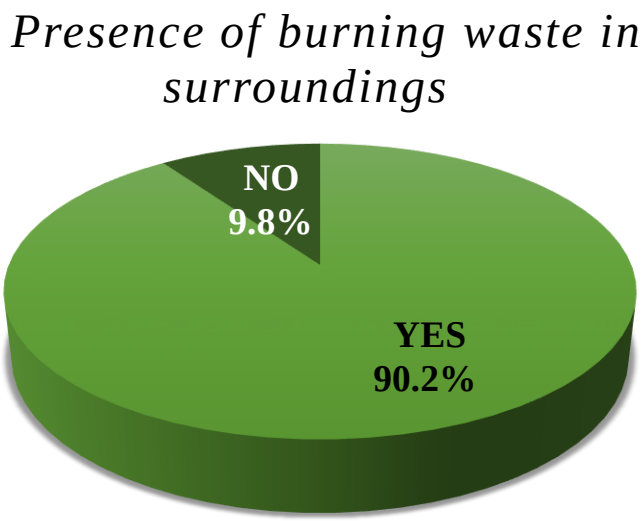
(Source: Data Computed from google form 2022, which tells from 82 responses about the percentage of people who have heard about the importance of recycling were 97.6 % (80 respondents) and people who haven't heard were 2.4% (2 respondents))



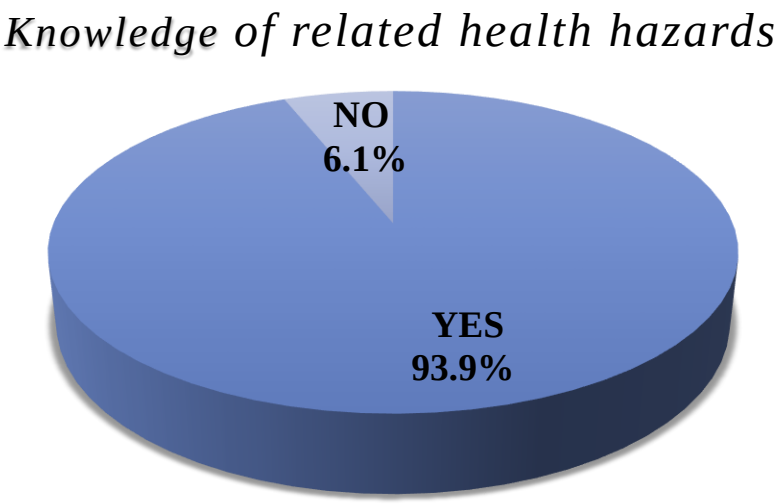
(Source: Data Computed from google form 2022, which tells from 82 responses about the percentage of people who if a recycling program was set up, would they be willing to separate material into separate bags for collection purposes, those who were willing were 97.6% (80 respondents) and people weren't willing were 2.4% (2 respondents))



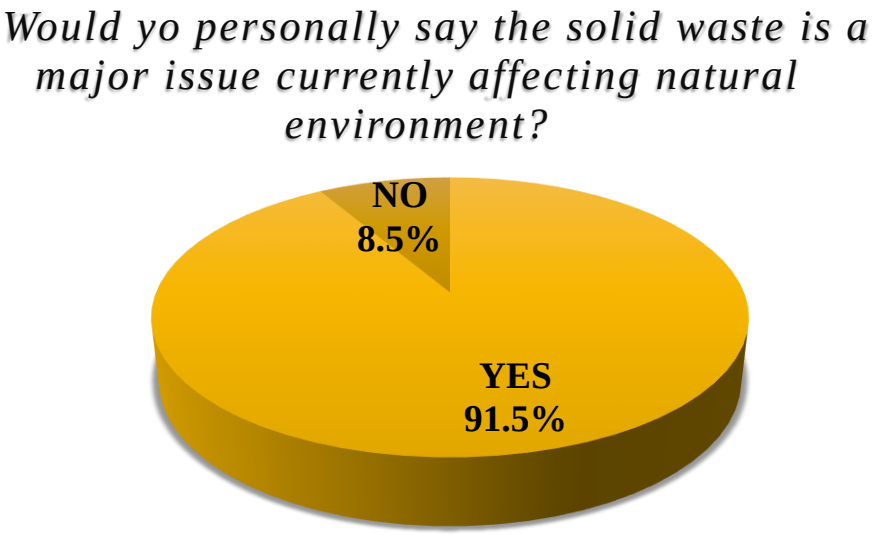
(Source: Data Computed from google form 2022, which tells from 82 responses about the percentage of people who Knew about the environmental impact of solid waste were 91.5 % (75 respondents) and people didn't know were 8.5% (7 respondents))



(Source: Data Computed from google form 2022, which tells from 82 responses about the percentage of people who have ever noticed burning waste in public area were 90.2 % (74 respondents) and people haven't noticed were 9.8% (8 respondents))



(Source: Data Computed from google form 2022, which tells from 82 responses about the percentage of people who have ever heard of health problems due to any waste were 93.9 % (77 respondents) and people haven't heard were 6.1% (5 respondents))



(Source: Data Computed from google form 2022, which tells from 82 responses about the percentage of people who would agree personally that solid waste is a major issue currently affecting natural environment were 91.5 % (75 respondents) and people who disagreed were 8.5% (7 respondents))

The data procured from 82 people are analysed in the review. The information gathered from 82 individuals in Haryana as a state from 22 district covered Approximately 10 districts of India talks, maximum number of responses were from the age group pf 18-29 which was 78%, then were from 30 and above age group which was 17.1% and rest very few responses were from 15-1 age group which was 4.9%. From these respondent's maximum was graduated with 57.3%, then were post graduated with 24.4%, then people who have just done secondary schooling were 15.9% and people who never have schooled were 2.4%. Also from these respondent's maximum were students that were 79.3%, then were employed professionally with 17.1% and rest were home maker which

were 3.7%. Approximately the municipal corporation under which maximum respondents' locality resided was MCG (Municipal corporation Gurugram). According to the survey as we can see mostly are gradated but still 12.2% of respondents haven't heard about waste management and those who have heard maximum have heard in their schools but still 36.6% aren't aware about if there is a waste management centre in their municipality. Most of the solid waste that comes from the household are bio degradable and least is the hazardous waste this also shows that people aren't aware about what actually comes under hazardous waste because the plastic of anything like we use in daily life and the sanitary waste which comes under it too, we all know that this is somewhere the compulsory waste. The waste container is emptied every day and maximum waste goes in the government or the private itinerant waste vans this shows that first step of the waste management is in a good state also some respondents (6.1%) who actually follow recycling by segregating and putting the waste in a hole in the own compound and maximum number of respondents (81.7%) even follow the waste segregation. The public bin near to their houses are emptied almost every day and the public bins are in a good state so the second stage also is the good sign but still at very few places but the public bins are emptied when complained and at some places the public bins are not in a adequate situation which is not a good sign also 90.2% of people of respondents have noticed burning waste in public area which actually can lot of health problems and 93.9% people they actually know about the repercussions of them but still have witnessed the burning.

India produces 62 million tonnes of waste annually. Total collection is 43 million tonnes (70%); 12 million are processed, and 31 million are dumped in landfills. The amount of municipal solid waste generated in urban areas is expected to rise to 165 million tonnes in 2030 as a result of changing consumer habits and robust economic growth. The majority of India's dump sites are larger than their permitted 20-meter height limit. These locations are thought to contain more than 10,000 hectares of urban land.

(Figure 2 below, tells about the source of waste generation and the action that should be taken)

Source of waste generation	Action to be taken
Household	• not to dispose of any solid trash in the community's drains, open spaces, vacant lands, or on the streets or in the area's streets or waterways. • Keep biodegradable garbage and food waste in a container with a cover that is not corrosive (lid) Keep recyclable, dry waste in a container, bag, or sack. • If and when generated, keep domestic hazardous garbage apart and dispose of it at properly designated areas.
Multi-storeyed buildings commercial complexes private societies	• Create a separate communal container or bins that can accommodate recyclables, food trash, and garbage that decomposes or biodegrades in the building or society.. • Inform association members to place their trash in the community bin
Slums	• Use the communal bins that the local authority has supplied for the disposal of food and biodegradable garbage.
Shops, offices, institutions, etc	• If you're in a business property, put your trash in the containers that the association has supplied.

Hotels & restaurants	• The container should have a handle on top or handles on the sides and a rim at the bottom for easy handling. It should be sturdy and no more than 100 litres.
Vegetable & Fruit Markets	• Offer huge containers that are compatible with the regional body's transportation infrastructure. • Waste should not be disposed of in front of businesses or public areas. Put the trash in the big container that is set up at the market as it is produced.
Meat & fish markets	• not to put any trash near their stores or other open areas. Keep non-corrosive container(s) with a capacity limit of 100 litres, a lid handle, and a rim at the bottom, and place garbage there as it is produced. • Fill a sizable container given by the association with the contents of this container.
Street food vendors	• not to dispose of any trash on the ground, the pavement, or other open areas. Keep a trash can or bag nearby for storing rubbish produced by your street vending operation. • Ideally, provide preparations for the bin or bag to be attached to the vending hand cart..
Marriage halls, community halls	• not to dump any solid trash into drains or water bodies in their neighbourhood, on the streets, in open areas, or on bare ground. • The garbage produced on the premises should be placed in a sizable container with a cover that can fit into the local body's transportation system.
Hospitals, Nursing homes, etc	• not to dump any solid trash into drains or water bodies in their neighbourhood, on the streets, in open areas, or on bare ground. • Biomedical waste should not be disposed of in public trash cans or other waste storage or collecting areas intended for municipal solid garbage. • The Ministry of Environment of India's Biomedical Trash (Management & Handling) Rules, 1998 provide instructions for how to store waste..
Construction/ demolition waste	• Do not leave construction trash or rubbish on the ground or in open areas like water bodies, sidewalks, or roadways. Store the rubbish within the building or, with permission from the authorities, immediately outside the building in a location where it won't impede traffic, ideally in a container that may be obtained from the neighbourhood organisation or private contractors.

Garden waste	• Trim the garden trash once a week on the days specified by the local body. If feasible, compost the garbage in the garden. • Place the trash in big bags or containers and deliver them to the municipal authority responsible for collecting it on the day specified in the notification..

Steps by Government

The Environment Protection Act, passed in 1986, intends to create a system that adequately protects the environment by giving the federal government the authority to control all types of trash and address particular issues that could arise in various parts of India. According to the Municipal Solid Garbage Management Handling Rules, 2000, all Urban Local Bodies (ULBs) in India are in charge of collecting, transporting, disposing of, and segregating solid waste.

On June 5, 2017, in honour of World Environment Day, the Indian government unveiled a "National Strategy" to phase out all single-use plastic by the year 2022. This includes not just plastic bottles and bags, but also plastic cutlery, straws, Styrofoam containers, and coffee stirrers. According to a FICCI research, throwaway, single-use packaging used by e-commerce companies like Amazon and Flipkart accounts for 43% of all plastic consumed in India. A total of 18 states and UTs, including Andhra Pradesh, Arunachal Pradesh, Assam, Chandigarh, Chhattisgarh, Delhi, Goa, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Maharashtra, Odisha, Sikkim, Tamil Nadu, Uttar Pradesh, Uttarakhand, and West Bengal, have banned the manufacture, stocking, sale, or use of plastic carry bags. Due to inadequate governmental capability, the restrictions have not been adequately implemented.

The problem of urban waste.

Waste management in cities has become a serious issue. The increase in trash output is assumed to be a result of population and economic expansion. The primary issue with this situation is the rising trash generation, which is out of harmony with the rising garbage handling capacity.

The issue of urban trash is one that worries industrialised countries, but it is particularly severe in emerging nations, whose combined populations make up more than 70% of the world's population. In such nations, national and local governments are battling issues like rising trash volumes, high prices, a lack of clear waste management technology options, and the effects of garbage on the local and global environment. Municipal waste management firms have concentrated their efforts on disposal choices, favouring landfills as the favoured waste management strategy despite all of its drawbacks.

Each of these qualities, which are present in waste management challenges, is adequate to support the effort put forth in a rigorous multicriteria analysis. The following are the key traits:

- *Importance of the stakes:* There may be a huge disparity in the attractiveness of the various options.
- *Complex structure:* It is commonly recognised that environmental management issues are inherently complex.
- *Lack of a sector-wide expert:* Due to the complexity of the issues surrounding environmental issues, this field is devoid of a sector-wide expert.
- *The need for sufficient reasons of the choices made:* Environmental management choices require the proper architecture and documentation to verify that group interests have been taken into account.

Waste management is one of the supply networks that is vital to the operation of our global economy. The exponential growth in population has resulted in a noticeable increase in daily trash, whose improper handling and disposal has caused serious socioeconomic downturns. Many developing countries, where it is uncommon to use sustainable practises and where waste management is insufficiently controlled, were quite concerned about

this. Due to a labour shortage and infection control precautions, COVID-19 caused the already stressed waste management system to abruptly fail. Biomedical waste is on the rise due to increased use of sanitary products and personal protective equipment, necessitating a robust waste management system that is both ecologically sound and profitable. The first section of the book introduces COVID-19, various types of protective systems already in use, the production of diverse wastes, and discusses current approaches to recycling biomedical waste from a prospective future viewpoint. This is being done to highlight bio-based, environmentally friendly approaches to garbage recycling.

CONCLUSION

Urban waste management is a topic of considerable public interest and rising importance worldwide, yet conditions vary greatly from region to region. The instances presented in this essay clearly demonstrate this as well. In contrast to metropolitan regions, where attention has begun to focus on issues, optimising resource recovery from wastes, and selecting suitable technologies, developing nations place a greater emphasis on how to arrange the delivery of essential services.

How can you lessen solid waste?

- ✓ When you go shopping, take your own cotton or jute bag.
- ✓ As far as possible, avoid using plastic bags.
- ✓ Also cut back on the usage of paper bags.
- ✓ Keep two garbage cans and segregate the waste in your home by putting biodegradable and non-biodegradable items in different cans and disposing of them separately.
- ✓ In your garden, dig a compost pit and fill it with all of your biodegradable garbage.
- ✓ Make sure that all trash is disposed of in the municipal trash can because that is where it is usually collected.
- ✓ Make careful to place any paper, any wrappings, or even leftover food before you leave the house.

A functional waste management system combines waste streams, waste collection, treatment, and disposal techniques, which vary among areas and nations. Despite the variances, waste hierarchy, the guiding idea behind waste policy, classifies waste management choices in a preferred order and is largely acknowledged globally. According to the waste hierarchy, not producing any wastes at all is the best course of action. This frequently falls beyond of the trash organisations' purview.

Some disposal options, such as the 3Rs (Reduction, Reuse, and Recycling), are advantageous for garbage management.

The 7 R's of Recycling

- ➢ Recycle.
- ➢ Refuse.
- ➢ Reduce.
- ➢ Reuse.
- ➢ Repair.
- ➢ Re-gift.
- ➢ Recover.

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