DISSERTATION REPORT

ON

ZERO WASTE- A SUSTAINABLE APPROACH FOR WASTE MANAGEMENT- A CASE STUDY

SUBMITTED IN THE PARTIAL FULFILMENT OF THE REQUIREMENTS

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IN

ENVIRONMENTAL ENGINEERING

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CANDIDATE'S DECLARATION

I, Shivam, Roll No. 2K21/ENE/09 student of M. Tech (Environmental Engineering), hereby declare that the project Dissertation titled "zero waste- a sustainable approach for waste management-a case study" which is submitted by me to the Department of Environmental Engineering, Delhi Technological University, Delhi in partial fulfilment of the requirement for the award of the degree of Master of Technology, is original and not copied from any source without proper citation. This work has not previously formed the basis for the award of any Degree, Diploma Associateship, Fellowship or other similar title or recognition.

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CERTIFICATE

I hereby certify that the Project Dissertation titled "Zero waste- a sustainable approach for waste management-a case study" which is submitted by **Shivam, Roll No. 2K21/ENE/09**, Department of Environmental Engineering, Delhi Technological University, Delhi in partial fulfilment of the requirement for the award of the degree of Master of Technology, is a record of the project work carried out by the student under my supervision. To the best of my knowledge this work has not been submitted in part or full for any Degree or Diploma to this University or elsewhere.

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ABSTRACT

Zero waste is defined as relative term. It is a notion that encourages about the again thinking of resourced life cycles in to reuse all products. There is no output generated value. The primary focus is mainly done on formulating the material in such a systematic way to avoid and reduce wastes and materials. Garbage is a socially occurred issue that we are going to create resulting in order to eliminate it. We are more concerned to employ both social engineering and modern technology. In fact, zero waste management (ZWM) emphasises the aim to minimise resource use or consumption by society and maximise the 8 R, namely rensing, recycling, repairing, redesigning, regenerating, reducing, remanufacturing, and resale of things. The diversion of 100% of MSW from landfill can be achieved by 100% waste recycling, which can only be possible with the help of ` waste management plans. The no-waste meaning calls for evaluating the resource chain of supply in order to make use of or recover end goods or determined materials. Waste recycling evolved into in this respect, and a green the company's plan of action can be both a concern and the chance to succeed to yield more innovative resources, or possibly functions. As outcome, environmental sustainability has become growing significance for changes of the economy, society, and scientific understanding, because it is a worldwide issue is precisely the faster use of assets that overlooks the environment's limiting capacity, putting off intake, and ignoring a sustainable future. The concept comprises 100% recycled material and its recovery resources from generated debris at the source. today's Transforming the waste covered cities into negligible amount of rubbish is difficult. The purpose for research is to better understand about the fundamental of waste management as well as the challenges, threats, and possibilities in converting traditional waste streams and optimising practises towards null waste. Waste management systems are going to include each and every aspect in terms of environment and technology. All of such elements are dynamic and interrelated. As a result, waste management systems grow a complex web with distinct features, and the ways it operates are dynamic and interdependent.

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CHAPTER 1

INTRODUCTION

One of the biggest issues that various cities across the globe are dealing with is solid waste management. Urbanisation, industrialization, poor urbanised plans were done, deprived of necessary resources for human use, contribution made to the large quantity as the problem influence the population, are particularly to blame of the creation of solid waste. In modern scenario in countries such as India, this issue has caused major burning problems. In India, this problem had significant negative environmental effect. As we all know that it is the significant reason behind the crisis management and put a lot of impact on Indian economic growth and welfare. The idea of solid waste management focuses on regulating the production, storage, collection, transfer, and disposal of solid waste generated leading to the highest standards of public health, resource conservation, and other environmental aspects that are responsive to public opinion. Wastes that are coming from households, public institutions, restaurants, hospitals are having different categories in its properties and causes recurring problems to human health, if they are not properly handled and stabilised or reduced with the best mechanism at the source. Municipal solid waste (MSW) management very important in such rising urban difficulties as a result of increase in population expansion and industrialisation. In the process of creation of solid waste, there is abrupt changes and depends on the population activities of urban areas. The management of waste reduces its negative effects on the environment and human health, action must be taken immediately. Solid waste must be managed to the best practises in all considerations like public health, engineering, conservation, and environment at all stages like generation, storage, collection, transfer, processing, disposal of solid waste. So, all administrative, commercial, legal and engineering tasks are included in solid waste management. The content and volume of generated MSW serve as the foundation for developing, implementing, and monitoring the management system as compared to MSW in India, the hazardous nature and content of MSW are very different. Utilising an integrated strategy for managing solid waste that incorporates elements of recycling, composting, incineration, and land filling is frequently preferable. These are all common suggestions for a fix. There is a significant amount of waste left behind after both composting and incineration that must be land filled. Urbanisation is outpacing the amount of municipal solid garbage

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generated globally, and this gap is anticipated to widen over time, particularly in lower- and lower middle-income nations.

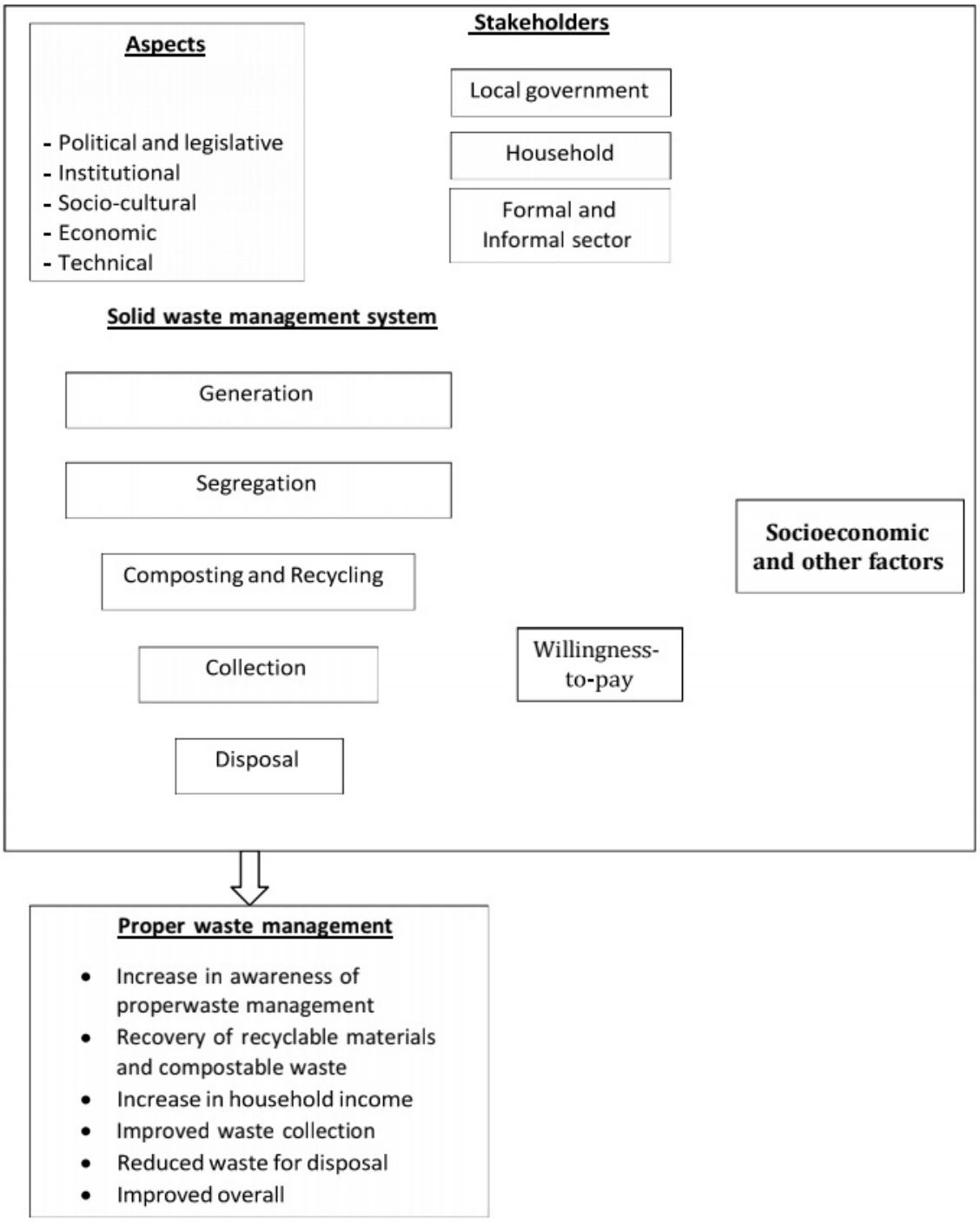

Figure-1 – framework of solid waste management

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Waste production and generation is the prior concern for management at the source. The idea of integrated waste management at the source. Waste reduction at maximum amount should be the prior goal. For continuing this process, we should follow the idea of waste categorization as its property play a vital role for this process. Different property of materials leads to different hazardous effect in environment. The origins and their detrimental consequences are used to categorise the solid waste into several groups. Where solid trash is generated affects how it is produced. Some include a significant amount of biodegradable material, whilst others contain substances that are hazardous and non-biodegradable. The types and sources of solid waste are as follows:

1.1. MUNICIPAL SOLID WASTE OR DOMESTIC/RESIDENTIAL WASTE - These wastes can be characterised as those produced by residential household activities or any business sites. The household materials, along with stores, shops, etc., make up the market site. The following are some of the elements of municipal waste:

- **Wet waste**: This often refers to leftover cooking residue, rotten produce, trash, etc.

  Papers, plastics, rubber, leather, metal cans, and other materials make up rubbish.

- **Construction and demolition waste**, which includes building materials including bricks, stones, electrical components, and metals.

  Special residues include dead animals and abandoned automobiles.

Waste that are generated at treatment units is made up of solid and semisolid waste water removal materials.

II) INDUSTRIAL WASTE

Both people and plants could be harmed by industrial source of emission. Hazardous waste, special garbage, and demolition and construction waste are examples of typical industrial waste. The garbage produced from this type of source needed special treatment because it can cause environmental disturbance by upsetting nature.

III) BIOMEDICAL WASTE

The essential garbage that are produced by hospitals including human waste, animal waste and human anatomical waste from hospitals, used or outdated medications, waste from body fluids, human excreta, disposed syringes, etc.

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Prior to disposal, they needed special care because, if not handled correctly, they are highly contagious and can seriously harm human health. hospital waste production projected.

IV. HAZARDOUS WASTES

They can be defined as the waste generated through any industry which are not easily disposable before treating properly and create instant danger which can harm human being when contacted directly. The basically poses the following characteristics:

- **Toxicity.**
- **Highly reactive.**
- **Corrosivity.**
- **Ignitability**.

Before the hazardous waste categorized into radioactive substances, chemicals, biological waste, explosive, etc. The main sources of hazardous waste as they are drived from hospitals, chemical industries and research facilities.

V.SOLID AGRICULTURAL WASTE

Waste of this kind is connected to agriculture. They might seriously hurt both people and plants. They primarily consist of extra nutrients, insecticides, Veterinary medications or pesticides. They seriously impair human health when they come into touch or build up in our bodies. More farming raises the potential possibility of ammonia and methane emissions. After that, they will contribute to the production of more greenhouse gas emissions and cause acidification.

VI.RADIOACTIVE WASTE

The primary sources of radioactive waste are nuclear power plants and other chemical companies. Nuclear power plants are constructed, as in many industrialised nations, to provide energy for meeting human needs. Radioactive wastes take hundreds to thousands of years to get properly disposed and eradicated from the environment.

The waste generated at the source after categorization is conducted with waste- audit, where waste is weighted in accordance with their content. Waste is typically thought of as an unneeded component that results from any industry's operations, household gathering, office

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generated waste. In reality, waste is a resource that has been misplaced and is present at the incorrect time and location.

Waste is also the poor use of resources like fuel, water, and energy, which are seen as inevitable costs. Most of the time it is drastically underestimated the costs of these wastes. After realisation there are other costs associated with trash in addition to the cost of disposal, such as:

- Cost of disposal.
- Cost of inefficient energy consumption.
- the price of unused raw materials purchased.
- Cost of producing the waste material.
- Time spent by management on waste.

The term "systematically reducing waste at source" refers to waste minimization. It denotes:

• Waste prevention or waste reduction

• Effective packaging and raw material use.

• Making trash produced of a higher grade to simplify recycling or to prevent hazards and efficiently use of fuel, power, and water Promoting recovery, recycling, and reuse should be promoted.

Waste minimization is often referred to as waste prevention, source reduction, pollution prevention and cleaner technology. To make industrial activities naturally pollution-free, it uses management or technical interventions.

Furthermore, it must be remembered that, despite its livelihood scenario, waste minimization is not a cure-all for environmental issues and may need to be complemented by traditional treatment and disposal techniques. The all recyclable waste which are non-biodegradable are taken to the MRF (Material recovery facility) where they are audited in a bulk amount (40-50kg) at a compound form, different byers and recyclers in the market are purchasing recyclable waste to recycle it properly so that there should not be any overburden use of virgin materials, which causes a huge impact to the environment. The recyclable materials kept in the recycling unit which ensures more feasibility towards material ensures that it reduces the manufacturing cost of virgin use of materials which has direct or indirect impact on environment. It is crucial to bring together diverse organisations in the industry to enable

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implementation of a Waste Minimization Programme. The industry's size, makeup, and issues with waste and emissions will determine how structured the strategy is to be formulated. The programme needs to be adaptable enough to change as the situation demands.

1.2. OBJECTIVE

- To calculate diversion of waste at the source.
- To analyse the amount of waste generated on daily and monthly basis and corresponding diversion rate.
- To find correlation and linear regression analysis on the basis of the waste data for comparative analysis with calculated diversion rate.
- To study the impact measures to be taken to minimize waste at the source so that least amount of waste to be diverted to the landfill sites.

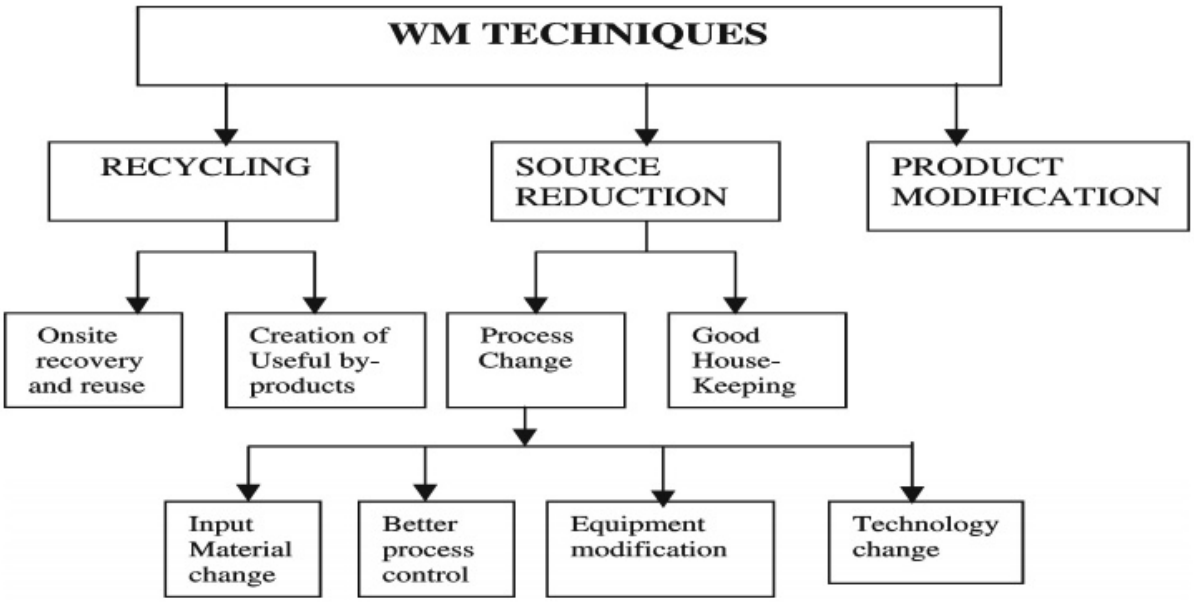

Figure 2-waste management technique

It comprises of diversion rate analysis of which defines that how much amount of waste is diverted in spite of sent to the landfill sites which causes a major issue in the commencement of carcinogenic and other disease if pile of waste is gathered. Its reduction depends on time and cost benefit analysis which has also impact on environment over it. The property of material and its characteristics play a very crucial role in conducting its analysis. Waste diversion rate in terms of waste management, is the defined process to remove waste from landfills. Recycling

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and reusing are two ways we can divert trash from landfills. Reusing a product to its full potential is the same thing as recycling, which is the process of turning wasted materials into new goods. This indicator shows how much material was diverted and disposed of from residential and non-residential sources, as determined by the weight in tonnes. The percentage of waste that is diverted compared to all waste that is disposed of and diverted is known as the diversion rate. Calculating the amount of waste that is diverted and disposed of per person involves multiplying the total amount of waste by the estimated population of the jurisdiction. It plays a role to manage the maximum waste at source so that it comprises of maximum diversion rate.

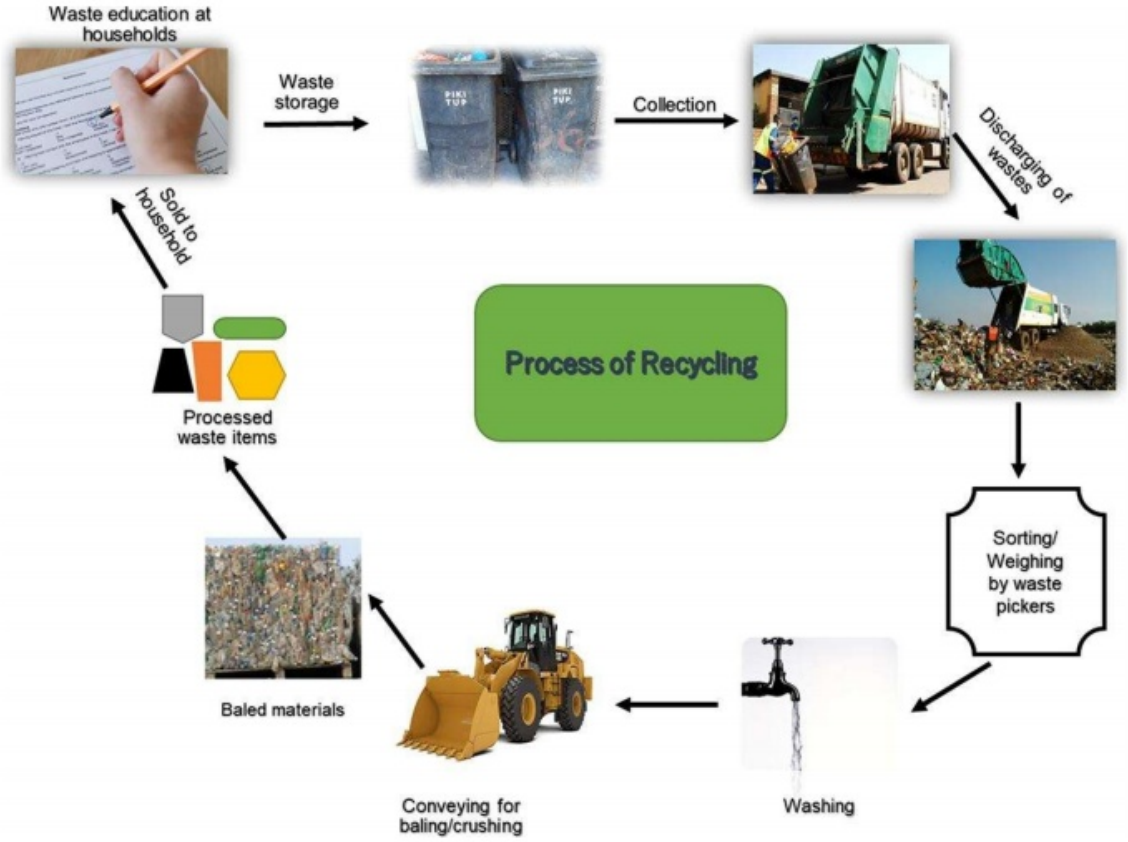

Figure 3 – flow chart diagram of waste management

The amount of waste removed from plant without burning (incineration) or being purchasing(landfill) is represented through the waste diversion rate. Knowing your existing trash diversion rate and using it as a benchmark is essential when trying to make your recycling programme more successful.

Within the first year or two after you have successfully diverted 50% of your waste from land fill by only sorting recyclables, the next step to further increase your diversion rate would be t

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o think about the value of organics collection and adding a third stream to your programme to further divert all compostable items from landfill.

Your recycling programme can start diverting up to 75% of waste from landfills just by inclu de organics collection. If waste is not to be treated properly then landfill sites will have maximum impact on emission rates and co- relative factor, leading to emerge serious concerns towards environment. "Source reduction, recycling, reuse, and composting are methods for preventing and reducing waste generation.

Figure-4 waste generation

Waste generation characteristics plays an important role in waste segregation and handling. If the waste is characterised in a well-mannered way then we can conclude that its segregation at the source will be prominently done at the source point. In india waste are not led and diverted in a well manner at various point source of collection. If it is segregated properly at the source point then it helps efficiently to follow the idea of integrated solid waste management. It helps us in reduction of maximum amount of waste at the source. Due to its effective use on land and emissions generated in and around environment, the process to manage the landfill waste is a

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major concern in policy making and planners in the consideration of smart sustainable communities. Existing landfills may be used to find the global resource scarcity. Creating a framework for landfill mining necessitates an understanding of garbage quantity and characteristics. The use of systems engineering methodologies assists regulatory agencies in the planning, implementation, and monitoring of landfill mining initiatives. The identified performance indicators are used in assisting the city planners for waste systems, systematic monitoring, and decision making. In context with this we can conclude that maximum waste reduction is required at the source so that problem arising with sending it to the landfill sites should be minimized. The idea of sustainable approach should be practised so that we should imply the concept of zero waste management at the source.

Figure-5-Waste audit and segregation

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Figure 6– Waste audit and segregation.

Correlation and regression analysis are to be followed so that the estimated diversion rate should be analysed with the calculated diversion rate so that the maximum waste which are diverted at the source gives an idea that if daily average amount of waste is too be maintained on this basis then diversion rate is to be calculated on the basis of the regression analysis which gives the idea about the rate with which waste is being diverted from the source so that minimal amount of waste should be landfilled or converted from waste to energy as rise in pollution ,mainly air pollution is a serious concern in terms of environmental factor. Using linear regression analysis, we can say that we are able to find what would be the estimated diversion rate, so that it should be compared with actual based formula calculated diversion rate so that a better comparative output should be find out. It helps us to find out whether the data which is taken from the source point is linearly variation or not. It helps us to find out the most probable better analysis that if this amount of waste is to be carried out then what would be the most efficient way to minimise the waste at the source point so that better sustainable approach to waste management should be followed. If we reduce and cutdown generated waste

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maximum at the source point then minimum amount of waste should be put to the landfill sites. The zero waste ideas are founded on waste hierarchy, which includes avoidance, minimal, and recovery.

Changes in way of life and sustainable consumption patterns will reduce waste generated during the item's production and utilisation stages. Extended producer and consumer involvement will ensure sustainable resource applications in addition to personal waste generation and management ownership. A more profound sense of responsibility will end up resulting in decreased garbage generation. Adopting comprehensive debris recycling and zero landfill and incinerator laws would allow for 100% resource recovery in zero waste, ensuring very little degradation of finite natural resources.

Thus, waste management in a way that converts the waste generated into useful goods or at the very least keeps waste from causing harm may lead to zero waste management.

Figure 7 – Aaga composters for recycling biodegradable waste (wet waste)

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CHAPTER 2
LITERATURE REVIEW

1)(Ii & Pustaka, 2011) This research examined an integrated method to waste handling that considers waste as a resource produced during the transitional stage of the use of assets process. They looked into how zero waste ideas can be applied in companies, societies, manufacturing industries, colleges and universities, and houses because they incorporated a diverse variety of consumers, including environmental and technological tools. Zero waste is defined as the system to design and manage the products and processes for waste removal and material outcome, not burning or burying. They have described that process to landfill the waste and incinerating it are not effective ways to manage waste, zero waste is primarily focused on the waste prevented through sustainable design and consumption procedure, as well as on maximized waste recovery. Zero waste is a process of waste reduction and avoiding over waste treatment and disposal. It is effective, but it might not be possible to proceed the zero-incineration and zero-landfill targets under the current consumed and waste management methods. The process to calculate the diversion rate such that maximum amount of waste should be managed at the source and least amount of waste should be diverted to the landfill sites. Weight of recyclables play an important role in this analysis of amount of waste that has to be diverted and reduced at the source so that net amount of waste sent to the landfill sites should be effectively minimised.

2)(Nizar et al., 2018) described that aim of the research output to ascertain how effectively Banda Aceh City has implemented the zero waste idea. Due to population increase and rising waste levels, there is an issue with rubbish that is getting more and more complicated. To prevent garbage from building up at the landfill, during this time waste is often transported and disposed of at the Final Processing Place (TPA). It is difficult to control waste since most waste management occurs after the junk starts to appear. The TPA quickly fills up as there is still very little handling of waste from scratch. Reduce trash generation as much as possible to reduce waste sent to landfills, according to the zero-waste philosophy.

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3)(Beynart, 2019) have described that paper in this paper it has been discussed , governments are looking forward sustainable waste management methods in spite of rubbish incineration for the population. The most sustainable approach towards waste management is to act for zero waste, which means diverting all material from landfills and incinerators. Many governments have attempted to reduce trash, but no one has completely diverted all the possible waste. Planning, disposal and transformation techniques guide for zero waste management. The public resource needs for community, and the producer's role in the management cycle are the primary focus of this study." The present work builds on the findings of earlier research. The first part examines the designs to manage waste output. Zero waste is acceptable only for full participation by citizens, complete executing through local governments, legislative approval from governments, and manufacturer units who are responsible in waste processing and/or relevant item and packaging development.

4)(Hannon & Zaman, 2018) have discussed that the burning movement towards zero waste includes the practise, and knowledge that individual being , family, organised sector, communities have developed as a result the crisis and failing in terms of conventional source of management. It is possible to propagate the diverse and expanded body of international waste experience either for entirely new and alternative waste management or in terms of overlapping, extending, and accessing with a general outcome towards more sustainable waste/resource management practises. Waste creates inventive, intellectual, and linear solutions that serve as a modern method for the discussion and advanced in this field of resource management. To be more specific, how the notion and pursuing objective may stimulate greater community involvement and work as a catalyst for the planning and administration of a more circular urban metabolism and, as a result, more adaptable and sustainable future cities.

5)(Cheng & Hu, 2010) have discussed about this paper as China is grappling with the issue of disposing of MSW and the urgent need for alternative energy development as a result of its rapid economic growth and vast urbanisation. WTE incineration is a method of managing MSW in China which get the energy from discarded waste and generates electricity steam for heating. It has been accepted as an energy resource that is renewable. The use of output waste as a renewable energy source in China is discussed a. Only about 13% of the generation produced in China is currently disposable. The waste to conversion in energy industry is predicting to grow significantly over the next ten years and contribute more to China's supply of renewable energy to the significant advantages of environmental changes for the reduction of greenhouse gas (GHG) emissions.

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6)(Shekdar, 2009) described in this paper they have discussed that every human culture has always incorporated solid waste management (SWM). Asian nations are not an exception when it comes to the need for SWM approaches to be equivalent with firmed nature in the society. The systems are to be focused on sustainable challenges, through the adoption of 3R (reduce, reuse, and recycle) technology mainly used to reduce the waste at the source. We examine current trends for the analysis of the situation in many Asian nations. We theoretically assess concerns about SWM's sustainability. In order to achieve sustainable SWM, we suggest integrated and improved strategies considering an institutional setup, appropriate technology, its operations related and financial management, as well as participation of the public and awareness.

7) (Pasang et al., 2007) analysed that waste management look into the management of municipal solid waste in Jakarta, the capital of Indonesia. The absence of long-term waste management strategies, the use of unskilled staff, the lack of involvement of stakeholders in planning and decision-making, and there is lack of effective bond between authorities and neighbourhood associated workers. They handle primary source of collection described to the common barriers to waste management in Jakarta. It had been said that of all barriers come over, there is a scarcity of various resources seeking as the least significant. The idea and function of a Jakarta community membership in which manages collection of garbage on a regular schedule and protects the cleanliness of their own area by employing their own waste service, are critical to the success of solid waste management in that city. Neighbourhood-based waste disposal plan is option 4Tfor city because it is more adaptive and fit for Jakarta's setting than community-based trash management. The effectiveness of this technique is assessed, and improvements for greater acceptance are looked at for long-term solution.

8)(Ayeleru et al., 2021) – have discussed that worldwide significantly rise in solid waste due to rapid population growth or change are subtle to consumer patterns, etc. Different variety of techniques are in use for properly managing the production of municipal solid trash. Ways are led to get sustainable solid waste management. The recycling alternative is one practical technique. primary goal of this essay is to review the pros and cons of building an environmentally friendly facility to process various garbage for use as raw materials by industry. Cost-benefit evaluation was performed according to preceding data found from the municipality. In this research, effective comparison of costs and benefits for creating a recycling facility has been conducted. The analysis discovered the initiative's viability based on the five potential outcomes looked at in the sensitivity discussion.

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9)(Zaman, 2015) has made clear about an innovative idea of zero waste will help us in sorting out our economy's waste challenges. This idea is being studied and used in a variety of fields particularly the handling of waste treat. Regulators are adopting the sustainable ideas because it stimulates preservation of resources, successful recycling, and appropriate making and using goods. However, it is seen and utilised in number of ways by researchers in waste operations, who comprehend and utilise it in different ways. They have discussed about the critical published scholarly journal articles. According to this study we come to know about conceptualising zero waste development with multiple methods. This study demonstrates many different types of studies, and the idea of zero waste is always in the evolution phase. According to the review study's outcomes, many nations have launched zero waste projects without a comprehensive zero waste plan. The research highlights that leaders may be able reach their waste-free goals by developing a national zero refuse approach and involving promoting minimal waste initiatives through trash management legislation. This article presents an in-depth look of the most interesting waste reduction trials conducted in the last few years. Based on the findings of the review, the study concluded that the zero-waste philosophy has been enthusiastically accepted in many aspects of manufacturing and garbage controls. The results of the study aid in defining the primary focus areas for a without waste strategy as well as establishing national no-waste standards.

10) (Ratnasabapathy et al., 2020) -

- **WDR= total waste diverted/ total waste generated *100**
- **WDR= recycling+ energy recovery/ (recycling+treatment+energyrecovery+landfill+another disposal) *100**

This study demonstrated how a WDR evaluation could be useful in determining the efficiency of waste management in the C&DW sector and creating more efficient WMPs for building projects. Additionally, WDR can assist the government and oversight organisations in creating efficient waste management plans and strategies as well as putting into practise certain C&DW management laws and regulations. The aim of the investigation was to assess and recognise Australia's diverting waste trend. The diversion rates were determined using resource categories across all states. The case investigation found a contrasting image with comparatively high diversion rates. Conclusions of the case study were based on home building projects from a single developer, they cannot be expanded to Australia's whole

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residential construction sector. This study stated WDR evaluation could be useful in developing waste handling capacity in the structure and demolition waste sector, in addition to in developing more effective garbage disposal plans for building projects.

11)(Kofoworola, 2007) has noted how Lagos, Nigeria's most metropolis, saw a sevenfold spike its population between 1950 and 1980, and currently provides a population of more than 10 million people. Most of city people are impoverished. Persons aside from place high demands on resources, but they also generate a significant amount of solid waste. Every year, the city generates about four million tonnes of municipal solid waste (MSW), of which about half a million are raw industrial wastes. This translates to around 1.1 kilos every day. The various waste management bodies of the state authorities have made some attempts in keeping the city's streets and matters clean. Recycling is the planned and organised transfer of waste using pathways to guarantee that it is disposed of according to with accepted public health and safety standards. Waste recycling can help remove, and hence diminish, garbage. According to the limited data available, the MSW stream of Lagos at the location of discharge comprises a significant amount of putrescible organic waste. However, it has a low proportion of practically recyclable materials and an insulation value deemed too low for energy recovery by incineration. Combination with its higher cost in comparing with alternatives Trash solutions and lack of resources, makes reducing waste by incineration an impractical technology for Lagos. Composting may transform putrescible wastes, which make up an abundance portion of municipal solid waste in Lagos, into nutrients or soil conditioners.

12)(Fricke et al., 2011) have determined with rapid economic growth and growing cities, China faces the problem of city-level solid waste (MSW) management, along with an urgent requirement for alternative sources of energy. This article helps in presenting WTE sector and delivers the primary problems in increasing WTE incineration in China mainly high capital and operational units contributing air pollutant emission rates including fly ash disposal. The concept of MSW as a renewable energy source in China is also proposed. Currently, only about 13% of MSW generated in China is disposed of in WTE facilities. WTE resolves the issue of MSW disposal while extracting energy from garbage, and pollutant emissions may be stood by to a lowest level. With major environmental advantages and a reduction in greenhouse gas emissions, MSW is becoming more commonly acknowledged as a clean energy source. WTE's place in the Chinese green energy operation will be supported by governmental rules and

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regulations. Research and development centred around decay problems, chimney gas control, ash flow management, and beneficial residue reuse will be processed.

13)(Sharholy et al., 2008) explained thoroughly Municipal solid waste handling is a critical environmental issue in India. Citizens are at risk by poor public garbage disposal. According to many studies, more than 90 percent of Trash are disposed of with a negligent way in open waste dumps and waste dumps, creating threats to human health and the surroundings. This research tried to give an in-depth review of the traits, gathering and transport, removal, and treatment technology employed in India. The research for Indian scenario was carried out to assess the current situation and identify important problems. Various treatment methods are critically analysed, along with their benefits including drawbacks. The general public should be much aware of the health risks exposed due trash. Throwing waste should be prohibited in everywhere. Furthermore, door management of collected debris should be organised by ways such as collection on regular time interval. The collection bins must be particularly designed with features such as metallic bins with lids, large enough capacity for accommodation of 20% more than the expected waste outcome in the particular area.

14) (Perrin & Barton, 2001) have described the findings of this paper suggest that those responsible for the planning, execution, and upkeep of kerbside recycling schemes should exercise cautiousness and be considered aware of the effects of their decisions, particularly in understanding a choice of home being involved in dry materials recycling in the UK. It should be acknowledged that their choices may have a direct effect not only on the number of individuals selected for participation in a programme but also on the degree of participation. Convenience in the broadest way is a major issue not just in the design of frameworks and the level of knowledge awareness of involved families, but also in the level of convenience of the fact the materials themselves provide to the home. Regardless of the scheme's design, kerbside recycling necessitates an additional volunteer effort on the part of the recycler.

15) (Koufodimos & Samaras, 2002) investigated all phases of combined waste management, which range from generation of waste data collection till the development of a comprehensive management strategy .According to the evidence and assessment provided, a feasible waste management programme that takes responsibility for present regulations in the EU and in Greece should first emphasise enhancing waste disposal through public and private participation that complies with EU-established rules. In view of the substantial volume of organic garbage, the excellent performance of recycling, and its adverse effect on the overall

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waste energy value that may be retrieved in garbage-to-energy establishments. Decomposition will probably grow into a crucial part of comprehensive waste handling strategies. The Landfill Directive, which establishes targets for lowering the quantity of biological matter that is disposed of, expresses concern regarding the separate disposal and handling of the degradable component. The burning process is a possibility, particularly if paired alongside material recovery. The increasing demand for disposal reduction, as well as new regulations and charges, will most surely have a long-term impact on the circumstances in Greece and other countries where waste is the predominant disposal option. Landfilling will keep on to be the dominant burial process in the short term as long little effort is poured into developing integrated waste management techniques. Schemes that result in the hampering of the undesirable components of the combustibility stream. It is stated that reuse and recycling, maybe the most widely used of all waste management procedures, will be a vital component of modern waste management techniques. Composting may play a big part that the burning process looks to be a conditionally acceptable alternative.

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CHAPTER 3

METHODOLOGY

3.1. THEORY:

- Waste diversion is defined as the amount of waste to be diverted so that maximum waste is reduced at source, generation of waste is an important parameter to be discussed in the analysis. The goal of zero waste believes that science and technology alone can't handle trash issues in an environmentally sound way with outreach to communities, public structures, regulating laws and environmentally conscious treatments innovations. However, it prohibits the application of wasteful energy which burns garbage to produce the electricity and waste disposal in waste-free surroundings which is an affect between typical trash treatment and non-residual disposal of waste. Rubbish diversion, also known as disposal diversion, is the technique of redirecting garbage from established trash dumps by a variety of means such as reduce, reuse, recycling. Previous research has described that 3Rs strategies provide benefits through preservation of natural resources and again using construction and demolition waste in cement kiln factories. They should not be thrown to the landfill leading to create economic paybacks. Recycling is the best conventional method turning towards end-of-life materials to generate fresh. The use of virgin materials should be reduced in the environment so that its lead to substantial growth. Furthermore, waste trading byers in the market precisely contributing to waste reduction by implying proper diversion of majority of garbage from landfill sites. It's an effective method for the replacement of waste disposal. Waste trading allows methods for the effective use of thrown materials by selling or exchanging options. Encouraging circular economy should be the idea so that trash diversion come into picture. The concept of generation stays the same in both techniques. The fullness and durability of the waste data utilised settles the degree of reliability of findings in both procedures. The estimation of waste emergence numbers may remove some recorded waste that was utilised directly and disposed with unregulated facility. The disposal method was used in this study to estimate waste diversion rate.

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$$WDR = \frac{\text{Total Waste Diverted}}{\text{Total Waste Generated}} \times 100\% \quad (1)$$

$$WDR = \frac{\text{Recyling} + \text{Energy Recovery}}{\text{Recyling} + \text{Treatment} + \text{Energy Recovery} + \text{Landfill} + \text{Other Disposal}} \times 100\%$$

Figure -8-Diversion rate formula (doi 10.1108/bepam-01-2020-0012)

3.2. STUDY AREA

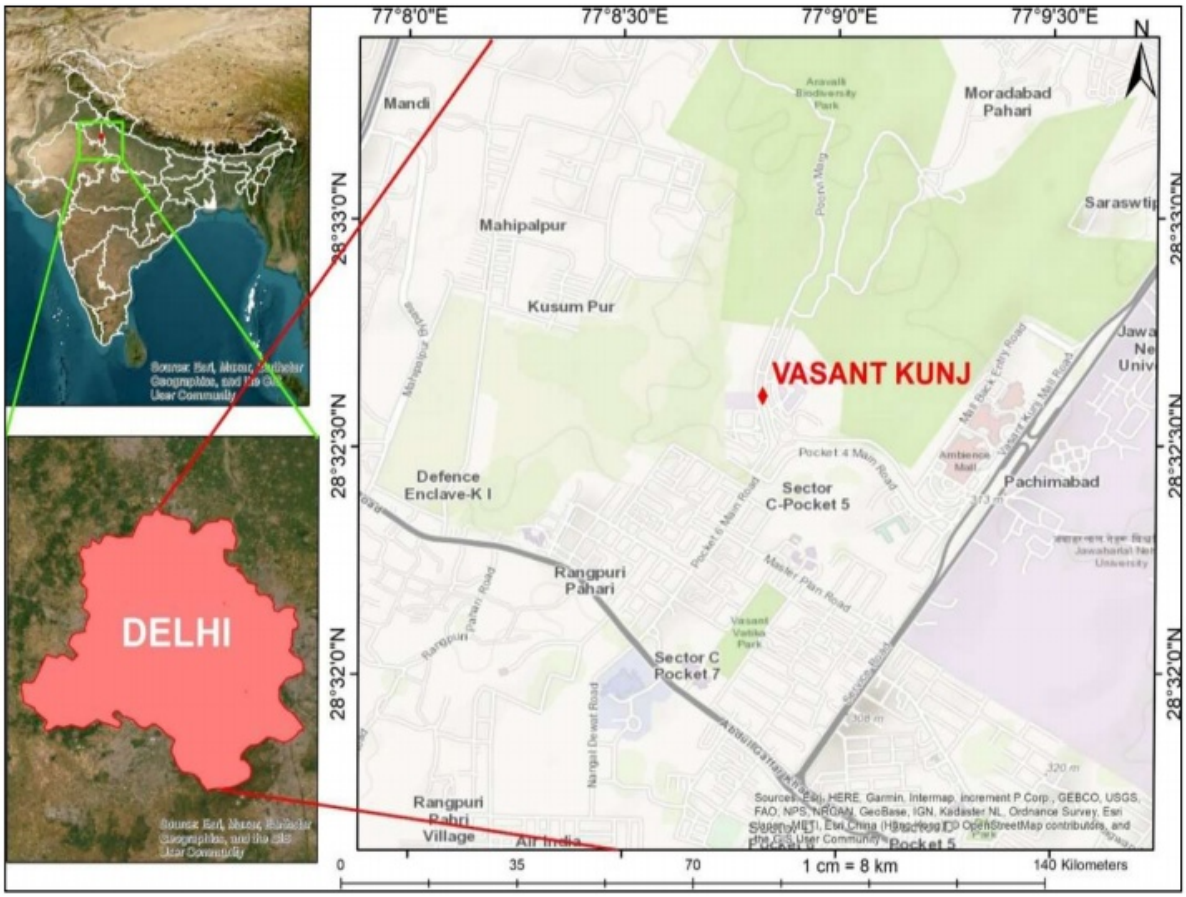

Figure-9 – Vasantkunj industrial area

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3.3. METHODS TO ANALYSE DIVERSION RATE

- Waste audit is done at the primary basis for proper segregation of waste generated.
- Waste are divided on the basis of its characteristics so that its proper handling and management should be done in order to minimize its disposal to land fill sites. This provides us segregated waste data.
- It helps us to find its diversion rate, daily average and monthly average of waste generated as analysis.
- We are going to find out the diversion rate on daily basis and seek the trend analysis with daily average waste.
- Waste recycling of biodegradable waste (wet waste) is processed with the use of composters which generates the composts used as manure.
- If we talk about dry waste we can say that they are sent to the MRF (MATERIAL RECOVERY FACILITIES) so that they should be sent for recycling byers which reduces the use of virgin materials.
- We are going to find its correlation and regression analysis on the basis of daily average of waste generated so that its forecast can be done so that we can compare calculated diversion rate and estimated diversion rate.
- Comparative analysis describes that if same amount of daily average or monthly average is generated then what would be the possible futuristic outcome of diversion rate.
- It helps us to predict the diversion rate output so that we can find the best possible ways to reduce maximum waste at the generated source point leading to zero waste management at the source.
- Pearson correlation describes the nature of relation between two entity. It lies between -1 to 1. If its nature is negative it describes that one entity will increase if another entity will decrease and vice-versa.

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Figure 10- Wet waste recycling-Vasantkunj industrial area

DATA COLLECTION AND ANALYSIS

DATE	PET BOTTLE	CARDBOARD	ALUMINIUM	LDPE	MLP	GLASS	HARD PLASTIC	PAPER	RADDI	TISSUE PAPER	PAPER CUP
20july	0.027	2.0555	0.415	1.295	0.99	6.15	0.67	0.619	3.11	8.2	7.4
21july	0.138	0.488	0.083	0.517	0.335	0	0.277	0.118	1.135	3.711	1.288
25july	0.159	2.846	0.107	0.665	0.393	0.665	0.323	0.096	1.341	3.183	1.408
27july	0.146	2.97	0.311	1.671	1.138	1.495	0.935	0.212	3.655	5.32	4.118
28july	0.09	3.647	0.262	1.15	1.4	0	0.316	0.549	4.018	4.255	2.148
01 august	0.195	1.868	0.286	3.517	0.965	0	1.164	1.347	3.075	2.88	0.511
02 august	0.246	1.648	0.37	0	1.217	0.618	0.51	0.471	3.755	3.975	2.509
03 august	0.098	1.071	0.224	1.993	0.67	0	0.8	1.031	4.18	3.2	2.09
04 august	0	0.485	0.19	0.489	0.253	0	0.387	0.665	1.825	2.88	1.31
05 august	0.121	2.873	0	0.366	0.278	0	0.408	0.572	3.95	2.405	1.665
06 august	0.623	1.01	0.94	1.844	0.516	0.074	0.685	0.36	5.931	8.385	7.105
10 august	0.11	0.738	0.124	0.6	0.212	0	0.835	0.147	3.318	3.455	1.815
12 august	0	0	0.08	0.292	0.12	0	0.21	0.118	2.331	1.605	0.985
16 august	0	0.255	0.294	1.142	0.231	0	0.405	0.284	2.073	2.355	1.4
17 august	0.088	0.367	0.156	1.076	0.192	0	0.281	0.11	1.767	2.215	0.85
18 august	0	0.856	0.113	1.278	0.304	0	0.371	0.122	1.122	2.43	0.753
22 august	0.122	2.24	0.535	2.04	0.294	0	2.725	0.286	1.58	3.095	1.668
23 august	0	0.3	0.1	1.138	0.12	0	0.405	0.344	0.988	2.19	0.871
25 august	0.136	0.294	0.094	1.635	0.177	0	0.285	0.2	3.305	3.755	2.225
26 august	0.66	0.774	0.13	2.305	0.326	0	1.755	0.318	5.726	7.175	2.6
29 august	0	0.686	0.218	1.354	0.188	0	1.712	0.119	2.071	2.87	1.384
30 august	0.158	0	0.12	0.836	0.092	0	0.6	0.08	1.11	1.615	0.522
31 august	0	0.6	0.108	1.492	0.135	0	0.58	0.11	2.315	2.325	1.215
01 september	0	0.126	0.04	2.19	0.155	0	0.1	0.094	1.135	2.105	0.708
02 september	0	0	0.058	0.944	0.088	0	0.15	0.046	0.972	1.64	0.454
05 september	0.175	2.626	2.84	7.755	0.216	0	0.93	0.675	10.855	3.665	0.9
06 september	0.054	0.448	0.194	0.87	0.062	0	1.11	0.08	4.275	2.16	0.418
07 september	0	0.23	0.14	1.608	0.074	0	0.383	0.0252	1.3	0	0.445
08 september	0.08	1.474	0.3	1.41	0.095	0	0.825	0.12	1.568	4.56	0.518
09 september	0.11	0.646	0.218	1.816	0.069	0	0.725	0.094	3.493	2.175	0.622
10 september	0	0.25	0.1	1.384	0.08	0	0.682	0.15	2.822	3.315	1.108
13 september	0	0.2	0.4	1.544	0.05	0	0.617	0.067	1.283	1.15	1.18
15 september	0.068	1.625	0.35	1.716	0.188	0	0.985	0.435	3.824	4.22	0.1458
16 september	0	0	0.283	1.335	0.082	0	0.79	0.116	2.592	2.36	0.894
19 september	0	4.16	0.264	1.435	0.108	2.985	0.64	0.215	2.994	2.95	1.658
21september	0.062	5.365	1.125	1.71	0.85	0	3.48	0.32	8.29	8.75	1.355
26 september	0	1.58	0.446	2.094	0.135	0	1.863	0.618	7.76	7.9	2.665
27 september	0.052	0.36	0.115	0.895	0.064	0	0.948	3.915	2.675	2.38	0.29
28 september	0	4.85	0.225	1.46	0.075	0	0.835	6.88	2.75	2.235	0.32
29 september	0	0.43	0.185	0.965	0.05	0	0.61	0.308	1.9	1.92	0.225
30 september	0	0.615	0.15	1.37	0.065	0	0.595	0.47	2.355	1.98	0.2
04october	0	0.36	0.145	0.83	0.095	0	0.78	0.2	1.472	3.155	0.125
06october	0.28	1.69	0.465	2.458	0.152	0	1.18	2.7	3.915	2.99	0.095
07october	0	0.3	0.18	0.795	0.052	0	0.425	0.208	1.19	4.435	0.03
10october	0.056	0.505	0.13	0.91	0.035	0	0.615	0.158	2.362	2.095	0.018
11october	0	0.28	0.095	0.832	0.024	0	0.36	0.168	1.2	1.945	0
13october	0	0.615	0.174	1.252	0.03	0	1.22	0.485	4.965	4.655	0.025
17october	0.082	0.63	0.395	3.84	0.106	0	1.455	0.66	3.78	5.065	0.02
19october	0	1.922	0.453	2.89	0.045	0	2.95	0.5	4.01	6.695	0.034
21october	0.12	2.095	0.44	2.565	0.14	0	3.28	0.605	5.915	4.87	0.095
26october	0	1.665	0.09	0.975	0.025	0	1.18	0.2	2.755	2.69	0
31october	0.028	3.29	0.585	4.625	0.274	0	2.915	2.8	5.325	6.575	0.04

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24 november	0	0.615	0.1	0.5	0.02	0	0.275	0.59	1.676	3.21	0
25 november	0.046	0.41	0.128	0.69	0.014	0	0.24	0.208	1.9	3.655	0.024
28 november	0	0.705	0.148	0.975	0.021	0	0.3	0.162	2.76	3.195	0
29 november	0	0.235	0.122	0.265	0.018	0	0.426	0.093	0.675	2.66	0
30 november	0	2.605	0.31	0.625	0.046	0.23	2.39	0.075	5.23	3.335	0.21
TOTAL	4.33	70.9785	16.653	86.223	14.149	12.217	52.898	32.7182	175.654	200.169	62.6618

TETRA PACK	REJECT	THERMOCOL	WET WASTE	C&D WASTE	E-WASTE	DAILY AVERAGE	MONTHLY AVERAGE	DIVERSION RATE
2.07	0	0	16.12	0	0	1.584564516	46.7039	95.99971499
0.745	0.549	0	7.436	0	0	0.542580645	46.7039	95.27942925
0.693	1.094	0	7.705	0	0	0.667032258	46.7039	95.22197505
1.689	0.93	2.18	14.87	0	0	1.343225806	46.7039	93.74159462
0.28	1.466	0	12.838	0	0	1.045774194	46.7039	95.47796046
0	0.026	0	6.68	0	0	0.726258065	46.7039	79.20849249
0.618	0	0	10.18	0	0	0.842483871	46.7039	98.04724892
0	0.479	0	7.59	0	0	0.755677419	46.7039	88.07734995
0	0.618	0	8.915	0	0	0.581193548	46.7039	95.13792529
0	0.604	0	7.52	0	0	0.669741935	46.7039	96.27203545
0	1.3	0.845	15.21	0	0	1.446064516	46.7039	9435843669
0	0	0	21.45	0	0	1.058193548	46.7039	95.62553347
0	0.446	0	6.965	0	0	0.424258065	46.7039	96.18309002
0	0	0	7.735	0	0	0.521741935	46.7039	90.43526648
0	0.7	0	9.93	0	0	0.572	46.7039	92.34716896
0	1.109	0	7.832	0	0	0.525483871	46.7039	89.87722529
0	0.855	0	14.55	0	0	0.967419355	46.7039	84.11137046
0	0.6	0	6.896	0	0	0.450064516	46.7039	88.94065367
0	1.17	0	11.46	0	0	0.797935484	46.7039	92.23803364
0.082	2.96	0	27.67	0	0	1.692935484	46.7039	92.26386692
0	0.92	0	10.03	0	0	0.695225806	46.7039	85.77394209
0	0.3	0	5.14	5.75	0.76	0.551064516	46.7039	91.59398232
0	0.425	0	8.28	0	0	0.567258065	46.7039	88.21723059
0	0.695	0	7.21	0	0	0.469612903	46.7039	84.26981728
0	0.308	0	6.4	0	0	0.356774194	46.7039	90.1084991
0	6.87	0	5.72	6.38	0	1.600225806	46.7039	82.49239019
0	0.4	0	10.37	0	0	0.659387097	46.7039	9031358544
0	0	0	8.205	0	0	0.400329032	46.7039	83.95674526
0	0	0	10.79	0	0	0.701290323	46.7039	89.71941122
0	1.016	0	8.32	0	0	0.622709677	46.7039	86.83692499
0	0.19	0	9.36	3.56	0	0.741967742	46.7039	91.01778184
0	0.17	0	7.52	1.062	0	0.491709677	46.7039	85.82300072
0	0.518	0	11.385	0	0	0.821283871	46.7039	89.39111855
0	2.31	0	8.17	0	0	0.610709677	46.7039	88.775618
0	0	0	12.79	0	0	0.97416129	46.7039	93.12891155
0	1.69	0	25.125	0.24	0	1.882645161	46.7039	91.10722731
0	0.876	0	24.81	0	0	1.637	46.7039	92.20249473
0	0.691	0	8.235	0	0	0.66516129	46.7039	91.06207565
0	0.45	0	6.93	0	0	0.871290323	46.7039	91.50314698
0	0.86	0	5.99	0	0	0.433645161	46.7039	88.28386521
0	0.21	0	7.165	0	0	0.489516129	46.7039	87.05107084
0	0.25	0	9.59	0	0	0.548451613	46.7039	90.53052582
0.098	0.56	0	16.115	0	0	1.054774194	46.7039	88.87393724
0	0.21	0	5.855	0	0	0.441290323	46.7039	91.08187135
0	5.7	0	8.92	0	0	0.693677419	46.7039	92.90829613
0	0	0	6.725	0	0	0375129032	46.7039	89.74976352
0	0.19	0	12.77	3.48	0	0.963258065	46.7039	91.72164362

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0	0.43	0	12.955	0	0	0.948967742	46.7039	82.00081583
0.31	0.53	0.162	18.71	0	0	1.264870968	46.7039	85.10622019
0	0.15	0	20.325	0	0	1.309677419	46.7039	85.60344828
0	20.48	0	6.15	0	0	1.168064516	46.7039	94.04860536
0	1.68	0	24.21	0	0	1.688612903	46.7039	85.59611821
0	0	0	8.16	0	0	0.488580645	46.7039	94.88313746
0	0	0	8.415	0	0	0.507419355	46.7039	94.08773045
0	0.22	0	5.635	0.32	0	0.46583871	46.7039	91.17097154
0	0.16	0	6.33	0	0	0.354322581	46.7039	93.70903132
0.165	0.2	0	11.23	0	0	0.859709677	46.7039	88.68710367
6.75	64.565	3.187	619.592	20.792	0.76	46.59024194	46.7039	90.3675664

DATE	REJECT	WET WASTE	E-WASTE	PET BOTTLE	CARD BOARD	ALUMINIUM	LDPE	MLP	GLASS	HARD PLASTIC (MIX)	PAPER	MIXED PAPER/ RADDI
01 december	0	9.88	0	0	0.17	0.09	0.58	0.02	0	0.24	1.39	0.62
02 december	0.25	9.38	0	0.12	0.51	0.15	1.36	0.03	0	0.32	0.55	0.93
05 december	0	2.5	0	0	2.22	0.14	0.68	0.03	0	0.46	0.25	2.58
06 december	0.15	8.78	0	0	0.51	0.17	0.72	0.02	0.26	0.39	0.1	1.37
07 december	0	6.31	0	0	0.27	0.12	0.39	0.02	0	0.26	0.14	0.92
08 december	0.24	5.33	0	0.05	0.19	0.15	0.69	0.02	0	0.4	0.32	1.01
09 december	0	5.65	0	0	0.21	0.13	0.76	0.01	0	0.48	0.14	0.86
12 december	0.14	6.99	0	0	0.18	0.18	0.51	0.02	0	0.38	0.21	1.09
13 december	0.18	10.98	0	0.03	0.4	0.2	0.83	0.02	0	0.49	0.16	1.65
14 december	0	7.09	0	0	0	0.14	0.5	0.02	0	0.21	0.09	1.18
15 december	0	7.96	0	0	0.18	0.12	0.54	0.02	0	0.28	0.19	1.3
16 december	0.43	6.75	0	0.08	0.39	0.13	0.89	0.02	0.1	0.17	2.13	0.9
19 december	0	7.55	0	0	0.25	0.1	0.58	0.02	0	0.18	0	0.85
20 december	0.29	10.17	0	0.05	4.03	0.22	1.45	0.04	0	0.34	0.17	3.36
21 december	0.11	6.08	0	0	0.12	0.1	0.35	0.01	0	0.15	0.08	0.49
22 december	0.14	7.01	0	0	0.19	0.08	0.48	0.01	0	0.17	0.09	0.31
23 december	0.29	5.48	0	0	0.15	0.12	0.57	0.02	0	0.22	0	0.44
26 december	0.18	6.56	0	0	1.41	0.16	0.6	0.01	0	0.28	2.85	0.62
27 december	0.26	4.16	0	0	0.1	0.06	0.3	0.01	0	0.18	0.05	0.51
28 december	0	6.61	0	0	0.23	0.08	0.59	0.01	0.18	0.11	0.09	0.8
30 december	0.18	3.49	0	0	0.3	0.06	0.31	0.01	0	0.15	0.13	0.58
TOTAL	2.84	144.69	0	0.32	12	2.68	13.67	0.39	0.54	5.85	9.12	22.37

TISSUE PAPER	PAPER CUPS	TETRA PACK	THERMO COLE	CLOTHES	OTHER	WOOD WASTE	DAILY AVERAGE	MONTHLY AVERAGE	DIVERSION RATE
2.3	0.05	0	0	0	0	0	0.49	8.98	94.69
2.99	0.03	0	3.23	0	0	3.4	0.75	8.98	92.77
2.62	0.05	0	0	0	0	0	0.37	8.98	90.14
2.85	0.03	0	0	0	0	2.92	0.59	8.98	93.9
1.72	0	0	0	0	0	0	0.33	8.98	93.6
2.04	0.04	0	0	0	0	0	0.34	8.98	89.54
2.65	0.04	0	0	0	0	0	0.35	8.98	88.71
3.1	0	0	0	0	0	0	0.41	8.98	93.01
3.18	0	0	0	0	0	0	0.58	8.98	92.72
2.31	0.03	0	0	0	0	0	0.37	8.98	93.89

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2.69	0	0	0	0	0	0	0.43	8.98	93.83
2.42	0.05	0.02	0	0	0	0	0.47	8.98	92.71
2.7	0.08	0	0	0	0	0	0.4	8.98	93.83
3.84	2.1	0	0	0	0	0	0.84	8.98	93.13
2.19	0.03	0	0	0	0	0.13	0.32	8.98	94.99
1.73	0.03	0	0	0	0	0	0.33	8.98	93.63
1.11	0	0	0	0	0	0	0.27	8.98	90.6
2.67	0.48	0	0	0	0	0	0.51	8.98	94.44
1.82	0	0	0	0	0	0	0.24	8.98	93.56
3.06	0.03	0	0	0	0	0	0.38	8.98	94.06
1.11	0	0	0	0	0	0	0.2	8.98	92.72
51.07	3.06	0.02	3.23	0	0	6.44	8.98	8.98	92.99

DATE	REJECT	WET WASTE	E-WASTE	PET BOTTLE	CARDBOARD	ALUMINIUM	LDPE	MLP	GLASS	HARD PLASTIC(MIX)
02-JAN	0.206	6.615	0	0	0.265	0.109	0.26	0.012	0	0.184
03-JAN	0.194	8.255	0	0	0.566	0.186	0.394	0.018	0	0.292
04-JAN	0.2	6.81	0	0	0.205	0.1	0.285	0.012	0	0.184
05-JAN	0	6.82	0	0	0.46	0.134	0.568	0.015	0	1.33
06-JAN	0.255	6.555	0	0.116	0.894	0.086	0.905	0.017	0	0.18
09-JAN	0.195	6.475	0	0	0.518	0.153	0.485	0.015	0	0.565
10-JAN	0.18	10.325	0	0	0.625	0.145	0.718	0.018	0	0.35
11-JAN	0.284	6.73	0	0	0.4	0.218	0.39	0.014	0.225	0.225
12-JAN	0.125	7.145	0	0	2.155	0.265	0.69	0.024	0	0.91
13-JAN	0	7.83	0	0	0.37	0.15	0.41	0.02	0	0.5
16-JAN	0.21	6.82	0	0	0.23	0.14	0.3	0.01	0	0.37
17-JAN	0	9.18	0	0	0.35	0.16	0.72	0.02	0	0.7
18-JAN	0.12	8.47	0	0	0.26	0.12	0.61	0.02	0	0.5
19-JAN	0	6.8	0	0.03	0.19	0.1	0.53	0.01	0.67	0.22
20-JAN	0.38	8.32	0	0.04	0.49	0.4	1.76	0.02	0	0.28
23-JAN	0.22	7.99	0	0	0.26	0.15	0.47	0.02	0	0.39
24-JAN	0.43	12.54	0	0.12	0.64	0.1	0.75	0.03	0	2.41
25-JAN	0	7.29	0	0	0.19	0.08	0.31	0.01	0	0.62
27-JAN	0.29	6.82	0	0	0.18	0.1	0.28	0.01	0	0.31
30-JAN	0	10.31	0	0	0.48	0.13	0.51	0.02	0	0.23
31-JAN	0.19	12.4	0	0.29	0.72	0.14	0.75	0.02	0	0.36
TOTAL	3.47	170.47	0	0.6	10.42	3.15	12.08	0.34	0.89	11.1

PAPER	MIXED PAPER/RADDI	TISSUE PAPER	PAPER CUPS	TETRAPACK	DAILY AVERAGE	MONTHLY AVERAGE	DIVERSION RATE
0.095	0.518	1.915	0.085	0	0.33	9.48	98.25
0.24	0.785	2.725	0.036	0	0.44	9.48	97.32
0.08	0.622	2.05	0.04	0	0.34	9.48	97.64
0.247	1.225	1.99	0	0	0.41	9.48	95.04
0.7	0.475	2.82	0.105	0	0.42	9.48	93.76
0.23	0.57	3.01	0.045	0	0.39	9.48	96.22
0.458	0.835	2.92	0.048	0	0.53	9.48	95.87

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0.215	0.58	2.28	0.07	0	0.37	9.48	97.18
0.38	1.685	3.425	0.15	0	0.54	9.48	96.6
0.4	1.1	2.25	0.05	0	0.42	9.48	97.1
0.19	0.67	2.44	0.04	0	0.37	9.48	97.64
0.31	1.08	2.98	0.1	0	0.5	9.48	95.78
0.08	1.18	3.05	0.05	0.16	0.47	9.48	96.07
0.19	0.61	2.1	0.07	0	0.37	9.48	95.9
2.01	1.31	2.24	0.05	0	0.56	9.48	89.93
0.22	0.81	2.72	0.1	0	0.43	9.48	97.1
0.46	3.02	2.98	0.05	0.06	0.76	9.48	96.66
0.12	0.59	2.43	0.06	0	0.38	9.48	97.71
0.1	0.38	1.72	0	0	0.33	9.48	97.12
0.2	0.84	2.27	0.06	0	0.48	9.48	96.93
0.32	1.49	3.35	0.14	0.06	0.65	9.48	96.88
7.24	20.34	53.63	1.32	0.28	9.48	9.48	96.2

DATE	WET WASTE	REJECT	E-WASTE	PET BOTTLE	CARDBOARD	ALUMINIUM	LDPE	MLP	GLASS	HARD PLASTIC(MIX)	PAPER
01 FEB	9.7	0	0	0	1	0.115	0.949	0.027	0.69	0.39	0.585
02 FEB	7.785	0.18	0	0.126	0.376	0.105	0.718	0.023	0	0.718	0.205
03 FEB	8.245	0.25	0	0.182	0.49	0.174	0.81	0.02	0	1.295	0.575
06 FEB	8.225	0.281	0	0.054	0.28	0.084	0.378	0.017	0	0.215	0.305
07 FEB	9.91	0.19	0	0.025	0.755	0.115	0.98	0.024	0	0.52	0.5
08 FEB	9.78	0.17	0	0	0.325	0.102	0.655	0.018	0	0.46	0.22
09 FEB	9.675	0.235	0	0.056	0.584	0.128	0.935	0.026	0.26	0.83	0.465
10 FEB	7.155	0.228	0	0	0.32	0.094	0.56	0.019	0	0.382	0.528
13 FEB	9.3	0	0	0.046	0.97	0.086	0.609	0.022	0.19	0.216	2.235
14 FEB	8.615	0.29	0	0	0.49	0.115	0.48	0.018	0	0.29	0.785
15 FEB	9.585	0.705	0	0.035	0.73	0.196	1.21	0.036	0.845	1.525	0.3
16 FEB	12.235	0.381	0	0.022	0.925	0.116	1.076	0.027	0	0.89	0.45
17 FEB	9.1	0.59	0	0.034	0.62	0.09	0.88	0.021	0	1.375	0.328
20 FEB	7.69	0.208	0	0.026	0.238	0.116	0.49	0.016	0	0.355	0.23
21 FEB	10.58	0.38	0	0.036	0.44	0.145	0.73	0.02	0	0.45	0.392
22 FEB	7.2	0.1	0	0.084	0.268	0.172	0.395	0.013	0	0.226	0.253
23 FEB	8.415	0.118	0	0	0.482	0.12	0.66	0.017	0	0.318	0.34
24 FEB	6.925	0.32	0	0.038	0.715	0.154	0.87	0.021	0.308	0.594	1.865
27 FEB	9.24	0.207	0	0	0.394	0.127	0.884	0.02	0.23	1.285	0.468
28 FEB	17.14	0.218	0	0.026	1.492	0.116	1.255	0.026	0	0.96	0.9
TOTAL	186.5	5.051	0	0.79	12.389	2.47	15.524	0.431	2.523	13.294	11.929

MIXED PAPER/RADDI	TISSUE PAPER	PAPER CUPS	TETRAPACK	THERMACOLE	CLOTHES	WOOD WASTE	C&D WASTE	DAILY AVERAGE	MONTHLY AVERAGE	DIVERSION RATE
1.32	3.475	0.18	0	0	0	0	1.1	0.690571429	12.256	93.85264427
0.996	2.69	0.055	0	0	0.14	0	0	0.504178571	12.256	89.50185555
1.3	3.605	0.21	0	0	0	0	2.04	0.685571429	12.256	89.84859636
0.906	2.47	0.08	0	0	0	0	0	0.474821429	12.256	96.1471501
1.33	3.87	0.128	0	0	0	0	0	0.65525	12.256	92.40346643
1.256	2.795	0.086	0	0	0	0.055	0.9	0.600785714	12.256	93.94138756
2.56	2.69	0.046	0.062	0	0	0	0	0.653285714	12.256	91.1148502
1.26	2.965	0.02	0	0	0	0	0.9	0.515392857	12.256	94.08523401

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1.476	3.435	0.036	0	0	0	0	0.315	0.6695	12.256	96.0795756
1.07	2.76	0.048	0	0	0	0	0	0.534321429	12.256	95.58803718
2.83	3.555	0.158	0.27	0	0	0	0.58	0.775535714	12.256	88.64693257
1.27	2.965	0.092	0.126	0	0	0	0	0.734821429	12.256	90.95752481
1.092	2.225	0.07	0	0.29	0	0	0.715	0.6225	12.256	87.51441753
0.82	2.416	0.058	0.126	0	0	0	0	0.45675	12.256	94.24761304
0.9	3.051	0.045	0	0	0	0	0	0.613178571	12.256	93.92034774
0.508	2.62	0.036	0	0	0	0	0	0.424107143	12.256	96.16337691
0.948	2.7	0.045	0	0	0	0	0	0.505821429	12.256	93.8901944
1.37	2.83	0.032	0.125	0	0	0	0	0.566392857	12.256	91.81914694
1.05	2.76	0.016	0.145	0	0	0	0	0.592714286	12.256	87.77172286
1.672	3.341	0.04	0.276	0	0	0	0	0.980785714	12.256	92.32428874
25.934	59.218	1.481	1.13	0.29	0.14	0.055	6.55	12.25628571	12.256	92.28270338

DATE	REJECT	WET WASTE	E-WASTE	PET BOTTLE	CARDBOARD	ALUMINIUM	LDPE	MLP	GLASS	HARD PLASTIC(MIX)	PAPER
01 march	0.16	10.19	0	0.04	0.408	0.086	0.365	0.013	0	0.272	0.28
02 march	0.27	6.295	0	0	14.82	0.154	0.69	0.016	0.385	0.57	0.404
03 march	0.36	9.64	0	0.08	1.51	0.1	3.295	0.02	0.28	0.89	0.52
06 march	0.19	6.3	0	0.02	0.39	0.104	0.59	0.02	0	0.3	0.29
07 march	0.45	9.42	0	0.14	1.165	0.278	3.82	0.045	0.25	0.72	0.518
09 march	0.305	6.2	0	0.024	0.45	0.134	2.97	0.021	0	0.535	0.728
10 march	0.57	6.685	0	0.018	0.57	0.15	2.77	0.019	0	0.425	0.28
13 march	0.372	6	0	0.12	0.394	0.106	0.87	0.016	0	0.32	0.395
14 march	0.598	7.96	0	0.086	0.725	0.17	1.245	0.026	0.176	0.688	0.445
15 march	0.216	6.785	0	0.054	1.709	0.184	2.185	0.018	0	0.381	0.26
16 march	0.375	6.425	0	0.04	0.516	0.115	1.37	0.014	1.15	0.424	0.51
17 march	0.425	6.8	0	0.024	0.845	0.136	1.896	0.021	0	0.625	0.32
20 march	0.27	7.18	0	0	0.416	0.125	0.926	0.026	0	0.52	0.39
21 march	0.438	8.575	0	0.096	0.625	0.116	1.275	0.025	0	0.49	5.87
22 march	0.3	4.928	0	0	0.362	0.125	0.885	0.024	0	0.416	0.52
23 march	0.258	6.175	0	0.07	0.507	2.41	1.075	0.02	0.145	0.53	0.375
24 march	0.275	5.085	0	0.026	0.332	0.13	0.87	0.012	0	0.295	0.206
27 march	0.37	7.42	0	0.042	0.25	0.155	1.275	0.018	0	0.24	2.85
28 march	0.492	4.915	0	0.028	0.837	0.23	1.59	0.015	0	0.485	1.175
29 march	0.37	7.255	0	0.126	1.082	0.136	1.17	0.03	0	0.697	0.896
30 march	0.58	6.34	0	0.08	0.79	0.125	1.248	0.025	0	0.591	0.41
31 march	0.478	5.74	0	0.042	0.412	0.105	1.294	0.02	0	0.325	0.29
total	8.122	152.313	0	1.156	29.115	5.374	33.674	0.464	2.386	10.739	17.932

MIXED PAPER/RADDI	TISSUE PAPER	PAPER CUPS	TETRAPACK	THERMACOLE	C&D WASTE	DAILY AVERAGE	MONTHLY AVERAGE	DIVERSION RATE
0.81	2.285	0.024	0	0.07	0.505	0.500258065	11.41422	95.89244261
1.39	2.552	0.018	0.11	0	0	0.892709677	11.41422	95.04950495
1.645	3.01	0.126	0.12	0	0	0.696645161	11.41422	80.06575292
0.882	2.058	0.03	0	0	0	0.360451613	11.41422	92.03508144
3.705	3.115	0.96	0.116	0	0	0.79683871	11.41422	81.15132378
1.28	2.585	0.174	0.054	0	0	0.498709677	11.41422	76.97930142
1.39	3.058	0.085	0	0	0	0.516774194	11.41422	80.05617978
0.784	2.385	0.084	0.06	0	0.355	0.395516129	11.41422	89.805073

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1.485	3.365	0.125	0.084	0	0.128	0.558258065	11.41422	88.34508263
1.296	2.637	0.088	0.146	0	0	0.514806452	11.41422	83.00645404
1.516	2.497	0.063	0.053	0	0.29	0.495419355	11.41422	87.97369449
1.435	2.454	0.038	0.026	0	0.352	0.496677419	11.41422	83.45781646
1.21	3.07	0.06	0	0	0	0.45783871	11.41422	89.8118791
1.678	3.245	0.079	0	0	0.17	0.731677419	11.41422	92.21849925
1.148	2.62	0.029	0.122	0.295	0	0.379806452	11.41422	87.9140479
1.29	2.6	0.058	0	0	0.31	0.510419355	11.41422	89.85653795
0.905	1.765	0.036	0	0	0	0.320548387	11.41422	88.27613968
1.165	2.375	0.02	0	0	0	0.521935484	11.41422	90.63658838
1.325	2	0.016	0.024	0	0.3	0.433290323	11.41422	84.37313877
1.517	2.033	0.11	0.1	0	0	0.500709677	11.41422	87.32766396
1.209	2.536	0.084	0.08	0	0	0.454774194	11.41422	86.38814016
0.681	1.675	0.028	0	0	0.695	0.38016129	11.41422	86.26219771
29.746	55.92	2.335	1.095	0.365	3.105	11.41422581	11.41422	87.13885615

DATE	WET WASTE	REJECT	E-WASTE	PET BOTTLE	CARDBOARD	ALUMINIUM	LDPE	MLP	GLASS	HARD PLASTIC(MIX)
03 APR	6.068	0.522	0	0.054	0.485	0.116	1.879	0.016	0	0.282
04 APR	4.72	0.485	0	0.028	0.725	0.156	1.375	0.028	0.27	0.878
05 APR	6.07	0.378	0	0.053	1.27	0.098	2.68	0.034	0	0.49
06 APR	8.138	0.508	0	0.04	0.695	0.116	2.11	0.026	0.38	0.6
10 APR	7.6	0.69	0	0	0.57	0.126	1.985	0.022	0	0.47
11 APR	5.37	0.885	0	0.026	1.07	0.153	2.39	0.034	0	0.718
12 APR	9.367	0.59	0	0	0.3	0.176	1.49	0.018	0	0.376
13 APR	8.66	0.39	0	0.028	0.288	0.096	1.986	0.014	0	0.485
14 APR	6.288	0.416	0	0.024	0.21	0.09	1.715	0.014	0	0.322
17 APR	8.13	0.32	0	0.036	0.388	0.086	1.376	0.016	0	0.215
18 APR	7.67	0.426	0	0.12	1.87	0.106	1.882	0.033	0.27	1.76
19 APR	4.72	0.675	0	0.094	0.812	0.092	1.516	0.026	0	0.515
20 APR	8.6	0.576	0	0.615	0.93	0.118	1.928	0.024	0	2.72
21 APR	4.848	0.39	0	0.038	0.576	0.114	1.57	0.018	0.296	0.425
24 APR	8.42	0.481	0	0.02	0.28	0.1	1.619	0.012	0	0.375
25 APR	6.04	0.37	0	0.036	0.392	0.125	1.57	0.028	0	0.377
26 APR	4.17	0.485	0	0.054	0.186	0.098	1.486	0.016	0	0.185
27 APR	6.418	0.29	0	0.02	0.434	0.135	1.47	0.019	0.246	0.31
28-APR	7.11	0.57	0	0.038	0.68	0.116	2.69	0.024	0	0.165
TOTAL	128.407	9.447	0	1.324	12.161	2.217	34.717	0.422	1.462	11.668

PAPER	MIXED PAPER/ RADDI	TISSUE PAPER	PAPER CUPS	TETRA PACK	THERMO COLE	WOOD WASTE	C&D WASTE	DAILY AVERAGE	MONTHLY AVERAGE	DIVERSION RATE
0.33	0.645	2.8	0.026	0	0	0	0	0.440766667	9.35956	83.65726386
0.51	1.416	3.16	0.04	0.046	0	0	0	0.461233333	9.35956	83.71756884
0.719	1.69	2.9	0.028	0.018	0	0	0	0.5476	9.35956	80.70367665
0.38	1.24	2.01	0.016	0	0	0	0	0.541966667	9.35956	83.33230826
0.585	1.004	2.17	0.02	0	0	0	0	0.508066667	9.35956	83.89318987
0.388	1.534	2.78	0.055	0.27	0	0	0	0.522433333	9.35956	80.16971862
0.695	0.445	1.98	0.038	0.076	0	0	0	0.518366667	9.35956	88.00077165
0.34	0.415	2.49	0.02	0	0	0	0	0.507066667	9.35956	83.75624507

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DATA COLLECTION AND ANALYSIS

0.196	0.516	1.92	0.033	0	0	0	0	0.391466667	9.35956	82.65497275
0.12	0.476	3.08	0.026	0.054	0	0.32	0	0.4881	9.35956	89.13474015
0.69	1.395	3.44	0.032	0.074	0	0	0	0.658933333	9.35956	81.5762849
0.338	0.49	2.82	0.048	0.126	0	0	0.495	0.425566667	9.35956	84.09179917
0.25	1.142	2.3	0.064	0.116	0.15	0.22	1.475	0.7076	9.35956	78.10439043
0.245	1.379	2.27	0.018	0.066	0	0	0	0.408433333	9.35956	83.71827308
0.302	1.16	2	0.026	0.028	0	0	0	0.4941	9.35956	86.54793227
0.21	1.335	2.88	0.028	0.046	0	0	0	0.4479	9.35956	85.51015852
0.155	1.044	2.26	0.016	0	0	0	0	0.3385	9.35956	83.5450517
0.268	1.17	2.71	0.049	0	0	0	0	0.4513	9.35956	86.85279563
0.22	0.944	2.21	0.018	0.03	0	0	0.19	0.500166667	9.35956	80.973009
6.941	19.44	48.18	0.601	0.95	0.15	0.54	2.16	9.359566667	9.35956	83.48036056

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CHAPTER 4

RESULT AND ANALYSIS

Table-1-Waste analysis

MONTH	MONTHLY AVERAGE WASTE (kg)
JULY	5.113
AUGUST	13.85
SEPTEMBER	14.91
OCTOBER	9.843
NOVEMBER	2.765
DECEMBER	8.98
JANUARY	9.48
FEBRUARY	12.26
MARCH	11.41
APRIL	9.35

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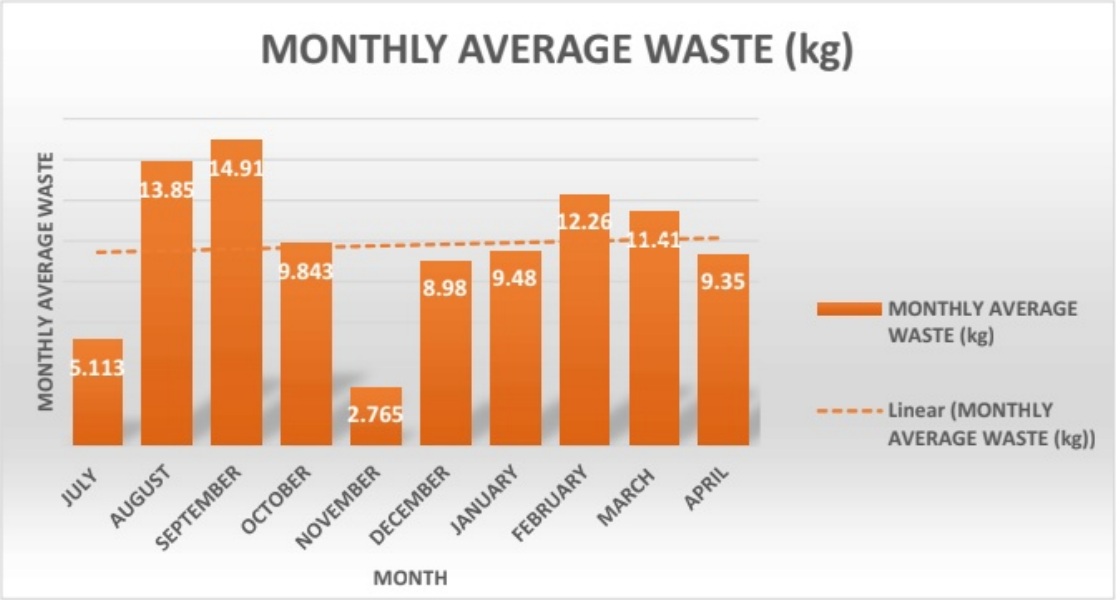
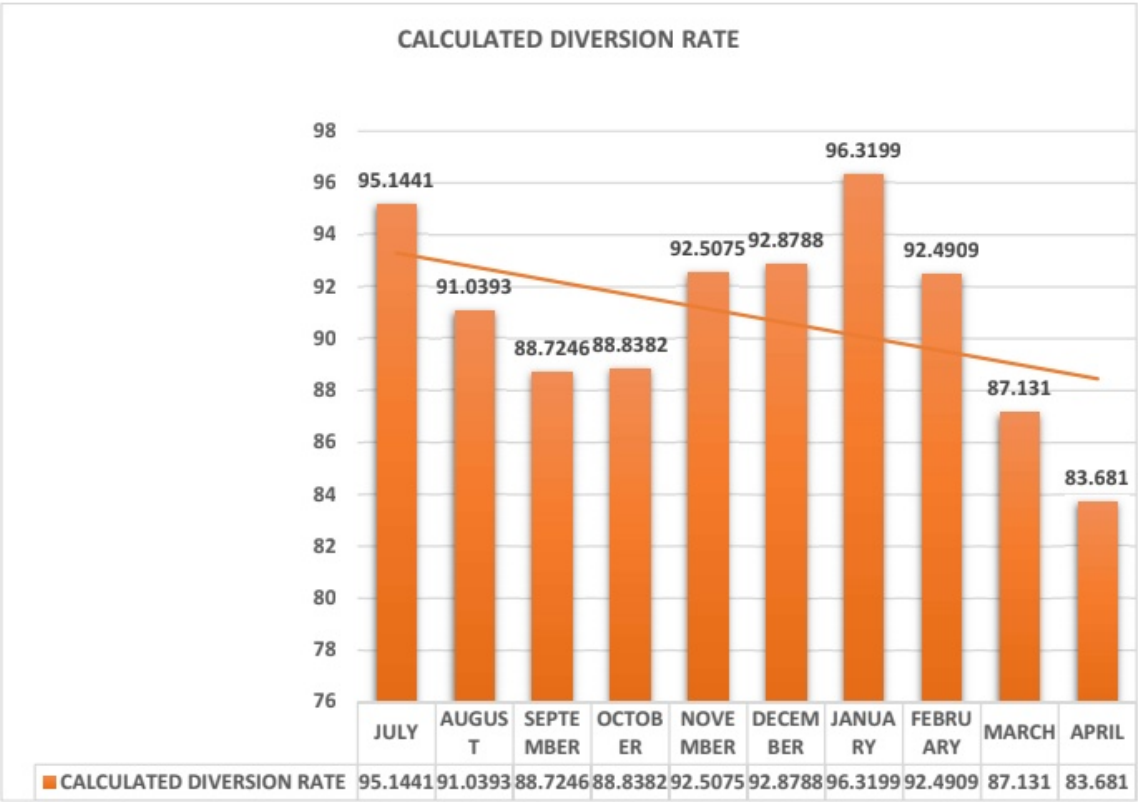


Graph-1-Monthly average waste generated



Graph-2- Overall calculated diversion rate

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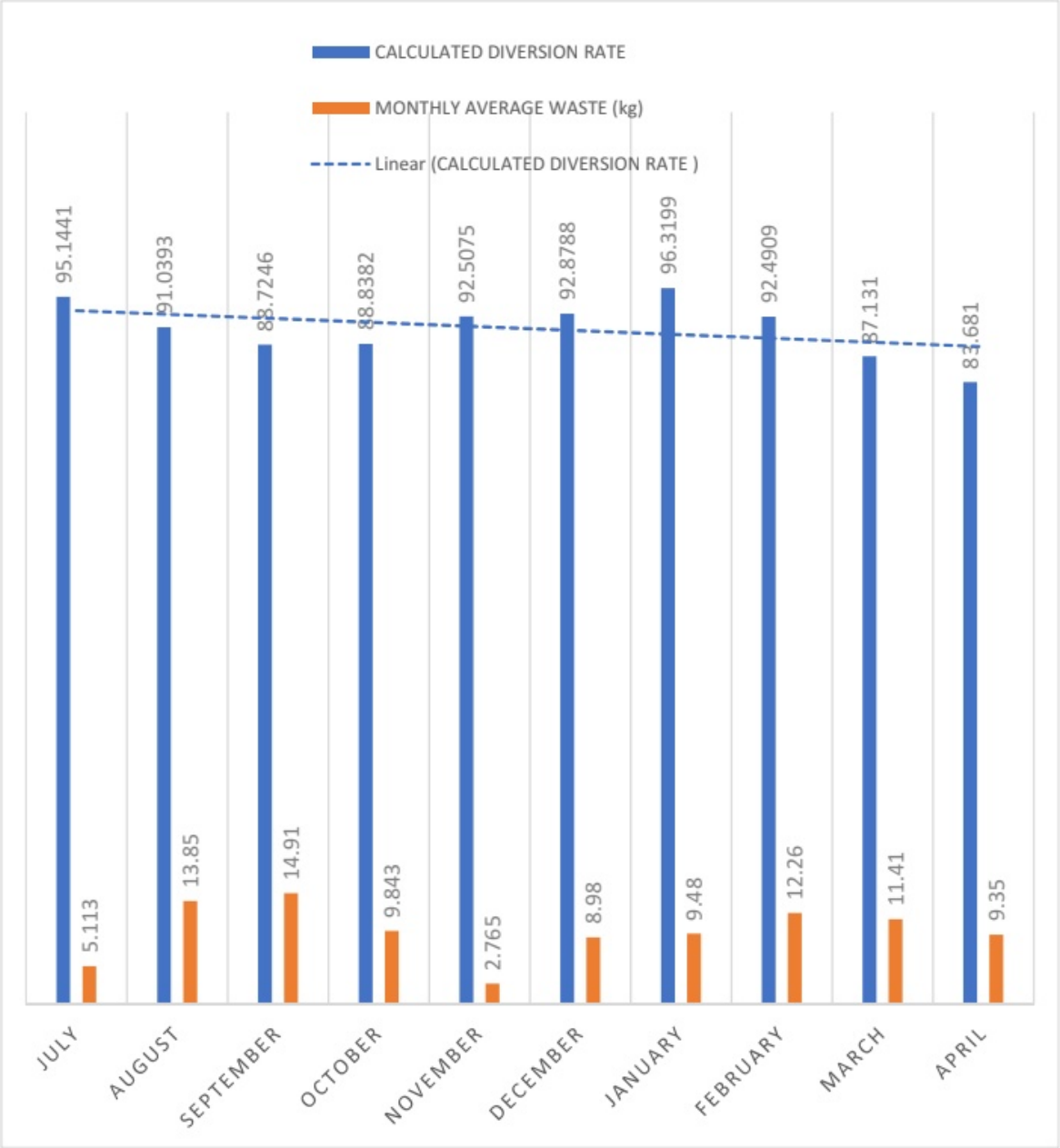

Graph-3- Comparative analysis between waste generated and diversion rate

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4.1. CORRELATION AND REGRESSION ANALYSIS

CORRELATION AND REGRESSION ANALYSIS

DATE	DAILY AVERAGE waste(kg)	DIVERSION RATE CALCULATED	INTERCEPT	SLOPE	ESTIMATED DIVERSION RATE (REGRESSION ANALYSIS)
20.07.2022	1.584564516	95.99971499	91.03216159	-0.857430079	89.67350832
21.07.2022	0.542580645	95.27942925	91.03216159	-0.857430079	90.56693663
25.07.2022	0.667032258	95.22197505	91.03216159	-0.857430079	90.46022807
27.07.2022	1.343225806	93.74159462	91.03216159	-0.857430079	89.88043939
28.07.2022	1.045774194	95.47796046	91.03216159	-0.857430079	90.13548335
01.08.2022	0.726258065	79.20849249	91.03216159	-0.857430079	90.40944609
02.08.2022	0.842483871	98.04724892	91.03216159	-0.857430079	90.30979058
03.08.2022	0.755677419	88.07734995	91.03216159	-0.857430079	90.38422105
04.08.2022	0.581193548	95.13792529	91.03216159	-0.857430079	90.53382876
05.08.2022	0.669741935	96.27203545	91.03216159	-0.857430079	90.45790471
06.08.2022	1.446064516	94.35843669	91.03216159	-0.857430079	89.79226238
10.08.2022	1.058193548	95.62553347	91.03216159	-0.857430079	90.12483462
12.08.2022	0.424258065	96.18309002	91.03216159	-0.857430079	90.66838997
16.08.2022	0.521741935	90.43526648	91.03216159	-0.857430079	90.58480437
17.08.2022	0.572	92.34716896	91.03216159	-0.857430079	90.54171159
18.08.2022	0.525483871	89.87722529	91.03216159	-0.857430079	90.58159592
22.08.2022	0.967419355	84.11137046	91.03216159	-0.857430079	90.20266714
23.08.2022	0.450064516	88.94065367	91.03216159	-0.857430079	90.64626274
25.08.2022	0.797935484	92.23803364	91.03216159	-0.857430079	90.34798771
26.08.2022	1.692935484	92.26386692	91.03216159	-0.857430079	89.58058779
29.08.2022	0.695225806	85.77394209	91.03216159	-0.857430079	90.43605408
30.08.2022	0.551064516	91.59398232	91.03216159	-0.857430079	90.5596623
31.08.2022	0.567258065	88.21723059	91.03216159	-0.857430079	90.54577747
01.09.2022	0.469612903	84.26981728	91.03216159	-0.857430079	90.62950137
02.09.2022	0.356774194	90.1084991	91.03216159	-0.857430079	90.72625267
05.09.2022	1.600225806	82.49239019	91.03216159	-0.857430079	89.66007986
06.09.2022	0.659387097	90.31358544	91.03216159	-0.857430079	90.46678326
07.09.2022	0.400329032	83.95674526	91.03216159	-0.857430079	90.68890744
08.09.2022	0.701290323	89.71941122	91.03216159	-0.857430079	90.43085418
09.09.2022	0.622709677	86.83692499	91.03216159	-0.857430079	90.49823159
10.09.2022	0.741967742	91.01778184	91.03216159	-0.857430079	90.39597614
13.09.2022	0.491709677	85.82300072	91.03216159	-0.857430079	90.61055493
15.09.2022	0.821283871	89.39111855	91.03216159	-0.857430079	90.3279681
16.09.2022	0.610709677	88.775618	91.03216159	-0.857430079	90.50852075
19.09.2022	0.97416129	93.12891155	91.03216159	-0.857430079	90.1968864
21.9.2022	1.882645161	91.10722731	91.03216159	-0.857430079	89.41792501
26.09.2022	1.637	92.20249473	91.03216159	-0.857430079	89.62854856
27.09.2022	0.66516129	91.06207565	91.03216159	-0.857430079	90.4618323
28.09.2022	0.871290323	91.50314698	91.03216159	-0.857430079	90.28509106
29.09.2022	0.433645161	88.28386521	91.03216159	-0.857430079	90.66034119
30.09.2022	0.489516129	87.05107084	91.03216159	-0.857430079	90.61243574
04.10.2022	0.548451613	90.53052582	91.03216159	-0.857430079	90.56190268
06.10.2022	1.054774194	88.87393724	91.03216159	-0.857430079	90.12776647
07.10.2022	0.441290323	91.08187135	91.03216159	-0.857430079	90.653786
10.10.2022	0.693677419	92.90829613	91.03216159	-0.857430079	90.43738171
11.10.2022	0.375129032	89.74976352	91.03216159	-0.857430079	90.71051468
13.10.2022	0.963258065	91.72164362	91.03216159	-0.857430079	90.20623516
17.10.2022	0.948967742	82.00081583	91.03216159	-0.857430079	90.21848811
19.10.2022	1.264870968	85.10622019	91.03216159	-0.857430079	89.94762318
21.10.2022	1.309677419	85.60344828	91.03216159	-0.857430079	89.90920478
26.10.2022	1.168064516	94.04860536	91.03216159	-0.857430079	90.03062794
31.10.2022	1.688612903	85.59611821	91.03216159	-0.857430079	89.5842941
24.11.2022	0.488580645	94.88313746	91.03216159	-0.857430079	90.61323785
25.11.2022	0.507419355	94.08773045	91.03216159	-0.857430079	90.59708498
28.11.2022	0.46583871	91.17097154	91.03216159	-0.857430079	90.63273747
29.11.2022	0.354322581	93.70903132	91.03216159	-0.857430079	90.72835476
30.11.2022	0.859709677	88.68710367	91.03216159	-0.857430079	90.29502066
01.12.2022	0.49	94.69	91.03216159	-0.857430079	90.60853582
02.12.2022	0.75	92.77	91.03216159	-0.857430079	90.3895869
05.12.2022	0.37	90.14	91.03216159	-0.857430079	90.71388908
06.12.2022	0.59	93.9	91.03216159	-0.857430079	90.52669273

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07.12.2022	0.33	93.6	91.03216159	-0.857430079	90.75156069
08.12.2022	0.34	89.54	91.03216159	-0.857430079	90.74268214
09.12.2022	0.35	88.71	91.03216159	-0.857430079	90.73029089
12.12.2022	0.41	93.01	91.03216159	-0.857430079	90.67851318
13.12.2022	0.58	92.72	91.03216159	-0.857430079	90.53128413
14.12.2022	0.37	93.89	91.03216159	-0.857430079	90.71253379
15.12.2022	0.43	93.83	91.03216159	-0.857430079	90.66487727
16.12.2022	0.47	92.71	91.03216159	-0.857430079	90.63199068
19.12.2022	0.4	93.83	91.03216159	-0.857430079	90.69173419
20.12.2022	0.84	93.13	91.03216159	-0.857430079	90.31136715
21.12.2022	0.32	94.99	91.03216159	-0.857430079	90.76021796
22.12.2022	0.33	93.63	91.03216159	-0.857430079	90.74882244
23.12.2022	0.27	90.6	91.03216159	-0.857430079	90.7998257
26.12.2022	0.51	94.44	91.03216159	-0.857430079	90.59459566
27.12.2022	0.24	93.56	91.03216159	-0.857430079	90.82610179
28.12.2022	0.38	94.06	91.03216159	-0.857430079	90.70606157
30.12.2022	0.2	92.72	91.03216159	-0.857430079	90.85735649
02.01.2023	0.33	98.25	91.03216159	-0.857430079	90.75062028
03.01.2023	0.44	97.32	91.03216159	-0.857430079	90.65447747
04.01.2023	0.34	97.64	91.03216159	-0.857430079	90.7404141
05.01.2023	0.41	95.04	91.03216159	-0.857430079	90.6784302
06.01.2023	0.42	93.76	91.03216159	-0.857430079	90.67251116
09.01.2023	0.39	96.22	91.03216159	-0.857430079	90.69427883
10.01.2023	0.53	95.87	91.03216159	-0.857430079	90.57374075
11.01.2023	0.37	97.18	91.03216159	-0.857430079	90.71239549
12.01.2023	0.54	96.6	91.03216159	-0.857430079	90.56737917
13.01.2023	0.42	97.1	91.03216159	-0.857430079	90.67198564
16.01.2023	0.37	97.64	91.03216159	-0.857430079	90.71770603
17.01.2023	0.5	95.78	91.03216159	-0.857430079	90.60413803
18.01.2023	0.47	96.07	91.03216159	-0.857430079	90.62972264
19.01.2023	0.37	95.9	91.03216159	-0.857430079	90.71607414
20.01.2023	0.56	89.93	91.03216159	-0.857430079	90.55565174
23.01.2023	0.43	97.1	91.03216159	-0.857430079	90.66628788
24.01.2023	0.76	96.66	91.03216159	-0.857430079	90.38170407
25.01.2023	0.38	97.71	91.03216159	-0.857430079	90.71054234
27.01.2023	0.33	97.12	91.03216159	-0.857430079	90.75034369
30.01.2023	0.48	96.93	91.03216159	-0.857430079	90.6181335
31.01.2023	0.65	96.88	91.03216159	-0.857430079	90.47687881
01.02.2023	0.690571429	93.85264427	91.03216159	-0.857430079	90.44004488
02.02.2023	0.504178571	89.50185555	91.03216159	-0.857430079	90.59986372
03.02.2023	0.685571429	89.84859636	91.03216159	-0.857430079	90.44433203
06.02.2023	0.474821429	96.1471501	91.03216159	-0.857430079	90.62503542
07.02.2023	0.65525	92.40346643	91.03216159	-0.857430079	90.47033054
08.02.2023	0.600785714	93.94138756	91.03216159	-0.857430079	90.51702985
09.02.2023	0.653285714	91.1148502	91.03216159	-0.857430079	90.47201477
10.02.2023	0.515392857	94.08523401	91.03216159	-0.857430079	90.59024826
13.02.2023	0.6695	96.0795756	91.03216159	-0.857430079	90.45811216
14.02.2023	0.534321429	95.58803718	91.03216159	-0.857430079	90.57401833
15.02.2023	0.775535714	88.64693257	91.03216159	-0.857430079	90.36719395
16.02.2023	0.734821429	90.95752481	91.03216159	-0.857430079	90.4021036
17.02.2023	0.6225	87.51441753	91.03216159	-0.857430079	90.49841137
20.02.2023	0.45675	94.24761304	91.03216159	-0.857430079	90.64053041
21.02.2023	0.613178571	93.92034774	91.03216159	-0.857430079	90.50640384
22.02.2023	0.424107143	96.16337691	91.03216159	-0.857430079	90.66851937
23.02.2023	0.505821429	93.8901944	91.03216159	-0.857430079	90.59845509
24.02.2023	0.566392857	91.81914694	91.03216159	-0.857430079	90.54651932
27.02.2023	0.592714286	87.77172286	91.03216159	-0.857430079	90.52395054
28.02.2023	0.980785714	92.32428874	91.03216159	-0.857430079	90.19120642
01.03.2023	0.500258065	95.89244261	91.03216159	-0.857430079	90.60322528
02.03.2023	0.892709677	95.04950495	91.03216159	-0.857430079	90.26672547
03.03.2023	0.696645161	80.06575292	91.03216159	-0.857430079	90.43483708
06.03.2023	0.360451613	92.03508144	91.03216159	-0.857430079	90.72309954
07.03.2023	0.79683871	81.15132378	91.03216159	-0.857430079	90.34892812
09.03.2023	0.498709677	76.97930142	91.03216159	-0.857430079	90.60455292
10.03.2023	0.516774194	80.05617978	91.03216159	-0.857430079	90.58906386
13.03.2023	0.395516129	89.805073	91.03216159	-0.857430079	90.69303417
14.03.2023	0.558258065	88.34508263	91.03216159	-0.857430079	90.55349434
15.03.2023	0.514806452	83.00645404	91.03216159	-0.857430079	90.59075106
16.03.2023	0.495419355	87.97369449	91.03216159	-0.857430079	90.60737414
17.03.2023	0.496677419	83.45781646	91.03216159	-0.857430079	90.60629544
20.03.2023	0.45783871	89.8118791	91.03216159	-0.857430079	90.63959691
21.03.2023	0.731677419	92.21849925	91.03216159	-0.857430079	90.40479937
22.03.2023	0.379806452	87.9140479	91.03216159	-0.857430079	90.70650412

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23.03.2023	0.510419355	89.85653795	91.03216159	-0.857430079	90.59451269
24.03.2023	0.320548387	88.27613968	91.03216159	-0.857430079	90.75731377
27.03.2023	0.521935484	90.63658838	91.03216159	-0.857430079	90.58463841
28.03.2023	0.433290323	84.37313877	91.03216159	-0.857430079	90.66064544
29.03.2023	0.500709677	87.32766396	91.03216159	-0.857430079	90.60283806
30.03.2023	0.454774194	86.38814016	91.03216159	-0.857430079	90.64222452
31.03.2023	0.38016129	86.26219771	91.03216159	-0.857430079	90.70619987
03.04.2023	0.440766667	83.65726386	91.03216159	-0.857430079	90.654235
04.04.2023	0.461233333	83.71756884	91.03216159	-0.857430079	90.63668626
05.04.2023	0.5476	80.70367665	91.03216159	-0.857430079	90.56263288
06.04.2023	0.541966667	83.33230826	91.03216159	-0.857430079	90.56746307
10.04.2023	0.508066667	83.89318987	91.03216159	-0.857430079	90.59652995
11.04.2023	0.522433333	80.16971862	91.03216159	-0.857430079	90.58421154
12.04.2023	0.518366667	88.00077165	91.03216159	-0.857430079	90.5869842
13.04.2023	0.507066667	83.75624507	91.03216159	-0.857430079	90.59738738
14.04.2023	0.391466667	82.65497275	91.03216159	-0.857430079	90.6965063
17.04.2023	0.4881	89.13474015	91.03216159	-0.857430079	90.61364997
18.04.2023	0.658933333	81.5762849	91.03216159	-0.857430079	90.46717233
19.04.2023	0.425566667	84.09179917	91.03216159	-0.857430079	90.66726793
20.04.2023	0.7076	78.10439043	91.03216159	-0.857430079	90.42544407
21.04.2023	0.408433333	83.71827308	91.03216159	-0.857430079	90.68195857
24.04.2023	0.4941	86.54793227	91.03216159	-0.857430079	90.60850539
25.04.2023	0.4479	85.51015852	91.03216159	-0.857430079	90.64811866
26.04.2023	0.3385	83.5450517	91.03216159	-0.857430079	90.74192151
27.04.2023	0.4513	86.85279563	91.03216159	-0.857430079	90.6452034
28.04.2023	0.500166667	80.973009	91.03216159	-0.857430079	90.60330365

Table-2 Comparison between calculated diversion rate and predicted diversion rate

MONTH	CALCULATED DIVERSION RATE	PREDICTED DIVERSION RATE
JULY	95.1441	90.1433
AUGUST	91.0393	90.3726
SEPTEMBER	88.7246	90.3562
OCTOBER	88.8382	90.217
NOVEMBER	92.5075	90.5738
DECEMBER	92.8788	90.36656
JANUARY	96.3199	90.6449
FEBRUARY	92.4909	90.5067
MARCH	87.131	90.5873
APRIL	83.681	90.6097

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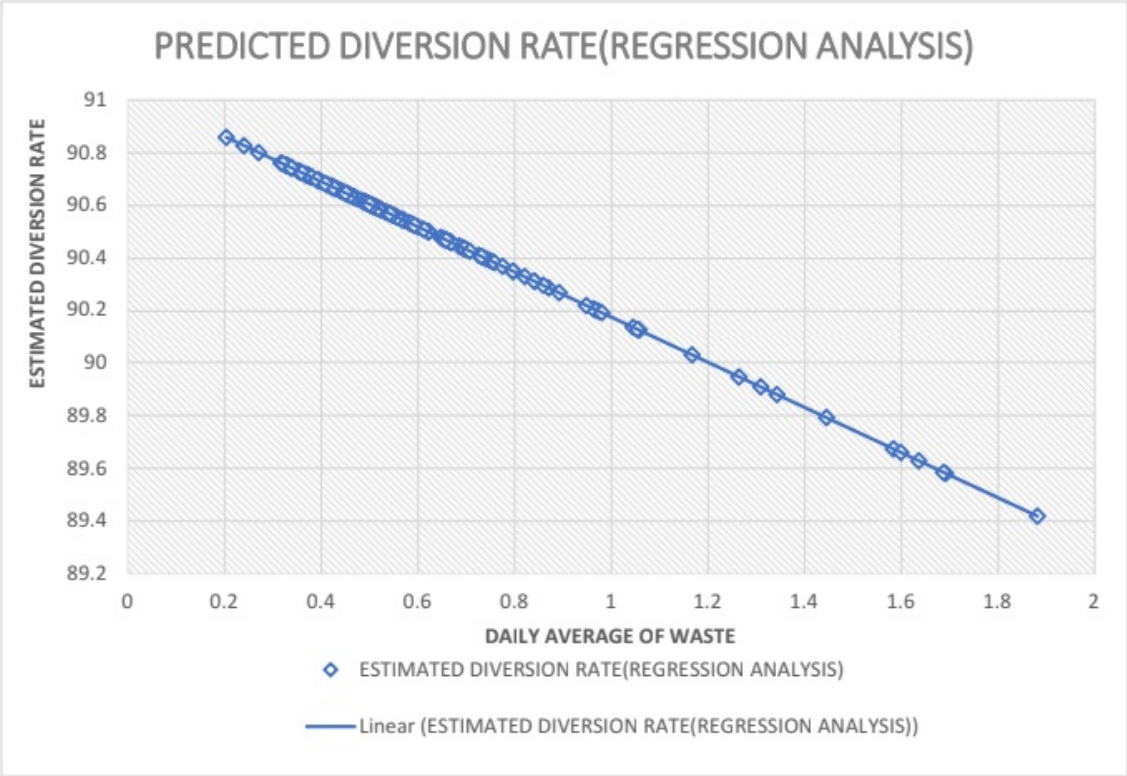
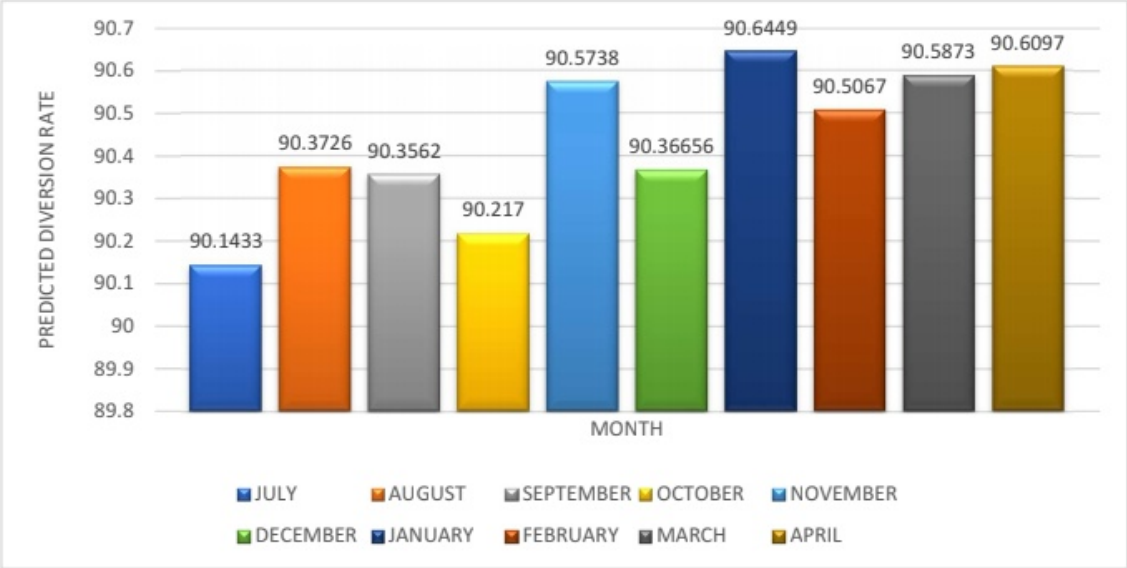


Graph-4- Predicted diversion rate



Graph-5-Month vs Predicted diversion rate

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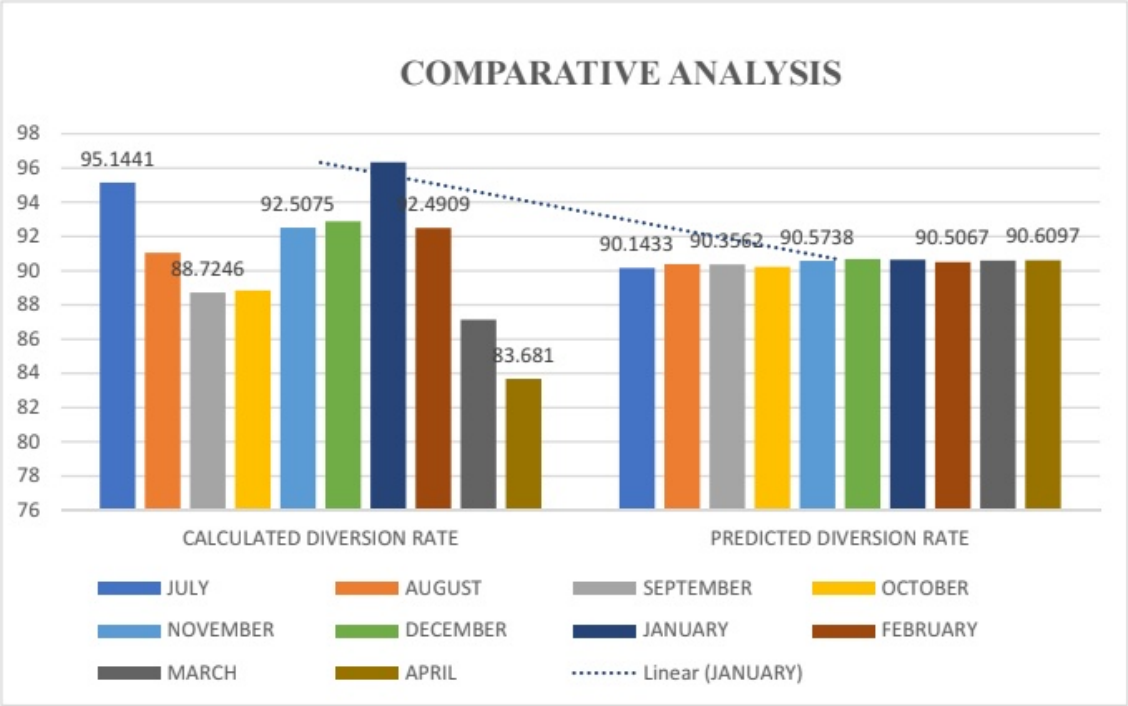

Graph-6- Comparative analysis between calculated diversion rate and predicted diversion rate

4.2. PEARSON CORRELATION

	DAILY AVERAGE (kg)	DIVERSION RATE CALCULATED
DAILY AVERAGE (kg)	1	
DIVERSION RATE CALCULATED	-0.052513955	1

	CALCULATED DIVERSION RATE	PREDICTED DIVERSION RATE
CALCULATED DIVERSION RATE	1	
PREDICTED DIVERSION RATE	0.052513955	1

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CHAPTER 5

CONCLUSION

Food or kitchen waste are collected and recycled using composters where they are put in a circular basis and takes an average of 45-60 days to convert it in a manure. If we talk about production of manure we can say that 100 kg of waste produces 15-25 kg of manure which was spread to the garden area. Aaga composters were used at the site based on the amount of food or kitchen waste generated at site. It implies the idea of zero waste management at the source. All the dry waste was sent to nearby material recovery facility where they are again segregated to comprise different recycling byers in the market. All the recycler byers purchase it so that it gets recycled so that use of virgin materials should be reduced. This implies that maximum amount of generated waste is recycled at the source, so that least amount of waste should be diverted to the landfill sites. It describes the use and utility of generated wet or dry waste leads to zero waste management at the source. This study describes that managing maximum amount of waste at the source gives maximum diversion rate, but if we see its relation with daily average waste generated we can say that higher is the amount of waste generated lower will be its's diversion rate, it has negative correlation. Weight of recyclables play an important role in calculation of diversion rate. Higher is the weight of recyclables more will the diversion rate.so if we correlate this relation with the daily average of waste generated we can say that we have to increase the number of recyclables in daily average of waste generated. Higher will be its value, the diversion rate will increase linearly as per my linear regression analysis. If we talk about predicted diversion rate and calculated diversion rate as per cor relation analysis the output is positive. It describes that the rate with which the calculated diversion rate increases, at the same rate predicted diversion rate increases as per forecasted analysis through regression and correlation analysis. It describes the idea that we should increase the number of recycles in order to get maximum diversion rate. Improving SWM in India is crucial. Improper SWM endangers public health, the environment, and Indians' quality of life. Improved SWM in India involves waste material and energy recovery. It not only adds value to SWM initiatives and makes them more financially viable, but it also makes them more sustainable. Any initiative to divert MSW from landfills will help the cause, especially in India's filthy landfills. India should choose one or more of these options, or a mix of them, in order to benefit the country.

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