Logistic Challenges in Solid Waste Management in Nigdi Pradhikaran

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Abstract - **The importance of waste management cannot be overemphasized. Improper waste management and disposal has rippling effect on the environment and human health. Hence, there is an urgent necessity to develop an efficient waste collection process while saving time, fuel, labour and maintenance costs. The aim of this is to assess solid waste management among household in Nigdi Pradhikaran Area. A sustainable process satisfies the current needs without compromising the ability of future generations to satisfy their own needs; that is, it must have a triple impact (sustainability): social, economic, and environmental. The management of municipal solid waste has become anacute problem due to enhanced economic activities and rapid urbanization. This project presents an idea of current Municipal Solid Waste Management (MSW) in Nigdi Pradhikaran area and provides recommendation in system improvement. Then collect data of MSW functional elements which were based on available reports & meeting with responsible persons. The primary objective is the proper segregation of organic and inorganic waste which is dry and wet waste. Due to increase in population & changes in lifestyle the quantity & quality of MSW in Nigdi Pradhikaran Area has changed. Public awareness, suitable planning, infrastructure are the main challenges of MSW management in Nigdi Pradhikaran Area is important. However, the present situation of MSW management in this city, which generates 350 ton/day, has been improved since the establishment of an organization responsible only for MSW management.**

Index Terms - **Polyhouse Automation, Communication.**

1.INTRODUCTION

Urbanization is rapidly increasing in developing and digital India. The increasing trends of urbanization and digital revolution and uncontrolled growth rate of population of India is bigger concern towards the negative impact on environment, also in management of municipal solid waste. India is highly populated country and 2nd in rank in the world, that's way the generation rate of solid waste is also high in India. In 1835 under the British rule Indian industrialization is started after that the growth in industry sector is tremendous. Industry's plays an important role in producing the waste. It creates adverse effect on human as well as on environment. Every year India generates 62 million tonnes of waste from every sector. Out of 62 million only 43 million tonne is collected by local municipal authorities by combined of this 43 only 12 million tonne is treated and remaining 31 million tonne is dumped in landfills.

Nigdi Pradhikaran, sector 26 is locality in Pimpri-Chinchwad city in Maharashtra state. The total population of PCMC area is 17.29 lakhs. The waste generation rate of PCMC area is 646mtd. The per capita generation is 350gm (NBC criteria is 400 gm). Sector 26 is a residential area it generates household solid waste. The waste categorises in wet and dry waste in sector 26. The waste mainly generates from houses, societies, hotels, medicals and clinical stores and some hospital. For biomedical waste separate vehicle is provided for collection. The local municipal corporation authorities are responsible for collection and transportation of waste. Door to door collection method is used in area by small vehicles called ghanta gadi. Lately Pradhikaran is working towards zero waste city program. Their goal is recycling the waste until its optimum level. After collection of waste, waste is transported to Moshi landfill area.

Awareness among the people towards management and segregation of waste is important. Also, logistics is big challenge in waste collection method. Waste generally dumped in landfills creates hazardous environment and its affect social as well as human and animal life. Green hose gases are evolved in air through this landfill affect the environment. The main goal of study is minimizing the affect on human as

well as on environment by suggesting proper methods of collection and segregation and overcome the logistics challenges in sector 26. by using appropriate methods of recycling and reuse of waste up to its optimum level.

2.REVIEW OF LITERATURE

1. Puneet Pal Singh Cheema1 et.ac. (January 2021)
In this paper author has investigate the uphill task of managing solid waste has influenced the Ludhiana city of Punjab. To investigate the current scenario and to carry out the implementation analysis of solid waste management (SWM) in the city, the present study was undertaken. This study focusses on analysing the factors that are responsible for hindering successful policy implementation of SWM in the city. For research purposes, a mixed methodology of quantitative and qualitative analysis was adopted to collect primary and secondary data from various sources. Discussions and interviews were held with selected officers of municipal solid waste departments of the city. Based on the analysis, the study proposes various policy recommendations in terms of administrative challenges to improve SWM in the city.

2.Ram Kumar Ganguly1 et.ac. (January 2021)
In this paper authors had tried to reflect the challenges face by the COVID-19 pandemic which has created a global emergency crisis of socio-economic-environmental challenges. Such crisis has altered generation and disposal of waste both in terms of qualitative as well as quantitative aspects and poses real challenges to arrive at decision to ensure sustainable management of environment. This study tries to show the challenges faced by the existing waste management framework to combat huge waste generation. Developing country like India, ranks second among the COVID positive cases across world which results into an enormous hike in biomedical waste generation. Therefore, the study has highlight and talk over about all those newly generated problems in view of continuing global pandemic with the necessity to outline strategies integrating different traditional, modern and newly proposed waste management strategies to tackle the deteriorating environmental problems especially in respect of generation, collection, disposition and recycling of huge amount of municipal solid wastes alongside assessing different guidelines as imposed by different Government agencies for handling of municipal solid wastes under this global crisis. Despite very limited literatures, the study has tried to emphasize the role of different existing processes as well as provide recommendations for improvement in waste management sectors in order to meet the challenges of ongoing and future crisis out of pandemic.

3. Stephen T. Odonkor1 et.ac. (2020)
The Autor aim is to assess solid waste management among household in a large Ghanaians district. Multi-stage sampling technique comprising a cluster, simple random sampling, and systematic sampling techniques were used to select 600 respondents for the study. Data was analysed using (SPSS) version 23.0 and results indicates that communal waste collection bins were far from households as confirmed by the majority (57.3%) of the respondents. The majority (56.5%) of the households walked 11–15 min before reaching the refuse site. This study found out that the number of waste collection point in the sector were less than 13 collection bins as confirmed by people (92.2). The distance from the centre of the community to the final waste disposal site covered 1–2 h journey. There was a significant relationship between the number of waste disposal sites in the community and the average distance (in kilometres one way) from the city centre to a disposing site. In conclusion, the study found that communal waste collection bins were far from households; number of waste collection bins point in the community were very less. This indicates that the distance from the centre of the community to the final waste disposal site covered 1–2 h journey. The major findings of this study were that district assembly should provide waste collection bins to every household to ensure that residents do not dispose their household waste randomly. District by-laws should be strengthened to ensure proper household waste disposal at all districts in Ghana.

4.Annie Purwani1 et.ac (April 2020).
Authors examine about Municipal solid waste problem, which is a complicate problem, due to which it impacts on economic, social and environmental aspects. The composition, which effect degradation in the quality of air, water, the environment and public health, affecting climate change, and even cause of disasters such as floods and fires due to increases in

weight and volume of Municipal solid waste. Municipal solid waste problem is an integrative problem which involves many stakeholders that needs to be considered simultaneously. Many logical /analytical approaches have been done since the collecting method, separating method, transportation, disposal and/or 3 R (reduce, reuse, recycle) and other related operations. This study also compares the performance of the municipal waste management that has been conducted in some developing countries with different characteristics and focuses on using the reverse logistics approach to solve municipal solid waste problems.

5. Mykhailo Dobroselskyi1 et.ac (May 2019).
In this paper author has carry out study on model of waste transportation management in the condition of a production company the purpose of the paper is to analysis the methods for reducing industrial waste by example of a brick factory, that is what type of waste is formed at the enterprise. The main result of this investigation is to define the common model of waste transportation management and to determine the main stages of its occurrence and to put forward effective methods and discussed about possible ways of waste engagement.

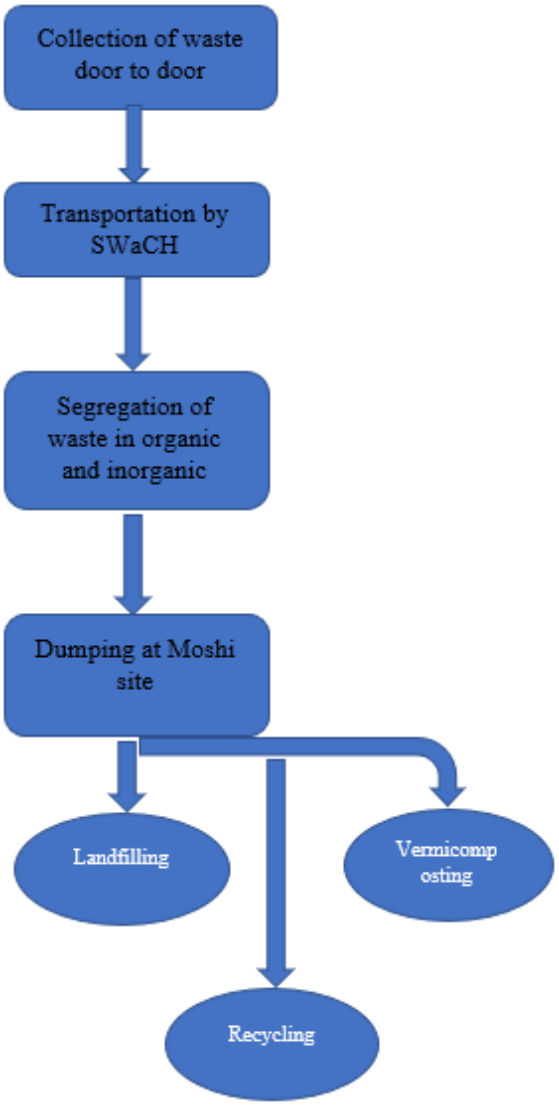
6. Agata Mesjasz-Leah1 et.ac. (2019)
The author has work about the municipal waste which is challenging in terms of physical and chemical composition. The economic use of municipal waste is the most effective method of removing its negative impact on environment. The main course in the field of municipal waste quantities in Poland are examine. Municipal waste is still the problem in Poland, especially in urban areas. The required reduction of waste in urban area results in a zero-waste city concept. This concept can be supported by reverse logistics. Recommendation for the execution of the tasks in the field of the reverse logistics are located especially in the province plans of the waste management. As a result, the aim of this article is to identify the course in the size of the flows of municipal waste. The main object of reverse logistics in municipal waste and the concept of zero waste cities, are measured separately. The function of reverse logistics is to reduce municipal waste without the proper organization of waste flows and infrastructure which is not possible because of the zero-waste concept involve the activities of reverse logistics. Ecologically and economically effective organization of waste flows often stretches beyond the city and encompasses a larger region around it. For this reason, the classification of the Polish provinces using the following diagnostic features: municipal waste collected according to the treatment operations, municipal waste collected by fractions, mixed municipal waste collected, landfilling of municipal waste by urban areas, degassing of landfill sites has been added to the research. Accepted for analysis variables reflect the effects of implementation of solutions of reverse logistics. The breakdown is conducted with the use of multidimensional statistical analysis. Data from the years2012 and 2016 were analysed

3. METHODOLOGY

Total solid waste generated in Nigdi Pradhikaran; Sector 26 is 20 to 30 metric tonne per day. Nigdi Pradhikaran; Sector 26 carried out work of collection and transportation of waste through its workers and private sector thought tenders' system participants for work management. In private sector the SWaCH cooperative are held to pick the waste door to door and segregate the dry and wet waste on site. Local household markets commercial buildings hospitals are also source of solid waste in pradhikaran which is also collected by SWaCH cooperative from market area restaurants &lodging and door to door households.
At Moshi side, PCMC has constructed one composting plant with capacity of 500 metric tonne. For door-to-door collection and segregation PCMC has appointed a private operator. Zone A has four ward which are ward10, ward14, ward15, ward19, and sector 26 comes under ward 15 which produce 330 metric tonne and sector 26 produce 20 to 30 metric tonne waste. Disposal of solid waste management manage by SWaCH cooperative they use vermicomposting and mechanical composting. After the collection of waste, it is dump at Moshi site for 8 days to remove odour.
There are two steps used by PCMC.
In first step vehicle stops at each building to pick up the waste. The second step is about collection and transportation of waste from residential home, grocery store, public building. After segregation of waste, it is treated in ways like Landfilling, vermicomposting, recycling, reusing.

In vermicomposting plant by using various species of worms usually red wiggles white worms and earth worms to create a mixture of decomposing vegetables or food waste. Recycling waste is sent to recycling and dry residue are used for landfilling

Flow chart of Municipal solid waste:



4.CONCLUSION

In the present work an effort has been made to design and develop an appropriate collection, transportation and SWM plant for the PCMC, Nigdi pradhikaran sector 26 city Municipality Corporation (ICMC).

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