

A STUDY OF SUBURBAN REGION SOLID WASTE MANAGEMENT IN INDIA**Haresh Kumar Sharma**SGT University, Gurugram, Haryana, India
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Abstract

Solid Waste Management in the rural realm is unworthy compared to urban areas. Adherence to solid waste management principles and laws comes from many provocations. From Solid Waste Management Rule 2016 to looming plans, a suitable settlement can develop a program for ongoing achievement. The primary data has been collected by surveying the village. The information on Solid Waste composition offer relative magnitudes of character waste fractions, the chances of which continually sum to a hundred, thus connecting them virtually. Due to this sum constraint, waste composition facts constitute closed statistics. Their interpretation and evaluation require statistical methods aside from classical records, which are appropriate most uncomplicated for non-limited facts, including absolute value. However, the closed traits of waste composition records are frequently disregarded whilst analysed.

Key word: Municipal Solid waste, Waste Management, Environmental.

Introduction

The remains of used items thrown outside like product packaging, grass clipping, furniture, clothing, bottle, newspaper, food fragment, more commonly called trash or garbage described by the Environmental Protection Agency (EPA) (USEPA, 2012). Due to intense urbanisation and increasing consumption caused by changed lifestyle practices, the MSW output escalated. Thus, Municipal Solid Waste Management (MSWM) is a missing link in urban areas, and now it's affecting suburban regions (Kaushal *et al.*, 2012; Singh *et al.*, 2014). Now-a-days MSWM has become a prominent issue in developing countries, which must be addressed to reduce its impact on the environment and health. MSW causes severe environmental risks, ascending further due to the transfer of MSW pollutants into soil, water, and air. The increasing pollution because of MSW gives rise to direct and indirect health risks to the city's population. Sanitary workers and rag pickers are more prone to health risks because of their direct contact with MSW. During its management processes, harmful chemicals and gaseous emission from MSW lead to more significant health risks. Besides, the population's health is also adversely affected by the breeding of disease-causing vectors, like flies, rodents, chemical compounds and toxic gases. We take a rural village and research on tasks of MSW management and compare it with the work of MSWM in the suburban realm. Hence, information has been collected

from the town Mankrola by a survey on solid waste and management.

Literature Survey

Ray Lu et al. (2020) explain the environmental and economic performance of different waste management practices like landfilling, lifestyles cycle usage and lifestyles cycle costing. Organic waste was considered one e Functional Unit, and the final product was compost. The compost was assumed to be implemented in non-public gardens and tropical horticultural vegetation in domestic and centralised scenarios. Sangkham, 2020) explains that the beginning of the radical human corona virus (SARS-CoV2) and its ability to damage multiplied face masks and scientific waste inside the environment necessitate the critical prevention and manipulation of the pandemic. The article estimates the face masks and clinical waste era in Asia for the duration of the pandemic to persuade the waste control and medical groups to locate approaches to deal with the waste disposal's poor effect on the environment. Also, Parmeswari K et al. (2021) recommended that municipal stable waste disposal poses a critical difficulty to the surroundings and human health. Technical measures and control moves are essential for the sustainable control of municipal solid waste. Babu et al. (2021) explain that rapid population boom and urbanisation have brought about the era of significant portions of municipal solid waste (MSW) in city areas. Gharagozlou et al. (2014) suggested that solid waste disposal systems are one of the primary reasserts resulting from weather extrude.

ThiKimOanh et al. (2015) studied the attitude of low remedy costs, and ranked the bioreactors. Al-Ghouti et al. (2020) recommended that the MSW destruction by incineration broadly become a suitable and popular global preference. Despite being seemed as a sustainable option, if now no longer operated and controlled properly, it could be one of the least environmentally desired options. Oyedotun (2020) projected that the novel COVID-19 pandemic has extensively impacted all aspects of society globally. Often disregarded is the ability infection of the waste disposed of with the aid of using people recognised with the virus.

Bareither et al. (2013) projected that methanogen boom levels coincided with elevated methane production, and cumulative methane yield improved with growing overall methanogen abundance. The methanogen populations and equivalent methane yield depend on MSW cellulose and hemicelluloses contents. Alamu et al. (2021) explain that the sustainability evaluation of MSW control calls for a holistic technique in comparing the effects of modern-day generation and processes. Abrate et al. (2011) proposed that the boom in curbside recycling has advanced independently of expenses.

For this reason, the economics literature is silent (with some important exceptions) on municipal waste and recycling services charges. Data barriers may also have additionally hampered investigations into charges. Ozturk and Dincer (2020) illustrate the structures wherein MSW is transformed to strength via combustion; an enormous loss occurs in the combustion chamber. Improving combustion chambers and minimising losses affect gadget efficiency. Suchowska-Kisielewicz et al. (2017) offered that with the mass stability evaluation of the waste and the technological and monetary parameters, the performance of the mechanical-organic property of the garbage can determine the sustainable management solution of MSW. Taskin and Demir (2020) proposed that the collection and transportation of MSW are essential components of the sustainable

MWSM method for municipalities. However, the series and transportation of the MSWs have continually been challenging topics for modelling, including MSWM structures through thinking about environmental and power parameters.

Ragazzi et al. (2020) proposed that the mismanagement of MSW should undermine the techniques at some point to benefit the lockdown. During the SARS-COV-2 outbreak in Italy, there was a standard lower selective series rate. From the literature review section, it can be considered that the increasing population is vulnerable to scattered waste. So, it has been found that unsegregated and unscientific waste management leads to a higher level of pollutants in the atmosphere.

Study Area

Mankrola, a suburban area, has been chosen for this research. It belongs to district Gurugram in Haryana State, India (as shown in Fig.1). Mankrola has been spread over 676 hectares to accommodate 446 households with almost 2738 people, of which 1249 are males, and 1129 are females.



Figure 1: Map of Mankrol village.

In the growing metropolitan regions of India, Gurugram is one of the biggest cyber cities, which is the reason of its rising population in the last three decades. Such a scenario also enhances the generation of solid waste, leading to the heaps of untreated solid waste degrading the environment and public health. Such effects are not limited to the urban boundaries; the nearby suburban areas like Mankrol's environment and living beings' population is also affected. Hence this area has been selected for the study.

Methodology

The primary data has been collected by random sampling technique 111 households survey. The survey questionnaire has been designed to extract information such as how household waste has been utilised and how animal waste and agriculture waste has been managed within agricultural fields. It

has been proposed that further study can further research the statistical methods for deep understanding. Likewise, Spearman correlation provides the rank of two monotonic functions and its value between -1 and 1. At the same time, Kendall correlation explains the ordinal association among the two variables in which strong relation is denoted by 1 and weak by -1.

Results and Discussion

i) Problem regarding utilising waste: We know that we can utilise all three kinds of waste. We can use different methods for this purpose, but still, too many problems occur in this way. The issue regarding each process is as follows:

a) Compositing: Compositing is microorganisms' aerobic decomposition of organic materials under controlled conditions. But too much moisture slows decomposition and produces a disagreeable odour. Also, if the organic material is too dry, decay will be prolonged or may not occur. It takes some planning and effort to achieve. There is also sometimes a lack of oxygen, nitrogen, and microorganism that occurs in the method. And also, a lack of knowledge regarding this happens many a time.

b) Burning waste: On a local as well as a regional level, burning farm waste seriously pollutes the soil and water. But farmers think of it as an easy method. That's why they prefer this method instead of anyone else.

c) Utilise the waste as manure: We know we can utilise animals and household waste as manure. Though, fertilisers are used too much in comparison to manures. The main reason behind this is that fertiliser shows its effect rapidly while manure takes much time. Also, fertilisers are more effective in comparison to manure.

ii) Time management: Time management is also an essential factor. When we decompose crop residue, it will take much time, but the burning process does this work in a couple of hours.

iii) Lack of knowledge: The government makes time-to-time schemes related to these MSWM problems but does not have much effect. Because of a lack of knowledge about these schemes.

iv) Suggestions: Compositing is an excellent method to utilise waste. But it requires certain circumstances. We have to let framers know these certain circumstances carefully. Burning causes much pollution, so we have to introduce them in a better way. Microbial culture has been sprayed on the post-harvest stalks of the crop plants. It is distributed to farmers at a nominal price of rupees 20. In South India, the post-harvested crop residue can be converted into the cardboard. A start-up from the IIT in Delhi has created a machine that can turn agricultural residual leftovers into pulp, which is then moulded to create biodegradable flatware. But poor farmers can't afford these machines, so the government has to make some schemes. As we know, fertiliser shows its effect rapidly and better than manure. But farmers must be aware of its harmful effects, such as affecting soil fertility, water pollution and also causes diseases. And factories which made these factories can reduce the effect of these fertilisers every year so that it doesn't affect much more. One more thing that should be noticed is that there is a lack of knowledge among the poor farmers, so it's government duty to provide knowledge about their schemes and crop production and management.

v) Inference: At last, we can say that there is some problem in our crop production and management. Every stakeholder has to accept these defaults and take appropriate steps regarding this. Some of them are mentioned above so that we can do more things in a better way.

Conclusion

Four composting situations were selected for environmental and costing evaluation, whereas taking lifestyle cycles in picture organic residential and simple waste control have been eliminated as factors for analysis. The result now is used for examining the current trend of landfilling. The hindrances present in the device initiate at household waste moving on to degradation of waste and terminating at compost software. Lastly, it was deduced that composting was directly executed as house composting in private gardens. Stakeholders must take the environmental and financial advantages of compost utility had been additionally taken into account, which consists of the cost of substituted fertiliser. The study result shows landfilling became visible because of the worst alternative from environmental and monetary perspectives. The end result indicated that power intake turned into the maximum main environmental impact compared to the waste series and transportation method inside the centralised composting situations. While this was going on, bin manufacture and the pollutants produced by waste degradation inside the residential composting machine became the most dangerous impact. In contrast to earlier studies, our results suggested that energy intake might have a more positive impact on the environment than waste collection and transportation.

Future Scope

In my opinion, many such models exist to solve this problem, yet this problem increases daily. The reason behind this is the unawareness of people regarding this. So, to make our model successful, we must be aware of people and let them know their duty towards waste management.

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