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# Role of Rag Pickers in Solid Waste Management

**Mrs. Suvarna Shinde**

Research Student, Department of Sociology, Shivaji University Kolhapur

**Abstract**

Solid waste generation in India has increased tremendously in the last few decades due to increasing population and rapid economic development. Effective waste management plays an important role in solving the problems of a healthy environment. Although the formula of 3-R (Reduce, Reuse and Recycle) is important for the safety of the environment, the role of waste pickers has always been central and important. Usually rag pickers earn their livelihood by collecting usable items from garbage dumps. Apart from this, there has been a lot of growth of solid waste in India due to Increasing population, rapid urbanization, insufficient knowledge of new techniques of workers working in waste management systems, and other factors continue to increase waste generation.Recently the Government of India has given a boost to this sector through Swachh Bharat abhiyan and as a result of this, solid waste management market in India is expected to grow CAGR of 7.5% during the period (2021-2026). Present study aims to identify role of rag pickers in solid waste management

**Keywords:** Rag-pickers, 3-R, waste management, garbage, rapid urbanization. Swachh Bharat abhiyan

**Introduction:**

Waste management in India falls under the jurisdiction of the Union Ministry of Environment, Forests and Climate Change. This Ministry framed some rules for solid waste management in the year 2016. Accordingly, Municipalities, Municipal Councils are working on solid waste management in their respective jurisdictions.

The industrial revolution and economic development have completely improved the standard of living of the people. People's preferences and the consumption patterns of life goods are changing. As a result, the types of waste generated are also becoming complex.

A deeper study of solid waste reveals that all countries in the world are taking serious steps towards solid waste management. Yet some countries are failing to find effective solutions. Some of the developed countries have started implementing some effective and advance systems for solid waste management process. Germany, Italy, Canada, Australia have really focused on it seriously. If the solid waste management process in India is implemented in a modern and effective manner, it is believed to be a model for the entire world. As per the year 2023, the estimated population of India is 14,286,27663and India represents approximately 17.76 percent of the world population.

The amount of solid waste in the municipal sector is increasing day by day. Therefore, it is necessary to find a solution to this serious problem of waste management. Moreover Waste management is very important in terms of environment and human health.

In fact, increasing population and rapid changes in industrialization have led to a huge increase in waste generation. If the waste management system is to be kept under control, it is necessary to implement efficient and sustainable waste management practices.

Most warring thing about plastic waste is that India generates 3.4 MT of plastic waste every year and out of which only 30 percent is recycled.

In India, solid waste management (SWM) process is generally carried out by traditional way in maximum municipalities. Very few local municipal authorities or urban local bodies (ULBs) have proper set up for disposal of collected waste.

In the year 2014, the Government of India launched Swachh Bharat Abhiyan in collaboration with the State Governments and Union Territories. And as part of that, around 100 smart city development projects were launched across the country in 2015. The Ministry of Environment, Forests and Climate Change revised India's SWM regulations in 2016 with proper use of the 3-R system.

**Objectives:**

The Present Study is undertaken with following objectives

1. To take Review of solid waste management in India.
2. To highlight the role of rag pickers in solid waste management process

**Hypothesis:**

1. Rag picking has a positive impact on solid waste management.

**Research methodology:**

This research paper is completely based on secondary data. The data for this paper is collected from internet, books, newspapers, research papers. Research journals, articles, etc.

**Statistical analysis of Solid waste management in India:**

It is estimated that more than 4 million rag-pickers are working in various states of India. And India generates 65 million tons of waste every year. Among these rag pickers, mainly female rag pickers appear to outnumber the male. Hence, women rag pickers in all cities are considered to be the backbone of traditional waste management in Indian cities.

Per capita solid waste generation has been calculated for the period of 2015-2021 is illustrated in Table no .01 as follows.

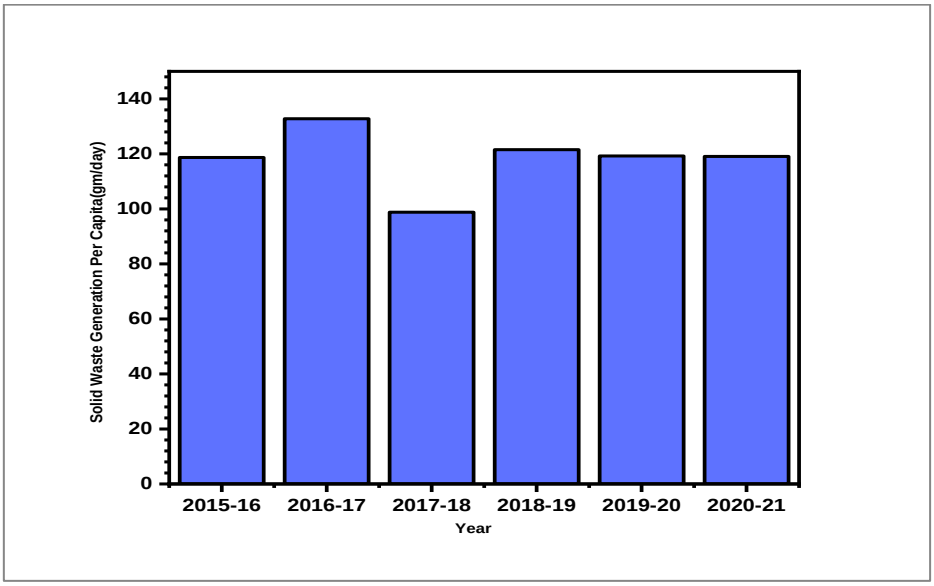
**Table: 1 Solid Waste Generation Per Capita (gm/day)**

| Year | Solid Waste Generation Per Capita(gm/day) |
|---|---|
| 2015-16 | 118.68 |
| 2016-17 | 132.78 |
| 2017-18 | 98.79 |
| 2018-19 | 121.54 |
| 2019-20 | 119.26 |
| 2020-21 | 119.07 |

**(Sources: Annual Report on Solid Waste Management (2020-21),CPCB, Delhi)**

From fig.1, it can be seen that during the six year period from 2015-16 to 2020-21, there is a marginal decreasing trend in per capita solid waste generation.

**Fig.1 Solid waste generation per capita (gm/day)**




**Sources: Annual Report on Solid Waste Management (2020-21), CPCB, Delhi)**

As per as last three years are concerned, the amount of solid waste generated per day in India is as table no.02 below.

**Table:2 Year wise Solid Waste Generations (TPD)**

| Year | Solid Waste Generation (TPD) |
|---|---|
| 2019 | 152076.7 |
| 2020 | 150847.1 |
| 2021 | 160038.9 |

**Sources:** ***Global waste generations - statistics & facts*** **(2023)**

According to the Annual Report on Solid Waste Management 2020-21, the total solid waste generated by municipalities or local bodies from all states in India is 160038.9 TPD. This is huge. Generally 79956.3 TPD of waste is processed from this solid waste collection and 29427.2 TPD of waste is land filled and 50655. 4 TPD of waste is thrown anyway without proper disposal. Inadequate waste management causes many environmental problems and also affects human health.

As per Annual Report on Solid Waste Management (2020-21), CPCB, Delhi, overall solid waste management status is illustrated in table: 3.

**Table: 3: Overall solid waste management status**

| Sl. No. | State | Solid-waste generated/day (TPD) | Collected (TPD) | Treated (TPD) | Land filled (TPD) |
|---|---|---|---|---|---|
| 1. | Andhra Pradesh | 6898 | 6829 | 1133 | 205 |
| 2. | Arunachal Pradesh | 236.51 | 202.11 | Nil | 27.5 |
| 3. | Assam | 1199 | 1091 | 41.4 | 0 |
| 4. | Bihar | 4281.27 | 4013.55 | Not provided | No |
| 5. | Chhattisgarh | 1650 | 1650 | 1650 | 0 |
| 6. | Goa | 226.87 | 218.87 | 197.47 | 22.05 |

| | | | | | |
|---|---|---|---|---|---|
| 7. | Gujarat | 10373.79 | 10332 | 6946 | 3385.82 |
| 8. | Haryana | 5352.12 | 5291.41 | 3123.9 | 2167.51 |
| 9. | Himachal Pradesh | 346 | 332 | 221 | 111 |
| 10. | Jammu&Kashmir | 1463.23 | 1437.28 | 547.5 | 376 |
| 11. | Jharkhand | 2226.39 | 1851.65 | 758.26 | 1086.33 |
| 12. | Karnataka | 11085 | 10198 | 6817 | 1250 |
| 13. | Kerala | 3543 | 964.76 | 2550 | Not Provided |
| 14. | Madhya Pradesh | 8022.5 | 7235.5 | 6472 | 763.5 |
| 15. | Maharashtra | 22632.71 | 22584.4 | 15056.1 | 1355.36 (Unscientifically dis-posed= 6221.5) |
| 16. | Manipur | 282.3 | 190.3 | 108.6 | 81.7 |
| 17. | Meghalaya | 107.01 | 93.02 | 9.64 | 83.4 |
| 18. | Mizoram | 345.47 | 275.92 | 269.71 | 0 |
| 19. | Nagaland | 330.49 | 285.49 | 122 | 7.5 |
| 20. | Odisha | 2132.95 | 2097.14 | 1038.31 | 1034.33 |
| 21. | Punjab | 4338.37 | 4278.86 | 1894.04 | 2384.82 |
| 22. | Rajasthan | 6897.16 | 6720.476 | 1210.46 | 5082.16 |
| 23. | Sikkim | 71.9 | 71.9 | 20.35 | 51.55 |
| 24. | Tamil Nadu | 13422 | 12844 | 9430.35 | 2301.04 |
| 25. | Telangana | 9965 | 9965 | 7530 | 991 |
| 26. | Tripura | 333.9 | 317.69 | 214.06 | 12.9 |
| 27. | Uttarakhand | 1458.46 | 1378.99 | 779.85 | - |
| 28. | UttarPradesh | 14710 | 14292 | 5520 | 0 |
| 29. | West Bengal | 13709 | 13356 | 667.6 | 202.23 |
| 30. | Andaman and NicobarIslands | 89 | 82 | 75 | 7 |
| 31. | Chandigarh | 513 | 513 | 69 | 444 |
| 32. | DDDNH | 267 | 267 | 237 | 14.5 |
| 33. | Delhi | 10990 | 10990 | 5193.57 | 5533 |
| 34. | Lakshadweep | 35 | 17.13 | 17.13 | Nil |
| 35. | Puducherry | 504.5 | 482 | 36 | 446 |
| | **TOTAL** | **160038.9** | **152749.5** | **79956.3** | **29427.2** |

**Sources:** ***Annual Report on Solid Waste Management (2020-21), CPCB, Delhi***

India's western state of Maharashtra has produced the highest solid waste in FY2021. Maharashtra has generated approximately 22632.75 (TPD) metric tons of municipal solid waste per day in financial year 2021. Maharashtra generates 14 percent of the total solid waste generated in India. Along with Maharashtra, the states of West Bengal, Tamil Nadu, and Uttar Pradesh are also contributing to the

generation of solid waste on large scale. Sikkim generates 71.9TPD of solid waste and Andaman and Nicobar Islands generates 89TPD of solid waste. As the municipal solid waste in India is increasing day by day, it is necessary to improve the solid waste management by creating infrastructure. To move forward, India needs to plan for long-term management of waste and adapt strategies to changing lifestyles. Household and institutional waste must be separated at the source to make recycling more efficient.

Even though solid waste is collected through various municipal bodies, the role of waste pickers is also very crucial .Therefore, it is necessary for the government to take care of waste pickers by including them in main stream of solid waste process.

**Market Overview for Solid waste management**:

From a practical point of view, the solid waste management market in India is segmented into four phases. It mainly includes collection, transportation, treatment and disposal. Collection and transportation segments account for the largest share of the market due to lack of proper collection and transportation infrastructure.

The recent implementation of policies to improve the sustainable waste management process within the municipality can lead to a major change in the treatment and disposal sector and is likely to grow significantly.

The solid waste disposal sector in India is largely influenced by the special efforts of the central and state governments. May be municipality or a union territory, the government's Swachh Bharat Abhiyan is helping to modernize the solid waste management system. Growing population, rapid urbanization, changing lifestyles have led to a sudden increase in solid waste. So solid waste management systems needs to be modern and sustainable. Recently the Government of India has given a boost to this sector through Swachh Bharat abhiyan and as a result of this; solid waste management market in India is expected to grow CAGR of 7.5% during the period (2021-2026*).*

India is among the top ten countries that generate maximum solid waste. According to The energy and research institute (TERI) latest report, India generates 62 million tons of waste every year. Out of which Only 43 MT of waste is collected. 12 MT of waste is treated before disposal. And 31 metric tons of waste is dumped at the dumping ground.

According to Central Pollution Control Board (CPCB), annual waste generation in India will reach up to 165 MT by 2030. Since last five years e-Waste, biomedical waste, hazardous, and plastic waste are significantly increased.

**Challenges toward effective solid waste Management:**

At present, problems like increasing population and rapid change in solid waste in India are taking a serious form. About 640 million metric tons of municipal solid waste is generated in India every year. And if the rate remains the same, it is predicted to increase to 1.3 billion metric tons by the year 2025.

Considering the 3-R system, the current recycling rate in India is only 18 percent, which is far below the global average recycling percentage. The global average recycling rate is 35 percent. India's below world average percentage of people in The most important thing to improve the solid waste management system in India is to invest in innovative technologies that can go a long way in reducing waste generation. A zero waste system or waste composting technology not only creates employment but also enables proper disposal of waste.

1. The employee working in solid waste management system in India needs to be trained. Therefore, the new technology system in the solid waste management system can be implemented effectively.
2. Availability of qualified waste management professionals required for waste management system in India seems to be limited. Hence there are difficulties in implementing the waste management system.
3. In India, the most important factor for effective implementation of solid waste management system in any city is the municipal authorities. But due to low financial budget for solid waste management process, there are limitations for its collection, storage, processing, and disposal. For proper implementation of solid waste management system, it is necessary to make sufficient financial provision in the budget of respective municipal corporations or ULBs.
4. It is necessary to create environmental awareness in the society. Because many used items can be recycled. As a result, the generation of waste can be significantly reduced. Municipal authorities concerned with solid waste can play an important role in this regard. On the other hand, separation of wet(biodegradable ) and dry (inorganic) waste is mandatory for every family, but it needs to be strictly enforced
5. A strong independent authority is required to improve solid waste management techniques, strict enforcement of planning and regulations.

Although many provisions and practices are being implemented for proper disposal of waste, it is still challenging to find a reliable and economically affordable solution to solid waste.

**Problems of Rag pickers:**

Solid waste includes many wastes, which includes household waste, construction waste, street waste, waste generated from commercial complexes, municipal parks and gardens, waste from different industrial estates, agricultural waste, bio-medical waste, plastic waste, e-waste, etc.Considering all the above solid waste, it is observed that the role of Rag pickers is central. Although they are not directly involved in the solid waste process, their importance cannot be denied. Rag pickers really plays important role in waste management process by collecting and separating recyclable materials from garbage. For environment sustainability rag pickers role is important.

There are so many problems of rag pickers which arrive in workplace or in daily life includes: Negligence of the Municipal Corporation, Lack of facilities in workplace, Problem of waste segregation, Lack of social security, Bad treatment from society (Social Exclusion),Lack of savings habit, Low health awareness, Low awareness about diet, Lack of information about government schemes, Child Labour, Irregularities in yield, Lack of education and skill development, Environmental issues**.**

All the above problems are frequently faced by these rag pickers. As a result, if we consider the overall situation of rag pickers, it can be seen that they are treated as inferior in the society, the economic and social life of their family is affected by this occupation. Serious health problems arise. Depression is seen in the education of children in the family. Along with this, rag pickers do not get proper information about various schemes of the government on time. Municipal employees do not cooperate properly while rag pickers work in the municipal area, as a result of which rag pickers face problems in the work.

**Role of rag pickers in solid waste Management:**

Various surveys show that, rag pickers around the world tend to be poor, less educated, from rural areas, or from lower castes. All these rag pickers are working in the informal sector. Although they are deprived

of society, their contribution in the process of solid waste management is valuable. The contribution of rag pickers in the waste management process is evident from the following points.

1. The role of rag pickers is very important in the solid waste management process. The sector of waste collection as a whole is known as the informal sector. The role of rag pickers in this area is also known as kabaddi system.
2. Rag pickers are part of the Kabaddi system, which is generally part of the solid waste management process, and they are contributing to waste management by recycling about 70 to 75 percent of the waste generated from the informal sector, domestic consumption, or commercial activities.
3. Rag pickers collect recyclable waste from the streets, dumping grounds, or in parks within municipal jurisdictions. Near about 15 percent of the total waste in the municipal sector is picked up by rag pickers in India. So we can see that the pressure on solid waste management is reducing considerably.
4. There are so many methods of solid waste disposal and management as well. Out of which solid waste open burning, sea dumping process, solid waste sanitary landfills, incineration method, composting process, salvaging procedure, fermentation or biological digestion are important disposal methods. Rag pickers on their own risk separate the biodegradable and non biodegradable wastes which is helpful for solid waste management.
5. As per as the 3-R technique (Reduce, Reuse and Recycle) is concerned, every step has proper meaning. Reduce means to create less waste. It is the most powerful and useful strategy which is required to keep environment clean. So by reducing waste, we can stop problem at its source. In short, creating less waste in first place means less waste to clean up later. In short Reduce means to cut back on the amount of trash we generate. Reuse is another way to find purpose for outdated or unwanted items that would otherwise be discarded. We can reuse the products in variety of ways to help reducing waste. The third and most well-known R stands for recycling. Actually recycling is the process of remanufacturing a product to be marketed as new. Recycling is the process of converting waste entities into new original forms to reduce the use of more virgin resources. According to the 3-R technique, the role of rag pickers is primary as they collect useful items from garbage and sell them to wholesalers in the market for recycling..
6. The rag picker can inspect the accumulated waste in the area under the jurisdiction of the municipality and eliminate disease-causing insects like mosquitoes, flies etc by taking proper guidance from municipalities employee.
7. Rag pickers clean municipal roads, public parks, food lanes, etc. Therefore, the role of rag pickers has been important to keep the municipal area clean.

From all above discussion, it is clearly understood importance of rag pickers in solid waste management.

**Conclusion:**

Rag pickers play important role in solid waste management by handling recyclable material in their own way. Generally rag pickers collect materials like plastics and metals, due to which municipal workers get lot of help for sorting solid waste.

Rag pickers run their lives by selling some saleable items from rag picking. Though rag picker plays role of a self -employment, rag picking is most dangerous and inhumane activity where without any protection they do their work honestly.

But waste pickers feel that they can do better if municipalities or local bodies provide adequate protection or other facilities at the workplace.

Among the many methods of waste disposal, many of them cause environmental damage and human health problems. But at such times the role of waste pickers becomes important.

Garbage, that is burned in the open or dumped in the ground creates a lot of health problems and also disturbs the balance of the environment. Therefore, it is necessary for the municipal corporation to provide protective equipments at the work place of garbage collectors. While they are working at that time, they may be harassed by the police or other members of the society or even suspected of theft. Therefore, they should be given an identity card. From all above statements it is concluded that rag picker plays important role in solid waste management process by proper guidance and cooperation.

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