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A Geographical Analysis Of Waste Minimization Techniques In Satara City.

* P. R.VHATKAR
Assistant Professor,
Department of Geography,
S. G. M. College, Karad.
pandurangvhatkar@gmail.com

**Dr. A. S. PATIL
Assistant professor,
Department of Geography,
Chh. Shivaji College, Satara.
patilanandrao123@gmail.com

*** Dr. R. S. MANE-DESHMUKH
Assistant professor,
Department of Geography,
Chh. Shivaji College, Satara.
ramrajemsd@gmail.com

Abstract

Waste generation is a major environmental problem. Nowadays, the world's population is growing exponentially. Various businesses and occupations are set up to cater to the growing needs of the growing population. Waste is generated more and more from different human activities. The growing population is having an impact, especially on waste generation. The terrible problem of solid waste generation is facing the whole world. People from rural areas are flocking to the city for occupation. Solid waste generation and disposal is a bigger problem in urban areas than in rural areas. The entire responsibility for solid waste management in the city lies with the Municipal Corporation and the Municipal Council. Waste minimization techniques need to be used to meet the huge responsibility of solid waste management. Recently, there has been a growing trend towards waste minimization using various techniques. Contributions are being made in various ways to reduce waste in the municipal area of Satara city. If sustainable environmental development is to be achieved, the modern idea of waste minimization needs to be given further impetus.

Keywords: Waste generation, Solid waste management, waste minimization, sustainable environment.

Introduction:

Unnecessary waste is generated from human business and work. The formation of solid waste causes various complex problems. The creation of solid waste endangers human health, creates environmental problems, and destroys the beauty of the area. Waste can be reduced with proper management. Many new concepts are being used to reduce waste. The health department of Satara Municipal Council has taken the responsibility of managing the waste generated in Satara city. The waste minimization technique is mainly being used for solid waste management in Satara city. Waste minimization is being achieved by combining traditional and modern ideas. While managing solid waste at the waste disposal site, waste is disposed of in many ways such as incination, landfills, sanitary landfill, open dumping. This

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is the usual way to reduce waste. However, waste should be disposed at the source of waste where it is generated. This will reduce waste on the spot and also reduce the workload on the Municipal Council. The city of Satara has a high proportion of household waste in waste generation. A total of 51 metric tons of municipal solid waste is generated in one day. Most of this waste is reusable and recyclable. Such waste can be recycled or processed to create quality new products or resources. In short, waste minimization at waste sources or other means for waste management will help improve the environmental quality in the Satara city area. Waste minimization a technique helps to reduce waste as well as improve human health and helps to look clean and beautiful Satara city.

Study Area:

Satara is a major city in the state of Maharashtra. The city of Satara already has a historically distinct background. Therefore, the city of Satara has historical significance. The Satara city was founded by King Chhatrapati Shahu in the 16th century. The Satara city derives its name from the existence of seven hills (seven-stars). Satara city is stands at the foot of the historic fort of Ajinkyatara. Ajinkyatara Fort is located on the south-western boundary of the city. Many tourists visit this fort every year. The location of Satara city is between 17^0 39 'to 17^0 42' 30 "north latitude and 73^0 57 'to 74^0 02' east longitude. The Satara city is present in the plateau region of the Deccan. Geographical factors seem to have a greater influence on the natural structure of the city of Satara. The height of Satara city from sea level is generally between 600 meters. The natural structure of Satara city is diverse. The combination of mountains and plateaus can be seen. The entire western part of Satara city is hilly. The presence of such mountain-ranges has created obstacles to the western expansion of Satara city. To the east of Satara city, however, is the entire flat plateau, which is more developed due to the black soil. The flat terrain has led to further development of the road on the east side. New colonies have developed. Industrial estates have been created. Now the development of Satara city is more on the east side. The city of Satara also has a large population due to its favorable climate. According to the 2011 census, Satara has a population of 120,195. The population of Satara city is increasing every year.

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Location Map:

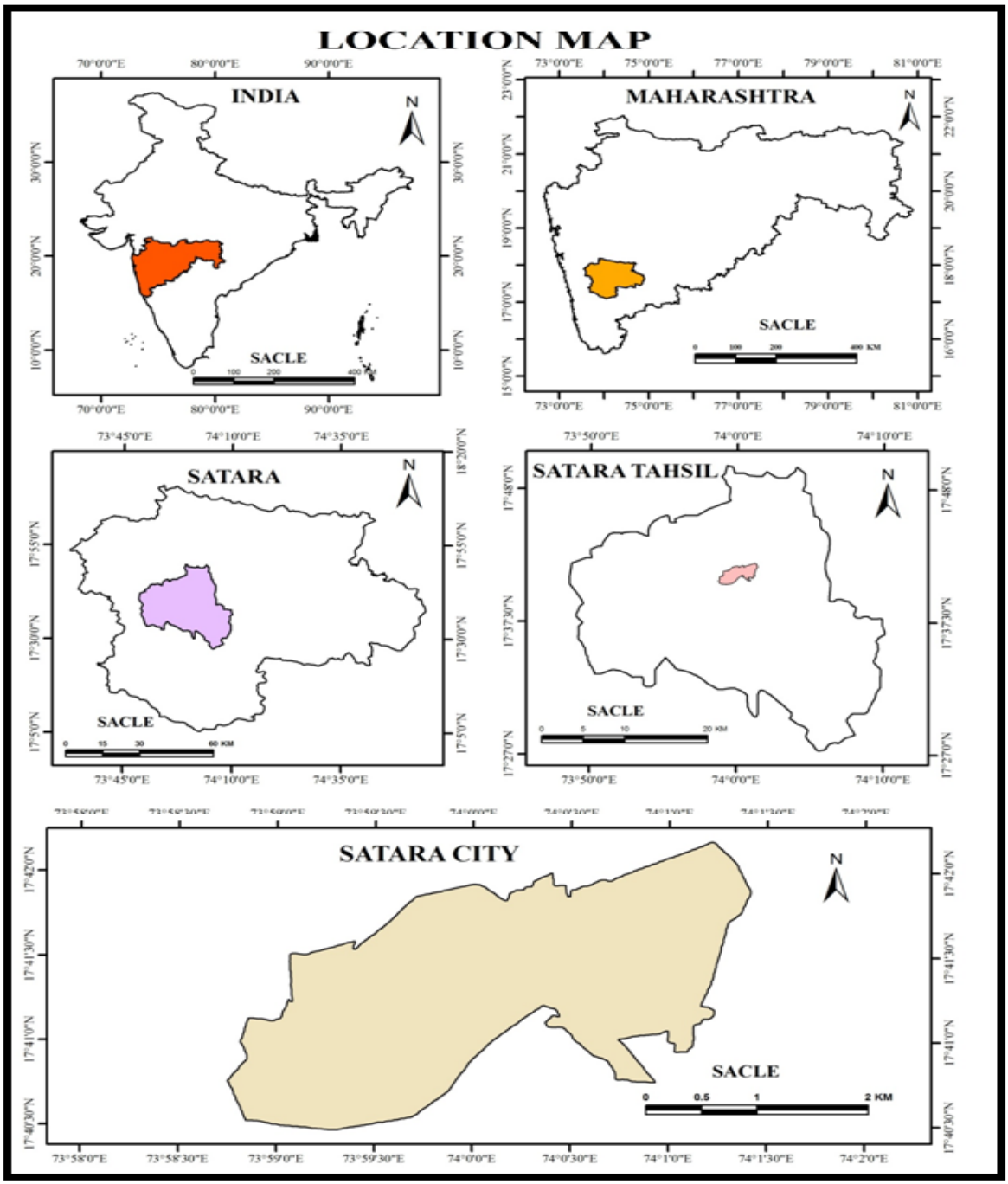

Figure 1.1: Location map of Satara city.

Objectives:

The view "A geographical analysis of waste minimization techniques in Satara city" expected that the outcome result for solid waste management. The present research work has focuses on the usable techniques of waste minimization for solid waste management, in the Satara city. The primary aim of research work is analysie the traditional and new techniques of waste minimization, and effects of waste minimization in the study area. In view of the above proposed research work, the main objectives are as follows.

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1) To investigate in the present situation waste minimization techniques in Satara City.
2) To analyze the effect of waste minimization techniques in Satara city.
3) Suggestions for better use of waste minimization techniques.

Database and Methodology:

The proposed geographical research work is based on primary data. Field survey, interviews, observation, and questionnaires are used for information collection. The research methodology includes the process of data collection and presentation related to waste minimization. The basic data is prepared on the primary information only. Information and data elaborate of the service delivery in the Satara city. Present research work has been carried out with the help of following principal primary and a little secondary data.

1) Maps, and Statistics.
2) Observations and interviews.
3) Administrative data getting from the department in the region under study.

Waste Minimization techniques in Satara city (2020):

The main objective of solid waste management system is to waste minimization. Waste Minimization is a basic approach of waste management that is focuses on mainly reducing the amount of waste and toxicity of hazardous wastes. Waste minimization is a process with a set of specific methods aimed at reducing the amount of solid waste. This technique of waste minimization promotes the creation of a more sustainable society by reducing waste generation. Resource Conservation and Recovery Authority (RCRA), and the Environmental Protection Agency (EPA) have encouraged the reduction of all forms of waste. The modern technique of 'waste minimization' mainly focuses on prevention of solid waste generation as well as recycling of waste. This requires careful planning. Processing of waste is preferred in solid waste management process. The focus is on recycling, recycling, composting, energy generation. However, based on this technique of waste minimization, efforts should be made to prevent waste generation between waste generation sources.

Waste minimization is an innovative, beneficial and alternative process. Waste minimization is more beneficial if done in a more effective, safe and sustainable manner. Waste minimization can best protect the environment. Innovative technology methods can reduce waste generation. Production can be achieved by using efficient production method on waste so there is financial return. This technique of waste minimization will definitely help in protecting the environment, bringing economic and social benefits, producing quality products at low cost, increasing the aesthetic value of the premises. It encourages the creation

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of a sustainable society. This technique of waste minimization is expected to change some social practices to reduce solid waste.

Waste Minimization hierarchy (UNEP, 2011):

In 2011, the United Nations Environment Program (UNEP) proposed waste minimization in the field of solid waste management. Waste minimization hierarchy is suggested for waste minimization. Waste minimization is a priority concept in solid waste management. Among these, waste prevention, waste reduction, waste recycling, waste recovery, and waste disposal are the major cornerstones of the concept of waste minimization. Waste minimization hierarchy indicates the correct order of action for waste reduction. Figure no. 4.25 shows the waste minimization hierarchical order.

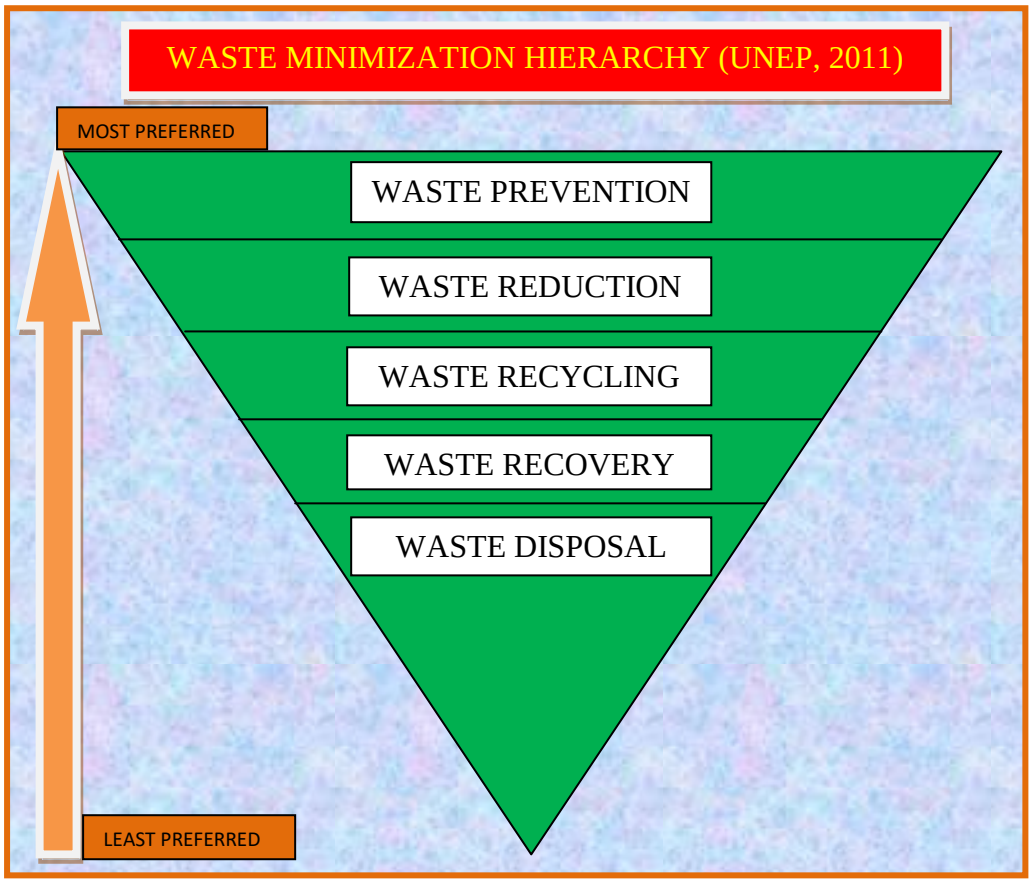

Figure No. 1.2: Waste Minimization Hierarchical Order.

Waste Minimization Hierarchy is an inverted pyramid that shows a preference for reducing waste generation. E.g. first is waste prevention, then waste reduction, then waste recycling, then waste recovery, and lastly waste disposal etc. In waste minimization technique compost manure can be produced through recycling, while energy can be recovered through incineration, pyrolysis or landfill. Finally the waste is disposed of by landfill or incineration. Thus the waste minimization hierarchy shows the life cycle of custom waste reduction in which waste disposal begins and ends at the final stage of waste disposal.

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The real purpose of waste minimization is not to better manage solid waste or to comply with the rules, but to prevent waste generation.

R's of Waste Minimization:

Recently, three 'R' is reduce, reuse, and recycle being used for waste minimization. Waste minimization is revolves around mostly three R's. These three 'R's are as follows.

1) Reduce:

Reduce of solid waste is a useful technique for waste minimization. We can build a separate small house and put garbage in it. There is an easy and effective way to reduce waste at the lowest possible cost. This is to ensure minimum time and planning for emptying the waste so that the waste does not spoil or stink.

Photoplate 1.1: Solid waste disposal house.

2) Reuse:

Reuse of solid waste reduces waste and saves money. This is possible with the reuse technique. It is very appropriate to use a special house for solid waste reuse. The segregation process specializes in reusable waste. Rag packers make a huge contribution to the collection of reusable waste. Once used reusable waste can be reused after processing. Waste minimization is done by reuse waste.

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Photoplate 1.2: Reuse processing of Solid waste.

3) Recycle:

Solid waste can be recycled. Such recyclable waste is known as recycled waste. The use of such regenerated resources reduces the need for new materials. Existing garbage in such a house is mixed in large quantities. It can use mixed waste. The process of recycle of solid waste can result in quality resource generation. Not only this, it helps in reducing the waste load in the landfill. Compost manure production is a great example of recycle technique. Thus, waste minimization can be done by recommending the use of recyclable waste. There is a lot of demand in the markets for such recycling resources.

Photoplate 1.3: Recycled waste.

Waste Minimization Techniques:

Some key techniques are used to reduce waste, thus helping to achieve the goal of waste minimization. Here are some important techniques to help you minimize waste.

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1. Zero Waste Management:

Zero waste management is a modern waste reduction system. Zero waste management is more focused on preventing waste generation. The waste generated in this technique will be processed and reused to produce a variety of quality products. This means that waste will be reduced by reusing it to the optimum level of consumption. In addition, recycling waste will make the environment and human health safer. Emphasis has been placed on restructuring processed products and distribution in zero waste plant to minimize waste. Zero waste management system provides quality waste-based recyclable products and prevents generation of waste. Thus zero waste management plants help to waste minimization at landfill sites. A zero waste management plant is working at the landfill site, Songaon.

Photoplate 1.4: Zero Waste Management Plant, Songaon (Satara City)

2. Reuse of scrap materials:

Garbage like plastic survives for many years. Therefore, it is advisable to process plastic waste and reuse it to produce more durable products. Some types of Plastics used in manufacturing, degraded initial product is suitable for recycling. Recycled suitable plastic is accepted for reproduction in industries that produce all types of plastic goods. In this way waste can be reused and waste minimized. There are so many shopkeepers in Satara city that they buy plastic scrap material. This collected plastic scrap material is supplied to the processing factory. In such factories old and wasted plastics are processed. More durable product is obtained from waste plastic. This contributes to the management of plastic waste. The amount of plastic waste in municipal solid waste has increased. Reuse of scrap materials is a great way to reduce plastic waste. Nowadays, plastic reuse has become more important for waste minimization.

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Photoplate 1.5: Selling empty milk bag (scrap material)

3. Exchange of waste:

Exchange of waste is another important technique for waste minimization. This is especially true of non-perishable waste. These materials are considered waste in a resource creation process. Such waste can be useful as a major raw material in any other production process. Many charitable organizations are involved in the exchange of various commodities such as construction materials, multi-purpose equipment, wax, oil, plastics, rubber, textiles, leather, wood, paper, etc. This helps in reducing waste through exchange of waste.

Photoplate 1.6: Cardboard and paper collection.

4. Waste Minimization at the source:

Waste minimization techniques can be used to indirectly co-operate with the corporation in the areas where waste is generated in the city. E.g. Home composting, repairing broken equipment, repairing old clothes, etc. There are a number of things that can be done to help reduce waste individually. This will definitely help in reducing the amount of

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common waste. Thus in Satara city various institutions, schools, offices, hotels, shops, malls, markets are personally accepting the responsibility of minimizing waste.

Fhotoplate 1.7: Home Composting.

5. Public Awareness and Educational Programme:

Public awareness is a surefire way to minimize waste. Most of the people in the city act thoughtfully because of the public awareness about waste minimization. Citizens are made aware of the rules, duties and responsibilities available for waste generation through public information provided by the Municipal Council. So people take care not to create waste. Educational programs can be devised to reduce the sources of solid waste generation. Transformation is created among the students by imparting lessons on waste minimization through educational textbooks, television channels, newspapers, magazines. Students from every school in Satara city are being encouraged to buy durable items, prefer less packaging, use dustbin etc.

Photoplate 1.8: Educational Programme on Waste Minimization.

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Effect of waste minimization in Satara city:

Waste minimization is the main goal of solid waste management. In the city of Satara, several business owners appeared in person based on solid waste. Municipal officials in Satara are also conducting experiments to create awareness about waste generation. In various schools, vows are taken in connection with the cleanliness of the premises. Waste minimization has shown good results in Satara city as follows.

- Satara city and its surroundings are looking clean and beautiful.
- The use of waste minimization techniques near waste sources has helped in reducing waste.
- This technique of waste minimization has facilitated easy solid waste management, thus reducing the stress on the work of Satara Municipal Council.
- Recyclable and reusable waste recycling increases economic turnover in the community and provides financial assistance. The economic condition of the people is improving.
- Awareness is being spread in the society from time to time to reduce waste and also understanding is being imparted to the students so that the mentality of the people is changing. Students have faith in the future.
- This modern approach to waste minimization has helped in the production of more quality and sustainable products.

Conclusion:

Thus the modern approach of waste minimization is helping to reduce the amount of waste in Satara city. Given the impact of the growing population in the city, more emphasis needs to be placed on this modern approach to waste minimization. Traditionally, the Municipal Council has been disposing of the waste generated in the city of Satara, but the modern idea of reducing waste near the source shows a sense of social commitment. In the future, the citizens of Satara and the modern generation seem to be getting ready to raise the slogan 'Clean Satara - Healthy Satara' by completely reducing the city's waste.

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