

# SOLID WASTE MANAGEMENT: A COMPARATIVE STUDY BETWEEN KERALA AND TAMILNADU

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## ABSTRACT

*Waste is an unavoidable byproduct of most human activity. This study is based on the solid waste management and it compares the solid waste management system of two states Kerala and Tamil Nādu. This study analyzes the centralized and decentralized treatment plants in these two states. This details the difficulties and suggestions for improvement regarding the solid waste management. The study was conducted among the authorities of different cities of Kerala and Tamil Nādu. This article will provide the readers knowledge about the present solid waste management system in these states, their comparison, limitations and also some suggestions for future.*

**KEYWORDS:** *waste management, solid waste management, centralized treatment plant, recycling*

## INTRODUCTION

Economic development and rising living standards have led to increase in the quantity and complexity of generated waste. Solid waste is a mixture of organic and inorganic waste generated by domestic or commercial activities. Waste management is the collection, transport, processing, recycling or disposal and monitoring of waste materials. Solid waste management is a polite term for garbage management. As long as human kinds have been living in settled communities, solid waste garbage has been an issue. Modern societies generate more solid waste than early human did.

The increasing industrialization and fast growth does not only pose problems related to the allocation of resources and powers, but also severely challenges the natural environment. Solid waste that gets accumulated from Industrial units, hospitals and hotels is the major land pollutants. They form a convenient breeding ground for mosquitoes, rats and other harmful insects. Such pollutants are responsible for the spread of major health hazards. Solid waste management through scientific processing and recycling is the only solution to such problems. Therefore there is a need of proper planning and implementation of comprehensive solid waste management system. The appropriate waste management strategies based on the principles of reduce, reuse, recycle and designing of appropriate collection, transportation, and processing and disposal system.

The activities involved with the management of solid wastes from the point of generation to final disposal have been grouped into six functional elements:-

- **Waste generation:** - Those activities in which materials are identified as no longer being of value and are either thrown away or gathered together for disposal.
- **Onsite handling, storage and processing:** -Those activities associated with the handling storage and process of solid waste at or near the point of generation.
- **Collection:** - Those activities associated with the gathering of solid wastes and the hauling of wastes after collection to the location where the collection vehicle is emptied.
- **Transfer and Transport:** - Those activities associated with the transfer of wastes from the smaller collection vehicle to the larger transport equipment and the subsequent transport of the wastes to the disposal site.
- **Processing and recovery:** - Those techniques, equipment and facilities used both to improve the efficiency of the other functional elements and to recover usable materials or energy from solid wastes.

## PROBLEM STATEMENT

Waste management has come to be a serious issue in Kerala. The main problem was that the state did not have a successful model for waste management. Waste management is an essential service to be provided by the municipal and local government authorities at the local and state levels cite. But the failure of planners and administrators to foresee the emerging threats, lack of training to (NGO)'s, (CBO)'s Residents welfare Associations and women Association in solid waste management in Kerala, absence of appropriate technology are the reasons for the problem assuming such explosive dimensions. The authorities still consider centralized waste management the only option. Steadily increasing population of the state has a direct bearing on the amount of waste generated. The solution to the massive problems lies in decentralization of waste treatment. So this study consists of good work that is being conducted on solid waste management by cities in Tamil Nadu to look at which devices change in Solid waste management, how things work in cities.

## OBJECTIVES

The main objectives of the present study are

- To analyze the present situation with regard to solid waste management in Kerala.
- To analyze the situation of centralized treatment plants in Kerala.
- To analyze the situation of centralized treatment of notice waste in Tamil Nadu.
- To understand the system of decentralized treatment of solid waste in Tamil Nadu.
- To compare the centralized and decentralized treatment.
- To suggest measures.

## **METHODOLOGY**

The study is descriptive and analytical. The data constitutes both primary and secondary sources. Interviews are conducted with the authorities of cities like Kollam, Ernakulam and Kozhikode to know the problem faced by them in solid waste management.

## **NATIONAL SOLID WASTE ASSOCIATION OF INDIA**

Urban population in India Constitutes about 20% of the country's population and is distributed in large towns and in metropolitan areas. Large industrial complexes have also come up in different parts of the country. The waste generated in these urban areas and industrial complex is of great concern. The problem of collection, transport, proper use and disposal have become a gigantic task, straining both financial resources of the civic bodies and their physical capabilities, not to mention the problem of availability of disposal sites. Some of these areas have a population of about million or more and still growing, and the daily production of more than 6000 tons of municipal solid waste is a major management problem. The introduction of new materials especially packaging materials, plastics and the like pose of different set of problems of disposal due to their inherent non-biodegradability, among others. The problems of industrial solid waste are different, the nature and quantity depends on the product, raw-materials and the process involved this requires careful consideration of management. Now the time has come when the experts and those interested in solid waste management in the country in vague, assess their suitability in the light of the existing regulations, developed cost effective and environmentally sound techniques and strategies and share such experiences. It is equally important to create awareness among the public on the need for environment sound management of all wastes. With this in mind an association is also a member of the International solid waste Association, and provides forum for exchange of information and expertise in the field SWM at the international level.

The objectives of NSWAI are as follows:-

- Development of solid waste management as a profession.
- Research and development in solid waste management.
- Development of expertise in solid waste management.
- Development of good solid waste management practices.
- Improvement in legislation and its enforcement in the field of solid waste management.
- Awareness and community involvement in solid waste management.
- Professional recognition of national and international solid waste Association.
- Development of a National policy on solid waste management in India.

## **SOLID WASTE MANAGEMENT IN KERALA**

Kerala is known as God's own country. The once green and clean state is becoming a fit locate for a public health disaster with garbage mounds dotting every street corner and Kerala's

formed political landscape becoming a space of fierce contestation between urban and village local bodies and their people over garbage disposal. Kerala is estimated to be churning out in excess of 8000 tons of garbage every day, of which 7% is plastic waste, and every town and city is now struggling to manage the solid waste that keep piling up with few options available to dispose them. Figure 1 shows the composition of solid waste in Kerala.

As one travels from north to south it is as though the whole landscape of Kerala is dotted with garbage hotspots. Kelugudde, Seethangoli and Kollangana in Kasargod; Pettippalam and Chelora in Kannur; Njeliyaparamba in Kozhikode; Pirivusala in Palakkad; Lalur in Thrissur; Chakkukandam in Guruvayur; Brahmapuram in Ernakulam; Vadavathur in Kottayam; Fathimapuram near Changanassery; Kanaathupaara; near pala; Kozhenchery in Pathanamthitta; Kureepuzha in Kollam and Vilappilsala in Thiruvananthapuram are but a few of these hotspots where local resistance movements have sprung up against indiscriminate dumping of solid waste, including plastic and e-waste, the product of Kerala's relentless march towards urbanization.

The state's idea of waste management all these years has had to do with identification of a spot some distance away from urban centers and dumping of all the garbage there. All these places have now become flashpoints of struggle by people in their neighborhood who are no longer ready to bear the burden of waste generated by urban agglomerations.

## **STATUS OF WASTE MANAGEMENT SYSTEM IN KERALA**

As per Supreme Court of India, all the local governments in India above population strength of over ten lakhs should set up proper facilities for processing waste generated within their limits. Supreme Court wanted waste management facilities to be in place in such municipalities by December 31, 2003. But a majority of the municipalities in India could not successfully implement this Supreme Court directive, even as on mid-2010. Whereas Kerala is one of the few states in the country that took some measures to address this issue by launching an initiative called clean Kerala mission. The mission was launched in 2002. Objective of the mission was to create a garbage free Kerala. It was given a task of capacity building within local government institutions (LGI's) enabling and preparing them taking up the challenge of implementing solid waste management projects. There were efforts to achieve this goal with the participation of NGO's, community organizations such as Kudumbasree across Kerala. The first phase of the project was implemented in five corporations and 26 municipalities with the participation of women self-help –groups and Kudumbasree. In the second phase of the 'Clean Kerala Mission' another 27 cities and 25 villages were included. But despite several initiatives such as Clean Kerala Mission nothing much has changed as far as solid waste management is concerned. It may also be viewed as these plans are not sufficient to address the issue of waste management in Kerala. While media and the general debates and experiments on waste management continue, Kerala still stink from village to village and from city to city natural beauty. Its rivers, tiny water canals and all other natural beauty, foundation of its growing tourism industry are getting affected as lack of waste management system in the state havoc to normal public life. Resorting to dumping the waste generated is also a serious matter since such

insanitary methods of disposal of solid waste would cause a serious health concern. Part of the waste generated remains unattended and grows in the heaps at poorly maintained collection centers. The choice of a disposal site also is more a matter of what is available than what is suitable. In several places locals are up in arm against prevalent of dumping and landfill. Contractors who transport garbage to dump in the interior village dumping sites or near forests or water bodies often face serve resistance from locals and environment activists.

## **TREATMENT PLANTS FOR SOLID WASTE MANAGEMENT IN KERALA**

Vilapilsala, Brahmapuram, Lalur, Pettipalam – all conflict Zones fast assuming the classic contours of a mass struggle with the potential to mar the growth prospects of a state positioning itself to take off to dizzying heights of development. The government has been forced to step in to prevent the ugly spat between urban municipalities and corporations on the one side and panchayaths on the other from degenerating into law-and-order problems with crippling social consequences. At the core of the issue is the failure of the existing centralized solid waste management system to handle the tons of garbage, both biodegradable and synthetic, generated daily in urban centers.

The government has come up with a two pronged strategy to manage the situation. While it is going all out to promote garbage disposal at source, efforts are on to employ a new technology for waste treatment at different levels. The Suchitwa mission, the agency that has been entrusted with the task has identified five major options. It has Zeroed in on cold mineralization (Eco cycling) and incineration for major centralized units to handle big loads amounting to hundreds of tones. For intermediate level plants of 25-35 ton capacity to be set up in markets and other public places the options are bio methanation and thermal and integrated systems combining bio methanation and thermal technologies. The government is expected to finalize the terms and conditions for setting up the new treatment plants on a PPP (Public Private Partnership) model composting has been dropped from the list of new technologies choice because of its legacy and the potential for open dumping and processing to work aversion among the public. It is however, still promoted as a treatment option at the household and neighborhood levels, along with vermin – composting and bio methanation.

Waste management or, to be more precise, the lack of it at sabarimala, one of the largest pilgrim centres in south India, betrays a casual attitude towards a visit necessity in a place thronged by millions annually. When the Ayappa temple is kept open for the two month annual pilgrimage season and the press of people climbing the holy hills is in the millions, the need for proper waste management mechanisms is nothing short of a necessity. The absence of a sewage treatment plant and consequently scientific solid waste disposal has been a major reason for pollution around the hill temple for past several years, posing an alarming threat to the forest fauna and flora in the otherwise serene forest environs of the periyar tiger Reserve. The centrally sponsored pampa Action plan of 2002, aimed at implementing various scientific waste and

sewage disposal scheme at Sabarimala for abatement of pollution of the river, remains more or less a non-starter. Except of few civil works, such as construction of check dams on the river, no major scheme has been executed. Similarly, the Sabarimala master plan has proposed construction of a 5-mld capacity sewage treatment plant at Sabarimala, which too remains on paper.

The steadily increasing population of the state has a direct bearing on the amount of waste generated. Estimates show that a person generates two kilograms of waste a day. The solution to the massive problem lies in decentralization of waste treatment composting and gasification of waste treatment composting and gasification are the most eco-friendly treatment methods. There are those who believe that about 60% of the household waste can be treated through various kinds of composting methods, such as aerobic composting, vermin-composting and window composting and the rest of the waste can be incinerated.

Private sector participation in waste management is the need of the hour since experiments in waste management are not affordable as any failure at any level can be risky. Private sector participation is one of the best choices open to boost the performance of public service like solid waste management.

It has following advantages:-

- ◆ Less risk of commercial failure and halting of this essential service provision unable in initiatives managed by co-operatives or community organizations.
- ◆ Higher level of efficiency and accountability.
- ◆ Access to technology and expertise.
- ◆ Focus Cost of service because of competition.
- ◆ Access to finance for new investments.

## **WASTE MANAGEMENT IN TAMIL NADU**

Tamil Nadu pollution control board has taken initiatives in waste management for the management of hazardous chemicals and hazardous waste in an environmentally friendly safe manner. The Board has identified 2117 units generating hazardous wastes for which 2000 authorizations under the hazardous wastes Rules 1989 as amended were issued. For the disposal of sludge generated from the treatment of textile dyeing effluents site at Tirupur and Kavur have been identified for establishing a common hazardous waste treatment storage and disposal facility through a private operator.

The implementation of municipal solid waste (management and handling) rules 2000 has become the mandatory responsibility of the urban local bodies. Government of India has notified the municipal solid wastes. As per the said rules, the municipal authorities are responsible for the collection, reception, transportation, treatment and disposal of the municipal solid waste. Also municipal authorities should improve the existing landfill site on or before December 2000. New site for landfill and composting should be identified by December 2002 and the composting facility must be commissioned by December 2003.

Based on the above Rules, Government of Tamil Nadu had issued instructions to all urban local bodies to establish waste processing and disposal facilities. In addition to this Hon'ble Supreme Court has directed cities with one million plus population to frame an Action plan for solid waste management and all the cities in Tamil Nadu having million plus population namely, Chennai, Madurai and Coimbatore Corporation have filed that Action plans before the Hon'ble court. The commissioner of municipal administration has taken initiatives in facilitating the preparation of similar action plans by all other ULB's in order to comply with the municipal solid waste (Management and handling) Rules 2000 in a time bound manner. The main requirement in this regard is the identification of suitable land for locating disposal facilities. Tamil Nadu pollution control Board, has been insisting all the 6 corporation, 152 municipalities, 561 special Village panchayath to take action for creating awareness on the segregation of waste as wet compostable, dry recyclables house hold hazardous construction deters and inorganic wastes. By segregating the municipal solid wastes at sources, 20% of the recyclables wastes could be collected separately and sent for recycling industries the 50% of the biodegradable waste collected separately could be sent for composting facilities for converting it into organic manure. The remaining 30% of inorganic waste above all sent for land filling.

Segregation of waste at source will reduce the land area requirement for the landfill by 70% and organic manure could be produced from the biodegradable wastes. Further 20% of the wastes generated could be recycled as useful products. The problem of odors nuisance, fly nuisance, water pollution and all pollution can be eliminated.

All the municipal authorities as well as the District Collector who are responsible for the implementation of the municipal solid wastes management and Handling Rules, 2000 have been instructed to identify a site away from habitations and water bodies for compost of segregated waste. Municipality has engaged a prelate firm for compost of the segregated wastes. The prelate facility has been issued authorization and is under operation, a prelate facility has also been issued authorization at Madurai to process the municipal solid waste generated from Madurai Corporation. The facility is yet to be commissioned. All other local bodies are in the process of identification of site for composting and secure landfill. All the municipal commissioners have been instructed to take action to stop the disposal of unsigned acted municipal solid wastes into low lying areas and water bodies in order to prevent water pollution. Door to door collection for segregated wastes and two bin system is being implemented in Udthagamandalam municipality. Municipality has started the source segregation of municipal solid wastes generated in their limits partially or fully.

Also Board has issued directions to the commissioner corporation of Chennai to

- Stop dumping of garbage at Kodangayyur and pallikkainai dump yards.
- Start segregation at the transfer points by using conveyor belt system.
- Take action to put up waste processing facilities at the earliest.

## MANAGEMENT OF PLASTIC WASTE IN TAMILNADU

The environment problems arising due to indiscriminate use and disposal of throw away plastic items have been recognized and the Tamil Nadu pollution control Board has embarked upon an intensive awareness campaign. The awareness campaign has focused on preventing the use of throw away plastics as well as eco-friendly substitutes to plastic items. Boards educating the people about the ill effects of throw away plastics were displayed on Metropolitan Transport corporation (MTC) buses in Chennai. Besides, Regular awareness programmes are conducted in tourist and pilgrim centers and the givrilalam path of thiruvannamalai temple. Training has been impacted to self-help groups for production of palm leaf plates, cups in Salam, Vellore and cuddalore district through the central palm products institute of village industries commission. The products are eco-friendly alternatives to throw away plastics item like cups plates etc. The Nilgiris district, Hogenkkal, Kodaikanal, Rameshwaram, Valparai, Yelagiri, Yeccaud and Thirumoorthy falls etc. have been declared as throw away plastic free Zones. The Government of India, Ministry of Environment and forests notified the recycled plastics manufacture and usage Rules 1999 under the environment (Protection) Act, 1986 to ensure that carry bags and containers used for packing food stuff are not made of recycled plastics. As per the provision of the rules only virgin plastics, permitted activities and color are to be used in Plastic items shall use for packaging food stuff. The board has identified 1159 plastics products manufacturing units.

## CONCLUSION

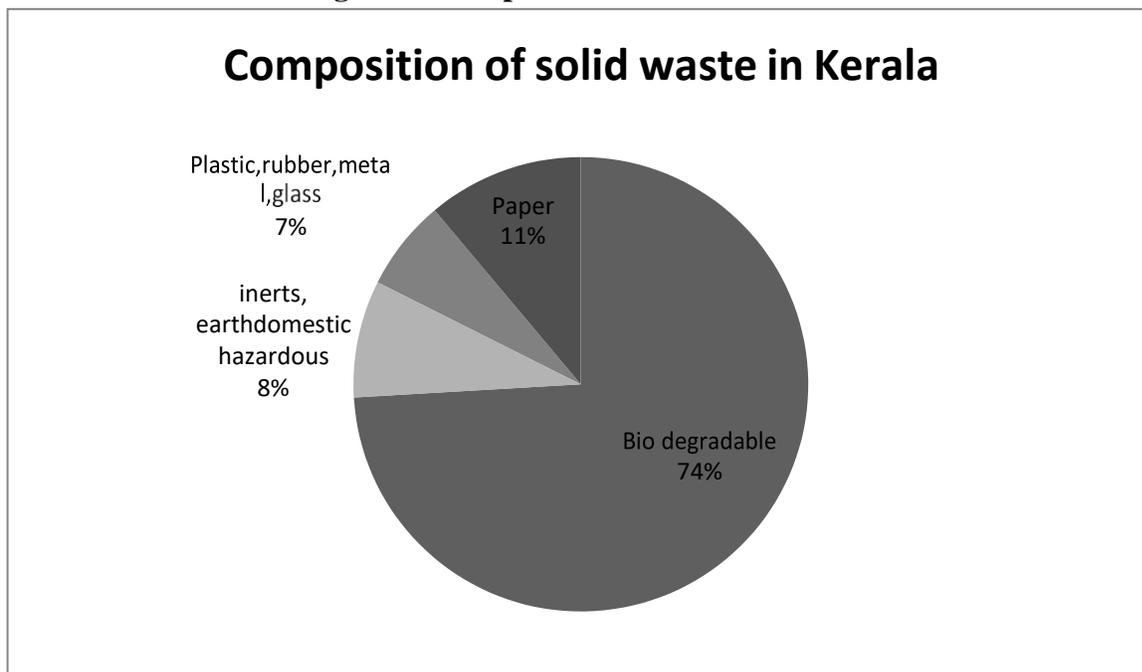
The current system of solid waste management in Kerala has many limitations. It is centralized. Also there is chance for better treatment when compared to the system of solid waste management in Tamil Nādu. It is decentralized. Plastic wastes and e wastes are also treated in a better way in Tamil Nādu when compared to Kerala.

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## FIGURES

**Figure 1: Composition of Solid waste in Kerala**



**Fig 2: Composition of solid waste in Tamil**

