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May-2019 Special Issue – 189

Thoughts, Ideologies and Public Policies

Guest Editor

Dr. Arwah Madan

Associate Professor

Dept. of Economics

St. Mira's College for Girls, Pune

Executive Editors of the issue:

Dr. Manisha Pimpalkhare

Dr. Meenal Sumant

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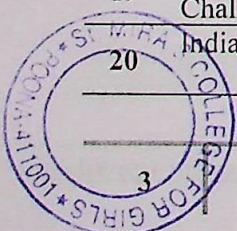
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*- Chief & Executive Editor*



Principal Incharge  
St. Mira's College for Girls, Pune



## Policy of Solid Waste Management & Resource Sustainability : A Case of Thane Municipal Corporation (TMC)

**Dr. Karbhari Bhalchandra K**

Assistant Professor, Department of Economics  
Akbar Peerbhoy College of Commerce and Economics, Mumbai  
E-mail- bk5682@gmail.com

**Dr (Mrs) Arwah Madan**

Associate Professor, Department of Economics,  
St. Miras College for Girls, Pune  
dr.arwahmadan@gmail.com

### Abstract :

*Municipal corporations are wasting their financial resources on SWM. Also disposal of solid waste involves degradation of natural resources i.e. land, water and air. Financially weak municipalities are in search of new methods which would preserve their financial and natural resources. TMC adopted Resource, Recovery, Reuse (RRR) model in their SWM operation for resources sustainability. To make it functional and effective the participation of all stakeholders is needed. It is important for urban local bodies to preserve and conserve the environment, at the same time, be resourceful in its functioning. The paper makes an attempt to understand the efforts made by the TMC to manage solid waste in a more resourceful manner. The key to better solid waste management is to collaborate with other stakeholders such as private sector, communities and in some cases with the informal sector, for expansion of waste management services, improving efficiency and effectiveness as well as attain resources sustainability*

**Key Words:** Municipal Solid Waste, Environment, RRR, Resources Sustainability

### Introduction

By producing complex and increasing quantity of solid waste, municipal corporations are trapped in the threat of degradation of natural resources. According to UNEP, 2010, the estimated quantity of Municipal Solid Waste (MSW) generated worldwide is 1.7 – 1.9 billion metric tons. It is found that municipal waste is not well managed in developing countries. The municipalities are unable to cope up with the accelerated rate of waste generation. It leads to several environmental and health problems and consequently wastage of natural and financial resources of municipal corporations.

Cosmopolitan cities of developing countries are facing challenge of waste management policy, which requires attention and issues of planning and implementation. Establishing and improving facilities for collection, recycling, treatment and disposal for MSW management can be very costly. For example, building and operating sanitary landfills and incineration plants require huge investments and incur substantial operation and maintenance costs. Furthermore, it is becoming increasingly difficult to find suitable locations for waste treatment facilities due to the approach of 'Not in My Backyard' (NIMBY) of local residents. Urban governments are therefore trying the paths of Reduce, Reuse and Recycle (RRR) that place highest priority on waste prevention, waste reduction, and waste recycling instead of just trying to deal with rising amounts of waste through treatment and disposal.

*Jayal*  
**Principal Incharge**

**St. Mira's College for Girls, Pune.**



Such efforts will help cities to reduce the financial burden on urban government for waste management, as well as reduce the pressure on landfill requirements. Natural resources are limited, financial resources are often inadequate, and securing land for final disposal is getting more difficult. Therefore urban governments are set policy directions aiming for resource efficiency, recycle-based society to provide a clean, healthy and pleasant living environment to its citizens for current and future generations.

**Research Objectives and Methodology**

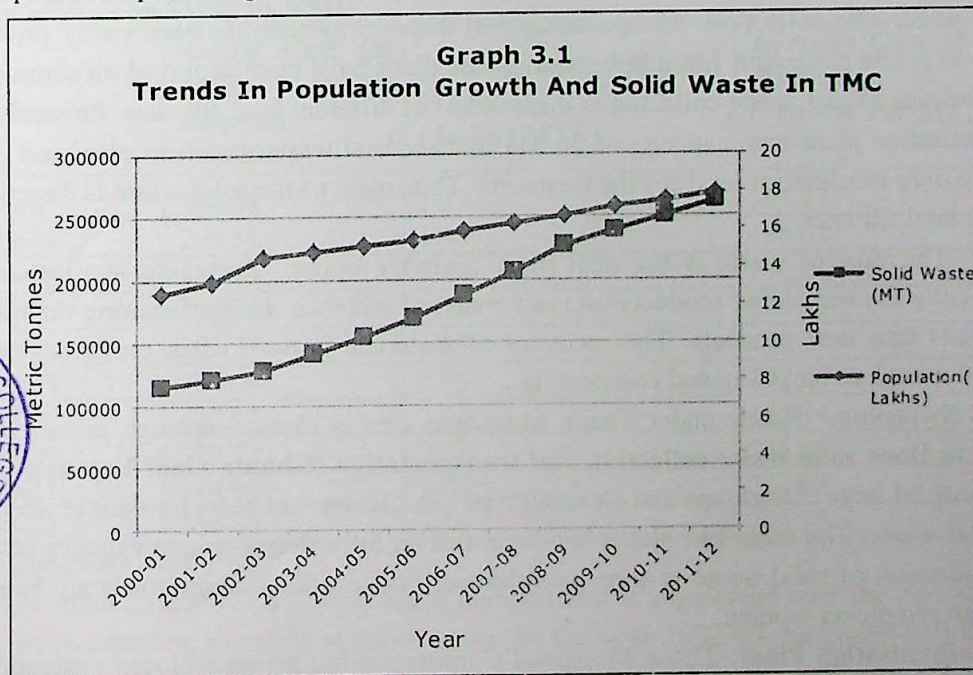
This research paper tries to evaluate the efforts taken by TMC in SWM for environment sustainability through RRR. The objectives of the Study are: (i) To analyze the RRR (Resource, Recovery, Reuse) Model used by TMC in solid waste management and (ii) To find out link between RRR model in SWM and resource sustainability.

**Hypothesis:** RRR model in SWM helps to sustain and preserve the natural and financial resources.

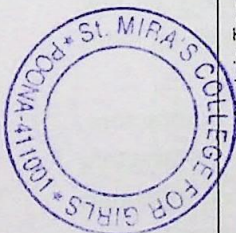
The research in its nature is interrogative. Secondary data has been obtained from the websites of TMC, Annual Budget and Environmental reports of TMC, DPR Report of TMC, environmental report of MPCB, etc.

The city of Thane is situated on the western banks of Thane creek with Parsik hills on the east. The creek not only provides a natural protection to the place but has also facilitated transport of big and small ships since ancient times. This has also acted as an impetus for the development of local and international trade since the pre-historic times. The Thane Municipal Corporation was established on 1<sup>st</sup> October, 1982. Thane city is India's one of the rapidly growing cities. As per the census of 2011 the city population is 20 Lakh and expected to be 31 Lakh by 2030. The population density of the city is 24218 persons per sq.km. The total slum population is 7.56 Lakh.

The Graph 3.1 explains the relationship growth of population and solid waste in TMC from 2000 to 2012. Population and solid waste growth is having almost same trend over the selected period. Population growth contributes to growth in solid waste.



Source: Compiled Data





With growth in population and urbanization the per capita income of residents of Thane Municipal Corporation has increased. It leads to consumerism. The vast growth in residential area has increased quantity of solid waste in TMC which requires large resources of TMC to manage it.

The Thane Municipal Corporation has undertaken many developmental projects and schemes since 1982 to preserve its natural resources. One of major projects is the Integrated Road Development Project. Taking in view the all-round infrastructural development which has recently taken place in Thane, the Govt. of India conferred the prestigious 'Clean City Award' to Thane in the year 2000. Before that in the year 1880 the Thane Borough Municipality spent Rs.12,960 on construction of the Pokharan Lake, to make use of the lake water for drinking purpose. It shows the efforts of TMC towards conserving it's the available natural recourses.

### **Solid Waste Management with RRR Model**

Solid Waste Management Division of TMC looks after the sweeping, cleaning and disposal of solid waste within the TMC area. Taking actions on Plastic carry bag users, eradication of rats, clean up of public toilets is also done by Solid Waste Management department.

Thane city generates about 500 Metric Tonnes (MT) of solid waste daily. The classification of the solid waste reveals that 307 MT is biodegradable waste, 73 MT is recyclable waste, and 73 MT is debris and silt while 37 MT is green waste. For effective collection, transportation and disposal of the solid waste Corporation has deployed 2683 employees from its own staff. They are providing with 229 number of refuse collectors and 190 number of dumper placer containers. They are also provided with 195 vehicles. The 112 km. of city roads have been outsourced for daily cleaning.

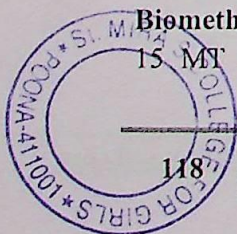
The entire city has been divided into nine wards. Each ward has been provided with separate men and machinery for effective collection, transportation and disposal system of the solid waste. The collection, transportation and disposal system has been partly privatized. For house to house collection 128 numbers of ghanta gadis have been deployed on contract basis. 83 Presently, the solid waste collected is disposed of at different land fill sites. Presently only Bio-methanisation plant with capacity of 20 MT and medical waste treatment plant and composting are the only mechanism used for the treatment. Thus most of the solid waste is directly disposed on the land fill sites.

The reuse of waste is the next most desirable option. Recycling involves sorting and processing the recyclable products into raw material and then remanufacturing the recycled raw materials into new products. The recovery of materials is most often preferred and includes activities such as recycling and composting.

**Road Sweeping:** Roads under Thane Municipal area is cleaned through private contractors.

**Door to Door solid waste collection and transportation (Ghanta Gadi Yojana):** Contractors are using 94 large closed type and 64 small type vehicles on rent basis for door to door collection of solid waste. The areas like slums and localities on hilly slopes, where vehicles cannot reach, the collection of solid waste is done by volunteer organizations. Some roads are being cleaned through rag picker women.

**Biomethanisation Plant:** Thane Municipal Corporation has set up a biogas generation plant of 15 MT capacity from wet solid waste (Kitchen waste) from Hotels, Malis within Thane







Municipal area at Chatrapati Shivaji Maharaj Hospital. At Hiranandani Estate, Patlipada a 5 MT capacity plant with private participation is started as well. 4 projects of 2 MT capacity each are proposed in different parts of the city.

**Solid Waste Disposal:** Thane Municipal Corporation does not have its own dumping ground. The Government has allotted a 19 hectors plot to TMC for setting up solid waste disposal plant at Daighar in June 2004. But due to opposition of local people, the solid waste disposal plant has not been set up. The waste is dumped at a privately owned plot in Khardi Village within TMC area. The leveling of solid waste dumped at this place is done and spraying of insecticide and air fresheners is carried out and a layer of soil is also put as per requirement.

**Issues Related To TMC's Solid Waste Management**

As TMC does not have its own dumping ground, the waste is dumped at a privately owned plot with the prior permission of land owner. TMC sought permission from the Maharashtra Pollution Control Board vide for grant of permission for disposal of solid waste at this site. Meanwhile, TMC has approached to the Navi Mumbai Municipal Corporation seeking permission for disposal of waste at common dumping ground at Taloja. But the permission from Navi Mumbai Municipal Corporation is not received. Considering the difficulty in the disposal of solid waste, the Maharashtra Government directed the forest department to make available the closed quarries under its jurisdiction for the period of 2 years till the arrangements are made at Daighar. TMC has submitted proposals to Ministry of Revenue and Forests for the closed quarries at Shil. TMC is making all efforts to preserve its natural recourses such as land water reservoirs, which are devastated due to increasing solid waste.

The following table 5.1 reveals that TMC sends big amount on solid waste management.

**Table. 5.1**  
**Expenditure on SWM by TMC**

Year	Actual Cost Of Solid Waste Disposal ( Lakhs)	Total Quantity Of Solid Waste ( Lakhs MT)	Average Cost of SW disposal ( Lakhs Per MT)
2002-03	204.68	1.27	161.17
2003-04	260.51	1.40	186.08
2004-05	354.53	1.54	230.21
2005-06	307.24	1.70	180.73
2006-07	305.32	1.87	163.27
2007-08	354.00	2.05	172.68
2008-09	407.11	2.26	180.14
2009-10	559.72	2.37	236.17
2010-11	584.96	2.49	234.92
2011-12	596.08	2.26	263.75

Source: Compiled Data

The amount required for solid waste management is augmented over the period of time because of augmenting quantity of solid waste. In the year 2002-03 the spent on SWM was Rs.204.68 lakhs which skyrocketed in the year 2011-12 is Rs. 2.26 lakhs. The Average cost of SW disposal indicates that over the period per MT cost was Rs.161.17 lakhs which is increases



to Rs.263.75 lakhs in the year 2011-12. From above table it is evident that TMC is spending mammoth amount on solid waste management.

#### **Solid Waste Management by TMC under RRR Model:**

According to the Municipal Solid Waste (Management & Handling) Rules (2000), TMC has taken following measures to preserve the natural resources and saved financial resources.

**Incineration Plant of TMC (Waste to Energy):** Government has allotted a land of 18.89 hectares for solid waste management. An agreement was made with M/s. Hanger Biotech Energies Pvt. Ltd. for setting up Solid Waste Treatment Plant on BOT basis for a period of 29 years. The said project could not be completed due to opposition from the local people. Residents were shown the waste treatment plant set up by M/s. Hanjer Biotech Energies for Rajkot Municipal Corporation and Mira Bhaynder Municipal Corporation. As opposition continued, the project is incomplete. A fresh proposal is put for setting up a modern odourless solid waste treatment and disposal plant.

**Collection and Transportation of Solid Waste:** 650-700 MT of solid waste is generated in Thane City. The collection of waste at door to door is done by collection vehicles. Public roads are cleaned by contractors and the waste collected is transported to dumping ground/collection centre through dumpers. To avoid double handling of the waste, hydraulic compactors are hired for collection of waste in TMC and dust bins of 1.1 MT and 120 Litre capacity are placed. The waste is collected in three sessions under this system. This has led to clean roads / places and a cleaner city.

**Property Tax discounts to Societies implementing Solid Waste Management:** TMC has decided to grant 5 per cent discount in property tax to the societies that will reduce the solid waste up to 50 percent by recycling/reusing. The residential societies have to register with the TMC. TMC will verify the daily generation of waste in such societies. Then societies will be given certain outline for reduction of waste. The societies reducing 25 to 50 percent waste will be given 3 percent discount and those which will reduce waste more than 50 percent will be given 5 percent discount in property tax. Corporation has appealed to societies to take advantage of the scheme.

**E-Waste:** As per government's decisions to dispose E-waste, the contract was assigned to Eco Recycling Ltd., TMC has disposed 3000 kg. of E-waste. The company paid Rs. 38,000 to TMC for disposal.

**Eco-friendly Ganesh and Durga Festival:** Thane is also known as lake city. Since last eight years, to avoid lake pollution during Ganesh Festival, TMC arranges for artificial lakes for immersion of Ganesh idols. This year total eight artificial lakes were arranged and idols were immersed in artificial lakes.

#### **Conclusion**

TMC is making all effort towards solid waste management, despite not having its own dumping ground. According to TMC, seventy percent of the solid waste is recyclable and reusable. It is making effort with the help of all stakeholders to efficiently manage waste in its region. The urban local body is sending a clear message that municipalities on its own cannot manage the ever increasing solid waste. Rather, the key to better solid waste management is to collaborate with other stakeholders such as private sector, communities and in some cases with the informal sector, for expansion of waste management services, improving efficiency and



effectiveness as well as attain resources sustainability. As per Kyoto Protocol, Municipalities have opportunity to adopt Clean Development Methodology for solid waste management to attain resources sustainability.

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