CHAPTER - IV
PROFILE OF STUDY AREA AND LEGAL PROVISIONS REGARDING SOLID WASTE MANAGEMENT

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CHAPTER - IV
PROFILE OF STUDY AREA AND LEGAL PROVISIONS REGARDING SOLID WASTE MANAGEMENT

INTRODUCTION

The purpose of this chapter is to overview the profile of study area. The factors that are affecting the solid waste generation and management in the area of Kolhapur Municipal area are growth of population housing, slum areas, economic development, transportation, commerce and trade, industries, educational institutions, topography, weather and land etc. These factors are explained in the profile of study area. As well as history of Kolhapur city, archaeological importance and profile of Kolhapur Municipal Corporation (KMC) is also studied in this chapter. This chapter also deals with legal provisions regarding solid waste management.

The Kolhapur is famous as ‘Dakshin Kashi’ since ancient times. It is a holy place and it was the capital of the historical ‘Kolhapur Province’. Now-a-days it is an important and predominant district place in the Maharashtra state. The Kolhapur Municipal area is spread over 66.82 Sq.Kms. The Kolhapur city is situated at the height of 650 m. above mean sea level. The city is settled on the bank of river Panchaganga, a tributary of the river Krishna.
LOCATION OF KOLHAPUR CITY
4.1 HISTORY OF KOLHAPUR CITY

Actual civilization had started nearly 2200 years ago on the bank of Panchaganga at a place known as ‘Brahmapuri’ in the periods of ‘Maurya Satvahan’. The name of the city, Kolhapur or Karvir, denotes number of meanings. According to some expertise, the name has been originated from Kannada word ‘Kolla’ meaning deep river bank, which clearly indicates that the city is situated on deep bank of river Panchaganga. According to some other expertise, the name Karvir is due to the Goddess Mahalaxmi, who is holding the ‘Kur’ in her hands. Whatever may be the origin of the name of the city, the actual history of the city can be traced in the following reigns.¹

1. Ancient Hindu Rule : 325 BC to 1306 AD.
2. Mohammedan Period : 1307 AD to 1658 AD
3. Maratha Emperor : 1659 AD to 1837 AD
4. British Rule : 1837 AD to 1947 AD
5. Government of Free India : After 1947 AD

After 2nd World War the city developed by leaps and bounds. In 1949 ‘Kolhapur State’ was merged into the Indian Territory. Then the actual development in industrial and agricultural sector started. In December, 1954, the Kolhapur Municipality was established, which became a Municipal Corporation on 1st December, 1972.
4.2 BOUNDARIES AND AREA

Kolhapur city is located in the south-west portion of Maharashtra. Geographical co-ordination of the city can be traced between 16°42' North latitude of 74°14' East longitudes.

The western side of city lies in the range of 'Sahyadri hills' whereas the river 'Warana' flows along the northern boundary. It is abutted by Belgaum district (Karnataka) on the southern side.

The approximate area of the city is 6682 hectares and is having somewhat triangular shape. The population of Kolhapur city is 4,84,101 as per 2001 census.2

4.3 TOPOGRAPHY

Topography of any region is affecting the solid waste generation. The geographical situation of the Kolhapur city is very peculiar. The city enjoys central position between the rugged terrain of the Western Ghat to the west and the rolling plain to the east. This region is connected with Kokan by a number of mountains passes like Amba, Amboli, Phonda etc. During the monsoon season when sea is rough and coastal shipping services are suspended, the towns in Kokan region can be reached via Kolhapur, so it may be called as the 'Gate Way of Kokan.3 This affect solid waste generation in Kolhapur city.
4.4 WEATHER

The weather is also affecting solid waste generation. The weather of Kolhapur city is very cheerful. Three major seasons commonly observed viz. summer (March-May) rainy (June-Sept.), Winter (Oct.-Feb.). It enjoys moderate temperature changes, dropping below $15^\circ$C in winter and occasionally rising above $38^\circ$C in summer. The wind is commonly from western side, which maintains hot and dry conditions of atmosphere. The climate is dry, mild and moderate. The temperature is averaging at $23.8^\circ$C in winter, $28.2^\circ$C in summer and $24.4^\circ$C in rainy season.

Rainfall in the city is fairly good. Maximum rainfall occurs in the month of July and stormy rain occurs in the month of October. Average rainfall of Kolhapur city is 1025 mm.

4.5 GEOLOGY

In mesozic period, during the tectonic movement in the earth’s crust a number of cracks or fractures and fault zones were developed. This led to eruption of ‘lava’ which spread on the surface and formed the ‘Deccan trap’.

The constituents of land can be classified into ‘Black soil and red soil, Deccan traps, and Granite and Gneiss’. Secondary minerals like quartz, zeolites, Agate, Jasper are found. Large amount of ‘Bauxite and Laterite’ is found in western region of the Kolhapur city.
Nature really has gifted this city a lot. Its rich variety of flora and fauna, its meandering silver streams with the bank, the spurs of the Sahayadris capped here and there with impregnable fortresses and its sturdy warlike people. It can be called as the “Punjab of the Deccan.”

4.6 LAND AND AGRICULTURE

Kolhapur is surrounded by the region comprising of deep fertile black soil. This land is irrigated by five rivers flowing in the district, which has brought prosperity to entire land of the city within the range of 30 Kms. Main observed crops in Kolhapur are sugarcane, jowar, maize and groundnut. Most favourite crop is sugarcane and most of it is utilised for sugar production and some amount for production of ‘Jaggery’. The city is famous all over the world for its sweet and colourful jaggery.

4.7 TRANSPORTATION

Roads in the city are like veins of the human body. The modes of communication have a ‘Lion share’ in the progress of any city/ country. Kolhapur has been recognised as an important religious and commercial centre of the region. It is at a distance of 395 Km. from Mumbai, the capital of Maharashtra and 235 Km. from Pune. The coastal line is only 75 Km. away from Kolhapur and hence is known as ‘Door of Kokan’.
The national highway No. Four (Poona-Bangalore highway) passes through Kolhapur.

Kolhapur is at centre of south central railway, having a railway terminal station. Now-a-days, the proposal of connecting Kolhapur terminal to Kokan railway is under consideration. Kolhapur is also having an airport at Ujalaiwadi, located near NH4. Kolhapur is an important linkage between Kokan and rest of the state. It is connected to Kokan by various Ghats. These Ghats are as follows:

<table>
<thead>
<tr>
<th>Name of Ghat</th>
<th>Important Place of Kokan Connected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amba</td>
<td>Sakharpa</td>
</tr>
<tr>
<td>Anuskura</td>
<td>Rajapur</td>
</tr>
<tr>
<td>Bhui Bawada</td>
<td>Kharepatan</td>
</tr>
<tr>
<td>Fonda</td>
<td>Devgad/Vijaydurg</td>
</tr>
<tr>
<td>Karul</td>
<td>Malavan</td>
</tr>
</tbody>
</table>

Development of transport affect the solid waste generation. As Kolhapur is commercial centre and having good transport facilities, people come to Kolhapur frequently. The high frequency of the people in Kolhapur city generate solid waste more.

4.8 ECONOMIC DEVELOPMENT

Economic Development is an important factor affecting the solid waste generation. Due to good quality of soil, ample water
supply and strong modes of communication, Kolhapur is one of the economically established cities. Kolhapur is rated amongst the top in the country as per the per capita income. The secret of this lies in the large network of co-operative, scheduled nationalised banks and chit-funds etc.

The city is surrounded by 14 large sugar industries and number of small scale industries. The city is also famous for the production of ‘Kolhapuri chappals’, famous all over the world. The leather industry in Kolhapur generate leather waste.

Kolhapur has three major industrial areas - Shirol, MIDC, Gokul-Shirgaon MIDC and Udyamnagar. Only Udyamnagar is within the city premises. This was established by Chhatrapati Shri Shahu Maharaj of Kolhapur. One of the largest co-operative sector dairy ‘Gokul’ is also situated near the city. The Gokul dairy is supplying milk to city. It generates plastic milk bags. Production of jaggery and sugar and its export also have major share in the economic development of the city, various type of trades accounts for a turnover of about Rs. 300 million every day.

Due to the development of the trade, commercial waste is generated in Kolhapur which is collected by Kolhapur Municipal Corporation.

Thus, economic development of the Kolhapur city is one of the important causes of solid waste generation.
4.9 COMMERCE, TRADE AND INDUSTRY

The development of the commerce, trade and industries are also affecting solid waste generation.

Out of the three industrial areas 'Udyamnagar' is located inside the city which generate solid waste in Kolhapur city. This is only small area accompanied with mechanical workshops. The Kolhapur Sugar Mill and Shri Chhatrapati Shahu Mill are the only major industries inside the city limits. There is also small group of leather industries in Jawaharnagar. Trading and commercial establishments are concentrated in Laxmipuri, near Kolhapur Municipal Corporation, Mahadwar Road, Gangavesh and on some major roads. The city is not showing considerable growth in industrial and trade business.

4.10 ARCHAEOLOGICAL IMPORTANCE

Kolhapur is archaeologically an important place in India, due to the ancient and aesthetically beautiful temple of 'Goddess Mahalaxmi'.

This is the description of Ancient City in 'Skandpuran'. Due to Goddess Mahalaxmi and number of ponds or 'Tirthas', which were there around the temple of Mahalaxmi, the city was known as 'Dakshin Kashi'. 
The Goddess Mahalaxmi is the major Goddess of the city. The Mahalaxmi temple is the best model of ancient Hindu archaeology. It is entirely built in black stone and it has four huge doors. The plinth of temple is given the shape of the star.

The garph gruch of the temple was built in 364 A.D. by one of the Chalukya knight-karnadeva. King Marshinha and King Gandraditya of Shilahar made the development of the temple.

The premise of the temple is huge and a number of small temples of other deities are within the premises. The devotees of Mahalaxmi in the Kolhapur city and outside the Kolhapur come to Mahalaxmi temple with coconut flowers etc. which generate solid waste nearby the temple.

4.11 EDUCATIONAL IMPORTANCE

The educational development in India started early in the 19th century by the British rulers. But in Kolhapur, the awareness began in 1894 when Rajarshee of Kolhapur Sansthan Shahu Maharaj began his rule. During his rule, on 2nd October, 1906, Prof. Vishnu Govind Vijapurkar presented a bill on national education. Then upto 1922 nearly 559 schools were started. In 1923 Shivaji Technical Institute was started for providing technical education. In 1933 Law College was started. Shivaji University was established on 18th November, 1962. This University is one of the
best universities of Maharashtra state. All educational institutions in the district of Kolhapur, Solapur, Satara, Sangli are affiliated to Shivaji University. The University has many courses from Ancient Music to Modern Information Technology. KIT's College of Engineering, Kolhapur was the first non-aided engineering college to be sanctioned in the state of Maharashtra. It was established in the year 1983. There is also Bharati Vidyapeeth's and Dr. D.Y. Patil Institute of Technology. The students in the different schools, colleges and University are generating solid waste. Those students are living hostel they are also generating solid waste.

4.12.1 DEMOGRAPHY

The knowledge of basic demographic trend is very essential to sort out the problems and exact needs of the area to be planned. It provides the ideas regarding habitation of the people and the basic requirements and facilities which authority should look over while preparing the development plan. The development plan was prepared for 1991-2011 and has been submitted to state government for sanction.
4.12.2 Growth of Population in KMC Area:

Table 4.1
Population Data

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Percentage Change</th>
<th>Area in ha.</th>
<th>Population Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>1901</td>
<td>5437</td>
<td>-</td>
<td>896</td>
<td>60.68</td>
</tr>
<tr>
<td>1911</td>
<td>42018</td>
<td>-22.72</td>
<td>896</td>
<td>46.89</td>
</tr>
<tr>
<td>1921</td>
<td>52299</td>
<td>24.47</td>
<td>896</td>
<td>58.36</td>
</tr>
<tr>
<td>1931</td>
<td>66728</td>
<td>27.59</td>
<td>1152</td>
<td>57.92</td>
</tr>
<tr>
<td>1941</td>
<td>93032</td>
<td>39.42</td>
<td>1715</td>
<td>54.25</td>
</tr>
<tr>
<td>1951</td>
<td>136835</td>
<td>47.08</td>
<td>6682</td>
<td>20.48</td>
</tr>
<tr>
<td>1961</td>
<td>187442</td>
<td>36.98</td>
<td>6682</td>
<td>28.05</td>
</tr>
<tr>
<td>1971</td>
<td>259050</td>
<td>38.20</td>
<td>6682</td>
<td>38.77</td>
</tr>
<tr>
<td>1981</td>
<td>340625</td>
<td>31.49</td>
<td>6682</td>
<td>50.98</td>
</tr>
<tr>
<td>1991</td>
<td>406370</td>
<td>19.30</td>
<td>6682</td>
<td>60.82</td>
</tr>
<tr>
<td>2001</td>
<td>484101</td>
<td>16.31</td>
<td>6682</td>
<td>72.44</td>
</tr>
</tbody>
</table>

Source: 1. Kolhapur District Census Books from 1901 to 1991
2. The population of Kolhapur city as per 2001 is taken from 'Dainik Pudhari' dtd. 4th April, 2001.

4.12.3 Growth of Population:

Growth of population is the main factor affecting the solid waste generation. The growth of population, boundaries of Kolhapur Municipal area and population density is taken into account in Table 4.1. The population of Kolhapur city was 5,437 only in 1901, it increased to 1,36,835 in 1951 and to 4,84,101 in 2001. From Table 4.1, it can be seen that Kolhapur has recorded a steady population growth rate without spectacular rise in it. While
Graph 4.1: GROWTH OF POPULATION IN KOLHAPUR MUNICIPAL AREA
the decade 1941-51 showed a rise of about 47%, the next three decades population growth rate was in between 31% and 38%. A sliding down growth trend is seen in the decade 1981-91 but it need not be an indication of further sliding down growth rate. Industrial development of the outskirts of the city has not much contributed the city’s increase in population. This may be due to the reason that majority of industrial workers hail from adjoining rural areas. The trade, commerce and service base of the city also have not likely to have significant influence on population growth, as there are no plans of creation of major service centers in near future.

The initial area of the Kolhapur Municipal Corporation was of 896 hectares. It was changed in the year 1931 and reached 1152 hectares. Again in the 1941 it was increased to 1715 hectares. 1951 the area was again increased to 6682 hectares. Till now there is no change in the area. The boundaries of the Kolhapur Municipal Corporation has not been explained since 1977.

The existing density of population is 72.44 per ha. The density of population in Kolhapur city is changed due to the change in population and municipal area.
## Table 4.2
Comparative Statement of the Land Use – 1977-1989

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Land Use</th>
<th>As per the sanctioned Development Plan 1977</th>
<th>As per the Development Plan sanctioned in 1989</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Area (Hectare)</td>
<td>Per cent (%)</td>
<td>Area (Hectare)</td>
</tr>
<tr>
<td>1</td>
<td>Residential</td>
<td>961.26*</td>
<td>15.14</td>
<td>1073.53</td>
</tr>
<tr>
<td>2</td>
<td>Commercial</td>
<td>111.17*</td>
<td>1.75</td>
<td>160.65</td>
</tr>
<tr>
<td>3</td>
<td>Industrial</td>
<td>124.76*</td>
<td>1.97</td>
<td>106.67</td>
</tr>
<tr>
<td>4</td>
<td>Public/Semi-public</td>
<td>811.60*</td>
<td>12.78</td>
<td>903.58</td>
</tr>
<tr>
<td>5</td>
<td>Road and Transport</td>
<td>275.31</td>
<td>4.34</td>
<td>314.75</td>
</tr>
<tr>
<td>6</td>
<td>Open space</td>
<td>56.08</td>
<td>0.88</td>
<td>57.35</td>
</tr>
<tr>
<td>7</td>
<td>Public Services and Crematories</td>
<td>10.96</td>
<td>0.17</td>
<td>45.15</td>
</tr>
<tr>
<td>8</td>
<td>Defence</td>
<td>120.00</td>
<td>1.89</td>
<td>120.00</td>
</tr>
<tr>
<td>A.</td>
<td>Total Developed Land</td>
<td>2471.14</td>
<td>38.92</td>
<td>278.68</td>
</tr>
<tr>
<td>9</td>
<td>Water bodies</td>
<td>130.08</td>
<td>2.05</td>
<td>130.27</td>
</tr>
<tr>
<td>10</td>
<td>Agriculture</td>
<td>3071.8</td>
<td>48.38</td>
<td>2478.75</td>
</tr>
<tr>
<td>11</td>
<td>Barren</td>
<td>675.78</td>
<td>10.65</td>
<td>1291.3</td>
</tr>
<tr>
<td>B.</td>
<td>Total Undeveloped Land</td>
<td>3877.65</td>
<td>61.08</td>
<td>3900.32</td>
</tr>
<tr>
<td>C.</td>
<td>Total KMC area</td>
<td>6348.80#</td>
<td>100.00</td>
<td>6682.00</td>
</tr>
</tbody>
</table>

Chart 4.2: LAND USE

4.2.a - Developed KMC Area

4.2.b - Undeveloped KMC Area

4.2.c - Developed and Undeveloped KMC Area
DEVELOPMENT PHASES OF KOLHAPUR

1828

1 - BRAMHAPUR
2 - BELBAG
3 - SIDDHALE
4 - KADAM WADI
5 - LAXMIPURI
6 - SHAHUPUR
7 - RAILWAY STATION
8 - KHASBAG
9 - RAJARAMPUR

1862

1 - BRAMHAPUR
2 - BELBAG
3 - SIDDHALE

1970

1 - KADAM WADI
2 - LAXMIPURI
3 - SHAHUPUR
4 - RAILWAY STATION
5 - KHASBAG
6 - RAJARAMPUR

1977

1 - SHIVAJI UNIVERSITY
2 - UDYAMNAGAR
3 - KADAM WADI
4 - SUGAR MILL
5 - KALAMBA
6 - AERODROME
7 - RANKALA

Fig.
Inferences:

Following are the inferences of above statistics:

- Total developed area has increased by 25.45% + defence
- Residential area has increased by 221%
- Commercial area has increased by 106%
- Industrial area has increased by 138%
- Transport area has increased by 160%
- Public area has increased by 145%
- Garden and open space has increased by 414%

4.13 HOUSING

Environmental quality of any urban city is mainly affected by housing. It is the most important and difficult area for planning. The provisions made in 5 years plan do not match with the actual allocations needed to solve housing crises, faced by many areas in India. Poor planning of housing leads to formation of slums.

Based on construction type and life, buildings are subdivided into six types, as shown in Table 4.4. In this table, the life of good quality RCC structure is assumed to be 60 to 100 years and that of temporary huts in 5 years.
Table 4.3
Classification of Buildings Based on Construction Type and Life of Building (Year 1999-2000)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Life in Years</th>
<th>No. of Buildings</th>
<th>%</th>
<th>Type of Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>60-100</td>
<td>8762</td>
<td>20.55</td>
<td>Good quality RCC</td>
</tr>
<tr>
<td>2.</td>
<td>40-60</td>
<td>3394</td>
<td>7.99</td>
<td>RCC with cement and lime</td>
</tr>
<tr>
<td>3.</td>
<td>30-40</td>
<td>7702</td>
<td>18.13</td>
<td>Construction in stone bricks, lime, soil, half round and Mangalore tiles</td>
</tr>
<tr>
<td>4.</td>
<td>10-30</td>
<td>10771</td>
<td>25.36</td>
<td>Simple type of construction in stone, brick soil</td>
</tr>
<tr>
<td>5.</td>
<td>5-10</td>
<td>7407</td>
<td>17.44</td>
<td>Old construction in raw form</td>
</tr>
<tr>
<td>6.</td>
<td>Upto 5</td>
<td>4472</td>
<td>10.53</td>
<td>Temporary huts</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>42472</td>
<td>100</td>
<td>--</td>
</tr>
</tbody>
</table>

Source: Kolhapur Municipal Corporation

Table 4.3 shows that the percentage of buildings having their life up to 10 years is about 28%. The percentage of the buildings having life up to 30 years is 25.36. This type of houses are large in number in Kolhapur. The percentage of buildings having life up to 40, 60 and 100 years are 18.13%, 8% and 20.55% respectively.

4.14 PROFILE OF SLUM AREA

Slums are the indicators of urbanisation. Unlike other Municipal areas, KMC is also not free from slums. Slums of KMC lack basic services like potable water, sanitation, drainage, roads.
and electricity. Slums have housing solutions adopted by the houseless population who do not have access to formal housing. At present there are 38 declared slum spots in Kolhapur. The present status of slum regarding population, coverage and other facilities given by KMC is given in table 4.4. About 25% population in Kolhapur is living in slums. The population living in declared slums is estimated to 74,718 covering an area of about 68.15 hectares with 3980 number of huts having provided with 1300 number of toilets. The population density is 1096 persons per hectare.

The non-declared slum areas are 18. It includes 1204 slums. The population living in 1204 slums is estimated to 6770.

About 20 pockets of slums in the city are reestablished in the municipal area of ‘E’ ward in R.S.No. 550, 552, 554, 608. In June 1997 about 207 huts from Nagala Park were shifted to the above mentioned site. As far as KMC is concerned, there is a separate slum department headed by an Assistant Engineer, two Junior Engineers and a Surveyor. In addition to the municipal funds, funds from MAHADA are also available for development of slums. Most of funds are utilised for the purpose of construction of toilet blocks, gutters and WBM roads etc.
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of the Slum Area</th>
<th>No. of Huts</th>
<th>Population</th>
<th>Area (Hect.)</th>
<th>Toilets</th>
<th>Roads (Sq.Ft.)</th>
<th>Water conn.</th>
<th>Light poles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kadamwadi</td>
<td>152</td>
<td>700</td>
<td>0.12</td>
<td>20</td>
<td>34800</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>2.</td>
<td>Sadar Bazar</td>
<td>230</td>
<td>1200</td>
<td>0.23</td>
<td>30</td>
<td>13300</td>
<td>2</td>
<td>01</td>
</tr>
<tr>
<td>3.</td>
<td>Shiye Panand</td>
<td>60</td>
<td>190</td>
<td>0.03</td>
<td>4</td>
<td>800</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>4.</td>
<td>Lonar Vasahat</td>
<td>50</td>
<td>307</td>
<td>0.05</td>
<td>4</td>
<td>700</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>5.</td>
<td>Rajendra Nagar</td>
<td>891</td>
<td>6900</td>
<td>9.66</td>
<td>160</td>
<td>Blank</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>6.</td>
<td>Kasaba Bawada-595</td>
<td>135</td>
<td>900</td>
<td>Blank</td>
<td>20</td>
<td>1500</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>7.</td>
<td>Tofecha Mai</td>
<td>678</td>
<td>8000</td>
<td>7.00</td>
<td>167</td>
<td>208840</td>
<td>20</td>
<td>10</td>
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<td>8.</td>
<td>Pr.Shibaji Vidyalaya</td>
<td>143</td>
<td>1000</td>
<td>0.3</td>
<td>32</td>
<td>24000</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>9.</td>
<td>Koti Tirtha</td>
<td>195</td>
<td>9500</td>
<td>1.4</td>
<td>170</td>
<td>10</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>10.</td>
<td>Avachit Nagar</td>
<td>1304</td>
<td>10000</td>
<td>9.16</td>
<td>160</td>
<td>246000</td>
<td>14</td>
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</tr>
<tr>
<td>11.</td>
<td>Bhagat Singh Vasahat</td>
<td>147</td>
<td>1500</td>
<td>2</td>
<td>20</td>
<td>37000</td>
<td>3</td>
<td>20</td>
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<tr>
<td>12.</td>
<td>Dombawada</td>
<td>149</td>
<td>1200</td>
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<td>40</td>
<td>25000</td>
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<td>01</td>
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<tr>
<td>13.</td>
<td>Ware Vasahat</td>
<td>82</td>
<td>1240</td>
<td>0.5</td>
<td>24</td>
<td>16700</td>
<td>6</td>
<td>02</td>
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<tr>
<td>14.</td>
<td>Makadwala Vasahat</td>
<td>104</td>
<td>725</td>
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<td>28</td>
<td>7300</td>
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<tr>
<td>15.</td>
<td>Takala Khan</td>
<td>185</td>
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<td>2.52</td>
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<td>15000</td>
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<tr>
<td>16.</td>
<td>Jamsandekar Mal</td>
<td>365</td>
<td>2100</td>
<td>2.46</td>
<td>77</td>
<td>9190</td>
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<tr>
<td>17.</td>
<td>Ambica Plastics</td>
<td>143</td>
<td>800</td>
<td>2</td>
<td>10</td>
<td>36775</td>
<td>2</td>
<td>8</td>
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<tr>
<td>18.</td>
<td>Nimbalkar Mal</td>
<td>232</td>
<td>900</td>
<td>1</td>
<td>50</td>
<td>5900</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>19.</td>
<td>Aantarbharti Vidya Mandir</td>
<td>68</td>
<td>900</td>
<td>1.48</td>
<td>10</td>
<td>300</td>
<td>1</td>
<td>2</td>
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<tr>
<td>20.</td>
<td>Sagar Mal Panand, Golibar Maidan</td>
<td>108</td>
<td>650</td>
<td>6.68</td>
<td>20</td>
<td>24000</td>
<td>2</td>
<td>8</td>
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<tr>
<td>21.</td>
<td>Datta Mandir</td>
<td>78</td>
<td>850</td>
<td>1.15</td>
<td>14</td>
<td>7900</td>
<td>4</td>
<td>9</td>
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<tr>
<td>22.</td>
<td>Phulewadi Gairan</td>
<td>258</td>
<td>1500</td>
<td>2.03</td>
<td>40</td>
<td>25000</td>
<td>7</td>
<td>2</td>
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<tr>
<td>23.</td>
<td>Raman Mala</td>
<td>186</td>
<td>1500</td>
<td>4.7</td>
<td>42</td>
<td>16600</td>
<td>6</td>
<td>2</td>
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<td>24.</td>
<td>Rankala Khanbhag</td>
<td>135</td>
<td>1092</td>
<td>0.06</td>
<td>8</td>
<td>41000</td>
<td>6</td>
<td>8</td>
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Contd..
Contd., Table 4.4

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of the Slum Area</th>
<th>No. of Huts</th>
<th>Population</th>
<th>Area (Hect.)</th>
<th>Toilets</th>
<th>Roads (Sq.Ft.)</th>
<th>Water conn.</th>
<th>Light poles</th>
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<tbody>
<tr>
<td>25.</td>
<td>Lakshthirth Vasahat</td>
<td>185</td>
<td>380</td>
<td>0.03</td>
<td>8</td>
<td>1700</td>
<td>6</td>
<td>8</td>
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<tr>
<td>26.</td>
<td>Ghorapade Galli (Koregaonkar Oil Mill)</td>
<td>35</td>
<td>220</td>
<td>0.02</td>
<td>8</td>
<td>7000</td>
<td>6</td>
<td>10</td>
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<tr>
<td>27.</td>
<td>Near 12-A/C Bawada</td>
<td>54</td>
<td>1000</td>
<td>0.04</td>
<td>8</td>
<td>1000</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>28.</td>
<td>Shenda park Leprosy Colony</td>
<td>164</td>
<td>330</td>
<td>1.35</td>
<td>8</td>
<td>1700</td>
<td>6</td>
<td>10</td>
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<tr>
<td>29.</td>
<td>Kanjarbhat</td>
<td>91</td>
<td>330</td>
<td>0.05</td>
<td>4</td>
<td>1700</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>30.</td>
<td>Phasepardhi</td>
<td>50</td>
<td>220</td>
<td>0.03</td>
<td>4</td>
<td>500</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>31.</td>
<td>Near Morewadi</td>
<td>57</td>
<td>100</td>
<td>0.03</td>
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<td>300</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>32.</td>
<td>R.S. No. 550/558/608</td>
<td>247</td>
<td>2500</td>
<td>4.51</td>
<td>10</td>
<td>56500</td>
<td>2</td>
<td>46</td>
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<tr>
<td>33.</td>
<td>Wichare Mal</td>
<td>1100</td>
<td>8300</td>
<td>4.04</td>
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<td>110700</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>34.</td>
<td>Timber Market 714 &amp; 718</td>
<td>266</td>
<td>2111</td>
<td>1.93</td>
<td>20</td>
<td>36000</td>
<td>4</td>
<td>16</td>
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<tr>
<td>35.</td>
<td>Behind GPT</td>
<td>42</td>
<td>409</td>
<td>0.14</td>
<td>8</td>
<td>1000</td>
<td>4</td>
<td>6</td>
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<tr>
<td>36.</td>
<td>Kamgar Chawl Race-Corce</td>
<td>178</td>
<td>1004</td>
<td>0.08</td>
<td>6</td>
<td>1500</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>37.</td>
<td>Front of Kalamba Filter House</td>
<td>291</td>
<td>2500</td>
<td>0.17</td>
<td>20</td>
<td>8765</td>
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<td>10</td>
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<tr>
<td>38.</td>
<td>Kanan Nagar</td>
<td>142</td>
<td>860</td>
<td>Blank</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>8980</td>
<td>74718</td>
<td>68.15</td>
<td>1300</td>
<td>1025980</td>
<td>252</td>
<td>332</td>
</tr>
</tbody>
</table>


4.15 INDUSTRIAL PROFILE OF STUDY AREA

Kolhapur is a leading city in Maharashtra in manufacturing oil engines, components of various machines, agricultural implements and other engineering products. Most of the small-scale units are owned and managed by small organisers. Upto
1850, Kolhapur was famous up to 1850, Kolhapur was famous for the production of 'Guli sakhar' (red sugar), paper and leather products and bangles. H. H. Chhatrapati Shahu Maharaj of Kolhapur state, set up a repairing workshop for the maintenance of his imported vehicles. This led to the foundation of the growth of engineering units in Kolhapur. He also established one technical school to train some local persons. The school, in fact had provided employment to those who were involved in the production of a few products of this school. Due to his encouragement, in 1911, Shahu Chhatrapati Mill was established.

After a detailed study of the district, some lift irrigation schemes were installed during the regime of Chh. Shahu Maharaj because of which a demand for oil engines Budaki and Phad systems were increased. 'Kolhapur type Weirs' (Embankment) innovations in the irrigation strategy to supply water to sugarcane farms. Sugarcane was grown for the Kolhapur Sugar Mill, which was established by Dr. Siragaonkar S.S. in the year 1935. This helped to develop the small scale industries in the Kolhapur state. In 1920, Rajaram Industrial School and 1921, Jaysingrao Technical School was established to train the workers. Yamajirao Ambale of Nipani was encouraged to set up a foundry in Shahupuri area of Kolhapur city. Concentrated efforts were made to develop small scale industries in the private sector, large projects in the joint
sector and co-operative units in the engineering sector by living prominent industrialists and entrepreneurs from different areas of the state. They were also provided with financial assistance to develop their industrial units. Hence, Kolhapur city, Jaysingpur and Gadhinglaj emerged as the new trading centres very soon.

During the Second World War, the imports of oil engines were reduced. The local workers took the job of repairs of existing oil engines and afterwards they entered into the production of oil engines. Kooper Engines, Kirloskar Pumps and Spares, Kolhapur Diesel, Engines and Engineering spares developed fastly due to Swadeshi Movement in 1942. After the independence due to various facilities given by the Government of India, large number of new engineering units on large scale basis were established in the locality. Till 1969-70, the production of diesel engines and their spares was the main line of production in the industry. Since 1980 onwards these industries have diversified their production activities in various ways.

The growth of industrial units has more than doubled in 1980s. The annual compound growth rate (ACGR) of industrial units was 6.33% in 1991-92 over 1980-81. In which the tiny and S.S.I. engineering units show the highest growth rate of 7.74% as compared to other units. Medium and large scale engineering units on the other hand show a negative growth rate of 0.5% in the
period 1980-81 to 1991-92. Medium and large scale units in the
district also show a small growth 0.90%.11

Thus, expansion of small scale industries, repair workshops
and technical schools are also generating the solid waste in
Kolhapur city. At present near about 5000 small scale industrial
units are located in Kolhapur city which generate general as well as
specific solid waste. Chh. Shahu Mill located in ‘E’ Ward also
generating solid waste in Kolhapur.

4.16.1 Profile of Functional Areas:

Following are the functional areas12 of Kolhapur municipal
area.

4.16.2 Commercial Areas:

Principal business area of the city which generates solid
waste more include Mahadwar road, Tarabai road, Mahalaxmi
temple, Bhausingaji road, Shivaji Chowk, Gujari, Shahupuri,
Rajarampuri, Gangavesh, Venus Corner, Station road and ST stand
area etc.

4.16.3 Wholesale and Retail trade:

The main wholesale trade establishments are found in
Shahupuri, Laxmipuri and Market Yard areas which are generating
solid waste in large quantities.
4.16.4 **Industries:**

Following are the main industrial undertakings in Kolhapur city which are responsible for solid waste generation

i) Shahu Spinning Mill located in 'E' ward along with Rajaram Road.

ii) The Kolhapur Sugar Mill located to the north of the Bawada Sub-urban area.

iii) Along the national highway near the market area oil mills are developed.

iv) Engineering industries are located in the area of Udyamnagar, Y.P. Powarnagar and Panjarpole Industrial Estate.

4.16.5 **Educational Institutions:**

There are 50 colleges including Engineering, Agriculture, Science, Commerce, Arts, Law, Polytechnics, Medical, Home Science, D.Ed., B.Ed. and Architectural etc. There is an university head quarter with different colleges from Sangli, Satara, Solapur and Kolhapur districts affiliated to it. There is also Chhatrapati Shahu Central Institute of Business Education and Research located near government Rajaram College at the east of the city. Nearly about 300 different schools and Municipal primary schools located in Kolhapur city.
4.16.6 Cultural Importance:

Kolhapur being the seat of the Maharashtra princely state, it has the historical importance. Socio-culturally it stands at a prominent in the history of the region. It was the centre of reform movement under the leadership of Chh. Shahu Maharaj who was a progressive ruler. During his times Kolhapur was well known for art, music, drama and films.

4.16.7 Hostels:

Kolhapur is known as a mother of hostels only because of the efforts made by Chh, Shahu. There are 25 different hostels in Kolhapur city. He not only encouraged the hostel movement in Kolhapur but also supported it by giving financial assistance. He opened the Hostels for all communities in Kolhapur city which had once become the issue of criticisms. But in the prevailing circumstances what he did was right.

4.16.8 Occupational Structure:

Out of the total population of Kolhapur, workers constitute 27% of the population.

4.17 PROFILE OF TOURIST ATTRACTION CENTRES

Different attractions may tempts the tourists to visit particular area or place to spend their holidays. The attraction centre can be classified as natural features like land forms, flora
and fauna, the man made objects in form of monuments, historic buildings, amusement parks, temples (religious places) etc. Man and his culture get expressions through language, music, folklore, dances, etc. There are many places of tourists interest. The historical forts like Panhalagad, Gagangad, Vishalgad etc. are located on the west, while religious places like Narsobawadi, Wadi-Ratnagiri, Bhahubali complex located in the east. Warananagar, Dajipur Scantuary, the famous ‘Bison’ are also of added pleasure of tourists.

Kolhapur is famous for temple of ‘Mahalaxmi’, wrestling ground and ‘Kolhapur’ chappals (shoes). It is in Panchaganga basin and experiences pleasant weather throughout the year. It has scared place since the ancient times is called “Dakshin Kashi.” The major attraction of Kolhapur are Mahalaxmi temple, Binkhambi Ganesh Mandir, Old Palace, Town Hall (Museum and garden), Khasabag Maidan (Wrestling ground), Rankala Choupati (beach), Shivaji University and Katyani temple.

Kolhapur is well connected by road and broadguage railway lines to all the Indian cities. There are 34 big hotels which provide accommodation to the tourists. Hotel Shalini Palace, Hotel Ashoka are the ‘Three Stared’ hotels. Hotel Pearl and Hotel Tourist are
‘Two Stared’ hotels. There are three ‘Dharmashala’ which provides lodging facility to the pilgrim tourist on nominal charges.

Jotiba Hill, a questa, a part of the Vishalgad and Panhalagad off shots of Sahyadri have 957 metres height from mean sea level, about 19 Kms. to north of the Kolhapur city lies in Panhala Tahasil. The annual temperature is 25°C, the climate of these places is quite good. On full moon Chaitra (March-April) every year a fair has been held since the vedic period. During the period, about three lakhs people visit this place. Devotees of Jotiba use to stay in Kolhapur. Many people get a hault in Kolhapur and take the ‘Darshan of Mahalaxmi’ and on the next day go to Jotiba. All the passengers/tourist stay for sometime in Kolhapur city, and hence they are subject to solid waste management.

Jotiba hill is well connected by bus service. Besides, the taxi service is available through out day. There is no ‘Dharmashala’ and no other lodging facility at the hill station. Since Kolhapur city is only 10 Kms. away from Jotiba, they come back to Kolhapur.

Tamasha and Jalasa is the true folk drama and dance of Maharashtra which is both entertaining as well as educative to the people.13
4.18 PROFILE OF KOLHAPUR MUNICIPAL CORPORATION (KMC)

Kolhapur Municipal Corporation (KMC) is the local authority. The body established under the Bombay Provincial Municipal Corporation (BPMC) Act, 1949, for providing civic services within the area of its jurisdiction. There are 72 Corporators elected by 72 single member constituency electoral wards. The General body is headed by the Mayor. There are various Committees such as –

1. Standing Committee
2. Law Committee
3. City Development Committee
4. Garden and Library Committee
5. Sports Committee
6. Water Supply Committee
7. Health Committee
8. Civil Committee

Most of the financial powers vested with the Standing Committee.

The Municipal Commissioner is appointed by the State Government and is assisted by the Deputy Municipal Commissioner and the various heads of the department such as –

1. Public Works Department
2. Water Supply and Sewerage Department
3. Town Planning and the Valuation Department
4. Health Department
4.19 RESPONSIBILITY OF MUNICIPAL GOVERNANCE

The functional devolution, planning for economic development and social justice have been identified, as the major responsibility of the Municipal Governance in the 74th amendment under its article 248-W. It also refers to the newly inserted schedule to the constitution which lists the following functions:

1. Urban planning including town planning
2. Regulation of land use and construction of building
3. Plannings for economic and social development
4. Roads and bridges
5. Water supply for domestic, industrial and commercial purposes

6. Public health, sanitation, conservancy and solid waste management

7. Fire services

8. Urban forestry, protection of the environment and promotion of ecological aspects

9. Safeguarding the interests of weaker sections of society, including the handicapped and mentally retarded.

10. Slum improvement and upgradation

11. Urban poverty alleviation

12. Provision of urban amenities and facilities such as parks, gardens, playgrounds

13. Promotion of cultural, educational and athletics aspects

14. Burials and burial grounds, crematoriums, cremation grounds and electric crematoriums

15. Cattle ponds, prevention of animals

16. Vital statistics including registration of births and deaths

17. Public amenities including street lighting, parking lots, bus stops and public conveniences

18. Regulation of slaughter houses and tanneries

However, the provisions of article 243-W are not mandatory; but, it is left to the state governments to decide as to which functions it may devolute on a municipality. This is because, unlike the functional jurisdiction of states, which are prescribed in the constitution, the functions of local bodies are derived from the
responsibilities, which are delegated by the state through legislation or executive decisions.

### 4.20 GENERAL INFORMATION OF KOLHAPUR - MUNICIPAL CORPORATION (KMC)

The general information of KMC is as follows:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Area under the jurisdiction of KMC</td>
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<tr>
<td>2.</td>
<td>Total population of Kolhapur city (2001 census)</td>
</tr>
<tr>
<td>3.</td>
<td>Total No. of administrative wards</td>
</tr>
<tr>
<td>4.</td>
<td>Total No. of Corporators</td>
</tr>
<tr>
<td>5.</td>
<td>Literacy as per 2001 Census</td>
</tr>
<tr>
<td></td>
<td>a) Male</td>
</tr>
<tr>
<td></td>
<td>b) Female</td>
</tr>
<tr>
<td>6.</td>
<td>Total No. of Corporation employees</td>
</tr>
<tr>
<td></td>
<td>a) Staff</td>
</tr>
<tr>
<td></td>
<td>b) KMT employees</td>
</tr>
<tr>
<td></td>
<td>c) Education Board employees</td>
</tr>
<tr>
<td>7.</td>
<td>Total No. of employees in Health and Sanitation Department</td>
</tr>
<tr>
<td>8.</td>
<td>Total No. of employees in General Conservancy Section of Health and Sanitation Department</td>
</tr>
<tr>
<td>10.</td>
<td>Annual expenditure on only Conservancy Department</td>
</tr>
<tr>
<td>11.</td>
<td>Number of small scale industries</td>
</tr>
<tr>
<td>12.</td>
<td>Number of slum pockets</td>
</tr>
<tr>
<td>13.</td>
<td>Population in slum area</td>
</tr>
<tr>
<td>14.</td>
<td>No. of Municipal hospitals</td>
</tr>
</tbody>
</table>
15. No. of Government hospitals : 02
16. No. of private hospitals : 647
17. No. of municipal schools : 29
18. No. of private primary and secondary schools : 250
19. No. of colleges (Jr, Sr and other colleges) : 50
20. No. of slaughter houses : 02
21. Public gardens : 46
22. Total tree plantation : 1,30,000 in last 20 years
23. Sewerage treatment plant capacity : 29.8 Mid.
24. Water supply capacity : 85 Mid.
25. No. of quarries : 25
26. Garden of island : 15
27. No. of waterbodies : 05
28. No. of hotels : 1000
29. No. of hostels : 25
30. No. of cinema theatres : 15
31. No. of market yards : 01
32. No. of fish and mutton shops : 66
33. No. of vegetable markets : 14
34. No. of offices : 200
35. No. of lakes : 03
36. No. of cattle sheds : 1000
37. No. of households : 85,639
38. Worker’s population : 27%

4.21 CLASSIFICATION WARDS

The classification of wards, type of waste generated and the actual area is given below:
<table>
<thead>
<tr>
<th>Ward</th>
<th>Population (1991)</th>
<th>Type of Waste generated</th>
<th>Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>99483</td>
<td>Residential and commercial</td>
<td>Shivaji Peth, Rankala, Salunkhenagar, Vashi Naka, Sambhaiji Nagar, Timber Market</td>
</tr>
<tr>
<td>B</td>
<td>76590</td>
<td>Residential, Commercial &amp; Industrial</td>
<td>Mahalaxmi Temple, Mangalwar Peth, Sambhaiji Nagar to Y.P. Powar Nagar (industrial), Jawaharnagar (Tanneries), Pachgaon</td>
</tr>
<tr>
<td>C, C1</td>
<td>C (all) – 42,378</td>
<td>Residential, commercial</td>
<td>Laxmipuri, Dasara Chowk, General Mutton Market, Shivaji Chowk</td>
</tr>
<tr>
<td>C2</td>
<td>-</td>
<td>Residential, Commercial</td>
<td>KMC, Sidharthnagar, Gangavesh, Gujari etc.</td>
</tr>
<tr>
<td>D</td>
<td>44739</td>
<td>Residential, Agricultural</td>
<td>Shukrawar Peth, Uttareshwar Peth, Phulewadi, Dandagewadi, etc.</td>
</tr>
<tr>
<td>E, E1</td>
<td>E (all) – 2,20,037</td>
<td>Commercial + Residential</td>
<td>Rajarampuri, University, Ambai Defence, Territorial Army</td>
</tr>
<tr>
<td>E2</td>
<td></td>
<td>Industrial &amp; Commercial</td>
<td>Udyamnagar, Shahupuri, Main ST Stand</td>
</tr>
<tr>
<td>E3</td>
<td>-</td>
<td>Commercial + Residential</td>
<td>Railway Station, Tarabai park, Sadar Bazar (slum area)</td>
</tr>
<tr>
<td>E4</td>
<td>-</td>
<td>Residential &amp; Agricultural</td>
<td>Kasaba Bawada, police headquarter, Nagala Park, New Palace</td>
</tr>
<tr>
<td>E5</td>
<td>-</td>
<td>Residential, Agricultural, Industrial, Commercial</td>
<td>Ruikar Colony, Kadamwadi, Tarabai Park, Vikramnagar, Shiroli Naka</td>
</tr>
</tbody>
</table>

Source: Kolhapur Municipal Corporation
There are 72 circles, made for administrative purposes by KMC are as follows:

Table 4.6
Circles in Kolhapur Municipal Area

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name</th>
<th>Sr. No.</th>
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<td>Salokhe Nagar (A2)</td>
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Source: Kolhapur Municipal Corporation (2001)

#### 4.22 FINANCIAL SET UP

The KMC’s two sources of income, are the octroi and property tax. Mostly Kolhapur Municipal Corporation is financially dependent on the State Government and is still not capable to achieve independence due to old traditional methods of working and outdated law like the Rent Control Act. Other sources of income are development tax, water charges and other fees etc. Government of Maharashtra also gives grants for specific services;
but, it involves uncertainty. The Municipal Council is converted into Municipal Corporation without increasing the boundary of the city limit and hence due to the lack of industrial coverage. (Gokul Shirgaon and MIDC, Shiroli), adversely affecting the octroi and other incomes of KMC.¹⁴

4.23.1 Financial Profile of Kolhapur Municipal Corporation (KMC)

Financial profile of the Kolhapur Municipal Corporation is as follows:

4.23.2 Aftermath of the 74th Amendment:

The 74th Amendment to the Constitution of India and the inclusion of various duties in the XII schedule widened the scope of work of Kolhapur Municipal Corporation. The Government of Maharashtra also amended certain provisions of the related acts operating in the state including the provisions in the Bombay Province Municipal Council Act (BPMC Act) in 1994 and as a result, along with the traditional obligations of providing the traditional civic services like water supply, drainage, solid waste disposal, primary health care, roads, markets, street lighting, cremation and burial ground etc., additional duties like urban forestry, protection of environment, promotion of ecological aspects, safe guarding the interests of weaker sections of society and urban poverty alleviation also become part of the duties to be discharged by KMC.
Though KMC's duties have increased many fold due to the 74th Amendment, no new measures are inducted in the Amendment for resource mobilisation to meet the increasing gap on the financial front except the directive to appoint the State Finance Commission. The Maharashtra State Finance Commission was appointed to go into the aspect of the finance of the local bodies such as the KMC and to recommend the sharing of resources with the local bodies who now became constitutionally recognised as local Governments at the third level. The Commission constituted submitted its report to the Government of Maharashtra long back but the Government has still not considered its recommendations and has still not taken any decisions at the state level for their implementation at the level of local bodies. Hence, till the present scenario at KMC is changed drastically as a result of new approach or the Commission's recommendations, we will have to view KMC's financial profile in the context of its existing style of working and the tax pattern only.

4.23.3 Dependence on Government:

There is a strong view in some quarters that the urban local bodies like KMC should not depend too much on the State Government or the Central Government, but mobilise their own funds and resources to meet the growing demands of the urban citizens, sparing the state resources for the needy rural lot.
However, despite enough potentiality, KMC has not been able to exploit the means of achieving this independence due to the traditional compulsions of adhering to populist approach, the traditional methods of working and the outdated laws like Rent Control Act.

4.23.4 Source of Income:

Following are the sources of income of KMC.

i) The Property Tax:

The traditional source of income of KMC is the Property Tax. In fact, the property tax should have been the strong base for income for KMC but it lost its prime position long back due to its tie up with the concept of 'Rental Value' and its further tie up with the 'Rent Control Act'. KMC did make some efforts to revive the property tax by introducing discriminatory tariff levels but then they had their own limitations.

The base of property tax is linked up with the Rentable value which in fact, is adversely affected due to an out-dated Rent Control Act. The existing Rent Control Act not only makes much undue favour to the old property owners and particularly the tenants of the cost of tenants residing in new buildings but severely affects the revenue potentiality of KMC.
ii) The Octroi:

Octroi occupies the first place in KMC's income resources, being the main source of income but always remains a question mark and an uncertainty due to demands for its abolition from interested quarters off beat announcement of the State Government to review the same keeps the sword hanging. KMC, therefore, always hesitated to revise the octroi schedule and exploit its buoyancy fully.

iii) Other Sources:

Other sources of incomes like sur-charges and fees are negligible in total volume except the water charges though their importance in principle cannot be overlooked. Grant from the Government of Maharashtra for specific services are also counted, but it depends on the ways and means position of the State Government and KMC, on most occasions, is required to use its own resources the inflation and budgetary needs, this important source is also dwindling.

iv) Imbalances:

A common feature for imbalance in resources mobilisation in KMC has been a weak base low level of taxation and poor performance in collection.
While all the expenditure of KMC remained price elastic (affected/increased due to inflation), from the income sources, it is only the octroi which remained somewhat price elastic being and-volerum basis. The corrective measures such as revision of rates or charges always lagged behind. The result was obvious. Unlike the public sector where the level of service and expenditure is first decided and resources are mobilised to meet the predetermined level, the expenditure in KMC depends on the cash receipts or income. This situation affects not only the level of service but also affects the essential services like repairs and maintenances. Growing deficit further widens the gap between the resources and the requirements.

Sectoral imbalances are also apparent in KMC. For example to the water supply sector, sewerage and waste water treatment and disposal sector is totally neglected. However, one can say that these imbalances are inevitable due to ever lasting financial constraints.

Out of all the sources of income of KMC, some are attributed to the specific services like water charges and water supply, road tax and road services, certain fees and specified services and regulations. The major source of income namely the octroi is however general in nature and is not attributable to a particular type of service.
v) The Budget:

As is mandatory under the BPMC Act, besides the General Budget, Budget A, KMC prepares a separate budget- Budget ‘C’ for water supply, sewerage and solid waste management. Though total income normally meets the total revenue expenditure and leaves a small surplus for capital expenditure, fact remains that Budget C is subsidised by Budget A. It is further to be seen whether the revenue expenditure in Budget A really meets the real requirements, so is the case with Budget ‘C’.

An important constraint in resource mobilization in KMC’s budget has been the lack of industrial development within the limits of KMC. This has put severe restrictions on extend of cross subsidisation apart from affecting the income from octroi.

The differential tariffs both in respect of residential and non-residential premises, hardly could make substantial impact on the resource mobilisation as the total Ratable value of the properties in the limits of KMC is less than Rs. 15 Crores. The water charges for domestic purpose are now Rs. 3.60 per m³ and those for commercial and industrial purposes are Rs. 7.20 per M³ and Rs. 17.30 m³ respectively. However, as indicated above, due to low level of industrialisation in the city proper, it has not helped much in improving a budgetary position of Budget C.
The annual budget of KMC (A and C together) is of Rs. 60 Crores. With population of 5 Lakhs, it means a per capita contribution of Rs. 100 per month. However, considering that more than 50% of this comes from the octroi (which is indirect incidence) and Rs. 4 to 5 Crores is by way of Government grant, and also considering the taxation of higher rate to commercial and industrial sector, the direct incidence gets substantially reduced – may be Rs. 30 per month or Rs. 1 per day – for all civic services.

Since the Accounts are based on cash basis, past actuals do not show any even trend due to wide fluctuations except in case of octroi which in any case is based on actual collection. However, on an average basis, the octroi growth rate is between 14 to 15% and that in respect of other taxes is 10%.

On the expenditure side also, there is an absence of an even trend but the average indicates that the expenditure on General Administration and public welfare is increasing @ 17% per annum while that on public security @ 20% per annum and the rest @ 10% per annum.

In budget C, on an average, the benefit tax indicates an annual growth rate of 15% and other taxes at 10%. In respect of expenditure, annual growth rate on establishment is rising @ 13 to 15% per annum while that on other @ 10% per annum, for water and 13% per annum for sewerage.\textsuperscript{15}
From the above background, it is seen that the surplus left for development expenditure (even at the cost of normal maintenance and service level) is bound to be minimal. Moreover, the surplus left for development expenditure together with the loans from LIC, Government are used for urgent works. There, however, never had been a specific policy to plan out the level of developmental expenditure and keeping aside or earmarking the funds for the same, due to severe budgetary limitations. The cost of financing and consequential debt-charges are also increasing.

The key word to be borne in mind by KMC will be ‘SELF DEPENDENCY’ and this will need Radical change in KMC’s present approach and the system.

4.24 ENVIRONMENTAL PROBLEM IN THE KOLHAPUR CITY

Regarding the air, water, noise and solid waste pollution, city is facing the problem of water pollution. The raw water sources of the city are threatened due to disposal of waste water from sugar factories, agricultural runoff, nalas like Dudhali Jayanti and the Tannery waste water from Jawahar nagar areas.

The other main problem of the Kolhapur city is the disposal of solid waste. At present the solid waste is disposed off through land filling, creating nuisance and unsanitary conditions to the locality nearby. Comparatively speaking the city’s air and noise
pollution, problem is not that much serious due to the lack of dominance of industry.

Thus, the profile of study area is covering the history of Kolhapur city, population, number of houses, boundaries, geology, weather, commerce, trade, industries, archaeological importance, educational importance, economic development, slum areas, and Kolhapur Municipal Corporation and its responsibilities, its financial set up and environmental problems etc. Out of these factors population, housing, geology, weather, industries, trade and commerce, educational institutions, slum area, and economic development of the Kolhapur city are affecting the solid waste generation and management in Kolhapur city.

4.25 ROLE OF LEGAL PROVISIONS IN ENVIRONMENTAL PROTECTION AND SOLID WASTE MANAGEMENT

Environment protection is the system of procedures which limits the impairment of the quality of water that human use, of the air they breath, and of land that sustain them. Environment protection is much wider subject. It includes within its compass not only protection against environmental pollution but also maintenance and prevention of ecological balance and conservation of non renewable resources, including proper use of renewable resources. It is necessary to have a really comprehensive law
which will take care of all these aspects of environmental protection and prevention what we call ecological deficits.\textsuperscript{17}

Human activities produce wastes such as vapors, gases, solids, liquids or energy states. Human seek to disperse these in the open environment of water, air and land. The receptors are all forms of life on Earth, with people primary concern.

\textbf{4.25.1 Objectives of Environmental Protection :}

Environment protection has three objectives.\textsuperscript{18} The \textbf{first} is to protect people from physiological damage from pathogenic organisms, from toxic chemicals and excess of physical energies.

The \textbf{second} is to spare humans annoyance, irritation and discomfort from offensive conditions in water, air and on the land. The physical energies have a role in this second objective when even electromagnetic transmission interference, disturbing ratio and television reception. Uncontrolled insect and rodent populations may be a source of discomfort, disgust and fear then a real risk of disease transmission. The evident corollary is the provision of an environment which adds to comfort, pleasure and productivity. Air cooling for summer comfort and cleanliness of recreational areas are examples of positive actions to meet the second objective.
Third objective is to safeguard the balance in the Earth’s ecosystems and to conserve natural resources. Many people strongly advocate that this should be the primary goal of environment protection.

Fortunately, the three objectives are not incompatible, although conflict arises. The drainage of a swamp which is a breeding place for an opheline mosquito vector of malaria obviously changes the ecosystem that existed here. Thus, there are differences of opinions on which environmental action should be given priority when the three objectives are not compatible.

4.25.2 Assimilative Capacity of the Environment:

Pollution occurs when human’s waste loads on the water, air, and land overwhelm the natural processes of assimilation of such wastes. In the case of physical energies, it is usually human or animal tolerance that is overwhelmed. The condition of pollution may jeopardize one or more of three objectives of environmental protection.

4.25.3 Increased Population, Production and Energy Use:

The human ability to produce prodigious amount of wastes depends upon energy use and on number of people. James Watt’s improvement in 1769 on New Comen’s atmospheric engine broke the energy limits of human and animal muscles, wind and water
power. The steam engine moving boats and then trains and driving machinery. After that petroleum became fuel and made the internal combustion engine possible. Almost (on currently, electricity became another magical energy. Finally, three developed nuclear energy became great magic in the field of energy. Use of all these energies resulted in to huge waste and thereby waste management problem.

Human population itself exponentially increased through the 19th century and continues to do so. All of this accelerated human activity produces more wastes. The capacity of the open environment to assimilate the wastes remains essentially static. The result is an erosion and change of the original ecosystem when the waste loading continues an unabated rise.

4.25.4 Options of Control of Pollutants:

To keep the balance, the alternatives are eliminate the source, eliminate the waste, treat waste to reduce the deleterious load on the open environment; or augment the environmental capacity to assimilate the waste. All of the alternatives are applied in one way or another to manage liquid wastes, solid wastes, airborne wastes and the excess of physical energies.
4.26.1 U.S. Government Action for Environmental Protection:

In the United States, governmental action in environmental protection began in 19th century with municipal services of water supply, sewers, as the need arose. This was extended to sewage treatment and solid waste incineration or ocean dumping. Beginning of Massa Chusetts, State health Department developed Sanitary Engineering Divisions. Their functions were both advisory and regulatory. Later on different Acts were passed. Acts like clean Air Act of 1963, Motor Vehicle Air Pollution Act of 1965, Air Quality Act of 1967, Clear Air Act of 1970, Energy Supply and Environmental Co-ordination Act of 1974, Safe Drinking Water Act of 1974 and Water Pollution Control Act of 1975.

4.26.2 US Solid Waste Disposal Act, 1965:

Modern solid waste legislation dates from 1965, when the Solid Waste Disposal Act, Title II of Public Law 89-272 was enacted by Congress. The intent of this act was to;

i) promote the demonstration, construction, and application of solid waste management and resource recovery systems that preserve and enhance the quality of air, water and land resources.

ii) provide technical and financial assistance to state and local governments and interest agencies in the planning and
development of resource recovery and solid waste disposal programmes.

iii) promote a national research and development programme for improved management techniques, more effective organisational arrangements, new and improved methods of collection, separation, recovery and recycling of solid wastes; and the environmentally safe disposal of nonrecoverable residues,

iv) provide for promulgation of guidelines for solid waste collection, transportation, separation, recovery and disposal systems,

v) provide for training grants in occupations involving the design, operation, and maintenance of solid waste disposal systems.

Enforcement of this Act became the responsibility of the USPHS, an agency of the Department of Health, Education and Welfare, and the Bureau of Mines, an agency of the Department of the Interior. The USPHS had responsibility for the regulation of most of the Municipal Wastes generated in the United States. The Bureau of Mines was charged with supervision of solid wastes from mining activities and the fossil-fuel solid wastes from power plants and industrial stream plants.

The initiatives of environmental protection in United States have passed the Federal Government. The National Environmental
Protection Act (NEPA) consolidated all federal activities on air and water pollution, solid wastes, pesticides, noise and environmental radiation in a new organisation 'The Environmental Protection Agency' (EPA).

4.27 ENVIRONMENTAL PROTECTION IN INDIA..

Details of environmental protection in India are as follows.

4.27.1 Five Specific Legislation of Indian Parliament:

The United Nations Conference on 'Human Environment' took place at Stockholm from 5th to 16th June, 1972. India was participant country at Stockholm Conference and consequently was under the obligation to give effect to recommendations made by the conference. The Parliament has inacted five specific legislation on pollution control and environment in India. These five legislations are as follows:

5. Public Liability Insurance Act, 1991 etc.

Out of these five legislations, the rules under the Environment (Protection) Act, 1986 are as follows:

Under the Environment (Protection) Act, 1986, the parliament of India has made rules to regulate various activities such as: i) Hazardous waste (Management and Handling Rule, 1989; ii) The Recycled Plastics Manufacture and Usage Rules, 1999; iii) Bio-medical Waste (Management and Handling) Rules, 1999 etc.

It becomes necessary to study in detail the above notification for proper regulation of various wastes in the Municipal limit.

1) Hazardous Waste (Management and Handling) Rules, 1989:

   It applies to hazardous wastes as specified in schedule under the Rules for 18 categories but not applied to a) Waste water and exhaust gases covered under the Water (Prevention and Control of Pollution) Act, 1974 and Air (prevention and Control of Pollution) Act, 1981 respectively; b) Radio active waste covered under the previous of Atomic Energy Act, 1960.

   The hazardous waste site under these Rules covers a place for collection, reception, treatment, storage and disposal of hazardous waste duly approved by the competent authorities, which should be outside the Municipal limit, but in our country in some cases hazardous wastes find its disposal in Municipal area.
The limits given in the schedule are:

i) To take all practical steps to ensure that such wastes are properly handled and disposed off without any adverse effects, which may result from such waste; ii) It also imposes responsibilities on the occupier for proper collection, reception, treatment, storage and disposal of such wastes either himself or through the operator of a facility.

iii) It also imposes responsibility on the occupier or any other person acting on his behalf to give to the operator of a facility such information as may be specified by the State Pollution Control Board.

iv) It also imposes duty on the occupier or operator of a facility to collect, treat, store and dispose of hazardous waste in such facility only in the way authorised for this purpose and duty is imposed on the occupier generating hazardous waste and living a facility for the same.

v) To make an application to the state pollution control board for grant of authorisation, similar duty is imposed on the occupier of a facility for the above purposes.

vi) The Rules also provide that the hazardous waste is packaged in manner suitable for the storage and transport and the labelling and packaging shall be easily visible and be able to withstand physical conditions and factors, which shall be in accordance with the provisions for the Motor Vehicles Act, 1988 and other guidelines issued from time to time.
vii) It is obligatory on the part of the occupier or operator of a facility to report immediately about an accident at the facility or on a hazardous waste site or during the transportation of the hazardous waste.

4.28 ROLE OF STATE POLLUTION CONTROL BOARD

a) The State Pollution Control Board shall not issue an authorisation unless it is satisfied that the operator of a facility or occupier possesses appropriate facilities, technical capabilities and equipment to handle hazardous waste safely. The State Pollution Control Board may after giving reasonable opportunity of being heard, refuse to grant any authorisation or even suspend or cancel.

b) The Rules make it obligatory on the State Govt. or a person authorised by it to undertake an continuing programme to identify the sites and compile and publish periodically an inventory of disposal sites within the state for disposal of hazardous waste by undertaking an environmental impact study before identifying the site as waste disposal site in the state.

c) In practice, the State Government has identified 7 sites, however, the sites are not so far developed in scientific manner for disposal of hazardous waste, hence, the State Pollution Control Board has no alternative than to allow the occupier or operator of a facility generating hazardous waste to dispose off the hazardous waste in their own premises under their own control or at the
premises identified by the units themselves for the dispose of hazardous waste. Now, the Central Government is amending the Hazardous Waste (Management and Handling) Rules, 1989, by shifting the responsibility of identifying and developing the sites on the industrial association and industries itself. The Central Government is also making large scale of amendment in the Rules.

d) The Rules further prescribed that the import of hazardous waste from any country to India shall not be permitted for dumping and disposal of such wastes. However, import of such wastes for processing or refuse as a raw material after examining each case on merit by the State Pollution Control Board may be allowed. Subject to grant of permission for the import of such waste to such conditions on being satisfied with the import of such waste is used for processing or refuse as a raw material, by the Central Government. It is surprising that the State Pollution Control Board has to examine the information sent in Form VI and the Central Government has to give permission for the import of such waste but which permission shall precede to other is not clear- Now in view of the Writ Petition No. 667 of 1995 filled by the Research Foundation of Science, Technology and Natural Resource Policy against the Union of India and others the Hon. supreme Court has banned all the import of hazardous wastes and a high powered committee is appointed to examine such cases. For want of such
examination a number of consignments are pending with the Port Authorities in respect of hazardous waste.

4.29 THE RECYCLED PLASTICS MANUFACTURE AND USAGE RULES, 1999 APPLICABLE FROM 2-9-1999

The Central Government notifies the Rules for the manufacture and use of recycled plastics carrybags and containers and prescribed the State Pollution Control Boards in respect of the States and the Pollution Control Committees in respect of Union Territories as the prescribed authorities for the enforcement of these provisions i.e. the manufacture and recycling of plastic carrybags. The rules also notify the District Collector, Deputy Commissioner of the concerned district as the prescribed authority for enforcement of the provisions of the Rules related to the use, collection, segregation, transportation and disposal. It also prohibits the use of carrybags or container made of recycled plastics for sorting, carrying, disposing or packing of food stuffs by the vendor.

The rules also laid down the condition of manufacture of carrybags and containers made of plastics, which permits manufacture of carrybags or containers made of it.

i) Carrybags and containers made of virgin plastics, shall be a natural shade or white.
ii) Carrybags and containers made of recycled plastic and use for purposes other than storing and packaging food stuffs shall be manufactured using pigments and colourants as per IS 14534 : 1998 i.e. the list of pigments and colourants for use in plastics in contact with food stuffs, pharmaceuticals and drinking water.

It also provides that recycling of plastics shall be undertaken strictly in accordance with the Bureau of Indian Standards Specification IS : 1981 entitled “The Guidelines for Recycling of Plastics”. It also provide for marking and codification of recycled plastic carrybags with the indication of the percentage of use of recycled material and manufacturers shall print on each package of carrybags whether they are made of ‘recycled material “or of” virgin plastic”. The rules provide for the thickness of carrybags made of virgin plastics or recycled plastics shall not be less than 20 microns. It also provides for self regulatory measures to be undertaken by the Plastics Industry Association through their member units.

However, it becomes very difficult for the State Pollution Control Board to know the details of manufacturing process. It also becomes very difficult for the District Collector/ Deputy Commissioner, to regulate use, collection, segregation, transportation and disposal of the recycled plastics and virgin
plastics on account of non-availability of specifications about the above plastic material business. It becomes necessary to see that at the manufacturing stage itself, the plastic manufacturing is not conforming to the notification. It should be banned and prevented. In the case of such material, if is found in the market in contravention of notification the same should be confiscated.

It is pertinent to note that the Environment Department of Government of Maharashtra has also issued Notification under Section 5 of the Environment (Protection) Act, 1986, directing all the manufacturers of polythene (plastic bags) forthwith to discounting the production of polythene carrybags having thickness less than 20 microns for new virgin bags and 25 microns for recycled plastic bags and for packaging, handling, storing or carrying any food products, the plastic bags with minimum thickness of 20 microns only virgin material in nature colour without adding any pigments, dyes, etc. shall be manufactured and for other foodgrain items, bags from recycled material with a minimum thickness of 25 microns in different colours other than the natural colour of virgin material may be used for manufacture, provided the pigments and dyes used in the manufacturing of such recycled bags shall be non-toxic and non-hazardous. It also provides that reprocessing recycling of the plastics is undertaken strictly in accordance with the Indian standards.
The Municipal Corporation/ Councils have to modify the conditions of license of permission used to the shops and establishments and vendors relating to sale and supply of plastic bags as prescribed above. Thus, there are 2 notifications in the State of Maharashtra regulating the use of plastic carrybags.

4.30 **BIO-MEDICAL WASTE (MANAGEMENT AND HANDLING) RULES, 1998:**


It imposes duty on an occupier of an institution generating bio-medical waste to take all steps to ensure that such waste is handled without any adverse effect on health and environment.

Institution generating bio-medical waste includes a Hospital, Nursing Home, Clinic, Dispensary, Veterinary, Institution, animal House, Pathological Laboratory, Blood Bank by whatever name it be called, which generates bio-medical waste. The treatment and disposal of such wastes shall be in accordance with Schedule I and the standards given in Schedule-V. Time schedule prescribed for setting up treatment and disposal arrangement to achieve the standards given in Schedule-VI.
Different treatments- incinerator, autoclave, microwave system or common waste treatment facility or any other waste treatment facility.

Rules also provide for segregation, packaging, transportation and storage of bio-medical waste. It empowers every state and union territories to establish a prescribed authority, which shall function under the supervision and control of the respective Government – State has prescribed the Maharashtra Pollution Control Board as the Authority for implementation of Rules.

Institution generating bio-medical waste shall apply in prescribed form to the Maharashtra Pollution Control Board (except institution having less than 1000 patients per month). Maharashtra Pollution Control Board may grant or renew an authorisation after satisfying that the applicants possesses necessary capacity to handle bio-medical waste in accordance with the Rules. Authorisation shall be granted for 3 years. The authorisation can be cancelled after giving reasonable opportunity of being heard.

Rules provide for the constitution of an Advisory Committee constituting experts in the field of Medical and Health, animal Husbandary and Veterinary Sciences, Environmental Management, Municipal Administration and any other related Department or
organisation including NGOs including State Pollution Control Boards to advise the Government and prescribed authority. It is a good provision which provides technical and expert back up to the prescribed authority - not constituted yet. An occupier/operator shall submit report to the prescribed authority by 31st January every year giving information about the categories and quantities of bio-medical wastes handled during the preceding year – the prescribed authority to send this information to the Central Pollution Control Board by 31st March of every year. Authorised person- to keep/maintain record of waste generation, collection, reception, storage, transportation, treatment, disposal and any form of handling bio-medical waste. It also provide for reporting of accidents occurred during handling Rules prescribed time limit for complying with the Rules (treatment, disposal and standards).

4.31 MUNICIPAL SOLID WASTE (MANAGEMENT AND HANDLING) RULES, 1999

It applies to every Municipal authority responsible for collection, segregation, storage, transportation, processing and disposal of municipal solid waste which is degraded by micro-organisms, and (I) bio-degradable substance which is degraded by micro-organisms, and (ii) non-biodegradable Rules impose duty for implementation of these provisions on every Municipal Authority which include infrastructure development for collection, storage,
segregation, transportation, processing and disposal of municipal solid waste.

Schedule-I provides for the implementation of schedule time for setting up suitable composting facilities to make use of waste.

It can also impose duty on the Municipal Authority to furnish its annual report in the prescribed format to the District Magistrate or the Deputy Commissioner who will forward it to the State Pollution Control Boards or Pollution Control Committees.

The State Pollution Control Board or Pollution Control Committee, to monitor the compliance by collecting samples of ground water, ambient air and leachate anility and may require District Magistrate or Deputy Commissioner of the concerned District or Municipal Authority to take steps as may be necessary. Rules also impose duty on the Central Pollution Control Board to co-ordinate with State Boards and Committees in the matter of municipal waste disposal and its management and handling.

Schedule II lays down the compliance criteria for managing any municipal solid waste generated in a city or town in respect of collection, segregation and storage of municipal solid waste. It also provides for type of transportation to be used.

It also provides for processing of municipal solid waste such as:
i) Bio-degradable wastes by way of composts, vermicomposting, anaerobic digestion or any other biological processing for stabilisation of waste and;

ii) Waste containing recoverable material to be followed by the route of recycling and;

iii) Land filling – restricted to non-biodegradable, inert waste and other wastes, which is not suitable for recycling or for biological process land filling can be for residues of waste processing facilities or pre-processing rejects from wastes processing facilities- but mixed wastes land filling shall be avoided unless unsuitable for waste processing- under unavoidable circumstances or till installation of alternate facilities, land filling shall be done by proper norms given in Schedule II.

Schedule III gives specification for landfill sites M.A. to identify, develop and maintain one or more landfill sites as may be necessary landfill site shall be planned and designed with proper documentation of a phased construction plan as well as a closure plan after environment impact assessment in a city/ town having population more than 5 lakhs and views of competent town planning authority with public notice – making use of nearby waste processing facility – existing landfill sites to be provided that biomedical waste, slaughter house waste, industrial wastes, sludge and other hazardous wastes shall not be dumped at landfill site meant
for disposal of non-hazardous and non bio-degradable wastes. Regarding site selection of landfill, the rules provide specification.

Rules also provide for specification for landfilling, water quality monitoring, ambient air quality monitoring, plantation at landsite, ground water standards at landfill site, closure at landfill site and post-care with special provision for hilly areas and smaller towns.

The provisions are made also for pollution prevention in respect of diversion of storm water drains to minimise leachate generation and prevention of pollution of surface water, construction of a non-permeable living system, provision for management of leachate, prevention of run off from landfill into any stream, river, lake or pond.

The Rules provides standard for compost, disposal of treated leachate etc.

Thus, it shows that more and more responsibility has been given to administration to administer, disposal of solid waste. This will protect municipal jurisdiction from its ill effects.

4.32 LEGISLATIONS IN SOLID WASTE MANAGEMENT

Satisfactory performance of any public utility depends on
i) Institutional infrastructure with required man power and
According to the Indian Constitution, public health and sanitation falls within the preview of state laws. Collection and disposal of solid waste is of local nature and is entrusted to local civic authorities.

These rules are called the municipal solid wastes (Management and Handling) Rules, 1999, which are made under Section 3, 6 and 25 of the Environment (Protection) Act, 1986.

4.33 MANAGEMENT OF MUNICIPAL SOLID WASTES

Following are the parameters of solid waste management.

4.33.1 Parameters Collection of MSW:

Littering of MSW shall be prohibited in cities, towns and in urban areas notified by the government. To prohibit littering following steps shall be taken namely,

i) Organizing house to house collection of garbage through any of the methods, like containerized collection, community bin collection (control bin), house to house, collection on regular preinformed timings scheduling by using bell ringing/musical vehicle (without exceeding permissible noise levels).

ii) Collection of wastes from squatter areas/ locating slums including hotels/ restaurants/ office complexes and
commercial areas shall be devised in consultation with Municipal authority.

iii) Waste from slaughter-houses, fruits and vegetable markets that are biodegradable in nature, shall be managed to make use of such wastes.

iv) Bio-medical wastes and industrial wastes shall not be mixed with MSW and such wastes shall follow values specified separately for the purpose.

v) Collected waste from residential and other areas shall be transferred to community bin, hand driven containerised carts.

vi) Horticultural and construction/ demolition wastes debris shall be separately collected and disposed off, by following norms.

Similarly activities retaining to dairies (milking of cows/ buffaloes) shall be regulated in accordance with state laws.

vii) Waste (garbage, dry leaves) shall not be burnt.

viii) Stray animals shall not be allowed to move around waste storage facilities or at any other place in city/ town and shall be managed as per state laws.

4.33.2 Segregation of MSW:

In order to encourage public, municipal authority shall organize awareness programs for segregation of wastes and shall
encourage recycling of segregated materials. Municipal authority shall undertake phased programme to ensure that community is fully involved in waste segregation.

4.33.3 Storage of Municipal Solid Waste:

Municipal authorities shall establish and maintain storage facilities in such a manner, as they do not create unhygienic/insanitary conditions around it. The following criteria shall be taken into account while establishing and maintaining storage facilities.

i) Storage facilities shall be created/established by taking into account quantities of waste generated in a given area and the population densities. A storage facility shall be so placed that a user finds it easy to approach within the walking range.

ii) Storage facilities to be set up be municipal authorities or any agency shall be so designed that waste stored shall not be exposed to open atmosphere and shall be aesthetically acceptable and user friendly.

iii) Storage facilities/bins have easy to operate designed for handling, transfer and transportation waste.

iv) Manual handling of waste shall be prohibited; if unavoidable due to constraints, manual handling shall be carried out under proper precaution with due care of safety of works.
4.33.4 Transportation of MSW:

Vehicle used for transportation of waste shall be covered. Waste should not be visible to public, nor exposed to open environment, preventing their scattering. The following should be met:

i) The storage facilities set up by municipal authorities shall be daily attended for cleaning of wastes.

ii) The collection and transportation vehicles designed in such way that multiple handling of wastes to final disposal is avoided.

4.33.5 Disposal of MSW:

Landfilling shall be restricted to non-biodegradable, inert waste and other waste that are not suitable either for recycling or for biological processing. Landfilling shall also be carried out for residues of wastes, processing facilities as well as pre-processing rejects from waste, processing facilities. Landfilling of mixed wastes shall be avoided unless same is found unsuitable for waste processing. Under unavoidable circumstances or till installation of alternate facilities, landfilling shall be done following proper norms. Landfilling shall meet the following criteria.

i) Landfill sighting and construction shall be done after proper care. However in respect of cities having population over 5 lacs proper environmental impact assessment shall be conducted by municipal authorities before selecting the site.
ii) Provision for further landfilling sites shall be included in the land used plan of city/town.

iii) The future and existing landfill site shall comply with the norms for control of air and water pollution and other environmental norms.

iv) Waste at disposal site shall not be burned. Sites where waste is to be burned as an interim measures shall not cause air pollution. Ambient air quality shall be monitored for compliance.

CONCLUSION

In this chapter profile of study area and role of legal provisions were studied. The profile Kolhapur city shows that factors like growth of population, slum area, housing development, trade and commerce, markets, shops, climate topography were affecting the generation of solid waste positively. The population of Kolhapur city was increased from 5437 in 1901 to 136835 in 1951 and 484101 in the year 2001. Increasing population, housing, slum generate more solid waste. The official slum population was 74718 in the year 2000. It generates more solid waste. The total developed area in the Kolhapur city increased by 25.45%, residential area increased by 221%, commercial area increased by 106%, public area increased by 145%, transport increased by 160% during the period 1977-1989.
The chapter also shows the functional areas of the Kolhapur city. The Mahadwar road, Bhausingaji road, Shivaji Statue area, Laxmipuri, Shahupuri, Rajarampuri were the functional areas which generate more solid waste.

The profile of Kolhapur Municipal Corporation shows functions income, expenditure of the KMC. At present KMC is facing the problem of funds because of limited sources of income.

The role of legal provisions and pollution control is very important in solid waste management. Hazardous and biomedical waste must scientifically managed to keep environment clean.
REFERENCES


4. Ibid., P. 15.


7. Ibid., P. 5.


