

# International Journal of Innovative Research in Science, Engineering and Technology

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## Analysis and Assessment of Solid Waste Management through Field Approach

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**ABSTRACT:** Managing the solid waste is really a big challenge all over the world for human beings. Increase in the solid waste in municipal area due to rise of living standard, rapid urbanization, commercial activities, cultural status etc need to manage effectively, since it may threat to nature and source for several diseases. Municipal solid waste management problem is also prevailing in the urban environment of Bangalore. Therefore the present research work was taken to find out the problems and prospects of Municipal solid waste in few areas of Bangalore city. This study helps to understand the present condition with respect to collection, storage, transportation of municipal solid waste. The data were collected through field visit, interacting with people and concerned authorities. In this work 12 blocks were identified to analyze the present situation in the block. Evidences of photograph were also made about generation, storage, collection, transportation of solid waste. This study reveals that the present system may not satisfactory for managing and handling solid waste due to shortfall of vehicle and time management.

**KEYWORDS:** Analysis, Assessment, Field approach, solid waste management.

### I. INTRODUCTION

Municipal solid waste materials includes the waste generated from various sectors such as agricultural, domestic commercial, institutional and industries due to rapid increase of production and consumption. These wastes are either in solid or semi solid form generated as well as rejected from the societies. This has become a serious global issue due to rapid increase of population and increase in waste production. This will be threat to nature because it may cause ground and surface water pollution as well as it may be source for several health disorders. Hence proper waste management will be a key challenge in modern society. A proper management technique reduces the unfavorable impacts on public health and environment. Also it improves the quality of life and aesthetic beauty of nature. Increase in solid waste generation leads to several questions about the condition of present conventional management system with respect to storage, disposal, transportation, treatment etc. hence it is necessary to analyze and also to assess the waste generated to present condition. The main objective of solid waste management is to protect the health and to promote the environment quality for better sustainability. For this research work, Halasuru ward is chosen as study area. The present studies intend to find out a suitable site for the disposal of municipal solid waste. The field survey is done by locating the black spots and marking in the Google map to save the location of that place. Black spots are the places where waste is dumped in considered area. Total of 26 black spots in our considered area, which involves the waste from residencies, commercial establishment etc. Out of which three are major sites of dumping and rest are minor dumping sites. Extended to this work, technique of remote sensing and Geographical system were also adopted. Outcome of this research helps to analyze the present situation and adopt a proper waste management plan without hampering the natural resources. In addition to this, we should also make an effort to create awareness about the problem in the society.

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## II. STUDY AREA

The present study area chosen for the study is Ulsoor. Ulsoor, is one of the oldest neighborhood in the city of Bangalore, Karnataka, India, located 12.97° N, 77.63° E in central Bangalore and being roughly near the eastern terminus of Mahatma Gandhi road. It is renowned for its numerous temples and rather narrow streets.

### 2.1 FILED VISIT REPORT

The average production of waste generated in the year 2017 is collected and used for analysis. The segregation is done in dumping yards which is divided into four categories. The wastes are collected in the ward without any segregation leads to major difficulty in segregation. In the month of October the waste generated will be more due to festival seasons. Month wise statistics of waste generated for the year 2017 is represented in the table 1. The wastes disposed in various locations are shown in the figure 1 to figure 5.

Table 1: Month wise statistics of waste generated report

| Sl.no | month     | Wet waste Qty<br>in MT | Dry waste Qty<br>in MT | Sanitary waste<br>in kgs | Mixed waste<br>Qty in MT |
|-------|-----------|------------------------|------------------------|--------------------------|--------------------------|
| 1     | January   | 12.00                  | 2.20                   | 2.00                     | 17.00                    |
| 2     | February  | 11.00                  | 1.80                   | 2.00                     | 18.00                    |
| 3     | March     | 12.50                  | 1.75                   | 2.00                     | 19.00                    |
| 4     | April     | 11.00                  | 1.20                   | 2.00                     | 17.00                    |
| 5     | May       | 11.50                  | 1.80                   | 2.00                     | 18.00                    |
| 6     | June      | 12.00                  | 1.20                   | 2.00                     | 20.00                    |
| 7     | July      | 11.00                  | 1.50                   | 2.00                     | 19.00                    |
| 8     | August    | 12.00                  | 1.80                   | 2.00                     | 21.00                    |
| 9     | September | 11.00                  | 2.00                   | 2.00                     | 18.00                    |
| 10    | October   | 14.00                  | 2.20                   | 2.00                     | 24.00                    |
| 11    | November  | 11.50                  | 2.00                   | 2.00                     | 22.00                    |
| 12    | December  | 12.00                  | 2.00                   | 2.00                     | 21.00                    |
|       |           | <b>141.50</b>          | <b>21.45</b>           | <b>24.00</b>             | <b>234.00</b>            |

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Figure 1: Waste dumped near Dhobi site



Figure 2: Waste dumped in streets



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Figure 3: Waste dumped near road side



Figure 4: Household and construction waste



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Figure 5: Waste dumped in Drain

## 2.2 BLOCK WISE STATISTICS AND ITS DESCRIPTION

The major black spots are seen more in the area, which includes drains and three major sites. The drains affect the lake and environment. Even though waste are collected by the auto rickshaws daily in morning, still some sort of the waste are dumped in the area. As the available number of vehicles for collection of waste is less, the area covered by each vehicle is more. Hence lack of time management in the waste collection leads to dumping of waste along the road. The truck will be in the site for morning 1 hour as per the field survey.

We have divided the area into 12 blocks according to the population, number of vehicles and waste generated. The photos and information is obtained through filed survey and through interaction. The drains are not cleaned frequently, hence during the rainy season it leads to hassle in the environment. The wastes are burned in drained. People should be educated about the hazards and problem caused by the waste. Details of statistics collected from each block (block 1 to block 12) are represented in the table 2 and table 3.

Table 2: Block wise statistics (Block number 1 to block number 6)

| Sl.no | Description            | Block 1 | Block 2 | Block3 | Block4 | Block 5 | Block 6 |
|-------|------------------------|---------|---------|--------|--------|---------|---------|
| 1     | Total no of households | 700     | 700     | 780    | 700    | 700     | 750     |
| 2     | Regular households     | 600     | 600     | 450    | 450    | 500     | 500     |
| 3     | Small apartments       | 100     | 100     | 200    | 250    | 200     | 250     |
| 4     | Slums                  | 0       | 0       | 130    | 0      | 0       | 0       |

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|    |  |      |      |      |      |      |      |
|----|--|------|------|------|------|------|------|
| 6  | Small shops and clinics                        | 10   | 8    | 20   | 4    | 15   | 20   |
| 7  | Retail unit, offices and educational institute | 0    | 4    | 2    | 3    | 0    | 4    |
| 8  | Small markets and temples                      | 4    | 3    | 4    | 2    | 0    | 1    |
| 9  | Street vendors                                 | 10   | 8    | 15   | 10   | 6    | 5    |
| 10 | Total road length in kms                       |      |      |      |      |      |      |
| 11 | Major roads                                    | 0.50 | 0.50 | 0.30 | 0.60 | 0.50 | 0.80 |
| 12 | Intermediate roads                             | 0.50 | 0.60 | 0.30 | 0.60 | 0.40 | 0.50 |
| 13 | Minor roads                                    | 0.80 | 0.50 | 0.90 | 0.70 | 1.00 | 1.00 |
| 14 | Pushing carts                                  | 2    | 3    | 2    | 2    | 2    | 3    |
| 15 | Auto tipper                                    | 1    | 1    | 1    | 1    | 1    | 1    |
| 16 | Luggage auto                                   | 0    | 0    | 0    | 0    | 0    | 0    |
| 17 | Compactor                                      | 1    | 1    | 1    | 1    | 1    | 1    |

Table 3: Block wise statistics (Block number 7 to block number 12)

| Sl.no | Description                                    | Block 7 | Block 8 | Block 9 | Block 10 | Block 11 | Block 12 |
|-------|--|---------|---------|---------|----------|----------|----------|
| 1     | Total no of households                         | 800     | 700     | 750     | 720      | 700      | 700      |
| 2     | Regular households                             | 700     | 650     | 650     | 600      | 600      | 50       |
| 3     | Small apartments                               | 100     | 50      | 100     | 120      | 100      | 0        |
| 4     | Slums  | 0       | 0       | 0       | 0        | 0        | 650      |
| 6     | Small shops and clinics                        | 100     | 50      | 20      | 25       | 25       | 40       |
| 7     | Retail unit, offices and educational institute | 2       | 2       | 0       | 2        | 0        | 2        |
| 8     | Small markets and temples                      | 8       | 6       | 6       | 3        | 2        | 5        |
| 9     | Street vendors                                 | 20      | 20      | 15      | 10       | 15       | 10       |
| 10    | Total road length in kms                       |         |         |         |          |          |          |
| 11    | Major roads                                    | 0.50    | 0.00    | 0.00    | 0.00     | 0.00     | 1.00     |
| 12    | Intermediate roads                             | 0.60    | 0.60    | 0.60    | 0.80     | 1.00     | 0.60     |
| 13    | Minor roads                                    | 2.50    | 2.50    | 2.20    | 1.20     | 2.00     | 2.90     |
| 14    | Pushing carts                                  | 5       | 3       | 3       | 6        | 3        | 4        |
| 15    | Auto tipper                                    | 1       | 1       | 1       | 1        | 1        | 0        |
| 16    | Luggage auto                                   | 0       | 0       | 0       | 0        | 0        | 0        |
| 17    | Compactor                                      | 1       | 1       | 1       | 1        | 1        | 1        |

### III. CONCLUSIONS

An attempt has been made to analyze and assess the waste generated in the city. In this research work, buffer maps were prepared for existing location and block statistics report were tabulated. The waste lifting patterns are identified and analysed. Through field approach, it is observed that present situation may not be suitable to solve the problem of



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waste collection, hence waste bins locations were identified in the ward. The numbers of vehicles available to carry the waste were also less; hence waste availability will be enormous in prominent places. For better environment and to improve the aesthetic appearance of the city, proper time management of waste collection are necessary.

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