

# SOLID WASTE MANAGEMENT OF GANDERBAL DISTRICT

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**Abstract** - Solid waste is the useless, unwanted and discarded material resulting from day to day activities in the community. Solid waste management may be defined as the discipline associated with the control of generation, storage, collection, transfer, processing and disposal of solid waste. The present paper based on the study carried out on solid waste management practice by municipal council Ganderbal. This study was also designed to study the composition of solid waste in Ganderbal city. The present study has been carried out with the primary aim of estimating the solid waste generation projections for the next 26 years in the Ganderbal town (J&K) and to suggest remedies to decrease the total quantity of waste by employing certain methods through which the whole of the solid waste generation can be reduced by about 60-80% besides making it unharmed for any of the natural resources i.e. employing the methods which can be environment friendly and at the same time be economical so that no overburden is carried on the states economy and also to dispose them off in a scientific environmental friendly and economical way.

**Key Words:** (solid waste, management, composition, environment forests)

## 1. INTRODUCTION

Ganderbal Town is an important and Growing Town in Ganderbal District. It is situated at a distance of 20 KMs in the west of Srinagar city center, the summer capital of Jammu and Kashmir. Though the borders of Ganderbal Town are touching the borders of Srinagar Municipal Corporation at Nagabal but still the Town bears a unique importance from political, geographical, Economical and geological point of view which makes Ganderbal Town a unique Town in the entire state. The Town not only enroot to Leh and Kargil Districts but is in the center of Tourist Places like Sonamarg, Mansbal, Dal Lake and wetlands of Anchar and Shallabugh. The maximum Pilgrim Tourists to Amaranth Ji Shrine and Mata Kheer Bhawani Ji Tulumullah adopt the route Via Ganderbal Town.

The population as per information of the authority of Municipal Council Ganderbal is 35,000 (approx). There are 7,500 households in Ganderbal city. No. of bulk waste generating sources (Hotels, Restaurants, markets) are 1,500

Total solid waste generation as of 2020 is 16q/day in Ganderbal city. From that, solid waste generation per person is approximately 350 gm/capita/day.

### 1.1 Background

In the last decade of the 20th century, municipal solid waste drew country wide attention of Citizen Forums, Judiciary, some of the Beaucrats and Democrats of Urban Local Bodies, as well as members of Planning Commission and Officials of Central Government. The subject got real high level of attention from the incidence of heavy rains-in Sept 94 in the City of Surat, where solid waste and rain water created so-called plague situation. (Unfortunately similar incidences again happened in several cities during July 05 and Aug 2006). Combined action from the multiple agencies and mounting pressure from several cities resulted in framing and enactment of specific rules and regulations on this subject. These rules are:

Municipal Solid Waste [Management and Handling] Rules 2000 from the Ministry of Environment and Forest (MOEF) Govt. of India. Final notification of these rules was done under the Gazette of India No. 648 Extra Ordinary Part II-Section 3- Subsection (ii) of 3rd October 2000. Prior to this draft notification was issued on 25th September 1999 for public opinion and responses.

Compliance of these rules (briefly called as MSW Rules 2000 and Revised in the year 2016) has become mandatory for every Urban Local Body that includes Municipal Committee, Municipality, Nagar Palika, Nagar Nigam, Nagar Panchayat, Municipal Committee and Notified Area Committee.

Under these MSW rules, all Municipal Authorities in the country have to follow prescribed norms for collection, segregation, storage, transportation, processing and disposal of Municipal solid waste generated in their respective jurisdiction

## 2. Literature Review

A Q Dar, Umer Bashir Dar [2] published a research paper on "Viability of Vermicomposting for solid waste management in Ganderbal town" in international journal of engineering research & technology (IJERT) vol. 2 Issue 10, October- 2013 in which they concluded that ganderbal town waste is having high percentage of biodegradable matter and the high moisture content,

therefore suitable for the vermicomposting. End product of vermicomposting when analysed chemically gives the very high values of nitrogen, potassium and phosphorus which are essential ingredients for good fertilizer.

To date, fewer papers have been published in international literature on a comparative analysis of SW management in developed, developing and lesser developed countries. To fill that gap, this comparative review aims to analyze SW management practices in lesser developed, developing and developed countries, using existing data from 2005 to 2015, from major scientific journals, Waste Management; Resources, Conservation and Recycling; Journal of Environmental Management and Waste Management and Research, covering both quantitative and qualitative data to draw experiences from developed countries for improving SW management efficiency in lesser developed and developing countries. The findings from the comparative review indicate that SW management in lesser developed and developing countries is not well established and inefficient. Key issues were identified around lack of cooperation among stakeholders, institutional structural weaknesses, lack of legislated recycling, adhoc and uncoordinated approaches. This paper provides the critical aspects that could be useful to policy- and decision-makers when developing, designing, and making adjustments and implementing efficient SW management systems in developing and lesser developed countries.

### 3. Current scenario of MSW collection, storage & transportation

The number of dust bins are grossly insufficient to store current waste quantities, hence about half the quantity is littered around at multiple points, where lot of labour is wasted in collecting and lifting of waste. In Ganderbal Town MSW is transported through one tipper, Two Tractors and seven Auto Carrier and 30 Hand Carts. MC Ganderbal Owns 1 tippers, seven Auto Load carrier, Two Tractors with one JCB and One Loader is also available.

The Ganderbal Municipal Committee has not developed proper landfill sites. Presently solid waste is being crudely dumped at Beehama dumping ground.

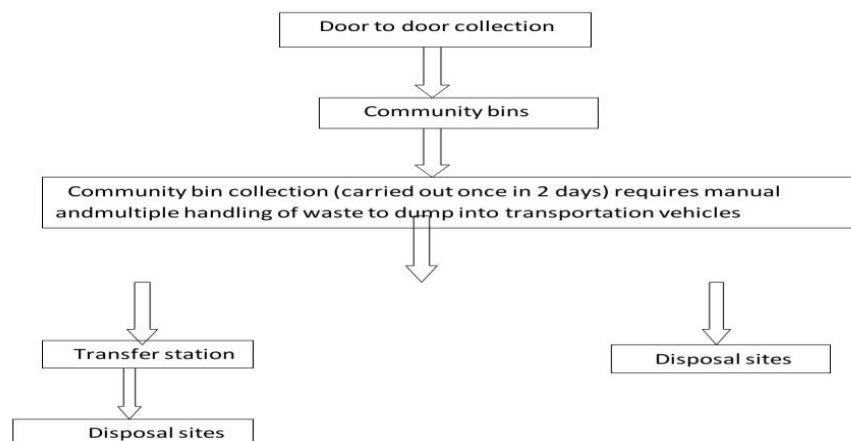
Ganderbal Town of Ganderbal district of J&K is disposing off the MSW at Nearby Open dumpsite on Main Road obtaining lot of Resistance from the local People and also dumping the waste in Wetlands near in the vicinity of Nallah Sindh, which has attracted lot of resistance from people.



Waste Being Openly Burnt at Daderhama



Waste Dumped Near Paddy Fields



Flow chart showing collection of solid waste

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Project Name/Town : Integrated Municipal Solid Waste Management for Ganderbal town of Ganderbal district.  
 Project description :  
 1. Door to door collection  
 2. Bulk transportation  
 3. Mechanical Segregation at site  
 4. Auto Composting through Machines for Bio-degradable waste.  
 5. Magnetic Dis-integration for Non Bio-degradable waste  
 6. Sanitary Landfill for Inert Materia

#### 4. Estimation of Future Population Protection

The population of Ganderbal town was 19236 as per census figures of 2001. The population as of on 2011 as per census figures stands on 28,233 in the Ganderbal town. The projection of future population is made by considering Master plan projection for 2039. The detail of the year wise population are enclosed in the table

The population is estimated as

$$Pa = Po + nx$$

Pa = Proposed population

Po = Current population

n= Number of decades

x= average increase in population

year	Population
2001	19236
2011	28233
2021	35000(approx)
2031	42000(approx)
2039	52000

#### 5. Estimation Of Waste Generation Production

The task of waste generation calculation from residential sector is easy as the data is available even though in a haphazard manner but the secondary waste data were not available for other category of waste. Even though the major portion of solid municipal waste comes out from residential areas but it is essential to consider waste quantity from all sources such as from commercial, hotel, restaurant, bio medical, industrial, slaughter house, horticulture, construction waste etc, also it is not possible to restrict the municipal waste only from residential sector in the present case. However no mixing of industrial and bio medical waste occurs with the municipal waste.

According to quantification analysis and the data available with the GMC the total waste generation from each ward of Ganderbal town is as follows

Ward No.	Name of Ward	Generation of Waste in quintals/day
1	Beehama (Nagripora)	1.0
2	Beehama (Wahid shah sahib)	1.1
3	Ganderbal A	0.8
4	Arampora A	0.9
5	Daderhama Gousia	1.2
6	Cheki Duderhama	0.9
7	Cheki Fatehpura A	1.1
8	Gangerhama A	0.9
9	Wanipora	0.8
10	Bamloora	1.0
11	Saloor A	0.7
12	Saloor B	1.3
13	Saloor C	6.0
14	Ganderbal B	0.7
15	Arampora B	1.1
16	Fathipora B	0.9
17	Gangerhama B	1.0

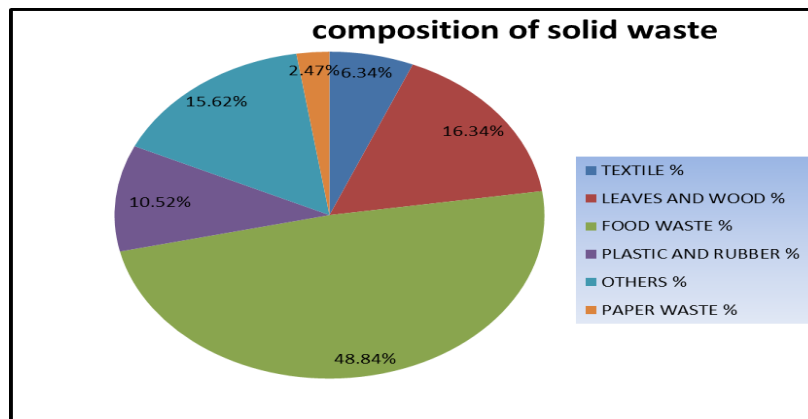
The total sum of these comes equal to 15.9 quintals which is rounded of to 16.0 quintals per day.

By the end of the year 2039 in which the population is expected to be around 52000 (approx) the assumed waste generation will be,

$$52000 \times 350 \text{ gm/capita/ day} = 18.2 \text{ quintals/day} \quad 19\text{q/day (approx)}$$

## 6. COMPOSITION OF SOLID WASTE:

S.NO	Name of zone	Paper Waste%	Textile %	Leaves and wood %	Food waste %	Plastic and rubber%	Others%
1	Beehama Nagripora	2.5	9.5	28.4	46.6	10.5	2.5
2	Beehama Walid shah	3.2	6.2	18.5	52.2	8.4	11.5
3	Ganderbal A	1.6	0	25.6	45.5	12.9	14.4
4	Arampora A	2.5	2.2	10.2	47.6	18.2	19
5	Daderhama Gousia	2.3	1.2	16	55.4	6.4	18.7
6	Cheki daderhama	3.1	12.2	8.6	51.4	12.2	12.5
7	Cheki Fatiphora A	1.7	9.4	23.4	42.9	3.2	21.1
8	Gangerhama A	3.6	7.9	14.5	62.4	6.6	5
9	Wanipora	2.6	6.4	17.5	42.8	10.4	20.3
10	Bamlora	3.2	8.2	18.9	41.4	5.8	22.5
11	Salora A	2.2	6.7	14.4	49.8	16.4	10.5
12	Salora B	0	7.4	16	46.4	12.6	17.6
13	Salora C	2.8	6.8	13.8	47.4	14.4	14.8
14	Ganderbal B	4.6	5.4	16	51.5	10.2	12.3
15	Arampora B	3.4	5.6	12.4	52.2	9.8	16.6
16	Fathipora B	1.7	3.2	14.5	47.6	11.4	21.6
17	Gangerhama B	2	6.9	13.4	48.7	12.2	16.8
18	Aggregate Dumping site	1.5	8.2	12.1	47.4	7.9	22.9
19	Avg quantity	2.47	6.34	16.34	48.84	10.52	15.62



## 7. Suggested Methods or Solid Waste Management in Ganderbal Town On The Basis Of Experimental Results

Due to very high percentage of moisture in the solid waste present in the town none of the thermal methods can be undertaken as they may not only will be economical and pose a burden on the economy of the state but will also lead to air pollution.

Due to high percentage of biodegradable matter and the concentration of the elements like NPK lying in the optimum range for to be consumed by the plants for their growth, BIOLOGICAL methods of waste mangement seemsX the most viable option in this town. This method will not only manage the solid waste but if carried on individual level will reduce the work load on MCG by 60-80 %

Among the methods of biological treatment the most feasible from the test results are composting and vermicomposting. These methods can be carried on individual level, municipality level. Moreover they can prove to be a boon for the unemployed sector as they can make the rich organic fertilizers from it.

## 8. CONCLUSIONS

Provision of litter bins at public places shall be made and there will compulsory segregation at all the sources. The design of bins should be worker friendly.

Most of machines used by MC Ganderbal are old and currently some are defunct hence needs to be phased out slowly and purchased new ones for efficiency improvement in collection of MSW.

As the waste is having high percentage of biodegradable matter and the high moisture content, therefore suitable for the vermicomposting.

The waste disposal site which has been earth filled and closed requires cleaning up through bio-remediation to reclaim the land area for its re-use for multiple purposes by Government.

Public awareness, political will and public participation as essential for the successful implementation of the legal provisions and to have an integrated approach towards sustainable management of municipal solidwastes

## 9. References

- [1] Muncipal Council Ganderbal
- [2] A Q Dar, Umer Bashir Dar "Viability of Vermicomposting for solid waste management in Ganderbal town" international journal of engineering research & technology(IJERT) vol. 2 Issue 10, October-2013
- [3] Solid Waste Management by Subhash Annand by Mittal publications, Edition 2010, Pg. no:210-236