

SWOT ANALYSIS FOR IMPROVEMENT OF MUNICIPAL SOLID WASTE MANAGEMENT PLANNING: A CASE OF AMOD TOWN, BHARUCH

Kapil K. Patel¹, Sejal S. Bhagat²

M.E Student, Civil Engineering Department, Sarvajanik College of Engineering and
Technology, Surat, Gujarat, India¹

Assistant Professor, Civil Engineering Department, Sarvajanik College of Engineering and
Technology, Surat, Gujarat, India²

Abstract: Solid waste has become one of the biggest problems and its management is one of the major issues now days for our environment. The problem is not restricted to a single place rather it covers all parts of the environment which leads to toxic pollutants. Developing countries face major problem i.e. solid waste management in urban as well as in rural areas. This Study represent solid waste management practices in the Amod town of Bharuch District, Gujarat. This study is based on existing scenario of solid waste management in Amod town. Study shows about 0.5kg of residential, agriculture solid waste per capita is generated in the town. It found that street sweeping, grass cutting, agriculture waste, cattle dung, drain and public toilet cleaning contribute most to waste generation in this town. Most common practices of waste processing are uncontrolled dumping which causes mainly water and soil pollution. For the analysis of existing scenario SWOT analysis is adopted. As population are increasing the qualities of solid waste are also increasing and if wastes are disposed in uncontrolled manner these may cause adverse impact on public health & environment. The attempt is made to resolve current issues and relevant proposal.

Key words: Amod nagrapalika, Solid waste management, SWOT analysis, Uncontrolled dumping

1. INTRODUCTION

Solid waste has become one of the biggest problems and its management is one of the major issues now days for our environment. The problem is not restricted to a single place rather it covers all parts of the environment which leads to toxic pollutants. Developing countries face major problem i.e. solid waste management in urban as well as in rural areas. The most obvious environmental damage caused by solid waste is aesthetic. A more serious risk is the transfer of pollution to ground water and land as well as the pollution of air from improper burning of waste. Many waste activities generate greenhouse gases like landfills generate methane and refuse fleets are significant sources of carbon dioxide and nitrous oxide. Leachate from unlined and uncovered dumpsites contaminates surface and ground waters (Photograph no.1). It is

necessary to have accurate information on planning a proper solid wastes management in rural areas of country. On the other hand, lack of knowledge on the unfavourable health outcomes of solid wastes has increased the occurrence of infectious diseases. In order to improve the quality of life of rural population, water supply and environmental sanitation need to be improved. Both solid and liquid waste management come under environmental sanitation. The objective of solid waste management in rural areas is to collect the waste at the source of generation, recovery of recyclable materials for recycling, conversion of organic waste to compost and secured disposal of remaining waste. Inorganic recyclable solid wastes are to be collected separately from residential houses through sensitization and motivation.



figure 1 uncovered dumpsite in amod town
source: amod nagarplika

Recyclable items would be sold to generate fund. In our study we suggest composting and vermicomposting for solid waste management. These technologies are ideal technologies. These are inexpensive and less time consuming as well.

2. STUDY AREA PROFILE

Amod is a Municipality city in district of Bharuch, Gujarat. The Amod city is divided into 7 wards for which elections are held every 5 years. The Amod Municipality has population of 15,237 of which 7,813 are males while 7,424 are females as per report released by Census India (2011).



Figure 2 loction of amod town

Population projections up to 2041

Amod town decadal avg. population growth is 2.74%, which lesser then other town in bharuch district. Population projections for Amod town are given in table:1.

Table 1 projected population for amod town

Population	2011	2016	2021	2031	2041
Amod	15237	20000	31908	43816	55724

3. SOLID WASTE MANAGEMENT

Generation

According to AMOD NAGARPALIKA data on solid waste generation in Amod indicate an average waste generation of 500 grams per capita per day. Based on the Census 2011, a population of 15,237 for generates total waste of 10.00 MT/day. Solid waste is generated by a variety of sources, ranging from households, to commercial establishments, public and institutional areas.

Collection and handling

Household collection: Currently, in Amod the solid waste is collected at the household level in bins (approximately 11000 pairs of refuse bins have been given to household for collect their wastes, and another 12000 green bins for biodegradable material has also been supplied to the town) at the household level by the waste collector. This collection of waste from households is carried out by workers belonging to employee of Amod Nagarpalika. Nagarpalika covers 7 of 5wards of the town with the help of its 47 workers. In Amod waste has been collected with the help of 4 tractors, 1 loader & 15 skip.

Collections from commercial establishments: Waste that is not collected from small hotels and commercial establishments and hospital by the Nagarpalika they thrown their waste into scribe boxes which is put by Nagarpalika in vicinity. The large hotels have their own systems and mostly produce biogas from their kitchen waste. The Nagarpalika is in charge of the main road sweeping and drain cleaning for all drains across the town. The collection and transportation of this waste is also done by the Amod Nagarpalika. However, the by-lanes are not swept by the Nagarpalika, and these become problem areas in terms of accumulation of solid wastes, which also enter the drainage systems including the storm water drains and canals.

Tariffs and charges

Amod Nagarpalika has been collected charges for solid waste, which is 2 % of the property tax and is collected along with the property tax. There are also user charges that are collected @ Rs. 60 per household per year. These user charges are collected directly by the door-to-door waste collectors and are used for funding the salary and insurance charges of the workers and also for maintenance and diesel charges of the vehicles used for collection of waste. However, there are currently no records maintained by the Nagarpalika for the fees collected and as to how these are used.

Transportation, processing and disposal

Transportation

Waste is collected by workers in dustbins which is loaded on tricycle and brought to the secondary collection points. The primary collection vehicle is either a tricycle or animal cart that belongs to the Nagarpalika and has been given to the various groups for collection of waste. On the vehicle only 1 bin are provided in which waste at the household level is

collected. This indicates, In Amod town segregation at source level is completely missing. These transfer points have been pre-determined by the Nagarpalika and the time when the vehicle reaches this spot is also defined. In some places the pre-segregated waste from households is directly transferred to the trucks from the large bins. The transportation system consists of 4 tractor-trailer, 2 refuse-collectors, 23 tricycle and 2 box lifting scribe. Existing Solid waste management network in Amod town is as describe in diagram:



Figure 3 existing solid waste collection network

Processing and disposal

Processing of solid waste was not done in the Amod Nagarpalika area at all, until recently, due to the lack of funding and only 1 bulldozer was used at a dumping site for laying the waste in one layer. At present in Amod Nagarpalika all waste collected is transform to the dumping site which is located at pursa road site (R.S no: 615) without any kind of treatment.

4. SERVICE LEVELS

Table no.2 Provides a summary of the service levels in Amod town.

Table2 SWM existing status

Sr.no	Indicator	Year 2015
1	Total waste generated (tons/day)	100
2	Per capita waste generated (kg/day)	0.5kg
3	Collection of waste (tons/day)	60
4	Distance of disposal point (km)	3km
5	No. of Safai karmacharis	47
6	Collection efficiency %	60%
7	Door to door collection %	70%
8	Source segregation %	00%
9	Treatment %	00%
10	Disposal %	90%

Source: amod nagarpalika annual report submitted to the district authority: 2014-15

Table:3 SWM service levels vis-a-vis SLB set by MoUD

Sr.no	Parameters	Benchmark is to be achieve	Amod service levels
1	HH coverage	100%	70%
2	Waste collection efficiency	100%	60%
3	Source Segregation	100%	NA
4	MSW recovery	80%	NA
5	Scientific disposal	100%	NA
6	Cost recovery	100%	NA
7	Cost Collection efficiency	90%	NA
8	Complaints redress	80%	NA

Source: service level benchmark of MoUD

5. FINDINGS FROM SWOT ANALYSIS

SWOT analysis always seeks to interpret the better preparation of strategic planning proposal for three sanitation infrastructure, these solid waste management, access to toilet, wastewater management.

Detail findings from SWOT analysis are as below:

Strength

- Good coverage of Door to door collection is residential area.
- Land disposal site is available.

Weakness

- Source level segregation is not available.
- No process for treatment of waste before disposal.
- System still not complete with MSW rules 2000.

Opportunities

- Coverage of door to door collection can be increase.
- Introduce some scientific treatment facility at dumping site.
- Treat waste as a resource for revenue generation.

Threats

- Dumping off waste in open drain is more than dumping in bins given by Nagarpalika.
- Water logging and pollution concerns at waste disposal site.
- Uncontrolled waste disposal generate some health issues.

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