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Research Paper Geography

Municipal Solid Waste Management in Kadapa City

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ABSTRACT

Solid a waste is the unwanted and unless parts of animal and human activities which are basically solid. They can be arising from agriculture, industrial and social activates. Solid waste is a consequence of life and its varies from one society to other. In early time human consumed at resources and he had not any problems but deposal of its waste. Traditional compositing and producing the fertilizers were very typical solutions for most of the organic waste during that time; the disposal of the solid waste can be traced from that time when human started to make community, society and urban life.

Municipal solid waste is one of major problem in urban centers. Kadapa city is one of the urban centers of Kadapa district Andhra Pradesh state in India is our study area. The main objective of the study sources of the solid waste generation and disposal. At present study gives the details of municipal solid waste generation, in the forms of residential, industrial, commercial, construction, demolish, and agriculture. The solid waste collection in the forms of door to door, community bins and storage points. Different types of vehicles are used to transport the municipal solid waste. To study the implementation of disposal methods of solid waste in kadapa city. The population of Kadapa city is 3,44,309 and area covered 164.08 Sq.Km. the average solid waste generation 206.21 Metric tons.

Keywords : Municipal solid Waste, Waste generation, collection methods, transportation

Introduction

Solid a waste is the unwanted and unless parts of animal and human activities which are basically solid. They can be arising from agriculture, industrial and social activates. Solid waste is a consequence of life and it varies from one society to other. In early time human consumed at resources and he had not any problems but deposal of its waste. Traditional compositing and producing the fertilizers were very typical solutions for most of the organic waste during that time, the disposal of the solid waste can be traced from that time when human started to make community, society and urban life. The part of solid waste which is related to the municipality is called Municipal Solid Waste. These kinds of waste encompass packing, food waste, bottles glass, cans, papers and agriculture waste are the wastes which are unwanted and useless for all inhabitants during their life. Because of changing the consumption patterns increasing the quantity of solid waste as well as the toxicity of them caused that it has been concerned more and more. The relation between collection, storage and disposal of solid waste to human health is so clear. Men while ecological problems of the function of the solid waste such as air pollution and soil contamination are so important. The leach of the poor land fills which has contamination with the surface and the ground water as an example of this ecological problem. In many technological societies after the industrial revolution the problem of solid waste was appeared because of changing the consumption pattern of society. The clear example of municipal solid waste is packing which is usually used for many goods in our life. Usage of plastic and cardboard as the basic materials for packing cause increasing the amount of in our life every day. Our study area Kadapa is located at 14degrees 25minutes to14degrees 33minutes North latitude and 78degrees46minutes to78 degrees54minutes East longitudes .the area of kadapa city is 164.08 square kilometers and population according to 2o11 Cens us 3,44,309 .

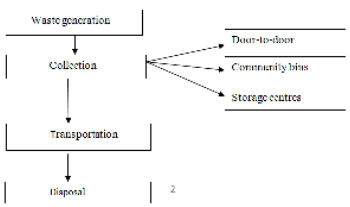
Objectives

1. To study the Municipal solid waste generation
2. To study the collection methods of solid wastes, Solid-waste transportation process and disposal methods.

DATA SOURCE AND METHODOLOGY:

Population data will collected from census of India, 2011, Data collected in the forms of working employs, waste generation, collection centers, no of vehicles used in transport for disposal of solid waste, disposal methods are using municipality from Municipal Corporation of Kadapa City.

Methodology



Municipal solid waste Generation :

In our study area solid waste is available in the forms of residential, industrial, construction, demolition, municipal services and agriculture.

Sources of municipal solid waste in Kadapa City

Source	Solid waste contents
Residential	Food wastes, paper, cardboard, plastics, textiles, leather, yard wastes, wood, glass, metals, ashes, special wastes (e.g., bulky items, consumer electronics, batteries, oil, tires), and household hazardous wastes.
Industrial	Housekeeping wastes, packaging, food wastes, construction and demolition materials, hazardous wastes, ashes, special wastes.

Institutional	Paper, cardboard, plastics, wood, food wastes, glass, metals, special wastes, hazardous wastes.
Construction and demolition	Wood, steel, concrete, dirt, etc.
Municipal services	Street sweepings; landscape and tree trimmings; general wastes from parks, beaches, and other recreational areas; sludge.
Agriculture	Spoiled food wastes, agricultural wastes, hazardous wastes (e.g., pesticides).

Municipal Solid Waste (MSW) Collection:
Collection is the component of waste management which comprises lifting and removal / passage of a waste material from the source of production to either the point of treatment or final disposal. Collection of generated solid waste is the crucial part in MSW management. Efficiency in collecting solid waste and segregating it decides how well solid waste is managed. Collection includes not only the gathering of solid waste, but also the transport of these materials, after collection, to the location where the collection vehicle is emptied. This location may be a material processing facility, a transfer station or a landfill disposal site.

Table 1
Waste Collection points in Kadapa City-2011

S.NO	Collection points	No of collection points
1	Door-to-door	72,256
2	Collection points	134
3	community bins	100
4	Storage points	08

Source: Data collected from Municipal Corporation of Kadapa

Door-to-door Collection of waste:
This stage includes door-to-door collection of waste. Most collection is done by garbage collectors who are employees or firms under contract to the government. Garbage collectors employed by local governing bodies manually collect the waste generated at the household level. In our study area door to door collection nearly about 72,256points are there .The municipality workers are collecting solid waste and transfer with help of trolleys, tricyclesand trippers.

Communal bins:
Communal bins are placed near markets, in apartment complexes, and in other appropriate locations. Shopping complex, hotels, public places like gardens, religious places are other definite point sources. In kadapa city 100 communal bins are there. Vehicles collects large amount of waste from these point sources and then transport it to transfer stations and disposal sites.

Storage of Municipal Solid Wastes
Municipal authorities shall establish and maintain storage facilities in such a manner as they do not create unhygienic and unsanitary conditions around it. Following criteria shall be taken into account while establishing and maintaining storage facilities, namely:

1. Storage facilities shall be created and established by taking into account quantities of waste generation in a given area and the population densities. A storage facility shall be so placed that it is accessible to users.
2. Storage facilities to be set up by municipal authorities or any other agency shall be so designated that wastes stored are not exposed to open atmosphere and shall be aesthetically acceptable and user-friendly.
3. Storage facilities or 'bins' shall have 'easy to operate' design for handling, transfer and transportation of waste. Bins for storage of bio-degradable wastes shall be painted green, those for storage of recyclable wastes shall be painted white and those for storage of other wastes shall be painted black.
4. Manual handling of waste shall be prohibited. If unavoidable due to constraints, manual handling shall be carried out under proper precaution with due care for safety of workers.

In our study area having 8 storage points are there.

Transportation:
Transfer refers to the movement of waste or materials from collection points to disposal sites. Transportation of waste from collection point to disposal sites is carried out by using different types of vehicles depending on the distances to be covered by them. Larger vehicles carry the waste from the collection points to the disposal sites. Comparatively small vehicles discharge waste at transfer stations where the wastes are loaded into larger vehicles for transportation to the disposal sites. In metro cities transfer stations are located at different places to support intermediate transfer of waste from the surrounding areas up to the dumping grounds. Transfer stations are centralized facilities where waste is unloaded from smaller collection vehicles and re-loaded into larger vehicles (including in some instances barges or railroads) for transport to a disposal or processing site. Kadapa municipality authorities are using 18 tractors, 30 trippers, 150tricycles and 300hand trolleys for transporting the solid waste from collection points door to door collection community bins and storage points to disposing places. In our study area they have collected municipal solid waste generation average per day 206.21 Metric tons.

Table 2
Waste transportation in Kadapa City-2011

S. No	Vehicles	2011
1	tractors	18
2	Tippers	30
3	Hand trolleys	300
4	Tricycles	150

Source: Data collected from Municipal Corporation of Kadapa

Disposal
There are three main disposal methods are land fill, Incineration and Composting

Landfill
Landfill is a careful designed structure built in to or on top of the ground in which waste is isolated from the surrounding environment. The purpose is to avoid any water related connection between the waste and the surrounding environment, particularly groundwater. Landfills are generally located in urban areas where a large amount of waste is generated and has to be dumped in a common place. Serious threat to community health represented by open dumping or burning is avoided in this method. 54 per centage of solid waste of study area by disposal land filling method.

Incineration
The process of burning waste in large furnaces is known as incineration. Incineration is a disposal method that involves combustion of waste material. Incineration and other high temperature waste treatment systems are sometimes described as "thermal treatment". Incineration is carried out both on a small scale by individuals and on a large scale by industry. It is used to dispose of solid, liquid and gaseous waste. Incineration facilities generally do not require as much area as landfills. At the end of the process all that is left behind is ash. This method produces heat that can be used as energy. Incinerators convert waste materials into heat, gas, steam,

and ash. It is recognized as a practical method of disposing of certain hazardous waste materials (such as biological medical waste). medical waste and liquid from chemical industries are 14 percentage generated solid waste kadapa city. this solid waste desposal by using Incineration method.

Composting

Composting is the process of decomposition and stabilization of organic matter under controlled condition. Waste materials that are organic in nature, such as plant material, food scraps, and paper products, can be recycled using biological composting and digestion processes to decompose the organic matter. It is a biological process in which micro-organisms, mainly fungi and bacteria, convert degradable organic waste into humus like substance. The resulting organic material is compost for agricultural or landscaping purposes. In addition, waste gas from the process (such as methane) can be captured and used for generating electricity. The intention of biological processing in waste management is to control and accelerate the natural process of decomposition of organic matter. 32 per centage of municipal solid waste of our study area to processing as bio fertilizers.

Conclusion

In our study area Municipal solid waste generated per day 206.21 metric tons. The waste collection Process Door to door 72,256, Collection points 134, Community bins 100 and Storage points 08. Kadapa municipality authorities are using 18 tractors, 30 trippers, 150tricycles and 300hand trolleys for transporting the solid waste from collection points door to door collection community bins and storage points to disposing places. In solid waste disposal by using three methods is 54 % of soiled waste by using land filling, 14% of soiled waste by using Incineration and remaining per cent age of soiled waste by using compositing method. We will suggest generating electricity and bio gas by using Municipal solid waste

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