

THROUGH MANAGING MUNICIPAL WASTE PUBLIC –PRIVATE PARTNERSHIP IN GWALIOR, M.P. (A CASE STUDY)

Rakesh Gir¹, D. Rastogi², Sanjay Tiwari³

^{1, 2, 3}Civil department MITS Gwalior 474005, India

Abstract

Gwalior, the 4th largest city of Madhya Pradesh, generates about 300 Tones of municipal solid waste daily. However, Gwalior Municipal Corporation had the capacity to collect and dispose about 60 % of this to the trenching ground located near the Air Force base about 8km away on north of the city. The wastes contain bio-degradable, non-biodegradable, especially plastic, recyclable waste. Besides the presence of a carcass utilization centre (CUC), which attracts birds was a nuisance for the military aircrafts flying from the air force base. To control the bird hit menace and to improve the solid waste management in compliance to the Municipal Solid Waste (Management and Handling) Rules 2000, Gwalior Municipal Corporation initiated a comprehensive programme, which include development of infrastructure such as Engineered Landfill site, Mechanical and Vermi Composting units, promoting segregation waste at source and door to door collection of segregated waste through public private partnership.

Keywords: Responsibility of municipal authority, Management of Municipal Solid Wastes, Public –Private Partnership

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1. INTRODUCTION

Waste generation is an inevitable consequence of industrialization and urbanization. With increasing world population and standards of living, it is not amazing that the quantities of wastes have grown rapidly worldwide in recent decades. The explosive growth in population and sustained drive for economic progress and development has resulted in a remarkable increase in the quantity of solid wastes from different processes viz., domestic process, industrial processes in our country over the last couple of decades. With an urban population of about 27.8 per cent of the country's total population, urban Solid Waste Management in India today represents a formidable challenge. While the country's overall annual population growth rate is about 2 percent, the estimated urban population growth rate is much higher - around 3.5 per cent per annum (World Bank, 1998). In addition, the per capita income of the urban population has increased resulting in a rise of approximately 1.3 per cent of urban waste generation per head in the last five years. These two factors have led to a yearly increase of the overall burden of solid waste in Indian cities by almost 5 per cent. At present the total MSW generation in India is approximately 100,000 TPD, most of which is disposed of unscientifically creating environmental hazard.

Drawing lessons from the national scenario, the Ministry of Environment and Forests, Govt. of India brought out Municipal Solid Waste (MSW) (Management and Handling) Rules 2000 and the entrusted the following responsibilities to the municipal authorities for the management and handling of municipal solid waste in an urban:

1. Setting up of waste processing and disposal facilities on their own or through an operator of a facility as per specified;
2. Organizing house-to-house collection of municipal solid wastes through any of the methods, like community bin collection (central bin), house-to-house collection, collection on regular pre-informed timings and scheduling by using bell ringing of musical vehicle (without exceeding permissible noise levels);
3. Devising collection of waste from slums and squatter areas or localities including hotels, restaurants, office complexes and commercial areas;
4. Making use of wastes, which are biodegradable in nature, such as wastes from slaughter houses, meat and fish markets, fruits and vegetable markets, etc.
5. Prohibition of mixing of bio-medical and industrial wastes with municipal solid wastes and such wastes; and
6. Transfer of collected waste from residential and other areas to the community bins by hand driven containerized carts or other small vehicles;

In order to comply with the MSW Rules 2000, the Gwalior Municipal Corporation (GMC) has taken up various initiatives to make the city totally sanitized adopting a public private partnership model of project implementation.

2. OBJECTIVE

The initiative was aimed at creating Gwalior a clean city through collection and disposal of entire municipal solid waste generated in all the wards of the city in compliance of MSW

Rules 2000 through participation of community and the private sector in the cities waste management process.

2.1 Situation before the Initiative:

2.1.1 Location

Gwalior, the fourth largest city in Madhya Pradesh, is known as Counter Magnet city to National Capital region as well as the tourist capital of Madhya Pradesh. The city has a municipal area of 177 Sq. km and is divided into 60 municipal wards. The municipal area also includes 37 villages and 229 slums. As of 2011[update] India census, Gwalior had a population of 926,919. The present population is estimated at 1.2 million.

2.1.2 Generation and Disposal of Waste

In Gwalior about 250 to 300 tonnes of municipal wastes is being generated daily. However, due to inadequate facility, GMC could only collect and dispose only about 60% of these wastes. Municipal waste as collected was usually found in a mixed form, where bio-medical waste, slaughter-house waste and carcass waste were all mixed together and stored in the open. The waste from the unorganized slaughterhouse and meat market were being collected and disposed along with the municipal waste only. Primary collection involved multiple-handling, and was not synchronized with transportation, using inadequate manual loading – unloading methods. Waste transportation was often by open trucks and dumped crudely at a trenching ground at Guda Gudi Ka Naka, at about 10 km to the north of the city. The crude dumping caused generation of obnoxious odors, blowing of litter and breeding of vectors. Burning of the waste at disposal site was very common, which used to generate poisonous hydrocarbons. Due to proximity of the air force base, the dumping site also caused menace for the aircrafts due to flying of birds. The physico-chemical characteristics and quantity of Gwalior municipal waste indicate that incineration option is not economical viable, because it cannot provide for a self-sustaining combustion. The MP State Agro Industries Corporation started a compost unit using MSW as the raw material. But it had to be closed down due to lack of demand for the product.

3. ACTION FOR CHANGE

In order to tackle the bird menace Ministry of Urban Development, Government of India provided a grant of Rs. 11.77 crore to the GMC under its Central Scheme for Solid Waste Management & Drainage in 10 Selected Airfield Towns. To implement the project, a comprehensive solid waste management Plan involving establishment of mechanical and vermin-composting units and engineered landfill sites, machinery & equipments, for door to door collection its transportation to the mechanical and vermin-composting units for processing and disposal of residues to the

landfill sites through public and private sector partnership was drawn up.

3.1 Establishment of a Landfill sites:

Based on an assessment of the composition of solid waste generated in Gwalior city, it was decided to establish a compost unit .As the Detailed Project Report developed by HUDCO and M/s NBCC, Ltd. New Delhi (an enterprise of Central Govt.) was appointed for execution of project.

The tenders for different components of the scheme were invited by M/s NBCC Ltd. On evaluation of the offers received, the work orders were issued to qualified agencies for the following

- (1) Transportation equipments and machineries;
- (2) Development of sanitary landfill site at Kedarpur having
 - i. A Weigh Bridge (30 Ton) to monitor the arrival of waste to the segregation plant
 - ii. A fully automatic segregation plant (300 TPD);
 - iii. A Mechanical Compost plant (100 TPD);and
 - iv. A Vermi composting unit (20 TPD).



Due to the constraints in the availability of suitable land for disposal of waste and steadily rising cost, the landfill site has been designed in such a manner that the land requirement is minimized. It covers an area of 25. 80 Hectare and will be sufficient for next 25 years.

GMC has given operation and maintenance of integrated land fill site for disposal of Solid Waste for 25 years to M/s AKC Developers Ltd. NOIDA (As a Public Private Partnership). The package also includes installation of a fully automatic segregation plant at Kedarpur, Chandoh, Khurd, Shivpuri link Road, Gwalior. The operator has invested about 30.0 crores Rs. for construction of all segregation plant.

The MoU signed between Gwalior Municipal Corporation (GMC) and M/S.AKC Developers has followed main term & Conditions:

1. Gwalior Municipal Corporation (GMC) will provide land, free of cost to operator.
2. GMC will hand over the infrastructure developed by M/S. NBCC, New Delhi.
3. GMC will develop the land fill after completion of existing land fill (5 year capacity) for disposal of inert material.
4. The right of carbon credit will rest with the GMC.
5. The operator will provide the lease rent at the rate of one rupee per square meter to GMC.
6. The operator will be allow for disposing maximum 20% of inert material in the land fill.
7. The necessary charges for O&M including electricity bill will be born by the operator.
8. The operator will treat & dispose off the Solid waste as specified the Solid Waste Management & Handling Rule – 2000
9. The closure of land fill will be done by operator.
10. The O&M period will be for 25 years.

The automatic segregation plant at Kedarpur has been installed and in operation.

The automatic segregation plant generates following components:

Waste Component	Quantity (%)
Wet organic material for composting	25-30
Dry organic material converted as RDF Pallets, a Green fuel	15-20
Recyclables materials (Plastic, Mild steel, rubber etc)	5-10
Inert Material	25-30
Residue for land fill site	15-20

3.2 Collection, Transportation and Processing of

Solid Waste

The basic collection system in Gwalior constitutes sweeping and cleaning the waste in a nearest collection point. The corporation has installed 200 collection bins at different places. The collection vehicle picks up the waste from the dust bins and other collection points and transported to the compost plant site. The steps involved are as follows:

3.2.1 Door to Door Collection:



GMC has outsourced the door to door collection and transportation solid waste to private organization on PPP (Public Private Participation) for 5 years. The objective was to involve the community to make Gwalior waste free and dustbin free. The households have been promoted to keep covered bins for wet bio-degradable waste. The dry recyclable waste is kept separate which can be sold off. For dry scrap waste, it has been suggested to the households to have larger bins at a consistent place and deposit all the waste into it. For the shops it has been suggested that every shop should have a number of bins for different type of wastes generated by them and these should be handed over to the waste collection group working in their ward. The toxic and hazardous waste generated at homes and shops are kept separate and the concerned local bodies make arrangements to have them collected by special receptacles located at each ward office.

The sanitary worker appointed by the private operator collects segregated wastes from each household and disposed them in demarcated bins for biodegradable and non-biodegradable wastes. GMC has developed a mechanism for meeting out the operating cost of door to door waste collection services provided by the operator. The mode of payment for the same is as follows.

- First year 100% cost for door to door collection of waste will be borne by GMC. But from the subsequent years it would reduce gradually, i.e. GMC would pay the operator 75% cost in the second year, 50% in the third year, 25% in the fourth year. From Fifth Year onwards it will be self sustainable
- The operator would generate balance resources through sale of recyclables as well as contribution from the households for the services rendered by them.
- The operator would also generate resources from commercial institutions like shops, hotels, slaughter halls etc. The charges for all commercial institution will fix time

- The contractor who was appointed for door to door collection & transportation failed to continue the contract after 2.5 years reason behind was political interference, change of mind set of people, improper planning of contractor. At present Municipal Corporation is doing the collection & transporting of waste to land fill site from its own resources.

3.2.2 Transportation



The transportation of the solid waste is being done to new scientific site at Kedarpur. This component is also outsourced and the payment is made on the basis of amount of solid waste transported. These special category waste materials are periodically transported to the integrated disposal site and deposited in specially created secured landfill in a suitable manner.

There are specified bins at specific locations for the disposal of construction and demolition (C&D) debris. These are transported separately and disposed to low lying areas.

3.3 Public Awareness Campaign:

To order to involve the community with the city wide programme on solid waste management, Gwalior Municipal Corporation has launched an awareness campaign with following objectives:

- (a) Creating awareness for segregating waste at source into biodegradable and non-biodegradable components;
- (b) Educating public through group meetings, workshops, exhibitions, and different channels of mass media;
- (c) Sensitizing public through print media, use of cable TV, use of cinema halls, street plays, posters, pamphlets, hoarding, resident associations etc.
- (d) Enabling the communities to acquire adequate knowledge about good practices of solid waste disposal and their importance for environmental and public health;

- (e) Promote safe handling practices through health education and capacity building of the sanitary workers;
- (f) Enabling the Municipal Corporation/ Hospitals to handle the Bio-medical wastes as per norms; and
- (g) Creating awareness for minimizing the use of plastics.

GMC involved NGOs to carry out the awareness programme in the city. The awareness program included the sanitation education programme through a mobile unit visiting city schools to communicate the good practices on sanitation and hygiene at school level, street play, and distribution of pamphlets and installation of hoarding with messages to keep the city clean.

The awareness campaign was spear headed by a Street show nicknamed “Watson Rath” (Movable Vehicle with all information regarding Solid Waste Management). Mayor, Councilors and Official Staff of Municipal Corporation spear headed various rallies to ensure peoples participation in the programme. The programme is also being supported by UN-HABITAT under its Water for Asian Cities Programme.

4. CHALLENGES

The Gwalior Municipal Corporation initially faced resistance for the implementation of the door to door collection of waste involving the private operator. Even though before inviting the tender for involving the private operator for the services, mutual understanding was reached by Hon’ble Mayor with all political leaders, paper media, organizations, chamber of commerce and leaders of Safai Karmchari union, there were lot of resistance from the a particular community for implementation of door to door collection and transportation without understanding that the potential of employment opportunities for the locals.

After receiving the contract, the private operator started the work in a limited way due the resistance from various quarters. Since the start of door to door collection, some of the lower level GMC staffs hindered the operation by the private operator under the influence of opposition leaders out of fear of losing their hold on the malpractice of subletting the cleaning operation by the Elakedar (Elakedar is a man who collects the solid waste from particular area and disposes it at his own ease.).

However, the Municipal Corporation of Gwalior took various initiatives to stream line the system by organizing stake holder’s consultations to remove the all doubts of the people and to make Gwalior city as model city in India in the area of Solid Waste Management.

4.1 Stake Holders for Programme implementation:

There are various stakeholders, but major are being mentioned below:

1. Citizen of Gwalior

2. Ministry of Urban Development , Government of India
3. Gwalior Municipal Corporation
4. UN-HABITAT
5. HUDCO
6. MP Pollution Control Board
7. Private operators for door to door collection, transportation, segregation and scientific disposal of waste

5. IMPACT

Following positive impacts are envisaged:

- People of Gwalior are aware about the need for safe handling of waste and started practicing it;
- Systematic handling and disposal of hazardous and non hazardous wastes leading to Environmental Improvement of the city
- Reduction of disaster due to bird fir to the Air Crafts;
- Increased employment opportunities for the unskilled people of the city

6. CONCLUSIONS

The system of collection, transportation, processing and disposal of wastes has been designed to make it financially self sustaining. The Private operator for transportation and processing of waste would generate sufficient resources out of the by products produced from the raw wastes. With the enhancement of public awareness the door to door collection of waste would also become self sustaining with peoples contribution.

The project has the potential to generate revenue through clean development mechanism (CDM) window of Kyoto Protocol.

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