



## “Building from bottom” a success story

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### Introduction

Rajkot Municipal Corporation (RMC) is a local government committed to provide basic infrastructure facilities including entertainment facilities to the people of the city. RMC is very well known for managing the city by using private sector participation as well as introduction of innovative mechanisms in management to serve people efficiently. City has prepared different plans for improving services and to nullify the gap between services and demands. The sole responsibility of Solid Waste Management (SWM) in the city lies with the Solid Waste Management department of Rajkot Municipal Corporation (RMC).

### Description of Solid waste management

RMC deals with the city waste comprising of both biodegradable as well as the non degradable waste. There was no proper management of the solid waste system in Rajkot due to which the all the wastes including the recyclable were dumped in open land again leading to foul odor. Also, the area of landfills was more prone to fire disasters as there was continuous generation of methane due to anaerobic digestion of organic waste. The waste materials and garbage dumps led to an increase in number of stray animals and flies. Birds also got attracted towards the dumping sites, which increased the risk of air disaster. Further, the lifespan of landfill decreased as waste got accumulated. There was also the risk of increased contamination of groundwater.

### How we do?

The Rajkot Municipal Corporation (RMC) has successfully ventured a waste processing plant project through public private partnership (PPP) model. It has adopted ways and means to process and dispose off the waste that are generated on a daily basis. Reuse and recycling of the waste is followed to process the waste such that least is sent to be disposed off. As part of decentralization, the entire city has been divided into four zones. There are various activities that have been associated with the management of municipal solid waste from the point of generation to final disposal.

These activities are, waste generation, storage, collection, transportation, segregation and waste processing and finally disposal.

Hanzer Biotech Energies Private Ltd. (HBEPL) was considered as the private partner who could handle the waste processing plant. RMC and Hanzer Biotech established the waste processing plant on the Built Own Operate and Transfer (BOOT) basis. RMC acquired a 200 acre barren land for developmental purposes from the collector's office. Out of these 200 acres, 30 acres were sanctioned to HBEPL for the establishment of a waste processing plant on lease at the rate of Re. 1 per square metre per year.

**Collection:** Waste both dry and wet were collected door to door collection from households.

**Waste segregation:** involved six stages. No segregation of waste is done at source; hence the entire waste was taken to the processing plant where end stage segregation is done to segregate waste into wet organic, dry organic waste, recyclable and inert materials.

**Waste processing:** After the waste is successfully segregated, wet organic waste is kept aside and sprayed in the composting yard and left for aerobic digestion. After 40 days, wet waste is transformed into organic compost. The dry organic waste is utilized for making green coal or fluff. The recyclable wastes like rubber, metal, plastic, which bear economic importance in junk market, are separated. Magnetic separators take out the metals whereas rubber is handpicked at the platform sort conveyor. This waste is then sold by HBEPL.

The last stage of the process decided the one major constituent of waste which used to go to the landfill site until now. HBEPL came out with the technology and innovation which made it possible to use the most of this waste. HBEPL utilized 20-35 per cent of waste for making bricks by mixing it with fly ash. Finally, the residue from this process, which was as less as 10-15 per cent, was sent for landfill in sanitary landfill site.

## The Impact

The results for the waste management plant have been very encouraging. This has made the waste management plant at Rajkot the first-of-its-kind in the country. It is the first fully-integrated waste processing plant. The entire waste of 300 MT of municipal solid waste (MSW) is processed into biofertiliser which is of 40 MT, fluff (green coal having calorific value of: @ 3500 to 4000 kCal/kg) which comprises of 70 MT, eco-bricks, which is 15,000 MT, and finally, recyclable materials, which is plastic, metals and others.

The processed plastic is being successfully used by small scale industries around Rajkot city in manufacturing ropes of different types and sizes. The entire compost, or the bio fertilizer, is being sold to corporate clients including Reliance Industries at Jamnagar

(Gujarat) and Reliance Energy at Dahanu (Maharashtra). Compost is also being used in appropriate mix with chemical fertilizers and has been approved by Gujarat State Fertilizer Corporation Ltd. (GSFC). The fluff has high demand in the nearby paper plants and the cement industries due to its high calorific value at reasonable price. The fluff could be used in combination of other sources of fuel like coal, wood, natural gas, etc. Presently, fluff is being sold to cement factories at Kodinar, paper mills at Vapi and Kuwadwa. Gujarat Ambuja Cements Ltd. also has placed order for fluff.

## Adoption of methods by others

The integrated waste processing plant is first of its kind which has been utilizing nearly 85-90 per cent of waste and only leaves behind 10-15 per cent as reject. The integrated waste processing plant has created a ripple in the region. It is reported by HBPEL that Bhavnagar Municipal Corporation (BMC) and Jamnagar Municipal Corporation (JMC) have set up a similar integrated waste processing plant in a fashion similar to the RMC.

## Economic Aspects

The production cost of compost is Rs. 1.50 per kg. The production cost of the fluff is also very economical-just Rs. 1.40 per kg. The eco-bricks are utilized by HBEPL for construction work in their plant. The production cost of eco-bricks is Rs. 1.10 per unit, while the cost of normal burnt brick is Rs. 1.40 per unit.

## Conclusion

The success of Rajkot Municipal Corporation (RMC) with public private partnership (PPP) model success story belongs to citizens of Rajkot.