

# City Report



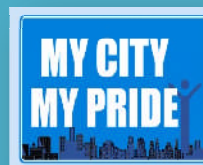
## *Surat Solid Waste Management Project under JNNURM*

Jawaharlal Nehru National Urban Renewal Mission



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Ministry of Urban Development  
Government of India



*Jn* **NURM**

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## ***Executive Summary of Surat SWM Project***

Surat's sporadic expansion between the 80's and the 90's resulted in a major service gap in the field of solid waste management (SWM). *It resulted in one of the major epidemic in the form of Plague in the year 1994*, which was probably the worst in the country in decades. As Plague was considered a manifestation of the service inabilities related to solid waste and drainage management, the city administration responded with a major cleanliness drive and a complete strategy to further manage its waste in scientific manner. Major administrative reforms like; re-arranging the six zones into 52 sanitary wards to gain better control, regular monitoring of waste management services, one-to-one coverage of all the nuisance points by sweepers, seeking assistance from private agencies in maintaining cleanliness, providing waste management services, slum improvement, and a responsive waste management system reducing time lag in delivery of services, etc., were some of the major initiatives taken by the city.

Surat Municipal Corporation (SMC) assessed the issues and challenges of implementing an integrated system, by taking care of aspects like rehabilitation of the existing sanitary staff, and asset utilization. SMC is also exploring futuristic waste management initiatives by adopting superior technologies such as waste to energy using waste gasification. SMC implemented part of the integrated waste management system through funds from JNNURM, and part with public private partnership (PPP). JnNURM substantially triggered private sector participation in Surat.

The SWM project under JnNURM was focussed on reinforcing the primary and secondary collection, transportation, development of transfer stations (TS) and development of sanitary landfill site. Surat Municipal Corporation (SMC) opted to develop its treatment facilities through PPP as the private party brings in expertise in waste treatment technologies, as well as covers major risk related to the sustainability of the plant operations.

SMC introduced '*Time Place Movement*' for the collection and transportation system which is a pioneering initiative wherein collection vehicles have to move in accordance with the time schedule, and areas of coverage and number of units are allotted to it. The collection efficiency of Surat has improved from 40% in the year 1995 to 97% presently, while the house-to-house collection coverage has improved to 92%.

The city's approach towards waste handling mechanism through modern semi closed type mechanical transfer station has inspired many Urban Local Bodies (ULBs) to adopt similar system. *The 6 TS handle the entire 1400 TPD of waste generated in Surat, without disturbing the regular lifestyle of the city, even though some of the TS are located close to sensitive zones such as residential and institutional areas (such as a school or a public building)*. The SMC's approach to the construction and management of TS with PPP is yet another example of judicious use of private sector's expertise in covering risk where the mechanical components have been installed by the private party while the civil constructions were done using JnNURM funds.

SMC generates close to 1400 TPD of waste out of which presently 400 TPD is treated in its waste treatment plant developed and managed in partnership with a private agency. A 600 TPD waste to energy plant is in the pipe line where work has been awarded and an agreement between SMC and private agency is already in place. The 600 TPD plant will process mixed waste to produce high quality Syngas which will further be used for generation of 8 MW of electricity to be sold to the local grid. Apart from this, a 400 TPD integrated

waste treatment plant through public private partnership (PPP) mode has been initiated, in which the private party will pay a royalty of Rs. 30/- MT to the ULB for handing over the mixed waste to the private party. Altogether, SMC will be able to bring in an investment of Rs. 275 Crore through private sector participation. It is envisaged that SMC will earn an amount of Rs.65 Lakh from the processing of 600 TPD of waste once the waste-to-energy plant is made operational.

## 1.0 Introduction and History of Waste Management

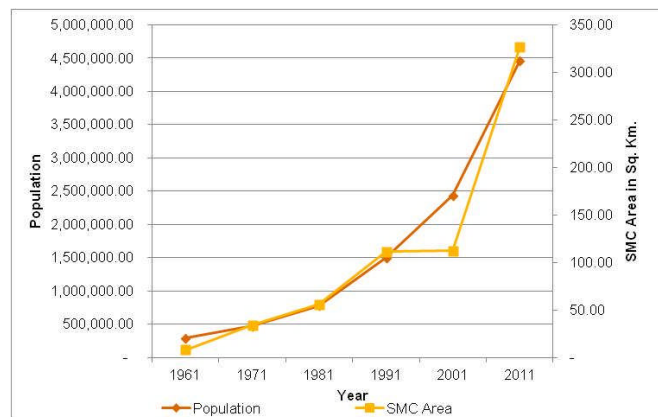
### 1.1 Surat Profile

Surat is the biggest trade hub in Gujarat and is one of the fastest growing cities in terms of infrastructure and urban development. It is located at a distance of about 250 Km. North of Mumbai on the banks of river Tapi. The city flourished due to its nearness to Mumbai. The city spurt to a highly dense population during the early 60's followed by a series of urban agglomerations as a number of peripheral urban villages were included in the Surat Municipal Corporation (SMC) area. The demographic profile of SMC is illustrated in table 1.

Figure 1 illustrates the year wise growth of the SMC area to its population.

**Table 1: Demography of Surat**

Year	Population	SMC Area
1961	288,026	8.18
1971	471,656	33.80
1981	776,583	55.56
1991	1,498,817	111.16
2001	2,433,835	112.28
2011	4,461,026	326.52



A very important observation can be seen between the decades 1991 and 2001, when the population grew from 1,499,817 people to 2,433,835 (growth of 62%) while the SMC area only grew from 111.16 Sq. Km. to 112.28 Sq. Km. (growth of 1%) leading to a high population density during the period. It was in the year 2006 that a number of peripheral villages were included in SMC area increasing the SMC area by more than double.

### 1.2 Growth and Development

Surat started to regain much of its former importance as a major centre of industry and trade in Western India during the early 1960's. Its population increased by more than eight times in the last four decades, from 2.88 lakh in the year 1961 to nearly 25 lakh in year 2001 (Table 1). The cause of population explosion was in-migration of industrial workers in the powerloom industry, and diamond industry from other States of India in huge numbers. In addition to natural growth and in-migration, the city's population also increased due to expansion of the city's geographical limits. From a meager 8.18 Sq. Km. in the year 1961, the city limit has now expanded to 326.52 Sq. Km. in year 2011.

### 1.3 Load on Development and Receding Urban Services

The development of the city and its infrastructure could not keep pace with the increasing population leading to inadequate service provisions thereby resulting in low quality of life in the city. The city doubled in size during the years 1981-1991 due to which many fringe areas remained un-served with basic amenities like water supply and sanitation. The rapid population growth in Surat caused several management problems for the ULB. The SMC is responsible for provision and maintenance of the entire range of civic infrastructure services in the city (including water supply systems, sanitation and drainage facilities, solid waste collection, and disposal). During the early 90's, the basic infrastructure services were low

with only 35% coverage of water supply (access to piped water supply) and 33% of the city being covered through covered drainage system. The sewerage network covered less than 30% of the city's area. Municipal SWM was in a poor state with waste being disposed in drains and water bodies. ***The waste collection efficiency of the city was reported at only 40% in a study conducted in year 1995.***

This sporadic development and lack of basic services and infrastructure led to the outbreak of Plague in the year 1994 which claimed several lives. The major cause of the outbreak was considered to be ineffective waste management, which led to the blockage of storm water drains resulting in flooding of the fringe areas of the city.

#### ***1.4 Recuperation of Solid Waste Management Services***

Since May 1995, a remarkable turnaround in the state of affairs was observed as a result a series of initiatives were taken by the civic administration. As the outburst of plague turned out to be a manifestation of the inability of the civic authority to provide necessary basic services, the government undertook a massive clean-up drive as well as administrative reform exercise which transformed Surat into one of the cleanest cities in just 18 months. Some of the initiatives undertaken were:

- Re-arranging the six zones of waste management into 52 sanitary districts for better control of waste collection;
- Introduction of daily monitoring system for better waste collection efficiency;
- Posting of sweepers for round the clock duty at nuisance spots, which were invariably cleaned at least twice a day;
- Engaging private contractors for collection and transportation of waste to the disposal site, as well as sweeping and scrapping all major streets during the night time;
- Slum improvement operations were undertaken with the assistance of NGOs;
- Revamping the entire administrative and financial management system of SMC; and
- Policy decisions were taken to create a responsive waste management system by introducing complaint redressal systems.

The drive was aimed at transforming the city, as well as the attitude of the people and government officials.

## **2.0 SWM Project under JNNURM**

### **2.1 Need for the Project**

Though SMC had done commendable job in compliance of SWM in the municipal area, there were many shortcomings in the system, which the ULB planned to augment through JnNURM funding in the year 2007. Prior to the JnNURM project, the waste management system in Surat had the following shortcomings:

- Door-to-door collection of waste was done without segregation;
- Listing of waste containers and transfer to transfer station was only 30% due to inadequate number of storage containers and transportation vehicles;
- Inadequate street sweeping equipment;
- Multiple handling and storage of waste at the existing transfer stations;
- No treatment and conversion of waste; and
- Open dumping of combined waste at the landfill.

As the SMC limits were extended from 112 Sq. Km. to 334 Sq. Km. in July 2006, the extended areas needed proper solid waste management, hence the project was also designed to support the additional areas agglomerated under SMC.

### **2.2 Project Components and Structure for Implementation**

- *Name of the Project:* Solid Waste Management in Surat
- *Approved Cost:* Rs. 52.5 Crore.
  - Central Share (As ACA): Rs. 26.25 Crore.
  - State Share: Rs. 10.5 Crore.
  - ULB Share: Rs. 15.74 Crore.
- *Date of Approval:* March 26, 2007.
- *Approving Authority:* Central Sanctioning and Monitoring Committee (CSMC).

The project was planned and implemented by the Municipal Corporation of Surat. The approved project consisted of the following components:

- Procurement of additional MSW Storage containers and littering bins;
- Procurement of additional street sweeping equipment such as wheel barrows;
- Procuring 2 Mechanical sweepers;
- Procurement of additional vehicles for primary transport to Transfer Station (TS);
- Construction of closed-type two-level TS in 6 locations; and
- Construction of engineered landfill with required infrastructure and waste handling equipments.

**Apart from the above, SMC undertook initiatives through Public Private Participation in implementing SWM for the following services:**

- Door-to-door primary collection and transportation;
- Started **Anudan Scheme** as an initiative towards community participation in Municipal Solid Waste Management (MSWM);
- Secondary transportation – container lifting in some wards; and
- Compost plant for treating mixed MSW through 400 TPD plant implemented with PPP. Another 400 TPD plant is in pipe line and is due for construction.

*The municipal corporation took due care of the areas, which needed private sector intervention. The areas chosen were those which required higher operation and maintenance cost and expertise. SMC structured the SWM project such that certain activities are retained with the municipal body while the rest of the activities are taken up through private sector participation.*

The section lists services under SWM in Surat and the responsible bodies for their implementation. **It may be noted that while SMC outsourced part of their duties to private parties, it remained solely responsible for provision of SWM services to its citizens.**

Areas of Waste Management	Responsible Agency
Door-to-door Collection	Private operator
Street Sweeping	SMC Staff
Drain Cleaning	SMC Staff
Primary Collection of waste from other commercial generators and market places	Private operator
Secondary Collection	SMC, only one ward is handled by private operators
Waste transportation	Private operator
Waste treatment	Private operator
Waste Disposal	Private operator

The implementation of the different components under Surat SWM has been elaborated in the following sections.

### ***2.3 Primary Collection through Door-to-Door Garbage Collection***

The door-to-door garbage collection was planned for the timely removal of waste at the source. Door-to-door collection of waste was introduced in four out of the seven zones of SMC with the help of private sector participation, however owing to the excellent performance of the private agencies; it was introduced in all the 7 zones of SMC. *The practice of night scrapping and brushing of roads was done by SMC staff.* Listed are the main features of the door-to-door services in SMC:

- **Adopted PPP model** - Service Contract – the entire system of door-to-door garbage collection has been leveraged through 7 different private agencies.
- **Period of concession/engagement** – 7 years based on the useful life of vehicle.
- **Private Parties:** There are seven different private agencies involved in door-to-door collection.
- **Arrangement between parties in the PPP arrangement:** The agencies are paid tipping fee against door-to-door collection services. The private operator is responsible for the capital as well as the entire O&M expenses for the system during the concession



period. Vehicles employed for garbage collection are monitored **through Time-Place-Movement Chart**, under which vehicles have to move in accordance with the time schedule, area of coverage, and number of units allotted to each vehicle. Vehicles under door-to-door collection system are also monitored by the Vehicle Tracking System. Complaints of non-coverage of wards/spots are monitored *at the ward level*.

- **Responsibility of the Private Agencies/Operators:** The agencies employ and maintain their own garbage collection vehicles as per the requirement laid down by SMC. Garbage collected is unloaded at one of the six TS located within the Municipal area of SMC. The private operator bears the entire O&M cost of primary collection and collects almost 700 TPD of mixed waste from door-to-door collection from the different wards of Surat.
- **Responsibility of the Municipal Body:** The municipal body facilitated the private agencies with transfer stations for easy tipping of garbage. This has helped improve the trip time of the collection vehicles.
- **Funds Infused by Private Party:** The private agency brought in ‘closed body vehicles’ for door-to-door garbage collection. Around Rs. 15 Cr. was spent by the agency for the purchase of 300 of closed type vehicles to carry out collection activity.
- **Project Progress:** Door-to-door collection of waste for all the zones was awarded to 7 agencies based on competitive bidding. The bidding process was done through **e-procurement system** where the agencies were selected based on their financial quotes. Agencies who quoted least were selected and entrusted the work.
- **Tipping Fee:** The agencies are paid tipping fee at a rate ranging between Rs. 570 per metric ton to Rs. 1188 per metric ton of waste collected. The rates will be escalated after every 1 year during the procurement period.

### **Anudan Scheme**

SMC, in order to maintain the level of sanitation and provide best coverage of SWM services as per requirements of the MSW Rules in the peri-urban areas started **Anudan Scheme**. The scheme was initiated by competent authorities (vide standing committee resolution No.1006/2012 dated 25/7/2012) of the Municipal Corporation to involve civil societies as stakeholders for internal cleaning and garbage collection. The scheme prioritized community level participation in achieving SWM in the areas.

Payments are made to the residential and non residential societies at the rate of 60 paise and 65 paise per sq.mt respectively for maintaining cleanliness. The minimum amount payable to the society is Rs.1,200/- per month. The scheme requires societies to arrange for sweepers and sanitary equipments on their own. While consumable items like insecticides, etc., are paid by the SMC. Payments to the societies are done by the SMC based on production of a completion certificate, duly signed by the president of the society on a monthly basis. The societies are required to make an agreement with the SMC to provide regular waste management services in their designated areas. At present more than 600 societies are benefited under this scheme.

### **Strategy for the Implementation of C&T system in Surat**

- Selection of right kind of vehicle based on width of road, and use of *GPS for Vehicle Tracking*;
- Coverage of units in each route has been kept between 1,000 and 1,500 numbers;
- Creating public awareness on garbage management and branding through Swachchhta Mitra;
- Drivers and “Swachchhta Mitra” are provided with uniforms and identity cards;
- All the garbage vehicles, equipped with proper alarm system, go to every door step regularly at scheduled time;
- Provision for segregated waste collection (Dry and Wet);
- Bulk Garbage Collection System for hotels, market place and slaughter houses have been established which collect waste in separate shifts suiting the business units;
- IEC has been kept as scope of work for all the contractors hired under this system; and
- Centralized complaint management system at head office at Mugalsara.

## 2.4 Transportation of waste and maintenance of semi closed type transfer station (TS)

To prevent manual handling of MSW during transportation and to improve the cost of transportation by achieving economies of scale, it was decided to convert the 'Conventional R.C.C Platform Type Transfer Stations' into 'Elevated Semi Closed Body Type Transfer Stations'. The project was partly implemented through JnNURM.

Alltogether, six (6) TS were planned to be developed under JnNURM where the capital cost is shared between the private party and SMC, while O&M is contracted to the private parties against a tipping fee paid by the Municipal Corporation.

Details of the arrangement is discussed below:

- **Adopted PPP model** - Build Operate and Own (BOO).
- **Period of concession/engagement** – 10 years.
- **Parties under Concession:** Concession between SMC and Private Agencies. Three out of six TS (Varachha, Bhestan, and Pal) were contracted to a private agency, under **phase I** while the remaining (Bhatar, Anjana and Katargam) were contracted to another private agency under **phase II**. *The TS were developed in two phases owing to unavailability of land in the desired locations.*
- **Arrangement between parties in the PPP arrangement:** Procurement, installation of all mechanical machineries and equipments like stationary compactor, mild steel chute, hook lifters and containers was done at the cost of the concessionaire. The concessionaire is also responsible for operation & maintenance (O&M) of the TS till the completion of the concession period. All civil works were funded through JnNURM and was constructed under SMC supervision. This helped in ensuring the quality of civil works of the transfer stations. Moreover, the mechanical components being depreciable and required higher maintenance, hence, it was decided to be developed through private agencies having resources and capacity to manage such infrastructure. The ownership of the mechanical equipments was kept with the private agencies considering that this arrangement would create a sense of ownership. Since, the shelf life of the mechanical equipments is not more than 10 years, an arrangement of Build Operate and Own (BOO) model has been adopted.
- **Responsibility of the Municipal Body:** Arrangement of land and construction of transfer station was SMC's responsibility.
- **Funds Infused by Private Party:** The concessionaire has infused an amount of Rs. 3 – 4 Cr. for the procurement of machines and equipments per transfer station. Almost Rs. 10 Cr. was infused by the concessionaire in the construction and procurement of transfer stations in phase I; while Rs. 12 Cr. was infused by the other private agency involved in the construction of transfer station in phase II.
- **Tipping Fee:** The details of tipping fee and contracting conditions are provided in the table below:

No	Description	Varachha, Bhestan, and Pal under Ph -I	Bhatar, Anjana and Katargam under Ph-II
1	Tipping Fee	Rs. 185 per MT	Rs. 222 per MT
2	Minimum Assured Waste Qty	435 MT	355 MT
3	Escalation Clause	5% after first year on previous rate	5% after first year on previous rate

No	Description	Varachha, Bhestan, and Pal under Ph -I	Bhatar, Anjana and Katargam under Ph-II
4	Discount on the rate	1) Up to 475 TPD- No Discount 2) 475 to 500 TPD : 1.00% 3) 500 to 525 TPD : 1.50% 4) 525 to 550 TPD : 2.00% 5) Greeter than 550 TPD : 3.00%	None

It can be seen from the above table that SMC modified the contract terms for phase 2 (tipping fee and discount rates) based on the assured waste quantity from the region.

- **Project Progress:** Civil constructions for all the TS have been completed. The three TS in phase I, i.e., Varachha, Bhestan, and Pal have already been made operational since 2012. Rest of the three TS under phase 2, in Bhatar, Anjana and Katargam will be operational by December 2013.

## 2.5 Waste Treatment and Disposal

SMC took up waste treatment with PPP, wherein the first phase of the 400 TPD MSW processing plant was constructed and is under operation since Sept 2008. While in the subsequent phases, SMC has planned to implement two additional plants; one plant converts waste to energy based on gassification technology and the other plant is based on composting technology.

### Details of 400 TOD MSW process plant using composting technology

- **Adopted PPP model** - Build Own Operate and Transfer (BOOT) basis.
- **Period of concession/engagement** – Plant constructed in 2008 and run by private agency as concessionaire for a concession period of 30 Years.
- **Arrangement between parties in the PPP arrangement:** SMC allotted land to the concessionaire on a token rent of Rs.1/- per sq.mt. per annum and free of cost MSW at the tipping floor of plant. The capital and recurring expenditure are being borne by the concessionaire. The end products are compost and RDF, the rights to sell these products in the open market is with the concessionaire. The project is already registered as Clean Development Mechanism (CDM) under UNFCCC<sup>1</sup> and the carbon credits generated shall be shared between the parties.
- **Responsibility of the Municipal Body:** Provision of land @ Rs. 1/sq.mt. and provision of waste free of cost at the tipping floor of the plant developed by the private agency.
- **Funds Infused by Private Party:** Around Rs. 25 Crore.
- **Tipping Fee Paid:** None.
- **State of Progress:** The plant is operational and has been successfully running since 2008.

SMC, in its second and third phase of developing waste treatment plant has planned a 600 TPD and a 400 TPD capacity plant on PPP basis. While the 600 TPD plant is a waste to energy unit, the 400 TPD plant will be developed adopting composting technology. SMC did

<sup>1</sup> United Nations Framework Convention on Climate Change

not seek any financial aid for the development of these two plants, as the entire capital expenditure will be leveraged through private sector investments. The status of development for the plants are discussed below:

Details of 600 TPD waste to energy plant under Phase II development:

- **Adopted PPP model:** Build, Own, Operate, and Transfer (BOOT).
- **Period of concession/ engagement:** 25 years.
- **Parties under Concession:** SMC and Private agency as concessionaire.
- **Arrangement between parties in the PPP arrangement:**
  - SMC is in agreement with a private agency under which the concessionaire will infuse the entire capital expenditure as well as maintain the plant during the concession period of 25 years;
  - The concessionaire will have to pay lease rent for the land allotted by SMC;
  - In addition, the concessionaire shall pay a 'Royalty Fee' to SMC based on tonnage of waste supplied to the plant;
  - The concessionaire has the responsibility to generate 8 MW electricity from the mixed waste supplied by SMC to produce high quality Syngas<sup>2</sup> which will further be used for generation of electricity using gasification process;
  - The concessionaire has full rights for the sale of products and by-products from the plant; and
  - The concessionaire shall use its best endeavour to register the plant as CDM and shall be entitled to the benefits and income from the same.
- **Responsibility of the Municipal Body:** SMC to allot 8 acres of land as a token rent of Rs. 1/- per Sq.mt. Assured quantity of around 600 TPD MSW to be delivered at the Rochem plant free of cost.
- **Funds Infused by Private Party:** Rs. 150 Crore.
- **Tipping Fee Paid:** Royalty of Rs. 30 per MT of waste supplied by SMC.
- **State of Progress:**
  - Preliminary analysis and project structuring has been done;
  - Bid Process has been completed with the private party;
  - Signinig of contract agreement has been completed;
  - Land lease deed is under process; and
  - The PPP project is expected to commence next year.

Details of 400 TPD integrated waste treatment and management plant in Phase III of development:

- **Adopted PPP model:** Build, Own, Operate and Transfer (BOOT).
- **Period of concession/engagement:** 25 years;
- **Private Parties:** Yet to be finalized.
- **Arrangement between parties in the PPP arrangement:** SMC has planned to set up the plant in the 8 acre land, which has been provided to the waste to energy plant. The capital and O&M are to be borne by the concessionaire. The end products are compost and RDF, the rights to sell these products in the open market has been provided to the concessionaire.
- **Responsibility of the Municipal Body:** SMC's liability lies in providing 400 TPD waste at the plant gate free of cost.
- **Funds Infused by Private Party:** The private agency will invest Rs. 100 Crore.

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<sup>2</sup> Syngas is a fuel gas mixture consisting of hydrogen, carbon monoxide and some carbon-dioxide.

- **Tipping Fee Paid:** During the entire concession period the concessionaire shall pay royalty to SMC against the quantity of waste supplied. The royalty will be Rs.30/MT of waste supplied for the first year, with an increment of 5.4% every year.
- **State of Progress:** Preliminary analysis and project structuring has been done, the Bid process is under progress.

### Disposal

- SMC has constructed a sanitary landfill to handle rejects from waste treatment. The landfill will be capable of handling rejects up to a maximum of 20% of the waste received at the treatment plant.

### 3.0 ***Benefits from the Project***

#### 3.1 ***Primary Collection through Door-to-Door Garbage Collection***

The project induced a number of benefits which are as follows:

- The coverage of SWM services increased to 97% in Surat, while door-to-door collection services increased to 92%. The practice of waste segregation has also been introduced with almost 17% of MSW generated being segregated presently. Waste segregation was not practiced before the implementation of the project,
- Overall improvement in the environment, as waste is now collected from the door step avoiding waste to be dispersed in the open. People have developed the habit of storing waste in domestic bins;
- Timely collection of waste from every house/shop on a daily basis;
- Reduction in the number of stray animals around containers spots;
- Reduction of odour and waste spillage nuisance as it is collected in closed containers/pickup vans involving less handling;
- Reduction in number of containers and container spots have resulted in curtailment of cost which were otherwise required for lifting of the containers;
- Cost curtailment on repairing and maintenance of containers and hydraulic dumper placers by SMC;
- Spare sweepers/workers are now engaged in carrying out sanitation work of new developing areas in the most effective manner;
- The old collection system of waste through open tractors has been curtailed;
- Due to the IEC activities being undertaken, it has helped in improving awareness amongst citizens. This has also helped in improving the cleanliness around the community containers; and
- Revenue generation from collection of user-charge. SMC has been able to achieve 88% efficiency in the collection of user-charges from its citizens.



*Collection vehicle for house to house waste collection*



*Vehicle being weighed for waste quantity*

### **3.2 Transportation of waste and maintenance of Semi-Closed Type TS**

Major benefits accrued through the proposed system are:

- Presently the MSW is received through closed vehicles and is dropped in closed containers, avoiding secondary storage vis-à-vis restricting flies nuisance and animals entry;
- Waste is transported in covered leak proof containers preventing spillage of garbage on the road;
- No foul odour in the vicinity, as transfer station is semi-closed and transport containers are fully closed; and
- Separate leachate collecting system is provided.



*Transfer Station in Surat*



*Tipping Platform at Surat Transfer Station*



*Semi Closed Type Transfer Station with waste compression and Chute system easing waste handling*



*Tipper Trucks with closed containers*

### **3.3 Waste Treatment and Disposal**

The project has triggered private sector participation and helped treatment plant development in three phases:

SMC developed 400 TPD plant in the 1<sup>st</sup> Phase, subsequently two plants of capacities 600 TPD and 400 TPD capacities are in the pipeline, by leveraging funds through public private partnership. SMC has leveraged INR 25 Crore for the 400 TPD plant in phase I, Rs. 150

Crore for the 600 TPD plant in phase II, and is in the process of leveraging Rs.100 Crore for the 400 TPD compost plant in the phase III.

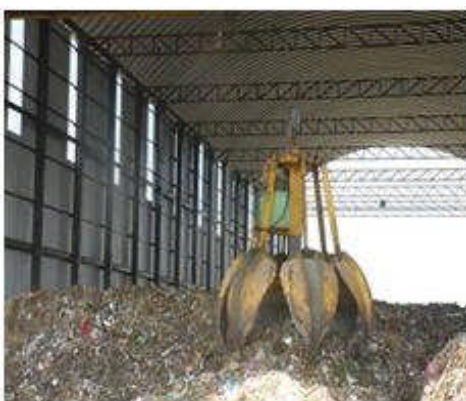
Other major benefits included:

- *Segregation* of incoming heterogeneous waste;
- *Conversion of waste* into compost & RDF pallets;
- *Waste recovery* to the tune of 22% was reported during the year 2012-13, which was almost negligible before the implementation of the JnNURM project;
- *Revenue generation* for SMC in the form of lease rent. As there are no capital and O&M cost involved in treatment of waste, SMC has been able to recover 100% of O&M cost from the total revenues generated (user charge, lease rent);
- *Revenues* from Carbon Credits;
- *Land required* to dispose inert is less as compared to that required for dumping mixed waste; and
- The project also included *construction of a sanitary landfill site* which helped disposal of inert waste as per requirements of MSW Rules, 2000.

SMC has entered into a contractual agreement with its private partner for the running of the 600 TPD waste to energy plant where it will receive a royalty payment of a sum of Rs. 30 per MT of waste supplied to the plant for the first year with a provision of 5.4% escalation every year till the end of entire concession period of 25 Years.



*Pictures of existing waste treatment plant of 400 TPD capacity*



*Waste tipping platform of SMC waste treatment plant*



*Disclaimer*

*This document has been compiled by the Technical Cell under JnNURM Mission Directorate based on information provided by the Surat's JnNURM Project Implementation Unit (PIU). The primary purpose of this brochure is to showcase the key features of the completed SWM project as a Peer Learning Initiative to augment capacity of other project implementers in the country.*

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