

# **Swacha Bangalore: A New Way Of Managing Waste In Urban Areas**

**Naveen K R & Nandini Hampole**

**CCS RESEARCH INTERNSHIP PAPERS 2004**



**Centre for Civil Society**

K-36 Hauz Khas Enclave, New Delhi 110016

Tel: 2653 7456/ 2652 1882 Fax: 2651 2347

Email: [ccs@ccsindia.org](mailto:ccs@ccsindia.org) Web: [www.ccsindia.org](http://www.ccsindia.org)

## **Introduction**

Modern metropolitan cities and urban areas have grown large and wide with population in the millions. Such a large population calls for the proper maintenance of the city in terms of infrastructure, traffic management, cleanliness, sanitation and waste management. Under such circumstances, the twin problems to be addressed are efficient and effective management as well as a scientific approach to it.

New Public Management envisages limited role to the municipal authorities and involves the active participation of private players in this regard. This helps in easing the burden of the municipalities and controls nepotism, corruption and inaction. The involvement of citizens adds to the smooth process of matters.

Under this idea of management, the Bangalore Mahanagara Palike (BMP) has introduced several schemes in the city of Bangalore in order to modernise it and develop it into a clean, hygienic and beautiful city. The Bangalore Agenda Task Force (BATF) was formed by the Congress Government in 1999 with the help of private partners. Under the Public Private Partnership (PPP), the BMP has initiated privatisation and the underlying rationale is typically commercial savings and superior delivery of services. Corporates and Individuals have come forward to contribute to specific projects like Nirmala Bangalore, Swacha Bangalore, Road improvements etc. Around 18 crores of donations were committed to various initiatives.

The following are some of the initiatives under PPP in order to provide better services to the citizens:

- 23 Nirmala Bangalore Toilets have been built by BATF with a donation received from Ms Sudha Murthy. In view of the great utility of this facility, BMP has taken up construction of 100 additional Nirantara Nirmala Bangalore Toilets out of its own funds.
- Pay 'N' park scheme for motor vehicle
- Swacha Bangalore the Door-to-Door garbage collection, the total cleanliness programme was launched on the 31st of March 2000 in 60 Health wards.

## **Steps involved in Waste Management**

Solid waste management is also an area where the municipalities have not only failed to manage effectively, but also in an environment friendly manner. This becomes essential not only to limit the use of financial resources but also to maintain hygiene and cleanliness in the city, prevent the occurrence of diseases and protect the natural environment and habitation.

Waste management in any region includes the following three aspects. They include:

- Proper mechanisms for collection of waste regularly from residential as well as industrial areas.
- A scientific and eco-friendly system of segregation of waste into organic, inorganic, plastic and metal etc.
- Transportation of waste from the place of collection to the destination of disposal.
- A method of disposal of waste in appropriate places following a clean procedure.

## **The Earlier State of Affairs**

Before the Swaccha Bangalore programme was initiated, cement bins were located at the corners of every street. Thus people collected their waste (without segregation) and dumped it in the dustbin at the corner of the street. This could be dumped at any point of the day. The garbage was dumped most often than not outside the dustbin and not inside it. This caused a flood of insects, flies, mosquitoes and rodents to infest the residential areas.

Most of these bins would overflow and animals such as dogs, cows and crows would feed on them. These were also places for rag pickers to collect the plastic materials.

The garbage was collected after 8:30 am every morning (sometimes the garbage van failed to arrive one morning and the garbage would lay rotting till the van came by the following morning). They did not possess a map of the block/area and the garbage was collected in an arbitrary manner. The garbage vans did not possess a safety iron net/mesh so, this would lead to the whole road being strewn by garb till it reached its destination point. The whole process was controlled, maintained and managed by the Bangalore Mahanagara Palike. An Independent study conducted by her, stated that the garbage vans would manage to collect 40% of the waste per day, so there was a backlog of 60% waste everyday.

The BMP sweepers would clean the roads and footpaths every day. However, most of the roads were dirty and the footpaths were full of weeds and grass. The city was very dirty and unhygienic.

### **The Present Scenario**

Swacha Bangalore is one such initiative under the NPM system launched in order to manage waste and garbage in the city and preserve its beauty. The various players include the BMP, citizens, NGOs, social welfare clubs, private companies and poura-karmikas.

The chief objectives of Swacha Bangalore were

- Analyse the issues related to Door-to-Door (D2D) collection.
- Deploy a new design of push-cart to facilitate segregation of wet and dry waste
- Elicit citizen's cooperation on segregation.
- Ensure commercial areas are brought into daily collection routine.
- Ensure daily transportation of waste and street sweeping in the health wards.
- Establish a monitoring system to obtain a regular feedback on the activities.
- Facilitate rationalization of number of community dustbins & removal of black spots.
- Ensure transport synchronization with Door-To-Door collection.

The project was introduced on a pilot basis with the support of NGOs, Resident Welfare Associations and corporate institutions such as Aditi, Biocon and Infosys for production of sufficient number of pushcarts in March 2000. Previously (i.e. Pre-March 2000), less than 5% of the waste was collected through the Door-to-Door system.

Post March 2000 when Phase I of the Swacha Bangalore Project was initiated in 25% of the city, they introduced the Door to Door collection of solid waste, scientific management of solid waste through segregation and Transportation of waste (all of these demands were citizens demands conducted by the BATF through an independent survey team/company

This is a Public Private Partnership project which was conducted in Four Phases which covered 25% of the city in each phase. The project is finally complete as it covers every nook and corner of the city (or so it boasts). The players/stakeholders in the project are the BMP, BATF, Citizens including the resident groups, poura karmikas (garbage collectors).

### **The procedure**

The process of garbage clearance is carried on from Monday to Sunday from 6:30 am to 2.00 pm in all the wards of Bangalore. There is late morning clearance in commercial areas. If the residents have problems such as sweeping/cleaning of streets, cleaning an overflowing bin, clearing choked drains, cleaning garbage under door-to-door collection they should contact 22221281 and give the address of the street or call the BMP control room or

contact the health inspector of the ward. If there is no response, the Medical officer of Health is to be contacted.

The Swacha Bangalore Helpline has been set up for public interface 24 hours to tackle problems such as road sweeping , overflowing garbage bins, garbage collection, removal of dead animals and reporting unauthorised posters and banners.

**DECCAN HERALD DATED 7 JUNE 2004**

*"Help Us in garbage collection, says BMP"*

A workshop had been organised on Urban Eco friendly movements for healthier living and the Health Officer C H Nagarabettu speaking on the occasion said that surveys indicated that nearly 80% of the citizens cooperated. Among those who did not cooperate were mainly working couples and those who were reluctant to dispose the garbage themselves and instead waited for their maidservants.

**Wards to be covered**

There are 294 Health wards in Bangalore city out of which 112 wards are under the direct control by the BMP (this means, the sweepers and the garb collectors were recruited by the BMP and are paid by the BMP) while the rest 182 wards are under private contractors. The wards are divided according to the population-a pop. Of 50,000 will constitute one ward and each ward in further sub-divided into blocks. Each Pura karmika covers around 100-150 houses a day (roughly around 4 streets) but then again the collection depends on the density of the residential area, population, length of the street etc.

The BMP has a staff of 5900 of its own as well as 7000 contract workers. Daily, 2000 metric tones of solid waste is managed through the process. Total municipal solid waste collection per day is 1482 tonnes and an additional waste of 700 tonnes is generated by hospitals and industries.

The waste has been segregated as follows:

- Total green waste generation: 889 TPD (tonnes per day)
- Total rejects: 356 TPD
- Total recyclables: 221 TPD

### **The finances**

The Swacha Bangalore initiative and Solid Waste Management (SWM) in the city are now fully funded by the BMP. Some of the finance for the programme is made available by the Infrastructure Cess and Waste Management Cess levied on the citizens of Bangalore by the BMP.

A budget allocation has been made for this purpose. The budget allocation for 2003-04 was Rs 32 crore for garbage cleaning under revenue expenditure. This excludes the salaries paid for the BMP staff that is involved in waste management. Separate data is not available for this in the Revenue and Expenditure account. However, Rs. 31.73 crore was spent out of the allocated fund, which has been 17.20% higher than the previous financial year.

Under Capital expenditure, Rs 12.70 crore was assigned for solid waste management, which was broken up as follows:

1. Infrastructure- Rs 10.65 crore
2. Scientific sanitary landfill- Rs 2.05 crore
3. Solid waste transportation- Rs 1 crore

Not even a single paise was spent for this purpose in 2003-04. The BMP claims to have acquired land and completed the fencing of the boundary, under the allocation of the Estates Dept. A private entrepreneur has been awarded the work of development and maintenance of scientific landfill on a principle of tipping fee. The BMP expects the work to commence once the landfill is ready. The payment of a tipping fee is yet pending.

It was voluntary earlier and now has been implemented in all wards. **The service is provided free of cost but some citizens do complain of making payments. Residents pay anywhere between Rs 10-25 to the sweepers.** When we spoke of this issue with the BMP officials, they admitted that it was wrong and assured to inform the citizens to discourage such a practice. However, they felt that the habit is due to sympathy and not entirely rejectable.

The players in the new system of management include, Suchi Mitras, Pourakarmikas, BMP officials and contractors in areas lent out for contract.

Suchi Mitras are local area volunteers who supervise health work for half an hour each day in their neighbourhood. They monitor parameters such as arrival of trucks, whether Pura Karmika's attend regularly. They cooperate with the BMP and over 500 are there till now. They are given identity cards.

### **A Typical Day for a Pura Karmika**

The pura karmikas meet at a particular point every morning before the respective supervisor and Health Inspector of that particular block and after attendance can commence work. The Health Inspectors today have a map of their respective wards/blocks, so not a single street is missed. The Pourakarmikas were trained by Resident groups before the Swaccha Bangalore project was initiated, so that they could collect and sweep the streets at the same time. But the ground reality is different. In most areas the sweepers are different from garb collectors and this sub-system is quite a muddle. Some areas where garb pickers are sweepers, prefer to complete collection and then come back and sweep at a later time. But in most areas sweeping is not as strictly

followed daily like garb picking. The BMP laid pickers are paid Rs 300 per month while the private contracted pickers are paid less (around 1800 per month).

The present system is managed under the guidelines laid out by the Municipal Wastes (Management and handling) Rules, 2000 and the Recommendations of the Supreme Court Committee on SWM (solid waste management).

### **The clean men and women**

Obalamma, 25, has been employed as a contract sweeper and is working for the past one year. She receives a salary of Rs 1500 per month. She has been given in charge of three streets in Kumara Park. She begins work at 6.00 am in the morning and works up to 10.00 am and takes half an hour break for breakfast. She gets a pushcart and rings a bell collects garbage from residents and cleans the roads as well. At 10, she meets all the other colleagues and deposits the garbage with the van. No segregation is done. Again they work from 11.00 am to 1.30 am. These sweepers work under a Mestri (in charge) and do according to his directions. They have been provided with two green coloured coats, which they have to wear compulsorily.

In order to provide effective services, the BMP has been training health officers, Pourakarmikas (PK's) , contract workers and shuchimitras.

Health Net- a two way radio paging has been provided for better communication between field and office with all health officers having handsets to communicate with the base station, monitor daily activities and respond to citizen complaints.

### **The Contract System**

Nearly two thirds of the health wards are contracted to private individuals and organisations. In order to maintain uniform methods the BMP has laid down several conditions and schemes. These include day and night cleaning packages for the work of cleaning, sweeping, collection and transportation of garbage and debris.

Day Package: The work involves sweeping and cleaning of roads, footpaths, roadside drains, public toilets and urinals, open places of corporation properties such as schools, colleges, health centres, burial grounds and collection and transportation of waste and debris to the designated disposal sites.

1. The roads shall be swept from one end to another either manually or using machinery. The footpath and pavements are to be swept with long handle brooms made of coconut sticks or wire brush. The waste shall not be left on the road or burnt. Open roadside drains shall also be cleaned.
2. Arrangements should be made to collect waste from households and shops directly in all roads, lanes by using containerised push carts with bells or three wheeler auto rickshaws. The waste shall be transferred to the tippers.
3. A tipper with a capacity of not less than 9 tonnes shall be used to transport the waste to the designated dumping site. The tipper shall be properly enclosed with a metal mesh. This has to be done by 2:30 PM.
4. The contractor or his representatives shall not collect any fee from the residents for the services provided.
5. The postings, buntings, and unauthorized banners shall be removed. Silt from open drains and weeds and vegetation on the roads, footpaths, burial grounds, play grounds

belonging to the BMP shall be cleared. Public toilets and urinals should be cleaned with water and disinfectants three times a day.

Some areas shall be cleaned and cleared of waste in the night times between 2:30 PM to 6:30 PM and 7:00 PM to 11:30 PM. Only male workers shall be used for this purpose.

The following market areas shall be cleaned in two shifts, 6:30 AM to 2:30 PM and 2:30 PM to 10:30 PM.

- Sri Krishna Rajendra Market and surrounding areas.
- Kalasi Palyam Bus stand
- Russell Market
- Jayanagar Shopping Complex
- Gandhi Bazaar

For day cleaning the following routine of 8 hours a day starting with 6:30 AM is to be followed. The workers shall start sweeping the road at 6:30 AM and collect household waste door to door from 7:30 AM and commercial wastes from shops and other establishments from 9:30 AM.

#### **Work execution and supervision**

- a) A supervisor should be appointed in each health ward who has passed matriculation and has a pager/mobile and a bicycle/ two-wheeler and should be available in the ward between 6:30 AM to 2:30 PM. A Chief Supervisor shall be appointed who has passed a sanitary inspector training course.
- b) All workers, supervisors should have bottle green colour overcoats.

#### **Terms and conditions of contract**

- The work shall not be sublet
- Contractor to pay expenses of medical aid to workmen
- Compensation to be paid under the Workmen's Compensation Act
- To provide personal safety equipment, first-aid apparatus, treatment etc

#### **Segregation**

The BMP has implemented the proper mechanism for collection but the process of segregation of waste into organic, plastic and metal and the proper disposal have not been taken up. The former Mayor of Bangalore, Prema Cariappa had claimed to bring about a scientific approach towards eco-friendly waste management but the scheme has not been implemented so far. The hospitals and nursing homes in the city are also expected to maintain insinulators for treatment of medical waste, but little progress has been made in this front.

It is ironical to note that segregation of solid waste was started with great vigour and carried out well in the initial period. The garbage pickers were trained to make use of the plastic buckets in the pushcarts and are painted in different colours for easy identification and segregation. The residents were aware and working well. It helped the Poura Karmikas in return as they would sell the paper, plastic and bottles for recycling and add to their monthly income. However, the transportation of segregated garbage failed as the vans were not equipped to deal with it. They did not possess different compartments, so what use in segregation when it all landed up together.

### **Bags for Segregation**

The BMP had handed over yellow coloured polythene bags under the Swacha Bangalore scheme to dispose dry wastes like paper, plastic, glass and metal waste to be collected every fifteen days under the first phase of the scheme in June 2003 in some of the areas and hoped to expand it to all areas in a year. The bags were donated by Reliance Infocomm Limited and were expected to be sold for Rs. 5 from the coming year. The collection happened only once and was not implemented further.

Debris management, bio-medical waste, industrial waste and segregation of wet and dry waste are the new initiatives under Swacha Bangalore.

The process of segregation has only been started on a pilot basis and is expected to be completed in a few years' time.

### **Transportation**

The waste generated in the city are collected by lorries and tippers which are required to make a minimum of two trips every day from the area of collection to the dumping yards. As many as 781 lorries are being used at the moment and are properly covered by an iron mesh and plastic sheets, unlike before when the open lorries would lead to spill over of waste on the roads and streets. However, the garbage is still handled without any segregation and the process of transfer of waste from pushcarts to lorries is handled poorly. The streets are blocked at the time of collection and some of the waste gets spilled during this process.

### **Waste Disposal**

The implementation of environment friendly disposal mechanisms has been slow to come. The BMP has been trying various technological options such as Composting, vermin composting, aerobic digestions, incineration and Producing energy from solid waste: pelletisation (production of Refuse Derived Fuel) and sanitary land filling.

### **Scientific disposal using processing plants**

Two sites have been identified for integrated plants and sanitary landfills have been made for rejects. The BMP plans to compost wet waste but low calorific value of waste has discouraged generation of energy. Under a pilot project a Composting park has been built in Raj Mahal Vilas Extension. Compost is being sold to residents in the same neighbourhood at Rs.4/kg and Rs.11000 has been made in seven months. This leads to 75% reduction in garbage transported, ensures scientific handling of waste and involves citizen participation.

In the case of disposal two companies, namely RAMKEI and MERDI have been given contracts recently to create landfills and also generate energy from organic waste. RAMKEI has been given 1000 metric tonnes of waste to make landfills while the rest has been kept to create energy. 300 acres has been kept aside for this. The BMP used to earlier sell the organic waste to farmers near the outskirts of the city and generate revenue. However, with non-organic waste rising, this process had stopped. Once again, it plans to initiate the programme.

The Karnataka Compost Development Corporation (KCDC) has been formed. An area of 20 acres at Aralkunte on Hosur Road is being used to compost 350 MT of the 1800 MT of waste

produced by the city per day. The KCDC has sold 15000 TPA of organic manure produced by it and generated profits since The garb once collected is deposited in vans by 10:00 am. They make their way across the city to KCDC or the van drivers dump the waste in suburbs of Bangalore, in villages near the city. Thus, a project was sanctioned a few days ago by the BMP to create an Integrated Waste Processing and Disposal Facility where landfills (vents in the ground will be dug out, layered with geo membrane and drainage layer to prevent leaks which contaminate the sub-soil) will be created into which the processed/recycled waste will go in. This is a Build-Operate-Transfer project. The BMP in another 4 months will be paying this processing unit to process the waste (based on models practiced in western countries). This unit will be able to handle another 300 tonnes.

Dumping yards/ Land fill sites:

- Bommanahalli- KCDC (South and East Zone)
- Kannahalli- KCDC (South-west and west Zone)
- B-Narayanapura (Only Debris)
- Kyalasanahalli- Bangalore North (East Zone)
- Jaraka Bande Kaval- Bangalore North Taluk (West Zone)

### **Has anything changed?**

The new scheme of solid waste management has been a unique initiative in the metropolitan areas of the country. It involves the application of modern managerial skills in public services and has thus reduced the burden on the exchequer and simplified the process. The BMPs role has been changed to that of a coordinator and invigilator than that of an actual functionary. It has also made the surroundings in the city much cleaner and the roads and streets look tidier.

Swacha Bangalore has paid off but seriously lacks a scientific approach that is to be combined to make Bangalore a more healthy and hygienic city. The steps of collection and transportation have been more than satisfactory while the segregation and disposal aspects have received little attention and are no better than before. In an increasingly harmful environment, this danger of the spread of diseases and epidemics has to be checked through better processes.

### **LOKAYUKTA: A WATCH DOG**

The Karnataka Lokayukta was set up a few years back in order to keep an eye on the performance of the Government schemes and punish corrupt officials. As part of its activities the Lokayukta Justice N. Venkatachala inspected the implementation of cleanliness and hygiene in the city on June18, 2004. After inspecting over a dozen areas, he set a deadline of two months to the Bangalore Mahanagara Palike to make the city roads and footpaths free of garbage and filth. The Lokayukta Chief pointed out fingers at heaps of stinking garbage in areas like Adugodi, near Shiva theatre in Koramangala, Siddiah road and Shantinagar. " Though the main roads are clean, interior roads in almost all areas, including slums, are in a pitiable condition. Garbage is dumped at every available place, making it extremely difficult for residents to live," he said. BMP officials, including Chief Health Officer Dr G Lokesh, Deputy Commissioner (Health) Hikkeri and others were present.

The other sad part of the programme is the non-implementation of the system in slums and the outskirts of the city.

### **Strategies Required**

The following issues need a re-examination:

- Use of appropriate technology for different processes
- Infrastructure and manpower requirements that are suitable
- The means to meet the growing financial requirements
- Environmental issues in urban space

Data collection has to be carried on as a measure of feedback for better waste management practices and to enable prioritisation and planning investments and decisions.

It is essential to involve the citizens of Bangalore in the process. There is a lack of awareness among citizens of segregation of waste and they dump in open spaces. The BMP has to organise awareness campaigns and spread the message.

## References

1. Tender Form/ Bid Document for The Work of Cleaning, Sweeping, Collection and Transportation of Garbage and Debris issued by the BMP.
2. 2004. Help us in garbage cleaning, says BMP. *Deccan Herald*, 7 June
3. 2004. Chastened BMP gets deadline to tidy city. *Deccan Herald*, 19 June
4. 2004. Olympus hotel gets full blast of Lokayukta fury. *Deccan Herald*, 19 June
5. 2004. Lokayukta can only issue directions: Mayor. *Deccan Herald*, 20 June