

Hyderabad's Subram Zero Waste Management Project

Summary of the Practice

Keywords: Zero waste management, resource recovery, subram (meaning "clean")

Country: India

Province: Hyderabad, Andhra Pradesh

Area: (a) Greenlands, Begumpet, Hyderabad

(b) Bharat Heavy Electricals Limited (BHEL), Ramachandrapuram, Hyderabad

(c) Indira Park (Municipal Market Waste)

(d) Quthbullapur Municipality

(e) Dr Reddy Laboratories (Pharmaceutical Unit)

(f) ITC Bhadrachalam (Paper Manufacturing Unit)

Sectoral Issues: Waste Management, Urban Environment, Ecosystem and Biodiversity Conservation

Cross-Sectoral Issues: Innovative Environmental Finance, Environmental Information, Environmental Technologies

Implementation Level: Local level

Duration: Aug. 2002 up to the present.

Sponsors: Self-sustaining, after initial contributions by MCH, EPTRI and BHEL.

Actors Involved: Private Sector, Non-governmental organisations, Community

Description of the Practice

Background:

Andhra Pradesh is the fifth largest state of India, in between North and South India. About 27% of its 75.7 million population live in urban areas. Its capital city, Hyderabad, is more than 400 years old and one of the fastest-growing cities in India.

Hyderabad city has a total population of over seven million, with more than four million located in urban areas. It is 650 meters above sea level and has scenic hills, forests, and rock formations making it one of India's prime tourist destinations. It is also the second-largest hub of IT technology in southern India, after Bangalore. Thus some residents refer to their city as "Cyberabad".

Despite its beautiful and modern features, Hyderabad grapples with its solid waste, a major environmental issue in the city, just like in other parts of India.

In Hyderabad and all of India, solid waste management is the responsibility of the local municipalities. The Constitution of India, through the Amendment Act of 1994, transferred significant authority and responsibility, including solid waste management, from the state government to the Urban Local Bodies (ULBs). This responsibility is supported by the directive issued by the Supreme Court of India in the form of the Municipal Solid Waste (Management and Handling) Rules 2000 on the effective and scientific management of solid waste.

The Rules 2000 require all ULBs to set up waste processing and disposal facilities by December 2003 and to identify landfill sites for future use by December 2002. They also require the ULBs to monitor the performance of waste processing and disposal facilities within their respective jurisdiction at least once every six months.

In Hyderabad, the ULB is the Municipal Corporation of Hyderabad (MCH), a government agency responsible for collection, handling, storage, transportation and disposal of waste. Its jurisdiction extends to about 172 sq. kms. covering about 100 administrative wards. These wards are organized into about 200 sanitary units for the purpose of systematic collection and transportation of waste.

In order to help improve the solid waste management situation in Hyderabad, Sukuki Exnora, a non-governmental organization (NGO), forged a partnership with local community organizations (e.g., Resident Welfare Association) and the MCH to implement the Subram Project. The project is now providing solid waste management services directly to sanitary units. For example, the Subram Project at Greenlands, Begumpet services one sanitary unit. Its upkeep is monitored on a daily basis by an AMOH (Assistant Medical Officer of Health) of the administrative ward and a Sanitary Supervisor from the MCH.

The average composition of waste in the area covered by the Subram Project is about 60% biodegradable waste, 30-35% recyclables, and 5-10% inert waste. The population ranges from 2500 households in Greenlands to 4500 quarters at BHEL.

Objectives:

The Subram Project aims to apply a zero-waste strategy with the participation of the community concerned. It applies localized handling and treatment of waste, thereby reducing transport charges and avoiding or minimizing the establishment of large, inexpensive final disposal facilities, such as sanitary landfills.

Outline of Practices/Actions:

The Subram Project aims to implement the key features of the Municipal Solid Waste Rules 2000, as follows:

(a) Collection of Municipal Solid Waste

This includes prohibition of littering of solid wastes through the following steps:

- (i) Organizing collection of waste from houses, including slums, and commercial establishments.
- (ii) Management of biodegradable waste from slaughterhouses and vegetable markets by recycling it.
- (iii) Not mixing bio medical waste and industrial waste with municipal waste and complying with separate rules prescribed for handling them.

(b) Segregation of Municipal Solid Waste

- (i) Encouraging citizens to segregate waste at source and promoting recycling or reuse of segregated materials through awareness programs.
- (ii) Ensuring community participation in waste segregation by arranging regular meetings at quarterly intervals with representatives of local Resident Welfare Associations and NGOs

(c) Storage of Municipal Waste

- (i) Creation of easy-to-operate storage facilities in accordance with the volume of waste generated and population densities.
 - (ii) Not exposing storage facilities openly to the atmosphere.
 - (iii) Prohibiting manual handling of waste.
- (d) Transportation of Municipal Solid Waste
- (i) Transporting waste through covered containers
 - (ii) Daily clearing of storage facilities
 - (iii) Designing the transportation system to avoid multiple handling
- (e) Processing of Municipal Solid Waste
- (i) Adopting suitable technologies for processing to minimize burden on landfills
 - (ii) Processing of bio-degradable waste by composting
 - (iii) Recycling of mixed waste.
- (f) Disposal of Municipal Waste
- (i) Establishment of sanitary landfills for inert waste after composting and resource recovery through recycling.

In applying these rules, the Subram Project undertakes door-to-door collection of garbage daily using tricycles. A tricycle (also called “street beautifier”) has a cart with different compartments for wet and dry waste. It starts operating at seven o’clock in the morning and collects waste from about 250 to 500 households, depending on the density of the households. Its activities are monitored by representatives of the RWA and Sukuki Exnora.

(Insert photo of tricycle here.)

The Subram Project at Greenlands handles waste of about seven tons per day. Its tricycles provide employment to 20 persons. On the other hand, the Subram Project at BHEL provides employment to about 25 persons.

The tricycles deposit the collected waste at the Subram Zero Waste Center, where the waste is segregated into various types of waste--biodegradable, recyclable, inert and hazardous.

(Insert photo of Green Gold Center here)

The biodegradable waste is transferred to the compost beds for composting for six to eight weeks. The recyclable waste is further segregated into different types-- paper, plastic, metal, glass and others. The recyclable waste is further transported to recycling units run by the informal sector. The inert or hazardous waste is taken to the landfill.

(Insert photo of compost piles here)

Results/Impacts

a. Environmental Impacts:

For the local community, the positive environmental impacts of the Subram Project are cleaner roads and healthy atmosphere. For the dumpsite, the result is lesser loading, e.g., one trip instead of two in the past at each Subram center.

b. Economic Impacts:

The main economic impact is increased revenues from the recovered compost and recyclables. The revenues come in the following forms:

- a) Payment of a small monthly fee by households (Rs 10 at Subram and Rs 21 at BHEL) for garbage collection. Average revenue is Rs 15,000 per month at the Subram-Greenlands (subsidized, as initial infrastructure facilities were provided by MCH) and Rs 90,000 at BHEL (higher as the infrastructure was provided by Sukuki Exnora and not subsidized).
- b) Sale of recyclables, e.g., plastics, glass, cardboard, and paper. The average revenue from recyclables is Rs 15,000 at Subram-Greenlands and Rs 18,000 at Subram-BHEL.
- c) Manure. About 50 tons of animal manure is generated at Subram-Greenlands and about 80 tons at Subram-BHEL. The manure is used to hasten composting.

c. Social Impacts

The local communities have been participating actively in waste management—from paying user charges to having street beautifiers. The project also provides uniforms to the people involved in the cleaning work, lending a sense of dignity to collection, in addition to providing secure employment.

(Insert photo of staff in uniforms here.)

d. Health Impacts

A cleaner environment leads to a healthy population, with improved quality of life.

Critical Instruments

Standards

The Supreme Court Directions and Municipal Solid Waste Management Rules have greatly facilitated the conduct of the Subram Project. Such top-level support from authorities of a country or location is critical to the success of a recycling project.

Tax and charges

The MCH has provided the basic infrastructure for the project, including land, covered shelter, and water, at no cost. The project is now being sustained by revenue streams from service charges and sale of recyclables and compost. Monthly user charges are Rs 10 per household, augmented by contribution by BHEL Management of Rs 21 per household per quarter.

The project partners have recognized the export potential of recycled paper, plastic, and glass for which there are ready international markets. However, there is a need to establish and apply standard practices to make the recyclables conform to internationally acceptable quality.

Organisational arrangements

This project involves institutional arrangements between an RWA (Resident Welfare Association) and a non-governmental organization (NGO). The GRWA, a registered community association, and Sukuki-Exnora, a registered NGO, are responsible for the implementation of the project on a day-to-day basis. They have organized a hierarchical system of supervisors and “street beautifiers.” The MCH serves as the monitoring agency for the project.

Partnerships

The Subram Project at Greenlands is a collaborative undertaking involving the MCH, GRWA and Sukuki Exnora, with a formal Memorandum of Understanding (MOU) clarifying the responsibilities of each one of them. EPTRI, a Government of India institute, has provided financial assistance with

support from the USAID to increase the efficiency of the project. It is the first time that an RWA entered into an MOU with a municipality and the private sector to achieve improved solid waste management.

The Subram project at BHEL involves a formal contract between BHEL and Sukuki Exnora, while the Subram Project at Quthbullapur is a collaborative effort between the Quthbullapur Municipality and Sukuki Exnora.

Technology

The Subram centers apply a simple technology for composting, with application of vermin. They also apply a simple technological initiative on the baling of recyclables, as shown in the following photograph.

(Insert Baling the Indian way here.)

Design, Planning and Management

Critical measures taken under this category were: survey and mapping of the area, design of tricycles for primary door-to-door collection, planning of efficient collection routes, secondary segregation of waste in an organised manner, and management of the project using a team of street beautifiers (five at Greenlands and 10 at BHEL) and supervisors. A survey of the area determined the types of households according to socio-economic groups, the types of commercial establishments, and the appropriate routing and collection schedules.

Lessons Learned

- Top-level support from authorities of a country or location is a basic requirement for a project such as the Subram Project. The Supreme Court Directions and Municipal Solid Waste Management Rules have provided significant basic support in this case.
- The Subram Project has demonstrated that it is possible to organize efficiently decentralized zero waste management centers at the local level. The revenue streams from user charges, sale of recyclables and compost, when efficiently organized, can effectively provide for the sustainability of the project and a long-term solution to the management of waste.
- The project has been providing employment to over 50 persons for the past two to three years now. There have been no complaints of any major health issues. Workers in waste management must be encouraged to be proud of their work. In this project, some measures taken towards that end are recognition of their efforts in regular staff meetings, making them relate to visitors of the centers by proudly demonstrating their work, and giving them uniforms that they can proudly wear.
- Segregation at source needs to be undertaken to facilitate the handling of waste and to improve the quality of recyclable waste.
- The use of mechanized systems to reduce manual handling and exposure of the waste handlers to the risk associated with waste has to be explored. In general, the collection, treatment and disposal of waste require innovative technological support from the government and the private sector.
- The recyclable waste after segregation into paper, plastic, metal and glass is transported to recycling units in the informal sector. Recycling activities in this sector need to be organized in order to ensure that they are environmentally sound and are in accordance with health regulations.
- At present, the project turns the biodegradable waste into compost that is subsequently sold. However, the compost needs a stable market. The project is now exploring with the government the compulsory use of compost in all public parks and institutions.

- The most important factor for the success of this project is the involvement and cooperation of local residents in the system. Getting their cooperation in segregating waste and in participating in the new system of waste collection have been important challenges to the project. To meet these challenges the Subram Project has been educating local residents on the impact of waste on their lives and the environment. The cooperation and assistance of local leaders in monitoring waste segregation at the source will greatly facilitate the smooth operation of the project.
- Public-private partnership is crucial to the implementation of a solid waste management program. Non-governmental organizations can play an important role in such a program.

Applicability

This project can be easily implemented in any local community, provided the critical instruments for successful implementation mentioned above are applied. It is now currently being replicated at the Agra Municipality in Northern India.

Information date

November 2004 to January 2005

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