



## **Informing, Educating and Motivating Community Members;**

### **A Major Step for Community Involvement in Solid Waste Management**

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## Abstract

The waste generated by the fast growing cities in developing countries is increasingly beyond the collection capacity and financial limitations of the municipal administrations. A promising approach to improve the collection coverage is the introduction of community based management schemes which involve the local communities in the collection, sorting and recycling activities. Research has shown how such schemes can be implemented under different kinds of conditions. This paper presents a pilot project study in an urban slum in Karachi, Pakistan, aimed at field testing an approach for informing, educating and motivating a community to participate for the establishment of a primary collection scheme. The project was initiated with the help of a local NGO called Association for Protection of Environment (APE). By developing alternative information material and then disseminating the material by informal methods as well as community meetings with target groups of different gender and ethnic background, motivation and participation was greatly enhanced. The community members were involved in all phases of the project, in assessing the existing situation as well as designing and implementing an alternative collection scheme. Enhancing awareness and genuine participation in all the phases of planning,

**Keywords:** Solid Waste Management; Community Participation; Solid Waste Collection, Low-Income Urban Areas; Community-Based Waste Collection, Karachi, Pakistan

## 1. Introduction

As centers of population and human activities, cities consume natural resources and generate waste that is disposed inside and outside the city. In the process, urban areas generate environmental problems over a range of spatial scales, the household, the workplace, the neighborhood, the city, the wider region, and the globe. In cities of the developing world these problems are especially intensified by a rapid urbanization. Rapid population growth can overwhelm the capacity of municipal authorities to provide even elementary services, resulting in serious environmental degradation and increased health risks. Today urban Solid Waste Management (SWM) is considered one of the most immediate and serious problems confronting urban governments. For low-income cities one of the main solid waste problems is, how to extend collection services to the poor. Often more than 50 % of the

population, mostly the low-income population in the peri-urban areas, remain unserved. Inadequate or unavailable solid waste collection and disposal services result in indiscriminate dumping of waste on streets and public areas, clogging of urban drainage systems, contamination of water resources and proliferation of insect and rodent vectors. Such situations are related to increased health risks by direct contact of humans with solid waste and are major factors in the spread of gastrointestinal and parasitic diseases.

Main problems and issues encountered in most developing countries, related to unsatisfactory SWM are: a) inadequate coverage of the population to be served; b) operational inefficiencies of municipal SW services and management; c) limited utilization of the formal and informal sector in recycling activities; d) problems related to the disposal of solid waste; and e) problems concerning the management of non-industrial hazardous waste (Schertenleib & Meyer, 1992). All these problems have common social, institutional, financial and technical issues.

This paper deals with the problem of inadequate coverage and missing or inadequate waste collection service. In a "typical" urban area of a developing country, the existing municipal service, serves less than 50 percent of the population. This unserved part of the population is mainly the low-income peri-urban population. Even if the efficiencies of existing systems could be improved significantly, a large portion of the population will realistically not be served by municipal services, especially in low-income areas where there is insufficient pressure on municipalities to provide the services. This basically means that the people in low-income communities have to assume the responsibility themselves with regard to the handling of their waste, and to set up an alternative waste collection system appropriate to their economic situation.

A review of alternative non-governmental refuse collection schemes in low-income areas from Asia, Africa and Latin America revealed suitable approaches to increase coverage of waste collection in low-income urban areas. Small private enterprises and community organizations have a potential in easing the responsible public authorities of part of their burden (Pfammatter & Schertenleib, 1996). However certain important conditions should be fulfilled to enable successful waste collection schemes. For instance, primary waste collection schemes in particular alternative approaches, require considerable participation of the households. Besides involving the community, that is the future users, in decision-making on all levels, the people's capacity and willingness to contribute in cash or kind is an important factor to be considered. However, willingness to contribute

depends on the felt need of the population for solid waste collection. Unfortunately this felt need is often low. An important start when initiating a community based waste collection scheme therefore is enhancing awareness with regard to the problems related to inappropriate solid waste handling, and providing information on possible improvements. Participation starts while informing and educating the community on the basic principles of hygiene and their relation to solid waste handling and health.

## 2 Research Background and Objectives

Self-help and the use of community participation may in many cases be the only solution for solving waste collection problems in low-income areas. In the course of SANDEC's solid waste research, a pilot project on alternative waste collection in a typical low-income urban area in the city of Karachi in Pakistan, was initiated. This pilot project was carried out by a local NGO "Association for Protection of the Environment (APE)". Reviews of Community-based waste management schemes around the world have shown that the main issues to deal with, when implementing a scheme can be generally classified into social, institutional, financial and technical problems (Meyer & Schertenleib, 1992; Anschütz, 1996). Focus of this project's objectives was laid on the social issues, specifically on:

- Gathering experience of people's concern in general and of their attitude towards waste collection in particular.
- Field testing an approach for enhancing awareness in the community and initiating genuine involvement of the community in all phases of the waste collection project.

A further objective of the pilot project was, finding a suitable technical, institutional and financial framework for an alternative waste collection scheme and finally its implementation.

Based on meetings with the key officials dealing with slum upgrading, three out of six slum areas were chosen for a detailed evaluation. After meetings with community representatives, preliminary information collected from the different areas, and the required characteristics listed in Table 1, Shah Rasool Colony was selected for the pilot project.

Required characteristics of the pilot project area	Reason
Typical low-income urban housing area	research focus on low-income urban areas
population of less than 10'000 people	manageable population size
well defined area boundaries	clear defined operating area
whole area within the municipal limits	clear defined institutional authority
availability of basic infrastructures	main community priorities, e.g. sanitation and water supply, partly fulfilled
area is a slum where awarding of lease titles is in progress	area regarded as "legal" by the public authorities
willingness of area representatives and opinion leaders to cooperate	available link to community members
inadequate solid waste collection system is a basic problem	possible potential for improvement of collection system
no NGO or CBO working on waste collection in the same area	no overlapping of efforts

Table 1: Selection characteristics for the pilot project on "Alternative Refuse Collection in a typical low-income urban area of Karachi, Pakistan".

## 3 Problem Analysis and Background Data of Shah Rasool Colony

Shah Rasool Colony (SRC) covers an area of 3.7 ha (9.2 acres) and has a population of about 3000 people in approximately 400 households. The area is inhabited by different ethnic people, the majority being the Pathan people from the North-West Frontier Province (NWFP), and slightly less frequent, people from the Punjab province. Local people, Christians and Hindus form a minority.

As very little background data on Shah Rasool Colony was available, APE conducted a physical reconnaissance survey, a survey on available infrastructures, a socio-economic survey and a survey regarding the communities attitudes towards solid waste and their solid waste handling habits. The socio-economic and attitude survey was conducted in 10% of

the households. Main objectives of this survey was to determine:

- the professional and occupational characteristics of the household members in order to assess their economic background and possible time involvement on any participatory activity
- the number of rooms, number of household members and number of families living on the plot to assess the number of people generating waste
- current household waste storage locations and methods of storage as well as the general sanitary conditions and cleanliness of the household
- the role of the household members in generating waste, having responsibility for the waste and the involvement in waste handling
- the genuine need to clean their immediate surroundings and environment
- the knowledge of current waste collection services and given reasons for using them or not using them

### 3.1 Solid Waste Practices

The survey revealed that 85% of the households utilize some sort of waste container. Due to the capacity limitations of the container and an average of 6 people per household, the household waste container is emptied on a daily basis. Main responsibility for the cleanliness of the households lies with the women. The majority of households dispose of their waste onto informal heaps in the neighborhood, which are then scattered due to scavenging activities. The people disposing of the waste are either the women or the children. Only in a few cases private sweepers are hired to dispose of the household waste. They are paid about 0.5-1 US\$ per month for this service.

Two municipal bins are present in the area however their capacities are insufficient and the municipal collection services are very unreliable or inexistant (figure 1). Only 12 % of the respondents use these municipal bins.



**Fig. 1:** Overflowing municipal bin and scattered waste due to scavenging activities

APE also sampled waste composition and quantity. Sampled at the household level, the data indicated an average 0.4 kg/cap/day of waste quantity generated with an average bulk density of 130 kg/m<sup>3</sup>.

### 3.2 Land-use, Infrastructures and Facilities

The land-use distribution showed that 65% of the area could be defined as residential, whereas only 2% is used for residential and commercial purposes. Open land makes up for another 15% and the remaining area is either streets or amenity plots. A survey of the infrastructures and facilities showed that piped water is available in most houses though it is often deficient especially in the dry season. Sanitary latrines, individual electric and gas connections are also available to the majority of households. The sewerage system consists of open drains as well as pipe sewers. Most secondary roads are narrow, unpaved and in bad condition, however primary roads are in better condition with a functioning public transport system. Two primary schools and a small playground are available for the children of the neighborhood and, as the majority of the community members are Moslems, five mosques are also located in the area. Medical facilities include five private clinics whereby only one has a registered medical doctor while the rest are being managed by paramedical staff.

## 4. The Role of Key Community Members

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Before involving all community members, a first step was taken to identify the different roles of key community members.

In Shah Rasool Colony *informal community leaders* were identified as influential people on the basis of their personal or religious status. They are all men, and are instrumental in the community development activities and maintain a liaison to the government departments and municipality. Depending on their ethnic background the place of meeting was either the mosque (Pathans) or their homes (Punjabis). They were found very active and cooperative with the APE staff.

*Women* are very important key community members concerning SWM projects as they carry the responsibility of a healthy and clean household and are directly affected by inadequate waste management on the household and community level. In informal meetings with women, a very active involvement and interest in improvement of the situation was observed. However also here the different ethnic background must be taken into account. Pathan women are generally restricted to their homes and prefer to communicate at home, while Punjabi women are more liberal, go outside for shopping, sometimes generate additional income and also attend informal meetings more frequently. The best time to contact the women was found to be from 2-4 p.m. as during this time, lunch is over, young children have gone to sleep and men are at work giving the women enough spare time to discuss general and individual problems.

Two women *shopkeepers* operating in the area proved to be important key members as they have a good reputation, good contacts in the community and supported the project enthusiastically.

Key people are also the *religious leaders* at the mosques who as supporters of the project influence and motivate the followers by their speeches.

## 5 Stakeholders on the Municipal Level

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SWM responsibility in Karachi belongs to the Karachi Metropolitan Corporation (KMC) whereas the responsibility for the management and development of the "katchis abadis", the squatter settlements, lie with

the Sindh Katchi Abadi Authority (SKAA). Other institutions linked to the community welfare are the Karachi Water and Sewerage Board (KWSB) and the Karachi Electric Supply Corporation (KESC).

## 6 Methods of Enhancing Community Awareness

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As mentioned earlier, one of the main objectives of the project was to field-test an approach to inform the population about environmental issues. Motivation was then expected to form automatically. Information and education activities planned included mass media education, group campaigns, video forums, pamphlets and home visits. While preparing the materials, the following points were stressed:

- short and clear messages should be given
- highlight personal responsibilities and obligations of people toward sanitation and keeping the area clean
- define the role of the municipality with its capabilities and limitations
- inform on the duties and responsibilities of individuals and of the community in co-operating with the municipality
- inform on the advantage of cleanliness in maintaining health

Throughout the project duration the most used method of involving the community was by informal meetings. These were carried out separately for different ethnic and different gender target groups. At such meetings general matters pertaining community welfare and area cleaning were discussed, as well as the best suitable communication methods to be further applied for creating awareness on solid waste management in the community. Community member stressed the need for training of volunteers by APE on the health aspects related to inappropriate solid waste handling and the possible improvements that can be achieved. The goal was to disseminate the educational information as widely as possible, visiting each house so to inform and educate also people not attending the community meetings. APE therefore trained "female" volunteers, on health, hygiene, waste management and cleanliness issues. Their training included the main following subjects:

- existing infrastructures and SWM situation, including shortcomings
- components of a SWM system

- health impacts of solid waste
- community participation for a SWM system
- communication, information and education about SWM
- legislation and regulation, and development of implementation strategies
- improvement in tools and equipment in SWM

Other communication methods as part of the information and education campaign included targeting schools, mosque schools "maktab", and the mosque in general. Christians were additionally contacted through the churches. For the children of the community, APE initiated an essay competition for primary and secondary school titled "How can I keep my area clean", where prizes were awarded. Further methods used were published articles in local newspapers and pamphlets.

## 7 Other Activities

Solid Waste often does not have high priority in the community. To gain trust and confidence from the community members it is also important to address issues felt to be important by the community members pertaining to community welfare and health but maybe not directly to solid waste management. In this sense APE also helped carry out different tasks such as:

- the celebration of the cleanliness week organised by the municipality
- informing about the spread of Hepatitis B and providing free vaccination
- helping the community during the rainy season with flooding problems and contacting different authorities such as the sewerage authority and the Karachi Electric Supply Corporation
- assisting the community to apply for lease titles

## 8 Implementing the Waste Collection Scheme

In more informal meetings the technical design and the organizational setup of a waste collection system was discussed and finalized.

### 8.1 Technical Aspects

Utilization of garbage containers was publicized among the area residents. The residents were motivated to use any type of waste container with a lid at first, but refrain from using plastic bags. Sweepers who are already known to the area were hired to collect the waste on a daily basis at the households. Their means of collection are wheelbarrows and thick brooms for street sweeping (figure 2).



**Fig. 2:** Wheelbarrows as means of primary collection in the implemented scheme.

The sweepers wear a distinctive waistcoat and protective gloves, and are supplied with disinfectant soap and a disinfectant bottle for cleaning the wheelbarrow. The waste is deposited in the municipal bins or at specially designated dumpsites until the municipality provides more communal bins. With help from APE the community made request for two more communal bins and contacts were also made with the municipal corporation to ensure the collection of waste from the communal bins. Alternatively a private contractor was requested to provide the service in case the municipality does not service the area.

## 8.2 Financial and Organizational Aspects

Volunteers from the community formed a financial and institutional committee to monitor and supervise the collection work. These volunteers consist of women, especially unmarried women who can devote more time to such voluntary activities and come from the lanes/streets they supervise. Two such volunteers in each lane/street supervise the sweepers, ensure that the waste is collected timely and appropriately, and collect the user-fees. These women have formed a community-based organization (CBO) called 'PARAS'. This CBO will be entrusted the task of collecting the funds and paying the sweepers (figure 3). Weekly and monthly meetings should ensure an appropriate planning and evaluation of the system. The charges for waste collection was decided by the committee to be 0.25 US\$ per household per month, whereby widows with no source of income are exempted from charges. Grace period of one month will be given to each household for the payment of their dues.

## 9 Problems, Limitations and Constraints

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Community-based collection schemes often collapse when one motivated in charge of the management, or a few competent individuals working on a voluntary basis withdraw (Pfammatter, 1996). The current waste collection scheme in Shah Rasool Colony is also susceptible to this situation, as the current volunteers managing the scheme are young unmarried women. It is therefore important that they pass on their knowledge and skills so that when they withdraw there is someone to take over.

This primary collection scheme like all such schemes also depends heavily on establishing a consistent collection service of the communal bins by the municipality. The current situation is far from ideal. More communal bins are needed and due to the unreliability of the municipal collection services a private contractor had to be contacted.

Political affiliations also constrained the project development as the majority of the residents joined the opposition party creating resentment by the ruling class towards any area upgrading efforts.

A population control campaign, regarded with a negative attitude by the community members, also interfered with the solid waste project as some community members incorrectly assumed that the solid waste project staff was also involved in that campaign.

## 10 Conclusions

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Self-help and the use of community participation may in many cases be the only solution for solving waste collection problems in low-income areas. However the community's awareness and willingness to participate are key aspects to consider when planning and implementing an alternative waste collection system since, among all urban infrastructures, primary waste collection requires the most participation from the community members. In many projects dealing with community participation the donors or the municipal and/or government agency try to motivate the people and beneficiaries without first gaining the confidence of the community. APE never motivated the community and addressed the topic of solid waste collection until they directly or indirectly realized the consequences themselves and started acting accordingly. With the "inform" strategy the community was informed about the pollution hazards and the impacts on human health and surroundings. Many topics beside SWM were addressed. During the "educate" phase the different segments of the community were targeted with specific material on SWM (video, handbills, etc.). Motivation then came automatically and the sentiments of the community were directed towards improvement efforts. The information and education strategy used in this project was applied gradually and in constant consultation with the community members. Main method of communication were informal meetings with community members of different gender and different ethnic/religious background, house visits and information campaigns at schools, mosques and churches. The community was involved in all stages of the project including assessment of the existing situation and designing and implementing of an alternative waste collection scheme. A local CBO consisting of female volunteers was activated. They collect user fees from the households and organize and supervise sweepers to collect household waste.

An evaluation of the project and a community attitude survey after implementation of the scheme yielded significant improvements in household storage, collection and disposal practices as well as a positive attitude to participatory activities and gained knowledge of SWM issues.

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