



## Domestic refuse collection in urban low income areas

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A REVIEW OF existing alternative refuse collection schemes with increased community participation and/or involvement of small private enterprises, revealed that these are basically promising approaches for increasing the service coverage in low income urban areas. However, short comings with regards to technical aspects and/or the financial set up of schemes, along with a lack of appropriate information and motivation of community members have been observed.

Community's awareness and people's willingness to contribute are the key aspects to be considered for the planning and implementation of a refuse collection system since, among all urban infrastructures, primary refuse collection schemes require the most participation from the households. Many projects for improvement of refuse collection have been initiated in different areas of developing countries and some of these have not achieved their target objectives due to lack of awareness among the beneficiaries and a lack of their involvement in the improved system. Enhancing awareness and genuine participation in all the phases of planning, designing, implementation and evaluation are consequently important preconditions for establishing successful primary refuse collection schemes.

### Objectives

The specific objectives of the project were:

- To gather experience of people's concern in general and their attitude towards refuse collection in particular.
- To field test an approach for enhancing awareness in the community and initiating genuine involvement of the community in all phases of the refuse collection project.
- To find a suitable technical, organizational and financial framework for an alternative primary refuse collection scheme.

### Project phases

The Association for Protection of Environment (APE) together with the Department of Water and Sanitation in Developing Countries (SANDEC), at the Swiss Federal Institute for Environmental Science and Technology (EAWAG), initiated the pilot project which was planned and executed in three phases. Phase I aimed at selecting an appropriate area in the city, assessing the situation within the area and investigating the community attitude towards refuse collection and disposal. Phase I was initiated in February 1996 and ended in December 1996. Phase II aimed at field testing an approach for informing and motivating the community and implementing the improved

programme. This phase started in January 1997 and ended in December 1997. Phase III covers the final evaluation of the conducted improvement programme and the assessment of any short comings and failures of the project and its methodology. This phase is planned to be carried out shortly.

### Project activities

#### Selection of project area

There are more than 532 regularizable slums in Karachi housing more than 40 per cent of the city's 13 million people. Shah Rasool Colony (SRC) was selected based on its following characteristics:

- typical low income housing area,
- manageable population of less than 10, 000 people,
- defined area boundaries,
- whole area within the municipal limits,
- home of people with different ethnic backgrounds (pathans, punjabis, mohajirs, christians and sindhis),
- availability of basic infrastructures,
- residents genuinely considered refuse collection a basic problem,
- refuse collection was a felt need,
- area is a regularizable slum where awarding of lease titles is in progress and
- no NGO or CBO was working on refuse collection and disposal in the same area.

#### Identification of the pilot project area

SRC is located in Block 4 of Clifton, Karachi covering an area of 9.2 acres with a population of about 3,000 residing in over 400 housing units. The area was inhabited in 1956 and was illegally occupied by the servants of armed forces personnel residing in the vicinity. With time, housing area has expanded without considerations to roads, services and amenities.

APE conducted a physical reconnaissance survey of the area and updated the topographic survey and physical layout of the area. The landuse pattern depicted that 65 per cent of the area is residential, 2 per cent residential/commercial, 10 per cent amenity plots, 10 per cent under roads and streets and 13 per cent is open land. The configuration of the plot sizes shows that 14 per cent are up to 40 sq. yd., 20 per cent are between 81-120 sq. yd. and only 6 per cent are above 120 sq. yd.. The typical housing layout consists of one to two rooms, courtyard, kitchen and a latrine. 82 per cent of the houses are semi pucca.

A survey of the infrastructure and facilities showed that piped water supply is available in the area though it is often deficient. Sanitary latrines, individual electric and gas connections are available to the majority of households. The sewerage system consists of open drains and pipe sewers. Internal roads and streets are unpaved but approach roads are comparatively better and public transport is available. Five mosques, two primary schools and a small play ground exist within the area.

In 10 per cent of the households APE also conducted a socio-economic survey. The average household size was found to be 7 with an average of 4 children. 82 per cent of the houses are occupied by the owners. Houses consisting of only one room make up 44 per cent and 33 per cent have 2 rooms. 91 per cent of the houses have courtyard.

A survey concerning refuse collection and disposal revealed that 85 per cent of the households utilize some sort of garbage container. 77 per cent of the households do not use services for waste collection but dispose of the waste by themselves. Refuse was mostly indiscriminately dumped and burned. Two communal bins are located in the area but were not properly utilized and secondary collection from the municipality was non existing. Insects and rodents were prevalent and incidence of diseases were high.

APE also sampled refuse amounts and composition. The data revealed that an average of 0.4 kg/cap/day of waste is generated with an average bulk density of 130 kg/cum. The waste composition is representative of the typical components of the low income areas of Karachi.

Community meetings, surveys and focus group discussions, were carried out for different ethnic and target groups separately. They revealed that 91 per cent of the respondents felt refuse collection and disposal to be a problem. 88 per cent thought the problem lies at street/community level while 68 per cent felt it a problem at household level. Due to increase in pollution, choking of sewers and open drains, increase in diseases and proliferation of insects and rodents 82 per cent wanted a better primary refuse collection system and 72 per cent respondents were financially willing to contribute while 28 per cent wanted to participate physically

### **Informing educating and motivating**

As a first step, existing and available community information and education material on waste management was reviewed. As no specific and relevant material was found, APE prepared such material to be used through various communication modes like video movies, posters, pamphlets etc.

By motivating people through awareness campaigns, carried out by APE, community volunteers and elders, the community formed an implementation committee. Its role was to organize and coordinate the information and education campaign.

The members of the community also decided to select community volunteers. These volunteers, which included women and men, were trained by APE on the basic aspects

and concepts of waste management through different informal sessions and communication modes.

The strategy of Information, Education and Motivation (IEM) was developed by the professionals of APE and applied gradually and in consultation with the community members. The community was made aware of the issues, constraints, aspects, components, impacts and actions required on waste management. Different target groups of the community were made aware, informed and educated on waste management issues by using unconventional communication modes. After providing information and education on the subject, people responded automatically and the motivation process was initiated.

### **Implementation of the refuse collection scheme**

The community was involved in all the phases of the improvement project including assessment of the existing situation, designing, implementing and evaluating the system. The technological, management, institutional and financial aspects were guided by APE.

The technical design of the scheme was designed and finalized by the implementation committee and was implemented gradually in the area. It highlighted the importance of using an appropriate garbage container at household level, avoiding plastic bags, keeping back lanes clean, avoiding littering on streets, utilizing services of a private sweeper and establishing methodology for refuse management. The implementation committee also established the financial and institutional setup of the scheme.

A local CBO was activated by the community members which consisted of female volunteers who can devote more time for the community activities. APE provided the training to the two volunteers per lane. These volunteers, selected by the CBO, are to organize the collection of refuse from the households and supervise the sweepers. For the sweepers APE provided personal protection gear. Financially, each household should contribute Rs. 15 per month for the sweepers services, consisting of the collection of household refuse and the sweeping of streets.

### **Other activities**

Simultaneous with the implementation of the scheme, efforts were made under the guidance of APE to improve the existing infrastructure facilities. The topographic survey was updated and a sanitary sewerage system was designed to be implemented by the Sindh Katchi Abadi Authority (SKAA). Karachi Metropolitan Corporation (KMC) and Clifton Cantonment Board (CCB) were contacted to provide regular secondary refuse collection. Links between the community and service providing organizations were established with the help of APE. Karachi Water & Sewerage Board (KWSB) was contacted for provision of adequate water supply and Karachi Electric Supply Corporation (KESC) for better electric connections and street lights.

Other activities organized by APE include a campaign of water disinfection and utilization, a campaign for sanita-

tion, the training of teachers, essay competition in schools, a disease prevention campaign, a vaccination campaign, the killing of stray dogs, a healthy baby show competition, a dress show for children, the cleaning of open drains and different income generation activities.

### **Results and conclusions**

Community's awareness and people's willingness to contribute are the key aspects to be considered for the planning and implementation of a refuse collection system since, among all urban infrastructures, primary refuse collection schemes require the most participation from the households. APE used an Information Education and Motivation strategy which was applied gradually and in consultation with the community members. As no specific and relevant material for community information and education concerning waste management was found, APE prepared such material to be used through various communication modes like video movies, posters and pamphlets. After providing information and education on the subject of refuse management, people responded automatically and the motivation process was initiated.

The community was involved in all the phases of the improvement project including assessment of the existing situation, designing, implementing and evaluating the alternative scheme. A local CBO was activated by the community members. The CBO consisted of female volunteers. Two volunteers per lane, selected by the CBO, organize the collection of refuse from the households and supervise the sweepers. Financially, each household contributes Rs. 15 per month for the sweepers services, consisting of the collection of household refuse and the sweeping of streets.

An evaluation of the project and a community attitude survey yielded that significant improvements have occurred in primary refuse collection, in community disposal practices, in infrastructures of the area and in people's attitude towards participatory activities and waste management.

### **Limitations and constraints**

The limitations and constraints were numerous. A fragile political system and affiliations was a difficult task to explore and accommodate in the informal system. The absence of an appropriate sewerage system as well as rain and its disruption of infrastructures corrupted the cleanliness efforts and created an adverse impact. A campaign for birth control, regarded with a negative attitude by the community, also negatively affected the project as the members of the community made the incorrect assumption that APE was involved.

### **Recommendations**

The following broad based recommendations can be made:

- The IEM strategy is important and should be used. It can be applied and modified to the local situation.
- The community should be involved in all stages.
- Help should be sought from the local development and service providing agencies for coordination and assistance services.
- Practical support and a continued assistance from a NGO should be available, for sustenance of the project.

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