



WATER, ENVIRONMENT AND MANAGEMENT

Community participation in solid waste management

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1. INTRODUCTION

Inadequate coverage of the population to be served and operational inefficiencies are some of the major problems observed in most municipal solid waste management (SWM) schemes in economically less developed countries. (Schertenleib and Meyer) In a "typical" urban area of a developing country, the municipal service picks up only 30 to 70 percent of the refuse generated and serves less than 50 percent of the population. The urban poor in high-density areas usually belong to the unserved population. The main reasons for this situation are a lack of adequate institutional arrangements and low financial and technical sustainability of the existing collection schemes. Generally, since not even the operation costs of the collection services are covered by adequate fees, the waste generated by the rapidly expanding cities grows beyond the collection capacity and financial limitations of most municipal administrations. In addition, many urban poor live in unplanned and unauthorized areas (often outside the municipal boundaries) and are, therefore, not eligible for municipal services. Consequently, the solid waste disposal practices of the individual households in unserved high-density areas are mostly detrimental to the living environment of the entire city (e.g. burning, indiscriminate dumping into watercourses and/or surface water drains).

This situation can probably be improved significantly only if the people in low-income communities start assuming the responsibility of handling their own garbage and setting up a system appropriate to their economic situation. This can take different forms; i.e., the community or neighbourhood is either paying private collectors living in or outside of the community, or the population will have to partly carry out the work itself. In other words, those who cannot afford to pay in cash will still be provided with SWM services by paying in kind. Such types of community-based waste collection schemes, often combined with sorting and recycling activities, have been tried out over the past few years in different urban areas in Asia, Latin America and Africa. This paper reports on the preliminary results of a review of about 50 SWM schemes in which the beneficiaries are or have been reportedly involved to some degree. The review of these schemes was launched to assess the potential and the limits of community involvement in SWM based on practical experience.

2. DIFFERENT TYPES AND DEGREES OF COMMUNITY INVOLVEMENT IN SWM

The review of the SWM schemes with reportedly some kind of community involvement has revealed that there is a wide range of interpretations and usages of the terms "community participation" and "community-based" respectively. For the purpose of this paper, the term "community" is used when denoting the community of beneficiaries. We suggest the use of the term "community-based" when speaking about those schemes in which the local population has been basically assuming the responsibility of solving its own SWM problems with or without external support, but based on the self-help approach. Consequently, in community-based schemes, the beneficiaries have been involved in all waste handling stages; i.e., from the setting up to the operation of the scheme. Where the local population has been mainly facilitating SWM operation and reducing costs, but not actively involved in the setting up and management of a scheme, the term "community participation" should be used. In other words, in a community-based scheme, community participation is usually required but not sufficient. Similarly, schemes in which only one segment of a community (e.g. scavengers) is involved in collection (e.g. recycling of some profitable materials) should not be called "community-based".

The review has also shown that any community involvement is or has been basically limited to primary waste collection and is, thereby, the first step in a sequence of different activities in a SWM scheme. During primary collection, the waste is collected from the households and brought to the nearest communal collection point. Some kind of primary collection scheme is needed in areas where conventional collection vehicles cannot reach households due to poor accessibility, and/or in low-income areas where the population cannot afford door-to-door collection by trucks. The waste is then picked up from the communal collection points by a secondary collection system and transported to the landfill. Secondary collection, transporting of primary collected waste to the dumping site, and operation of the landfill is usually beyond the scope and capability of the community itself. In addition, the population in the community is usually most interested and motivated to remove the waste from its immediate environment, however, it usually shows very little interest in an environmentally sound final disposal of its waste.

3. CATEGORISATION OF DIFFERENT PRIMARY COLLECTION SCHEMES

After reviewing existing and/or tried out primary collection schemes with some kind of community involvement, it seemed useful to divide them into different categories. The categorisation is based on:

- (a) main motivation of setting up and operating such a scheme;
- (b) level of community involvement during initiation and operation of the scheme (e.g. between community management/control and people's participation); and
- (c) type(s) of organisation(s) involved in setting up, operating, and managing the scheme.

a) *Motivation*

Primary collection schemes have been basically set up for three different reasons: (i) mainly to improve the condition of the environment, (ii) mainly to create jobs, or (iii) mainly to improve resource recovery from solid waste. Although all of these components play a certain role in all primary collection schemes, it is obvious that one of them is or at least was initially the main motive. The community-based primary collection schemes common in urban areas in Indonesia have for instance been set up mainly to improve the cleanliness of the neighbourhood and the environmental health. However, the main motive for introducing such a scheme in a district of Douala (Cameroon) was to create jobs for the unemployed young. The well-known system operated by the "Zabaleen" (ethnic group specialised in recycling) in Cairo is a good example for resource recovery, however, the main motive for their waste collection schemes is recycling. It is important to note that the main motive determines the way a scheme is set up and also establishes its limits. Primary waste collection schemes mainly motivated by resource recovery (e.g. Cairo) will serve only high and middle-income areas but will neglect the low-income areas due to the low content of recyclables in the waste of the poor.

b) *Level of community involvement*

As mentioned earlier, primary collection schemes vary considerably in the degree of community involvement. At one end of the scale there are schemes which only marginally involve the population; i.e., bringing the waste to a collection point predetermined by the municipality, as it is the case in most low-income and/or high-density urban areas. In a number of schemes, the community has already been involved to a greater extent, e.g. in site selection and/or type of collection points (see below described example in Recife). However, very few examples of real "community-based" waste collection schemes could be found involving the community not only in the operation but also in the management of the system (see below described examples

in Abidjan or Cirebon).

c) *Type(s) of organisation(s) involved in the initiation, operation and management*

When looking at the organisations engaged in the set up, operation and management of primary waste collection systems, one can differentiate between the ones based and mainly active within the collection area ("local/internal" organisations), and the ones based and active mainly outside the collection area ("external" organisations). The "local" organisations can be classified as (i) informal self-help groups (e.g. occasional neighbourhood committees, youth and women groups, clan meetings), (ii) formal local non-government organisations (NGOs) such as associations, cooperatives, social clubs, religious organisations, political parties, (iii) formal government organisations (GOs) such as the lowest administration units (e.g. ward, block, cell, parish, panchayat, baranguay). The "external" organisations are (i) national or international NGOs, (ii) multilateral and bilateral external support agencies (ESAs), (iii) higher level GOs (e.g. the Solid Waste Department, the City Council, the Metropolitan Authority).

We have divided the primary collection schemes into the following categories according to the degree of community involvement and type of organisation involved:

Category Ia: Scheme initiated and managed either by "local" NGOs, neighbourhood or community organisation(s);

Category Ib: Scheme initiated by "external" organisation(s) in view of early handing over of management to "local" organisation(s);

Category Ic: Scheme initiated and managed by "external" organisation(s), possibly with "local" NGOs, with clear active involvement in decision-making by the local community;

Category II: Scheme managed by local organisation(s) and operated by cooperative(s);

Category III: Scheme initiated, managed and operated by "local" GO;

Category IVa: Planning of scheme with active community involvement; management and operation by "external" GO; and

Category IVb: Planning, operation and management of scheme by "external" GOs with partial operational participation of the population.

4. TYPICAL PRIMARY COLLECTION SCHEMES ACCORDING TO THE DIFFERENT CATEGORIES

Ia: Collection initiated and managed either by "local" NGOs, neighbourhood or community organisation(s)

The review did not reveal any scheme which was entirely initiated and managed by the community.

Ib: Collection initiated by "external" organisation(s) in view of early handing over of management to "local" organisation(s)

The informal settlement of **Alladjan** (CHF/AMCAV) in the Port Bouet Commune of the city of **Abidjan, Ivory Coast, West Africa**, was once a small seaside fishing community. It has recently swelled into a dense community of around 5000 ethnically diverse people covering an area of 8 acres (3.2 ha). In mid-1990, residents were asked by a team of a local NGO and an international private non-profit NGO to rate environmental problems. Solid waste and environmental sanitation were of greatest concern. After consulting with community leaders, it was decided to recruit and train a community sanitation team to collect the the community's waste in handcarts every day. The waste can be stored in a container provided by the city and located less than half a kilometre away from the collection area. In 1991, local SW collection equipment was developed, pre-financed and handed over to a committee of local men and women selected to oversee the operations and responsible for financial decisions. Beside initial technical and community development support provided from outside, the community-based primary collection scheme is self-supporting.

II: Collection managed by local organisation(s) and operated by Cooperative(s)

In **Alameda Norte, Zone 18** (Barrientos), a peri-urban low-income colony at the edge of a steep gully outside **Guatemala-City, Guatemala, Latin America**, formed a local committee to also improve the environmental sanitation and SW problems. The difficulties in establishing a conventional motorized SW collection proposed by the municipality forced the committee in the early '80s to consider alternatives. An Integrated Waste Management and Recycling System managed by a local cooperative was proposed and introduced stepwise by the committee. Since mid-1980, about 3000 residents or about 600 families are regularly serviced against a cost-covering fee by the cooperative collection service. Local employment was created. Instead of linking the primary collection scheme to a conventional secondary collection scheme, the organic fraction is treated at a nearby pilot composting plant. The inorganic fraction is separated and recycled. Some recyclables are sold at market value and only the remaining parts are landfilled.

III: Collection initiated, managed and operated by "local" government organisation(s)

In 1990, in the city of **Cirebon** (Meyer) a typical coastal town of Java, **Indonesia, South-East Asia**, the City government put the community-level administrative units in charge of organising and managing the "micro" SW collection service. The community (RW, typically 100 to 500 households)

employs one or two collectors. They collect in handcarts the domestic SW from refuse bins outside the houses and carry it to the nearest temporary municipal collection point. A fee is levied on the handcarts and the household bins are provided by the RW. The municipal collection points are mainly equipped with mobile containers belonging to the municipal "macro" collection system. House collection service is provided every other day. Complaints about inadequate collection are dealt with by the head of RW. The collection fee is based on the income of the individual household and in agreement with the community. A list of the fees is also published. The monthly fee is usually collected by the lowest administrative unit (RT), the neighbourhood (typically 30 to 70 households). Around 30% of the collected service fee have to be delivered to the municipality for the "macro" collection service. This community based primary collection approach is based on other community-managed services, such as night security, and practised all over Java.

IVa: Collection planning with active community involvement but management and operation by higher-level government offices

The **Triângulo de Peixinhos** (Hawkins) is an unplanned low-income settlement in the city of **Olinda in Greater Recife, Brazil, South America**. About 2100 residents live in 450 houses located on a flat, flood prone triangle of 5.4 ha divided by three major roads. In order to promote decentralisation and increased community participation in planning and provision of urban services, an urban infrastructure pilot project was launched in Peixinhos in 1983 which also includes SWM. As in many other unplanned settlements of Recife, the residents formed a fairly strong association that pushed for improved infrastructure and, thereby, set an ideal forum for the exchange of ideas and information between the community and the project staff. During the planning phase, the community involvement was restricted to quite a few inputs and to the selection of local collection workers. Management and operation control was, however, in the hands of the local cleansing department. The success of this pilot project had a great impact on its extension to many unserved low-income areas in Greater Recife. In a later phase, the collected SW of Peixinhos was disposed at a local low-cost waste sorting and composting pilot plant which proved to be only insignificantly costlier than conventional secondary collection and final disposal. The decentralised composting/sorting plant was not further promoted in other low-income areas and replaced by a conventional secondary municipal SW collection system. As a result of the pathway improvement, the labour-intensive handcart/wheelbarrow collection was partly replaced by small tractor/trailer units with a cost-saving of 60%.

5. MAIN FINDINGS AND CONCLUSIONS

The following findings and conclusions can be drawn from the review of roughly 50 SWM schemes in which the beneficiaries are or have been reportedly involved to some degree:

- Municipal SWM remains the responsibility of municipal authorities and is usually managed and operated by their own services. Any type of organised community involvement is rather the exception and is mainly concentrated in primary collection and communal street cleansing activities. Community involvement in other municipal SWM components such as secondary collection, transportation, waste treatment or final disposal, is usually beyond the scope of a community.
- As regards primary collection, there is a wide range of different types of community involvement. They range from schemes with people's participation without any community control to different kinds of community-based schemes.
- There are a few basic reasons leading to separate primary collection schemes which may be suitable for setting up community management. Poor or a lack of road access to households for conventional waste collection trucks, especially in irregular high-density communities with narrow lanes, is often one reason. A lack of political will by the municipal government and local politics is another reason, especially in unauthorized low-income settlements.
- Improved cleanliness within the local public area of an unserved low-income community has usually been the driving motivation for setting up a community-based primary collection scheme.
- A prerequisite for the successful operation of a community-based collection scheme is a reliably functioning interface on the technical as well as on the institutional level between the primary (communal) and the secondary (municipal) collection scheme. Uncollected waste from communal collection points by the municipal collection system often discourages the motivation of a community and leads to interruption of primary collection schemes.
- Existing traditions and experiences of community-based approaches in other communal affairs can significantly facilitate community-based approaches in primary collection. In communities without such experiences, external assistance in community development may significantly enhance community management.
- A key aspect of primary waste collection is financial viability. Community-based primary

collection schemes generally depend on own cost-recovering financing mechanism, in contrast to primary collection schemes which are operated by the municipality and usually financed by the government budgets. If primary as well as secondary collection are basically financed through government budgets, individual households are usually not willing to pay "additionally" for a community-based primary collection scheme. In mixed-income areas, cross subsidies are required for full coverage (including the poorest households) in a community-based collection scheme.

References

- Schertenleib, R. and Meyer, W. (1992), *Municipal Solid Waste Management in Developing Countries: Problems and Issues; Need for Future Research*, IRCWD NEWS, No.26, p.2-8.
- CHF/AMCAV (1991) *Community-Based Solid Waste Collection for a Cleaner Urban Environment*, Washington, D.C./ Abidjan: Cooperative Housing Foundation / Association pour l'Amelioration et l'Aménagement de la Commune de Port Bouet.
- Barrientos, C. (1988) *Saneamiento alternativo por autogestion comunitaria*, in *Saneamiento alternativo o Alternativas al Saneamiento, 1er Seminario Latino Americano sobre Saneamiento (Alternative Sanitation or Alternatives to conventional Sanitation), Medellin, Julio 24-29, 1987*, Guibbert, J.J. ed. (1988) Bogota: ENDA America Latina.
- Meyer, W. (1992) Personal communications.
- Hawkins, P. (1989) *Community-based solid waste management systems in Olinda and Recife (Brazil)*, Recife/Duebendorf: IRCWD, unpublished report.