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COMPARATIVE STUDY OF COMMUNITY-BASED SOLID WASTE MANAGEMENT IN DIFFERENT COMMUNITIES OF DHAKA CITY

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Abstract

Municipal solid waste is perhaps one of the most intractable of all the challenges associated with urban squalor and disease in Dhaka City. Community-based SWM systems were introduced in two different wards which have different situations such as density of population, living status, road network and land use. This paper aims to identify those factors which influence the success of this voluntary system and to analyse the roles of ward solid waste management committees, primary collection service providers, community leaders and Dhaka City Corporation, and their impact on the progress and sustainability of the system. The involvement of the community (particularly the women) in planning, implementation and monitoring of the community-based SWM system in the two wards was different. The reasons for the differences and the initiatives that are necessary to increase participation are also highlighted in the paper. The role of politics possibly threatening the sustainability of the system and the scope of income generation will also be discussed in the paper.

1. Introduction

The mega city Dhaka, capital of Bangladesh, is facing a range of problems in seeking to provide the basic demands of its citizens. The proper management of the solid waste generated by its huge population and from different sources such as households, industry, hospitals and commercial establishments is becoming an important mission of the Dhaka City Corporation (DCC). At present the achievements in cleaning have not yet been appreciated by the citizens and the government. There are various solid waste management problems in Dhaka City which ultimately give rise to other problems such as health risks, mosquitoes, flies and flooding, as well as deterioration of scenery, among other things.

Recently the DCC formulated a master plan for solid waste management in Dhaka City. Community- and ward-based solid waste management systems (as referred to in the master plan) are the core component of the master plan. A participatory approach is proposed in the master plan for primary collection. A pilot project has initiated in two different wards of Dhaka City with the following objectives:

- To find workable, sustainable and effective mechanisms and systems for ward-level solid waste management.
- To provide feedback to process of master plan formulation from the experiences of the pilot projects.

The two wards are Ward no. 6 and Ward no. 65. The first one comprises newer urban areas developed in planned way and the second is old Dhaka and had developed spontaneously. The ward structure –

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that is land use, road networks, density of housing, open spaces, socio-economic conditions and people's awareness – are all different.

About two and half years have passed since the pilot project started. The ward-based solid waste management in those areas brought some changes in the overall system. In some cases the expected results were not achieved. As the new model will be implemented in all the wards of Dhaka City some factors and issues discussed later should be considered to ensure the sustainability of ward- or community-based solid waste management.

2. Ward-based solid waste management

2.1 Structure of ward solid waste management

There are two major portions of the structure as shown in Figure 1. One is the administrative side of the DCC which is responsible to monitor and evaluate the activities at ward level, especially the ward solid waste management committee (WSWMC). The other component is at the ward level where the WSWMC is responsible for implementing the ward-based solid waste management system as mentioned in the master plan of DCC.

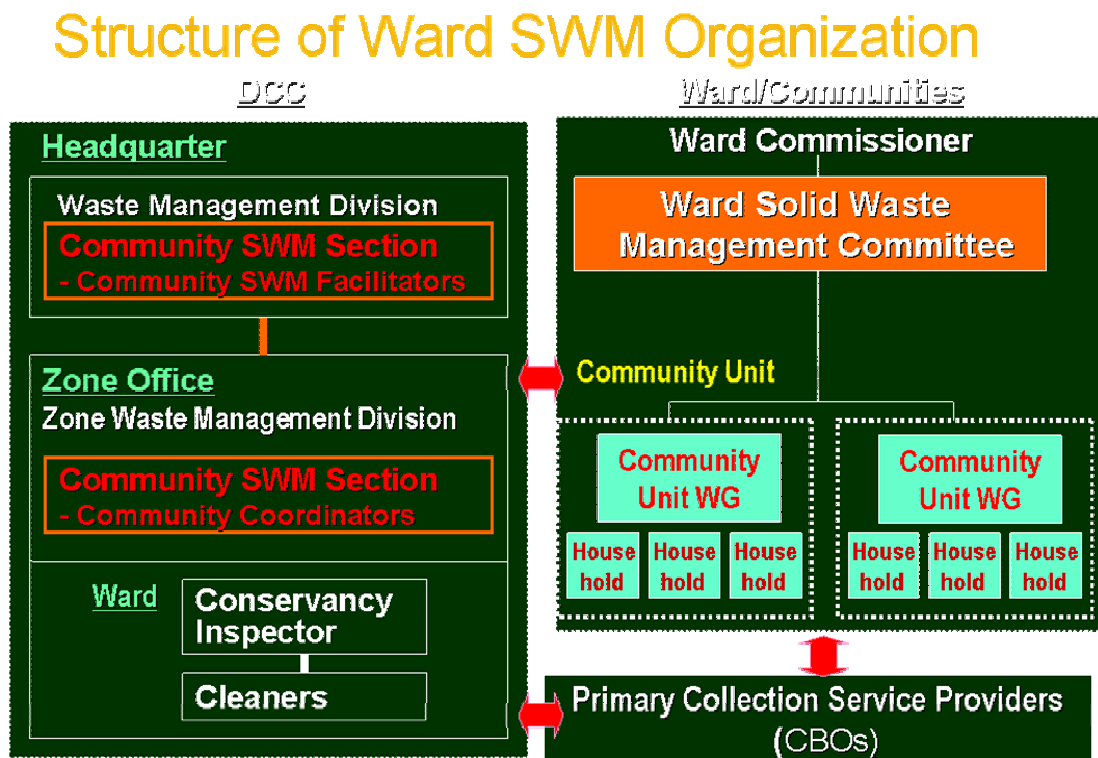


Figure 1 Structure of ward organisation

2.2 Roles of WSWMC:

2.2.1 Members of the committee:

- Key ward persons
- representatives of people's organizations
- representatives of the private sector
- representatives of Community Unit Working Groups.

2.2.2 Major Roles and responsibilities of WSWMC:

- to coordinate between the ward office, residents and the DCC
- to establish the ward's SWM Policy and Plan
- to support the Community Unit Working Groups
- to prepare residents for SWM at their wards
- to arrange and implement SWM activities with residents
- to monitor the implementation of SWM services.

2.3 Roles of Community Unit Working Group**2.3.1** Members of CUWG

- representatives of residents in the Community Unit
- volunteers
- 1 or 2 representatives from SWMC.

2.3.2 Major Roles and responsibilities of CUWG

- to support Ward SWM Committee,
- to prepare residents to participate and cooperate in SWM in the Community Unit,
- to arrange and implement SWM activities at the Community Unit with residents,
- to prepare the Community Unit Solid Waste Action Plan based on the Ward Solid Waste Management Plan,
- to implement and monitor Solid Waste Community Unit Action Plan,
- to support Ward Solid Waste Management Committee technically,
- to support and monitor CBO activities working in the community unit.
- to encourage residents (promotion of public awareness) for solid waste management at unit level,
- to arrange and implement solid waste management activities with residents,
- to organize and mobilize people to be active in solid waste management, and
- to cooperate in overall primary collection including service level, collection fee, cooperation from residents etc.

2.4 Roles of DCC**2.4.1** Related Sections

- Zone Office (CO, CSI)
- Conservancy Inspector
- Conservancy Department (Community SWM Section, Waste Management Division)

2.4.2 Roles and Responsibilities of DCC

- to support ward SWM Committees and Community Unit Working Groups, and
- to coordinate between ward SWM Committees and DCC.

3. Primary collection**3.1 The function of primary collection in the overall waste collection system**

In Dhaka City, waste collection consists of two parts, namely primary collection and secondary collection (see Figure 2). DCC is responsible for secondary waste collection, that is, to remove waste from the street containers, and transport the waste to the final disposal sites. Residents are responsible

for bringing their waste to DCC's waste collection points where the street containers are located. NGOs, CBOs and private enterprises provide primary collection services to collect waste door-to-door and transport the waste to street containers, or sometimes to vacant plots, by rickshaw vans (pedal tricycles with a platform for carrying a load). At present, primary collection services operated by NGOs, CBOs and private initiatives are prevalent in many parts of Dhaka City.

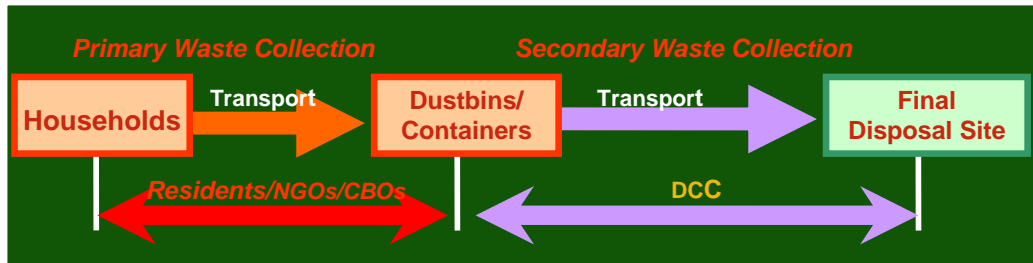


Figure 2: Waste Collection System in Dhaka City (The lower left photo shows a “rickshaw van”)

3.2 Responsibility for primary collection according to Dhaka City Corporation Ordinance

The Dhaka City Corporation Ordinance² is the basic law regarding street and drain cleaning, waste collection and transportation. According to Section 78 of the Ordinance, DCC is allowed to provide waste containers or other receptacles at suitable places, and to require residents to bring their waste to these containers. However, it is not clearly mentioned who is responsible for primary waste collection where such containers or receptacles are not provided.

3.3 NGOs, CBOs and private initiatives in primary waste collection

In recent times many door-to-door waste collection schemes have been set up in Dhaka City, because of the high pressure of population growth. Various local civil societies or CBOs duplicated the system of door-to-door collection introduced in Kalabagan in 1987. It is said that more than 130 organizations were providing the door-to-door waste collection services in 1999³. However, it is difficult to be sure of the overall number of organizations and persons engaged in door-to-door waste collection, or the extent of the coverage of their services in Dhaka City. A variety of organizations and individual persons are working in this field on large and small scales, in many cases using only one or two rickshaw vans. The number of such schemes is still increasing.

Primary collection is a labor-intensive work that uses rickshaw vans usually manned by one van driver and one to two helpers. They go to each house, collect waste from residents and put the waste into the

² Dhaka City Corporation Ordinance was promulgated by the Chief Martial Law Administrator on 24 August 1983.

³ Decentralized Composting, Waste Concern

rickshaw van. In some areas, residents bring their own waste to the rickshaw vans using buckets or bags. After collecting waste from house to house, the rickshaw drivers and helpers unload the waste in DCC containers, or on vacant plots. Some rickshaw van drivers complain that they cannot transfer the waste they collect into the DCC containers because they are already full of waste and the residents nearby complain to them if they dump the waste beside the container. Dumping the waste on vacant plots, however, means dealing with slum dwellers who then complain to them, so they change the places where they offload waste from time to time.

3.4 Approval of NGOs/CBOs for Primary Collection by DCC

In 2002, DCC introduced an approval system for NGOs, CBOs and private organizations which proposed to provide door-to-door waste collection services to a ward. At present, the Chief Conservancy Officer has the authority to sign the approvals. DCC was aiming to rationalise primary collection through re-organizing the individuals and the organisations of various types and sizes which were providing such services. Therefore, the DCC gives its approval only to those who have capacity to provide services to a whole ward, or, in some exceptional cases, to half or part of a ward. Organizations submit proposals and the DCC evaluates those proposals and may approve them.

At present, the DCC has given approvals to 47 NGOs and CBOs to work in 57 areas, covering 52 wards. Not all the NGOs who obtained approvals have started their activities. At least 19 NGOs which are members of Bangladesh Integrated Environment Development Forum (BIEDF) have not yet started the activities according to BIEDF.

4 Key strategies for ward- or community-based solid waste management

- Strategy 1: Development of partnerships between the DCC, ward administrations, residents and primary collection service providers.
- Strategy 2: Establishment of Ward Solid Waste Management Organization.
- Strategy 3: Development of suitable and efficient methods of primary collection.
- Strategy 4: Establishment of Approval System for Primary Collection Systems.
- Strategy 5: Establishment of Financial & Technical Support for Primary Collection Service Providers.

The above strategies have been implemented in ward no. 6 and ward no. 65 as a part of pilot project to improve the approach to community-based solid waste management. The ultimate objective is to develop these two wards as models for the future expansion of ward- and community-based solid waste management in the other wards of Dhaka City.

5 Factors which influence the success of voluntary systems

In September 2005 DCC arranged the first *Clean Dhaka Ward Contest*. The goal of that contest was to improve the cleanliness of the city through cooperation and participation of residents and to praise wards which worked hard to establish a clean environment. The following awards were presented to the best wards:

- Ward-Based Solid Waste Management Award,
- Challenging Spirit award,
- Best Effort Primary Collection Award, and
- Best Campaign Award.

Ward no.6 was selected as the cleanest ward in Dhaka City and awarded the Ward-Based Solid Waste Management Award. Ward no. 65 was awarded Best Campaign Award.

The following factors were found to be crucial to the success of community- and ward-based solid waste management:

5.1 Community participation

The involvement of the residents in Ward 6 was more than that in Ward 65. From the very beginning the people of Ward 6 participated with interest in every meeting, workshop, training event and survey. Especially the women of Ward 6 were involved at every stage of the pilot project. The likely reasons for the higher participation in Ward 6 are higher educational qualification, better socioeconomic condition, fewer social divisions, even though the residents were of diverse professions.

In contrast, in Ward 65 the participation of women was not satisfactory. One of the reasons is thought to be that the people of old Dhaka are religious and very conservative. The people of Ward 65 are businessman with low educational qualifications and the social gap between poor and rich is very high. There was also social conflict between the permanent residents and the temporary residents about the leadership of different voluntary activities.

5.2 The impact of leadership on ward solid waste management

The members of the WSWMC of Ward 6 were all well educated people with a range of professions. They were perceptive. On the other hand, in Ward 65 the members of management committee were businessman, not well educated and with less free time than committee members in Ward 6. The commissioners also played a vital role in this case. The Ward Commissioner was also the chairperson of the management committee. The Commissioner of Ward 6 participated actively in various activities, providing encouragement, moral guidance, awareness about solid waste management and leadership, to ensure his committee's success in solid waste management. However, the Commissioner of Ward 65 did not participate in all the meetings, workshops and training programmes.

5.3 The roles of the Conservancy Inspector, the DCC and the JICA Study Team

All these bodies and individuals were more active in Ward 6 than in Ward 65, probably because there was a good relationship between the Commissioner of Ward 6 and the City Mayor. If the Commissioner complained to City Mayor he might be punished. So everybody always kept alert and informed about the situation in Ward 6. Another reason was that it was easier to take any initiative regarding solid waste management in Ward 6 rather than Ward 65. For this reason the JICA Study Team always started their activities in Ward 6.

5.4 The roles of community-based organisations and primary collection service providers

The CBOs in Ward 65 were newly formed. They were not experienced in primary collection. Their monitoring system was not satisfactory. They even failed to collect the monthly service charge from the community. Actually the community people of Ward 65 were not conscious about sanitation and solid waste management. So sometimes they refused to pay the waste management fee. There had been some sort of primary collection system in Ward 6 before the JICA Study Team started their pilot project. So the study team just reshaped the existing system and tries to make some improvements to the system to ensure the service standard and overall success of community-based solid waste management.

5.5 The role of the primary collector

In both wards the DCC arranged different training events, workshops and awareness building programmes for the WSWMC, ward commissioners and unit working group members. But the primary collectors who are directly related to the primary collection system were not included in the training and

other programmes. So this affected the whole system. However, the primary collectors of Ward 6 were doing their job comparatively well due to the regular monitoring of the CBOs. On the other hand, the primary collectors were not regular in Ward 65. That affected the collection of the service charge. People refused to pay because of the irregularity of collection service.

5.6 Ward profile – land use, open spaces, roads and housing density

As Ward 6 was a newly planned and developed area it was easy to maintain the system to the satisfaction of each stakeholder. Primary collectors could easily work in the large, open roads. But it was very difficult to go into each small alley in old Dhaka with vans or even a small handcart to collect waste from each household.

5.7 Benefits from the new system

The people of both wards got benefit from the ward-based solid waste system. In Ward 65 several NGOs and individual initiators, and even the present Commissioner, had tried to start a primary collection system, but they had failed. At the beginning some problems arose in the ward, but day by day it became popular as the residents started to realize that this system was helping to clean their neighbourhood. Now the area became healthier than before. According to a household survey, 80 % agreed that after starting the primary collection service the situation regarding overall sanitation, the scattering of waste, the clogging of drains, and the numbers of mosquitoes and houseflies had improved in the area where the service was provided.

In Ward 6 the dumping of construction debris at the road side was a very common problem, as was the scattering of waste near containers at secondary collection points. After starting the pilot project and with the active participation of the community and the WSWMC members, the scenery began to change. Residents became aware of the punishments for mismanagement of and scattering of solid waste. The living environment in this Ward area is now very friendly, with fewer incidents of clogged drains and less dumping of waste in open spaces and along the roads. People gained a very good impression from the activities and residents from other areas expressed their interest in implementing a community-based solid waste management system in their areas immediately.

Awareness building is a key factor: In Ward 6 some residents were teachers. They were very much respected in the community. As they became involved in the community-based solid waste management system other people began to regard these activities as very noble and worthy, because of the benefits to welfare of the community. The WSWMC ensured transparency and accountability to the community. In contrast, in Ward 65 most committee members were well known for politics and business. So they were not highly regarded in the community. The committee of Ward 6 willingly took initiative regarding awareness building. But in Ward 65 they did not take initiative locally and did not arrange any programme to increase the awareness in the public regarding the sustainable management of solid waste in their area.

6 Recommendations and suggestions - lessons learned

6.1 Politics

In both wards all members of the WSWMC and CUWG were selected by commissioners who are political people. So if the commissioner is likely to be changed in the near future then the existing committee will not run effectively. The reason is that if the new commissioner is in a different party then he will not support the existing body and eventually the system will collapse. Therefore a ward-based solid waste system should not be linked to politics. Then the community people will benefit from this participatory system.

6.2 People's participation

In general responsibilities and roles in solid waste management are not clearly understood among stakeholders. It is necessary to clarify and recognize the roles of people, community organizations, ward commissioners and CBOs in solid waste management. Through different awareness-building programmes it is necessary to increase public consciousness regarding the importance of participation in solid waste management, hygienic practice and improving sanitation. One of the best methods is to go to each school in the area and teach the students using different media such as short films, drama, posters, brochures and leaflets. During the pilot project most of the children became very interested in these activities. Through them the message of community-based systems could be introduced into each family very easily.

6.3 Training for Community Organization

Most of the residents did not have enough knowledge about waste management, so it was necessary to train all members of the community organization. The main purpose of the training programme was to build skills for community solid waste management regarding planning, implementation, monitoring, evaluation and feedback. Training seminars included regulations and ordinance related to solid waste management, existing solid waste management systems in Dhaka City, the benefits of a community-based approach, methods of public involvement and procedures of community- and ward-based solid waste management systems.

6.4 Education of the younger generation in order to change their behaviour regarding solid waste

To develop awareness and change behaviour of adults is very tough. It is expected that only the young can be taught awareness and appropriate behaviour. However it takes time to change the society and the existing education curricula, tools and teaching capacity are not enough for that. Education for the younger generation should be started immediately. WSWMC can arrange events and programmes to teach the children of the community. It sustains the system and also improves the ties between community people.

6.5 Training of decision-makers (mayors, high officials, and commissioners) and DCC staff members

The success of a community-based solid waste management system depends on how much decision-makers become involved. It is vital that they understand and recognize the key issues affecting community-based solid waste management as a priority for their policy making. DCC staff at ward level, in the zonal office and in the waste management division should be more skilled and show good attitudes as public servants. People should understand the contribution of DCC cleaners, conservancy inspectors and primary collectors in making Dhaka a clean city.

6.6 Supervision and monitoring of activities

WSWMCs and CUWGs should organise regular meetings with primary collection service providers to ensure service standards are maintained. A responsible person from the DCC should also be involved. The problems and solutions should be discussed and necessary actions should be taken.

6.7 Support of primary collection service providers

Actually they are the only profit-making organisation in a ward-based solid waste management system. This becomes a source of employment, although for only a few people. DCC should initially give some financial support for small local organizations. They should also be trained and give necessary manuals to ensure the benefit of the smooth running of the whole system.

6.8 Provision of employment through recycling at ward level

It has already been demonstrated in several districts of Bangladesh that there is a large scope for composting solid waste. If a composting plant is established at ward level, it reduces the amount of waste requiring transportation, decreasing the cost for secondary collection, transportation and handling of the waste at a landfill site. This can be an employment generation scheme for unskilled poor people. The waste pickers, known locally as 'tokai', are responsible scattering waste around containers. They save some reusable and recyclable materials from solid waste. So we should take some large-scale initiatives within the context of a Dhaka integrated resource recovery system.

7. Conclusions

A sustainable community-based solid waste system aims to make the local environment clean and healthy without compromising the conditions in surrounding areas. It should also use approaches that require fewer resources, recover recyclable materials, minimize waste generation and dispose of residues properly and safely.

Finance is not the only consideration in community-based participatory approaches; often time and motivation are the main factors needed to achieve the ultimate goal of the system. Therefore more attention should be given to public acceptance, the roles and responsibilities of related organizations or individuals, the willingness and co-operative attitude of related stakeholders and the enforcement of regulations and ordinances.

Decision-makers – such as mayors, high officials and commissioners – civil society, development agencies and other organizations or influential individuals or bodies should work together and develop a social movement to support and enhance the conditions that favour community-based solid waste management in order to provide a clean and healthy urban environment for the next generation as well as for today's citizens.

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