

# RWSGEAP

## NOTES

LIBRARY  
INTERNATIONAL REFERENCE CENTRE  
FOR COMMUNITY WATER SUPPLY AND  
SANITATION (IRC)

October 1995

UNDP/World Bank Water and Sanitation Program  
Regional Water and Sanitation Group for East Asia and Pacific

No. 3

### COMMUNITY-BASED SOLID WASTE MANAGEMENT IN FOUR INDONESIAN CITIES

Yayasan Dian Desa and Mary Judd

*Community involvement in primary collection of solid waste in Indonesia has been varied in terms of organization, services provided, sustainability and effectiveness. Successful programs have tended to be large (covering a number of neighborhoods), have fixed tariffs, where communities have a felt need, where leadership is strong, provide acceptable levels of reliable services and have policy as well as technical and initial financial support from government. Most programs have resulted from government regulations which limit unhygienic practices and mandate the responsibility of local groups. The lessons learned in this study could provide invaluable guidance and direction in the extension of community-based solid waste management.*

Indonesia is struggling with rapid urbanization, increasing consumerism, industrialization and associated environmental effects. These changes are having a profound effect on the solid waste management sector. Solid waste quantities are rising and disposal sites are becoming more difficult to locate within reasonable proximity to urban areas. Furthermore, growth in car ownership and resulting traffic congestion in urban areas have caused cost of solid waste collection and transport to rise markedly. City Sanitation Departments, with their limited financial resources are unable to meet the growing challenge.

In 1980-1981, World Bank assisted pilot projects in Neighborhood (Kampung) Improvement projects demonstrated that community based approaches for primary solid waste collection could lead to major improvement in city cleanliness. The activities involved communities in the first stage of solid waste handling and disposal and included door to door pushcart collection of solid waste from households, and transport to and unloading of waste at a transfer point/depot by a community hired garbage collector. Refuse collection

trucks from the city serviced the depots and transported the refuse to permanent dump sites. These activities still comprise the main components of community based participation. Government Kampung Improvement Projects in other cities and World Bank assisted urban projects are now incorporating this system in their urban development programs.

#### THE STUDY

In order to understand and promote community-based solid waste management for underserved or unserved communities in Indonesia and elsewhere, UNDP/World Bank Water and Sanitation Program commissioned a ten week study by Yayasan Dian Desa, an NGO, to document the current status of community involvement in solid waste management, to make recommendations for further action, and to contribute to documentation for IRCWD (International Research Center for Waste Disposal). Funding was provided by Swiss Development Council. Specifically, the objectives of the study were to:

343-95C0-13406

- examine the evolution of community based solid waste collection systems in four representative Indonesian cities and document the current status;
- identify the key factors and aspects of the systems that promote or constrain the spread of community based systems to other areas of a city or other cities/towns in Indonesia;
- develop a framework of "success criteria" for efforts to replicate community involvement in collection of solid waste elsewhere in the region; and
- identify possible future projects/interventions that would serve to strengthen and expand community based solid waste management in Indonesia.

Four representative cities in Indonesia were selected for study: *Surabaya*, a commercial city/port in East Java; *Yogyakarta*, an inland administrative city in Central Java; *Ujung Pandang*, a coastal city in South Sulawesi; and *Padang*, a city in Sumatra. Two low income neighborhoods in each city were identified: one with a successful ongoing community-based primary collection system and the other where the system had been tried but was not yet successful. The term COPRICOL is used throughout the article and refers to community-based primary collection of solid waste.

## METHODOLOGY

The diversity of the study locations and the numerous factors to be considered required the utilization of different approaches and methods of investigation. These included:

### Site Selection

Information was gathered from government offices to identify: a) low income communities; and b) those with COPRICOL systems. Five to eight of the identified areas were observed and qualitative surveys of the waste collection service were conducted. Final selection was made of two study sites in each city: one with a successful COPRICOL system and one that was unsuccessful.

### Sampling Method

Clustered sample areas were selected on the basis of the success criteria (80% or higher coverage; reliable service; collection costs fully covered by collected fees) and respondents on the basis of proportional random sampling. Sixty household respondents were selected

from the two clustered sample areas in each city. Of the 30 selected respondents in each sample area, 20 came from the low income group in the community, 5 from the lower-middle income group and 5 from the upper-middle income group. Respondents were then selected randomly from the entire population in each respective group.

## Data Collection

Information on the evolution and implementation of the community-based systems was gathered from documents, reports, discussions with development workers, individuals, and private and government agencies involved in COPRICOL. Quantitative data was collected from community household respondents by use of questionnaires. Both qualitative and quantitative data was collected through participative discussions and observation when it was more appropriate. Secondary data was gathered for each city and sampled area.

## Data Analysis and Reporting

Data was analyzed quantitatively and qualitatively to determine existing conditions and problems and how best to overcome them within the framework of socioeconomic realities of low income communities.

## EVOLUTION AND STATUS OF PROGRAMS

Two major factors influenced the development and evolution of community participation in solid waste collection. These were: 1) the rapid and dense growth of cities requiring accelerated levels of environmental sanitation services; and 2) regulations issued by municipal governments, formally responsible for solid waste management, to increase community responsibility for maintaining clean and healthy environments. The new regulations forbid the dumping of solid waste into rivers, ravines, and empty spaces and assigning community responsibility through local formal organizations.

### Yogyakarta

The two COPRICOL programs studied in Yogyakarta (Kampung Juminahan and Kampung Pajeksan) were initiated in 1985—one, by the receipt of two garbage carts from UNICEF, and the other, by a concerned community member. The first program was originally managed by a committee; eventual management was assumed by one dedicated community member. In both cases the management was undertaken by one motivated community member, was rather informal, and was

subsidized by the manager. In Kampung Pajeksan, the need for service was motivated by the move of the temporary garbage dump from a convenient location to one at some distance away.

## Surabaya

In the city of Surabaya in East Java, the community-based solid waste activities in the two study communities of Kelurahan Pacar Keling and Kelurahan Sidotopo were established in the early 1980s. This move was initiated in response to community need: few disposal alternatives were available to residents, and municipal government regulations identified residents, with coordination by neighborhood leaders (RT/RW) and government, as having shared responsibility to keep the environment clean. Government regulations also forbid the practice of disposal of garbage in rivers and on empty land, a practice commonly used. Sanctions of fines or jail were included in the regulations. In both cases programs were set up as a part of the Kampung Improvement Program and 100% of residents were obligated to pay a minimum amount with wealthier residents contributing more. Although the management structure of the two programs was different, however, both are based on the same principles and are still functioning. In the case of Sidotopo, the wife of the neighborhood leader is the manager and has subsidized the program, while in Pacar Keling the heads of each discrete neighborhood unit have provided the management functions.

## Ujung Pandang

Ujung Pandang, once known as the dirtiest city in Indonesia, is the major city of South Sulawesi. COPRICOL organizations for low income communities were introduced late (1992) and ran into almost immediate problems. Historically, waste disposal was the responsibility of the Department of Public Works (PU). In 1987, PU formed a separate program for City Cleaning and city residents who received services were required to pay city sanitation fees. In 1990 a new regulation stated that all citizens had to participate in paying city fees and in 1992 further regulations were issued that gave the responsibility for solid waste collection to the Kelurahan (neighborhood) administration and the LKMD (local development group). Fees collected were to be divided into 60% for the city sanitation fee and 40% for the community collection organizations.

On the basis of these rules, numerous programs sprang up and were managed by local administrative groups. In 1993 a new regulation stated that the city sanitation fee would be collected by the Municipal Government directly through door to door collection or combined with the

water fees (PDAM). This resulted in confusion among community and local administration and the termination of payment for collectors who subsequently stopped working. At the time of the study, there were no successful programs in place, although some small neighborhood groups, having grown accustomed to the convenience, made private arrangements with individuals to continue provision of some service. In these cases the garbage collectors were acting as collectors and managers, negotiating fees for service and collecting and pocketing the fees as their salary. There was strong resistance from communities to pay city sanitation fees from the beginning. This has not changed.

## Padang

The fourth study area was the city of Padang in West Sumatra. In this city, all programs displayed the characteristics for success to some degree. This was due to the approach used by the Municipal Government to deal with its solid waste disposal problem. As in other cities, the responsibility for waste disposal is formally that of the Municipal Government. In the case of Padang, the municipal cleaning department established a special branch to clean and beautify the city known as K3 (Kebersihan dan Keindahan Kota). Recognizing that municipally managed systems could only provide services for 75% of the total need, and that city sanitation fees were required to maintain city services, the community's role and its contribution in cash and labor/management were seen by city government officials as very important. A strategic plan was developed that included a flexible method for the collection of the sanitation fee: through Banks, door-to-door collection, through water fee collection (PDAM) and by Kelurahan efforts.

Each Kelurahan was given the mandate to organize neighborhood programs. The following description of Kelurahan Parupuk shows the development of a successful program. Receipt of an official letter from the district government to Kelurahan Parupuk in 1988, outlining the goals and responsibilities for solid waste management and requesting community participation, initiated a meeting by the LKMD to discuss and devise an organizational plan for the entire kelurahan. A task force was set up consisting of LKMD members and the Youth Group. They identified the collection of household waste to be the most pressing problem and funds were borrowed from the Education and Cultural Department (4 million rupiah) to purchase two trucks, as final disposal of waste was the objective. A COPRICOL program was established, headed by the head of the LKMD and staffed by other LKMD members. Two drivers and two collectors were hired.

Regulations were established whereby households, schools, restaurants, businesses, etc., were obligated to pay monthly tariff fees. Five percent of homes considered to be very poor, were provided free service or at reduced rates. Garbage was to be placed in front of homes in plastic bags provided by the organization and was collected every two days between 8 am and 1 pm with plastic bags replaced by the COPRICOL organization as required. Garbage collectors were provided with protective clothing and provided an adequate salary, thus eliminating the need to seek other employment at the expense of their solid waste collection. Within six months the loan had been paid back, monthly COPRICOL meetings were being held and good relations had developed between the City Department and the COPRICOL organization.

In 1991, after a change in leadership of the organization and abscondment of funds and equipment by the replaced leadership, the LKMD installed a new management and the organization was given legal status. The new organization had to start anew by renting trucks from the City, and by the time of the study were showing major profit from their endeavors (over Rp 1 million a month). Over 93% of clients expressed satisfaction with the service with some complaints regarding reliability and uncleanliness.

Kelurahan Lapai in Padang was also considered to be successful. In this case the COPRICOL organization was managed by the Youth Group of the Kelurahan. This program began in 1985 when the community received assistance for kampung improvement and a government regulation forbidding the throwing of garbage in the river or in empty spaces, was introduced. The LKMD again developed a strategy to organize solid waste collection, using the nearby swamp as a dump site, and using the youth to provide the manpower. A village member contributed a loan of 2 minitrucks and 400 households joined the program. Since its inception to the time of the study the number of households had increased to 600.

The organization, under the LKMD, is managed by people who are elected every two years and consist of a manager, secretary (financial officer), and fee collectors. Four garbage collectors were hired and provide a daily service for collection of garbage placed in plastic bags by households that pay a monthly tariff. This organization has also had a positive monthly balance that is used for payment of city sanitation fees, collectors salaries, repair and maintenance, and youth activities. No complaints have come from residents about the tariff fees, although the usual complaints from some regarding unreliability and uncleanliness are present.

A major concern in this program is the use of the swamp as the dump site. At the time of the study it was already filling quickly. Once full the community will be faced with the problem of final disposal and will require close collaboration with city officials.

In both of these examples, there was no interface with government services as total collection and disposal is managed by communities. Municipal government was supportive and non-interfering in operations. Communities continue to be reluctant to pay city fees as they do not see any direct services being provided.

## **FACTORS CONTRIBUTING TO SUCCESSFUL AND SUSTAINABLE COPRICOL ORGANIZATIONS**

The study of COPRICOL in the four Indonesian cities highlighted several key factors in community-based solid waste management systems:

### **Convenience and Need**

Convenience and need were the main motivators for most community members to join COPRICOL programs. They were willing to pay for services when they could see the direct benefits and the dependability of the service. COPRICOL groups, therefore, should ensure regular and effective garbage collection.

### **Government's Role and Responsibility**

Replicability of community-based solid waste disposal systems is possible if political will is high and government regulations clearly support community-based efforts. The government's role in directing and planning for city wide services is crucial for the development of sustainable and successful COPRICOLs. It is the government's responsibility to ensure the proper interface between primary and secondary collection by providing services for the secondary phase of garbage disposal, including primary transfer points, final dump sites and haulage. These activities are clearly beyond the capacity and sphere of community groups. In addition, community groups require the initial assistance of vehicles and equipment to start their own COPRICOL activities.

### **Community Characteristics**

Functionally orientated and well managed organizations were more successful and sustainable than those that were social/welfare oriented and under the leadership of one initiating person.

A high level of understanding and awareness on the part of COPRICOL managers of the total solid waste management and not just the community role was also important in developing a good working relationship with related government agencies to ensure a suitable interface between the primary and secondary collection phases.

### **Financial Viability**

Many community groups could organize COPRICOL for their solid waste management. However, there were many problems in financial sustainability due to the low level of fees collected from relatively small groups of people. In many cases programs required subsidy to cover basic expenses and collectors were paid inadequate salaries. This affected the quality of the work and the reliability of the service.

Therefore, the size of the area covered by the service had to be sufficiently large for maintaining a higher income level and greater financial stability for the organization. Financial sustainability was also promoted by integrating poor and richer clients in the organization and thus facilitating cross subsidy.

### **Flexibility**

Flexibility in law enforcement, incentives, and good cooperation with local formal and informal leaders has also proven to be effective in obtaining community compliance in payment of the city sanitation fee and promoting community based activities. Implementation of realistic and flexible plans for city sanitation fee payment ensured a much better result than rigid regulations.

## **STRENGTHENING AND EXPANDING COPRICOL**

To strengthen and expand COPRICOL programs in the country, the study recommends a number of activities to be undertaken at the community and government levels. These include:

### **Awareness Creation & Preparation**

- Increase community awareness of the need for total solid waste management, e.g., steps and processes required; danger of using unsanitary landfill; and potential benefits to the community.
- Develop media that is relevant and appropriate for different community groups to increase awareness.

- Generate comprehensive social preparation activities for communities to increase/develop a sense of ownership by communities.
- Conduct an economic study of the COPRICOL organization incorporating all elements of the waste disposal system prior to establishing the organization.
- Government to develop area profiles (population density, open spaces, space per capita, etc.) to assist in prioritizing efforts to encourage the establishment of new COPRICOL organizations.

### **Institutional Capacity Building**

- Engage in institutional building for COPRICOL organizations including fee establishment and collection processes, management of garbage collectors hours, salaries and benefits, cross subsidy mechanisms.
- Provide continuous guidance and assistance in the area of institutional strengthening in management.

### **Management**

- Facilitate a close working relationship between the related government institutions and COPRICOL.
- Develop/improve coordination between primary and secondary collection activities for existing or newly formed COPRICOLs by government.
- Encourage communities to contribute as much as possible for capital costs when starting COPRICOL organizations.

### **Financial**

- Municipal allocation of time and funds for the further development of primary collection of solid waste with community involvement and participation.
- Provide financial assistance to support community contributions for COPRICOL, directly for capital costs or indirectly for training and educational activities.
- Municipal development of a tariff system for the city sanitation fee for individuals and COPRICOL organizations that facilitates cross subsidies between rich and poor neighborhoods. Ensure that the tariff system is simple and easy to follow by community organizations.

## Technical Assistance

- Government promotion of the reduction of solid waste production by recycling and composting.
- Promote recycling and composting activities as community initiatives where appropriate.
- Upgrade (by Dinas Kebersihan) existing facilities to maximize the amount of garbage that one vehicle can handle.
- Design more appropriate and easier methods for disposal of garbage into secondary transport trucks.
- Ensure the proper interface between primary and secondary collection by providing services for the secondary phase of garbage disposal, including primary transfer points, final dump sites and haulage

## Policy Development

- Develop and implement rules and regulations that are favorable and promote the establishment of COPRICOL systems by municipal governments.
- Provide an enabling environment to promote COPRICOL approach by communities and refrain from direct intervention such as sanitation fee collection by the city authorities.
- Encourage private sector development and its collaboration with COPRICOL organizations.

---

*Note: Hildy Haiplik provided editorial assistance.*

For more information on RWSGEAP NOTES contact Mary Judd  
at UNDP/World Bank Water and Sanitation Program  
P.O. Box 1324/JKT, Jakarta, Indonesia  
Tel.: (62-21) 252-0606; Fax: (62-21) 252-0432  
Email: reap@worldbank.org@internet

LIBRARY, INTERNATIONAL REFERENCE  
CENTRE FOR COMMUNITY WATER SUPPLY  
AND SANITATION (COWS)  
P.O. Box 35100, 2509 AD The Hague  
Tel. (070) 814511 ext 141/142

RN: 6H 13406  
LO: 343 9500