Micro and small enterprises involvement in municipal solid waste management in developing countries : workshop papers

UMP/SDC Collaborative Programme on MSWM in Low-income Countries

Workshop on Micro-Enterprises Involvement in Solid Waste Management in Developing Countries

Cairo, 14-18 October, 1996

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CASE STUDY

ASSOCIATION OF MICRO-ENTERPRISES FOR SOLID WASTE COLLECTION (AMERSEA) IN THE CITY OF EL ALTO, BOLIVIA

Prepared by
Centre for Integrated Urban Development Services
(PROA)
La Paz, Bolivia

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CASE STUDY

ASSOCIATION OF SMALL ENTERPRISES COLLECTORS OF SOLID WASTE

(AMERSEA)

City of El Alto
BOLIVIA

1. BACKGROUND. This case study deals with the experience of the Association of Small Enterprises Collectors of Solid Waste (AMERSEA), a private organization constituted by seven self-managed small enterprises (to July 1996), which operate in the city of El Alto, Bolivia.

El Alto, which became a city in its own right in 1987, adjoins the city of La Paz. It has a population of around 600.000 (June 1996), a constructed surface area of 60 km^2 and an average population density of 150 inhabitants per hectare. It has an annual population growth rate of 9.2% (12% of the population is illiterate), principally as the result of migration to the peripheral urban areas. It is a young city, with 50% of its inhabitants 25 years of age or less.

The economically active population (EAP) constitutes 31.5% of the total. Around 50% of the EAP is accounted for by informal laborers. The average monthly family income for 80% of the population is of 100 US Dollars (US$ 100), which rates it as a very low-income population.

The city of El Alto, of all Bolivian cities, is that which has least basic public utilities (only 34% of the population has access to all utilities). The supply of basic public utilities, due to the Municipality's technical limitations and lack of financial resources, does not grow at the same rate as the population, and as a result a large part of the population uses the streets and lots, which have not yet been built on, as public toilets and for the disposal of solid waste (amounting to 190 tons/day of garbage).

2. HISTORY. The acute environmental problems faced by one neighborhood of the city of El Alto at the beginning of 1987, and the limitations in the supply of public utilities of the recently-constituted Municipality, prompted members of the Neighborhood Association of "Villa 1 de Mayo", after having presented a request to the Municipal

authorities, to launch a pilot project for garbage collection in June 1987, called "JUNTA ADMINISTRATIVA de SANEAMIENTO URBANO (JASU)", covering the 860 houses in the area (4,500 people, 1.5% of the population of El Alto). Three members of the neighborhood were selected to take charge of the project.

The self-run community enterprise, JASU, started its activities with a large-scale campaign to clean up the Villa's garbage-dumping grounds, with the participation of the inhabitants and technical support in the form of trucks from the Municipality. This achievement encouraged the administrators of the small enterprise to continue the work and hire a dump-truck (two days per week); negotiate and set a tariff with the community, with Municipal authorization, (Bs.2.00, or US$0.80 a month per household) for garbage collection and disposal services; and to have the assistance of the Municipality in the supervision of these services.

In order to mobilize the community around the activities of the small enterprise, its administrators, together with the Neighborhood Council, planned the cleaning of streets and uninhabited lots on a fortnightly basis. With the technical support of Municipal officials, they then went on to structure the activity of the small enterprise, through the formulation of a Pilot Action Plan.

3. OBJECTIVES. The initial objectives of the project, set with technical support from the Basic Sanitation Department of the Municipality, were:

- Planned management and application of municipal regulations for urban cleaning services.
- Community participation in the cleaning of garbage dumps in the neighborhood.
- Training of members of the neighborhood in the handling and reduction of garbage.
- Reduced Municipal costs as a result of the operation of self-funded solid waste collection systems.
- Creation of employment for the community.

The beneficiaries of the self-managed garbage collection services were initially 4.500 people, and are now 390.000 in the city of El Alto thanks to the acceptance the system has received among the population. They are covered by seven small enterprises employing a total of 110 people.

The objectives of the project, although the fundamental aspects have not changed, have evolved towards: providing a solution for a critical environmental problem, covering operative and financial costs, creating employment for members of the local community, working with the Municipality on these services and mobilizing the population.

These objectives and the results achieved by JASU coincided with the social and economic policies and strategies of the Municipality, PROA (with financial support from USAID/Bolivia), GTZ (Germany) and Bolivian financial institutions (Mutual La Paz). In August 1989, in consultation with the community, this led to the creation of a program to strengthen and expand the original project, through support for the creation of new small enterprises using tricycles, given the flatness of El Alto, (ATIPIRIS in Villa Bolivar D), as well as trucks and regulating the activities of the enterprises. Small enterprises were created, which operate trucks and others which operate tricycles (after two years these covered 40% of the city).

The objectives of the three principal players in urban cleaning are: the community, small businessmen and the Municipality, therefore coincided to achieve neighborhoods free from garbage dumps, the decentralization of this Municipal service and the participation of local citizens in solving problems of urban development and in organizing their own small enterprises for the collection and disposal of garbage.

As the self-managed small enterprises expanded their services to new neighborhoods of El Alto, members of the neighborhood participated in activities related to the entry and initial operation of the enterprises, contributing to the elimination of garbage focus and participating together with small businessmen in the planning of routes for the trucks and tricycles in order to achieve a good service.

4. COVERAGE. The Neighborhood Councils and the Municipality carried out frequent evaluations of the quality and coverage of the self-managed small enterprises, JASU and ATIPIRIS, the results of which led the Municipality to promote the creation of new small enterprises, assigning each of them defined areas of operation. As a consequence, KHOMA MARCA, which operates with trucks, and NECO and AMERICA, which operate with tricycles, have been established. The latter transfer the solid waste collected to Municipal trucks at set transfer points.

The Municipality authorized the operation of the self-managed enterprises through a resolution of the Municipal Council which enabled the Mayor to consolidate the supply of this type of service in the city of El Alto. The decentralization of services led to the create two new small enterprises: ASE and SEADES, in addition to the 6 enterprises already operating, thus resulting in a group of 8 small enterprises.

JASU became leader of the group, with the support of the community. It outlined and coordinated the group's activities, transferred technology and trained the staff of the small enterprises, promoted services, negotiated with the Municipality and selected areas with social and economic characteristics similar to those of "Villa 1 de Mayo".

5. INSTITUTIONALIZATION. As their activities spread to cover much of the city of El Alto, the group of small enterprises expanded with the setting-up of three new ones: SIMBA, OMEGA and ZIMBRON, the last of which was created on the basis of ASE. Tricycles ceased to be used due to the great quantity of garbage to be collected and disposed of each day.

With technical and financial help from PROA, these enterprises, in order to negotiate adequately with the Municipality, have greater force in charging for services, avoid being manipulated politically and systematize activities, constituted a private non-profit making association in May 1990, named AMERSEA.

At this stage the role and participation of the three players in these services was clarified: the Municipality (norms and regulations), the Community (beneficiary and funder) and AMERSEA (feasibility, management and creation of employment).

AMERSEA obtained a contract for the supply of services with local government in August 1991, in areas set by the Municipality, for a period of 10 years (Ordinance 146/91). Services covered 60% of the population, or 390.000 people.

The need to improve services and costs induced AMERSEA to carry out a study of the production and composition of garbage at source, in order to determine the best ways and means of collection. The studies carried out by AMERSEA and other organizations,

among other things, led to the obtaining of a donation of machinery and equipment to the Municipality from the Government of Japan. This was turned over, by tender, in 1995 to a private company (CLISA). The Municipality authorized charges higher than those of AMERSEA and gave in concession areas already assigned to AMERSEA. This resulted in a conflict between AMERSEA and the Municipality, which was won by the former. As a result, AMERSEA and CLISA as from mid-1995 each provide services in different areas of the city of El Alto.

The high rate of population growth (9.2% per year) of the city of El Alto led the leaders of various neighborhoods to make requests for the supply of services directly to the small enterprises, in areas not authorized by the Municipality.

This situation, in many cases, resulted in poor supply of services due to the limited capacity in terms of handling and transport equipment of the small enterprises. In addition, in some cases they were also poorly managed, the amount raised through charges lost purchasing power because it was not adjusted for inflation (the enterprises need authorization from the Municipality in order to be able to do this) and there was a lack of Municipal support for the small enterprises in terms of regulations on the handling and disposal of garbage at source and at dumps, and measures to support the payment of garbage collection charges (the majority of the population was not accustomed to paying directly for these services). As a result, some went bankrupt and closed, and were replaced by Municipal small companies (these included SEADES, OMEGA, AMERICA and SIMBA, replaced by UNJUAL and MEMBRAC) and by AMERSEA itself.

6. FUNDING. The funding of the planning and organizing of small enterprises and the AMERSEA association was made possible through donations from international organizations (USAID, GTZ, PROA, Mutual La Paz) since local people and small businessmen could not supply these resources.

The operational and financial costs of the small enterprises are funded by the charges paid (US$ 0.80 in 1987, US$ 0.60 in 1995) by 50% of beneficiaries (around 50% of beneficiaries do not usually pay for services due to lack of technical support from the Municipality (in the form of coercive action and dispositions).

The average cost of collection and final disposal of garbage (O.350 kg. per day per person) in dumps (2.600 tons per month) by self-managed small enterprises in El Alto is of US$ 6.15 per ton. This level of cost enabled charges to be set at the levels indicated above, which are acceptable for low-income communities (US$ 100.00 per family/month).

The small enterprises invested in equipment and tools, using bank loans guaranteed with property owned by the administrators. To cover financial and investment costs, in some cases, and cost of hiring these goods, in others, the small enterprises use between 40% and 50% of their monthly income. Around 45% is spent on wages and around 10% on administrative costs.

The number of users rose from 860 in 1987 to 65.000 in 1995. Members of the neighborhoods have contributed to the cleanliness of the neighborhoods, by no longer throwing garbage in the streets and empty lots.

7. TECHNICAL STANDARDS. AMERSEA's experience has led it to set the following technical standards:

a. Minimum number of users per small enterprise (6.000) needed to cover operative costs (2 trips) [10 tons of garbage]) per day per garbage lorry);

b. Utilization of 50% of the enterprise's human resources for collecting charges and 35% for operations;

c. Methodology of instruction for the population about cleaning regulations, hours of services and disposal systems by enterprise staff;

d. Compilation of a list of inhabitants of the neighborhood for charging purposes.

These technical standards were set as a result of the experience acquired by the small enterprises during their years of service, and adjusted on the basis of studies and consultants' reports commissioned by AMERSEA. They received no help in this from the Municipality, but did however pass on the information to the Municipality.

The small enterprises adopted and applied a three-tiered organizational structure: executive, operative, and support. The operative level comprises the administrative and technical areas, which in the first case include units for collecting charges door-to-door and accounting, and in the second case, units for transporting and collecting garbage at source and street-cleaning. A small enterprise has, on average, 16 staff, of whom 50% collect tariffs, 35% are field staff and 15% administrative staff.

8. **RELEVANT STAGES.** AMERSEA's experience reveals steps or stages necessary for the project's success. These are:

a. The experience arises from a decision taken by the Neighborhood Association of "Villa 1 de Mayo".

b. Operative responsibility is taken on by members of the neighborhood designated to run the service.

c. The experience gives rise to the setting-up of a small enterprise for collection and its repetition in other areas of the city.

d. Governmental, private and international organizations support the planning of activities and the creation of small enterprises.

e. A charge is applied and collected for services to cover operative and financial costs.

f. The Municipality of El Alto supports the experience.

g. The small enterprises form an association (AMERSEA) to systematize their services (390.000 people covered), defend their rights and achieve a response from the community and local government.

h. AMERSEA promotes the supply of equipment to the Municipality, through donations from private and international institutions of equipment and tools for improved garbage collection services.

This process shows a change in the original idea behind the first small enterprise for the collection of garbage. This was initially set up, in the neighborhood, by community decision and constituted by members of the neighborhood to provide services in the neighborhood, and later became a self-managed private small enterprise operating in various areas, with Municipal authorization.

The rapid expansion of services and the need to deal with administrative, financial and technical aspects common to all the small enterprises led to the creation of AMERSEA. On becoming self-managed, the small enterprises needed to charge for services. To this end, they initiated and carried out programs to promote awareness among the community about the need for garbage collection services and the necessity of eliminating dumping points in the neighborhoods. This was not initially included in their plans of action since it is the responsibility of the Municipality.

9. **CONDITIONS AND LESSONS.** The experience achieves four results:

a. Joint action of the community and local government to solve a problem.

b. Collection and disposal of garbage in areas authorized by the Municipality for operations (from 47 tons/month in 1987 to 2.600 tons/month in 1995), by self-managed enterprises constituted by members of the neighborhood.

c. Payment of cleaning services to a private company, in a low-income community (the population became aware of the importance of having a clean neighborhood).

d. Decentralization of municipal services, through authorization for private enterprises to provide these services.

Furthermore, the project contributes by:

a. Creating stable employment for more than a hundred people;

b. Achieving environmental awareness in the population through promoting and informing about the handling and disposal of solid waste.

c. Consolidating business activity in low-income communities and capitalizing small enterprises with fixed assets (trucks and equipment).

The conditions for repeating this experience lie in:

a: Municipal decision to decentralize garbage collection services, authorizing the operation of self-management small enterprises and Municipal companies (when these exist as is the case in El Alto), as options and not as a complement to Municipal actions, granting them tax exemptions or reductions;

b. Directing of external investment and technical assistance (national and international organizations) for the planning and organization of small enterprises and associations, like AMERSEA;

c. Organization of self-managed small enterprises by the neighborhood;

d. Service authorization from the Municipality for the small enterprise being set up or for the association, if one exists, to operate in a specific urban area;

e. Knowledge of social, economic and environmental conditions in the area (location of garbage dumps, production of garbage at source in terms of quantity and type, number of families living in the area, social and economic characteristics of the population) by the small enterprise or association staff;

f. Establishing working contacts and relations with neighborhood leaders and compiling of a list of families living in the area to be covered;

g. Launching of a campaign to clean the area (creation of environmental awareness) with community participation, promoted by the organizers of the small enterprise or association of self-managed small enterprises, as appropriate;

h. Promotional campaign on garbage collection services, municipal regulations and cost of services (set after consultation with the neighborhood and authorized by the Municipality) through the distribution of leaflets and bulletins containing the relevant information;

i. Minimum coverage of 6.000 beneficiaries (the average family in El Alto is composed of 4.5 members) per small enterprise (with the use of a single dump-truck) to cover operative costs.

j. Hiring of members of the neighborhood, as far as possible, as staff in the small enterprises, 55% for the collection of tariffs, 35% for field activities and 10% in administration.

k. Charges for services set jointly with the neighborhood and the Municipality;

l. Start of services, setting a preliminary route program (days and times for the supply of services) for the collection unit, to be adjusted during the first month of operations;

m. Establishing of permanent communication between small businessmen and members of the neighborhood, in order to adjust and improve services.

The important limitations faced by the AMERSEA project are the lack of incentives (i.e. tax exemption) and municipal dispositions (i.e. regulations concerning the payment of charges by the neighborhoods and actions to be taken against tax evaders) and the high turnover of municipal authorities (new officials do not recognize previous accords, which must therefore be renegotiated).

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for
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CASE STUDY

COMMUNITY INITIATIVES IN MUNICIPAL SOLID WASTE MANAGEMENT: THE CASE OF EXNORA, IN INDIA

Prepared by
EXNORA International
(EXNORA)
Madras, India

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EXNORA CASE STUDY ON COMMUNITY INITIATIVE IN MUNICIPAL SOLID WASTE MANAGEMENT

by T. K. RAMKUMAR

HISTORY

Origin

One of the biggest sources of environmental pollution in any human settlement is improper handling and disposal of waste. With the proliferation of unplanned urban settlements and phenomenal increase in urban population, local governments, especially in developing countries are ill equipped to handle the volume of solid wastes and sewage generated.

This traumatic experience of developing societies today in having to contend with insufficient infrastructure to handle accumulation of putrefying garbage in streets and public places and untreated sewage flowing into waterways, water bodies and wet lands is a situation common the world over. The resultant environmental degradation and insanitary conditions exposes entire communities, rich and poor, rural and urban, alike to risks of epidemics, contamination of water sources and a general decline in the quality of life.

Admittedly Waste is a by-product of consumption. The Community resorts to consumption and generates waste. Should not then the Community become aware of this danger of its own creation? Yes it should and therefore there is no escape for it except to think in terms of `Local Initiative and Self-Help' (LIAISE) strategy to confront and contain this problem. The above reasons resulted in the development of the "Civic Exnora" movement spearheaded by Exnora International, a voluntary, non governmental organisation.

Idea and its development

Mr.M.B.Nirmal, Founder and Chairman of Exnora International on his travel abroad had seen efforts of some countries such as Singapore and Hongkong in maintaining clean cities and relatively clean environment. Based on his experiences in this regard he had written a series of articles in a weekly magazine having wide readership. This should be seen in the light of the fact that the city of Madras in the State of Tamil Nadu, India generates 2,500 to 2,800 metric tonnes of garbage per day. The Municipal Corporation collects and transports the garbage to its dumping grounds, one at Perungudi in the south and another at Kondungiyur in the north. Due to constraints like non-availability and malfunctioning of transport vehicles and equipment, only about 75-80% of Solid waste was being cleared by the Municipal authorities.

The primary collection of solid waste by the municipal authorities was haphazard. Added to this was the total lack of cooperation and from the citizens who dumped garbage on to streets and public places at will. The Municipal Corporation could not cope up with the resultant garbage accumulation and insanitary conditions. This created a need for an improved system of primary collection of garbage with citizens' participation.

Many of the readers of this article, were residents of the city of Madras got together and decided that if some countries can work towards clean environment and keep their cities clean, the rest of the world can also do so. This was how the idea to form a voluntary organisation devoted to clean environment and clean cities developed. The underlying strategy of the movement was local initiative and citizens participation.

It was at this point of time that the Municipal Corporation of Madras chose to experiment with "hydrocontainers" for containerised handling of garbage in one street by name Kamaraj Avenue in Adyar, Madras.For the Municipal Corporation's experiment to be successful, garbage would have to be placed directly into the hydrocontainers so that Municipal workers could later mount the hydrocontainers onto trucks and have the garbage removed to landfill sites. This was expected to eliminate dumping of garbage into street dust bins, which in turn had to be manually cleared by sanitary workers. When the Corporation of Madras solicited citizens' cooperation for making the scheme work, Exnora International promoted a street level associations of residents known as `Civic Exnoras', which took on the responsibility of ensuring that the garbage was not dumped all over the street or even in the street dust bins, but in these hydrocontainers.

The Civic Exnora adopted the following strategy: First, it sought the co-operation of the local residents. Instead of households dumping garbage in the street dust bins, garbage would be directly handed over to a ragpicker. Second, Exnora decided to involve the local ragpicker for two reasons. As the ragpicker was responsible for much of the mess on the road when he rummaged through the garbage bins, getting his cooperation would eliminate this problem. Also, Exnora did not want to deprive the ragpickers of a source of income. The ragpicker was officially designated as "Street Beautifier". To facilitate garbage collection from house to house, the street beautifier was provided with a specially designed garbage removal tricycle cart. The local Civic Exnora took a soft loan from a bank to buy the tricycle cart and paid the street beautifier a salary of Rs.650/- (US$ 18.50) per month. The street beautifier would collect the garbage from each household every morning at 8.00 am and thereafter sweep the street. The residents of Kamaraj Avenue contributed Rs.10/- (US$..30) per month towards the street beautifier's salary, loan payment to the bank and for other incidental expenses.

Exnora movement was born from this experiment. Successfully working hand in hand with the Municipal Corporation in Kamaraj Avenue, Exnora International has used this model to promote the idea of community involvement in primary collection of garbage and keeping the streets clean. The success has illustrated two important points, that the co-operation of the Public is essential and that it is possible to work hand in hand with the Municipal authorities and also with the ragpickers representing the informal sector.

The starting

Exnora International was born in 1989 founded by Mr.M.B.Nirmal and a few right-thinking people, to motivate the Community to participate in salvaging Environment from the jaws of its own Creation - The WASTE.

It is the purpose of this case study to present relevant information as to how Exnora in the past 7 years achieved `LIAISE' of the Community at large in Environmental Management and Pollution Control.

OBJECTIVES

The fundamental objective of Exnora International is to act as a catalyst in bringing about local initiative in community participation for environmental management. The main component of the objective is solid waste management. The apex body Exnora International set out on its mission with three objectives, which have been crystallised as follows:

GoldenObjective of generating ideas on environmental and developmental issues and planning for implementation with the view to making the world a better place to live in.

Civic and Environmental Objectives aimed at inculcating and developing civic and environmental consciousness among the public; to organise civic amenities and sanitary facilities on a self-help basis, thereby creating a healthier environment. It also aims to take steps for enactment of appropriate legislation for betterment of civic standards, environmental protection and in general, to work for a cleaner and greener environment.

Service Objectives to promote the implementation of the ideas of the Golden Objectives by way of Service to various sections of mankind like Women, Youth, Students, Slum dwellers, Senior Citizens, Addicts etc. They also include service towards preservation and protection of Nature, wild life, animals, habitat etc.

The Civic Exnora Movement is based on the Civic and Environmental objective. The Civic Exnoras, formed by the residents of the particular street or locality, takes care of the local solid waste collection, disposal including composting and recycling.

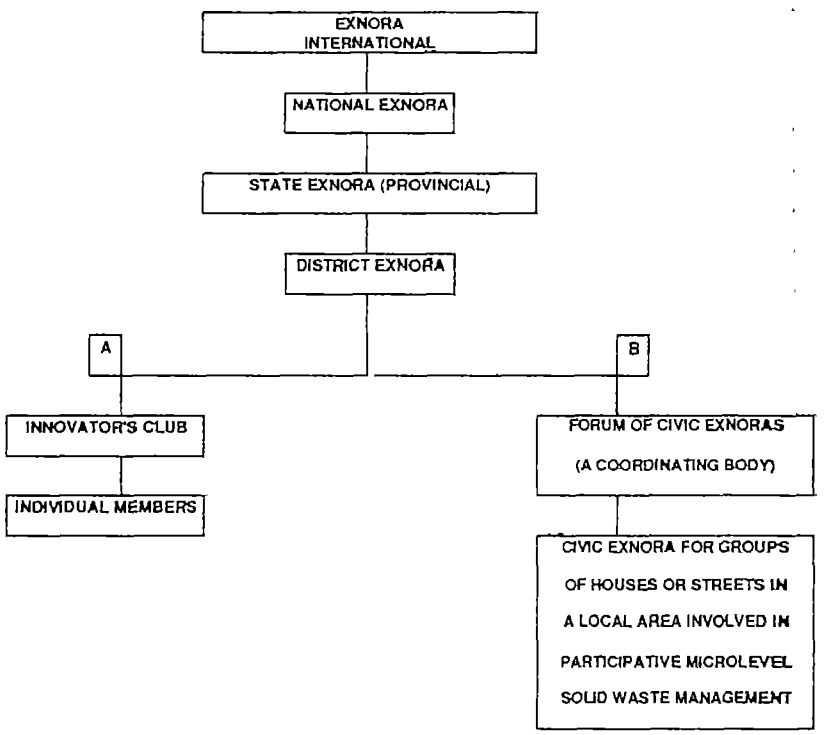
The **immediate beneficiaries** of the objectives of Exnora International are the local communities, who form a part of their local Civic Exnoras. They are able to live in a clean environment by disposing off their solid waste in an environmentally friendly manner. Composting the biodegradable garbage through vermicomposting/ aerobic composting, tree planting and Rain water Harvesting has considerable improved the living conditions of the local communities.

The **objectives of the beneficiaries** are bringing about local initiative and community participation in solving the civic problems of the neighbourhood. As every resident is involved in tacking the problems, a sense of civic responsibility has been created among the residents. Every achievement of the Civic Exnora is shared by the community as a whole. Exnora International has not only been able to bring about a distant change in the overall appearance of the locality but also in the attitude of the residents. The members of Civic Exnora no longer consider clean streets as a civic right but as a civic responsibility and work towards it.

In the scheme of things the beneficiaries are the implementors and the beneficiaries are the ones who finance the activities. The Civic Exnora Movement is self supported in that the cost involved is paid for by way of contributions from the local community (residents). The total cost is decided by the number of residents and each resident contributes his/her share.

INSTITUTIONAL SETUP OF EXNORA/APPROACH/STRATEGY

Exnora's Institutional setup is as follows:



Planning and Implementation

As seen from the organisational chart of Exnora (given above) the overall planning of the Civic Exnora movement is by the apex body Exnora International, as also its branches at the State, (Provincial) and District levels.

The local planning is by the various Exnora Innovators Club whose activities are co-ordinated by the District bodies. The implementation, operation and maintenance is by the community based Civic Exnoras and the activities of a cluster of civic exnoras are co-ordinated by the FORUM of Civic Exnoras in that area. The committee members of the Civic Exnoras meet regularly to discuss the progress and problems of the Civic Exnoras. Where the problem transcends a particular Civic Exnora it is discussed by the FORUM of Civic Exnoras which are formed by a cluster of Civic Exnoras in an area. The Presidents and Secretaries of the Civic Exnoras are members of the FORUM of Civic Exnoras in their area. The FORUM is assisted with ideas and solutions from the corresponding Exnora Innovators Club. Each Civic Exnora is an independent association of local residents and has its own committee of President, Vice President, Secretary, Joint Secretary, Treasurer, who manage the finance and administration of the Civic

Exnora. The post of the Committee members is on a rotation basis so that every resident is given a chance to become a committee member. The link of the Civic Exnora with the parent body Exnora International is by affiliation.

As is seen, at the basic level, the organization has two lateral and equally important branches. Branch A would be responsible for generating ideas and planning on all objectives of the Exnora and Branch B will be involved in a participatory exercise of Local Environmental Management, including Solid waste management.

It is about Branch B that we will concentrate in this paper. The Civic Exnora movement is not confined to the middle/upper classes. Garbage is a classless problem and infact, facilities for garbage disposal are almost non-existent in slum areas. The logical response by slum dwellers at times has been to take their garbage and dump it elsewhere. Civic Exnoras have now been formed in slums also to change this. In the slum areas, garbage clearance is done by volunteers.

Strategies adopted by the Civic Exnora

SOLID WASTE MANAGEMENT - MUNICIPAL GARBAGE:

It all started by removing the Garbage from houses and streets in a small area to a secondary collection point for the Civic Bodies to clear them and remove to transfer stations or dumping grounds The Community achieved this primary collection in two ways:

a) By pooling an initial lumpsum to buy a tricycle to transport the Garbage. It was Rs.2,000/- initially and now Rs.5,500/-. As the Civic Exnoras grew in number and the service stabilized, many corporate bodies came forward to subsidise 50% of the cost of the tricycle or to provide interest-free loan of the amount.

b) Regular rag pickers were employed to do the primary collection using the tricycles. They were paid a monthly remuneration which was again subscribed by the community.

VERMI-COMPOSTING: In this scheme garbage at house-hold was segregated at source. Waste from kitchen and dining table and foliage from the garden went straight into the Vermi-Composting Pits or containers in the backyard or terrace. This bio-degradable garbage is subjected to aerobic decomposting assisted by earthworms. These Vermi-composting pits or containers did not attract flies or mosquitoes in large numbers and therefore posed no problems of Hygiene or sanitation. The harvested manure has proved better yield from plants and trees both by way of quality and quantity. Many Schools, Clubs and Colonies adopted this method. The Hindu Senior Secondary School in Indira Nagar, Madras implemented multiple pits and made the same as work experience for its biology students.

The other non-degradable garbage from households were collected in separate gunny bags and given to street beautifiers or house maids who would exchange the same for money from unorganized recyclers. Street Beautifiers, however, continued to sweep the streets in these areas and maintain the roadsides. This

effort contributed to a sizable reduction in the quantum of garbage to the Municipal stream in areas where vermi-composting was implemented.

SOLID WASTE MANAGEMENT (BIO-MEDICAL WASTE):

Exnora International got involved into this problem quite recently. The Corporation of Madras a few months ago declined to collect waste from hospitals and put them on notice to install their own incinerators or a common disposal facility. Almost at the same time the Supreme Court of India ruled that all hospitals with a bed-strength of 50 or more should install their own incinerators on site to dispose off their wastes. The Civic Exnoras also restrained their street beautifiers from handling such hazardous waste which is prima facie infectious. Exnora took charge of the problem and organized an Expose on `Hospital Waste Management' on 9-4-96 involving Hospitals, Clinical Laboratories, Environmentalists, Scientists,

Industrialists etc. and discussed the issue threadbare. Exnora also procured further information from Greenpeace and Shrishti and other environmentalists to show that Incineration is not a tested solution and there are other tested solutions. In this regard a Compendium was published by Exnora which contains a separate section on the Expose on Hospital Waste Management and a Paper entitled `Bio-Medical Waste - An Environmental Perception'.

Meanwhile Exnora has suggested to the Medical Community to form into viable groups to find and implement solution to this problem. The motivation process is on.

PEOPLES' TOILETS:

Normally Civic Bodies build and maintain PUBLIC Toilets in slums and other low-income group areas. Since they are Public they are more misused and become targets to vandalism during agitations. Eventually most Public Toilets lie unused and in bad repair. The result is defecation by adults in the open and by children in the streets. Exnora motivated community of women in such localities to maintain and supervise the use of such toilets which were to be known as `Peoples' toilets hence forth. The Corporation came forward to repair and handover such toilets with all facilities to Civic Exnora bodies of women members.

Additionally the Corporation also built along side a few toilets without walls for children to use since they felt insecure inside a closed toilet. Such an arrangement first implemented in front of the EI Office on Giriappa Road, T.Nagar, Madras, was an instant success. Many such Peoples'toilets have come up in Madras City and in pockets in Thanjavur District. The Corporation will repair and handover to the Civic Exnora bodies about 300 more toilets in Madras City in the next few months. The women who maintain them by turns are remunerated by community subscription or reimbursed by the Corporation in low-income group areas or slums.

The functioning of Civic Exnoras differ in various localities and districts as per local requirement. The basic principle in all the Civic Exnoras is local initiative and peoples participation and the objective is cleaner and healthier environment, in which solid waste management finds a prominent place. In middle and upper class localities a "Street Beautifier" is employed by the local residents to keep the street clean. The Civic Exnoras in Slums do not employ a street beautifier nor do

they contribute money. The cleaning is done on a voluntary basis by the localities during weekends and the garbage is dumped in the place earmarked by the Municipality.

FINANCING

The Civic Exnora Movement being a self help movement the actors, beneficiaries and the donors are one and the same. The committee (Office bearers) of the Civic Exnora work on a voluntary basis. The expenses of the Civic Exnora- salary for the street beautifier, maintenance of tricycle and other related expenses are met by the monthly contributions from the residents of the locality. Every resident of the locality contributes towards the planning, operation and maintenance of the Civic Exnora

MaIntenance

Each Civic Exnora has an account in a bank. The Secretary and Treasurer of the Civic Exnora take responsibility of collecting the household contributions, handling the bank account. The yearly expenses of the Civic Exnoras are audited by a certified Chartered Accountant and copies of the audited statement of Accounts is circulated among the members and also sent to the District Exnora and the apex body Exnora International.

Contributions from members

The average expenses of a Civic Exnora catering to about 75-100 households is Rs. 1,200/- (US$--). The contribution from the households vary according to the monthly expenses of the particular Civic Exnora (contributions by households may vary between Rs. 10 - Rs. 20 a month). The salary of the Street Beautifier varies from Rs. 750 to Rs. 1,000 per month. The households pay their monthly contributions on a monthly, quarterly, half yearly or yearly basis, as decided by the Committee of the Civic Exnora.

LESSONS and CONDITIONS

Since its inception in 1989, the Civic Exnora Movement has not only brought about "civic pride" among the citizens but also helped in strengthening community bonds by bringing people together for working towards environmental protection and management at the grass root level.

Strengths and weakness of Civic Exnoras

1. Civic Exnoras tend to show a higher level of success where they have been able to involve more people. The underlying factor is not merely an efficient solid waste management system but also active involvement of the people.
2. The work has been successful where good human relations exist among residents, Street Beautifiers and the Municipal Authorities.
3. The efforts of the Civic Exnoras have been successful where the earmarked areas such as garbage transfer stations, large bins are cleared regularly by the Municipal authorities

4. Civic Exnoras in slums are very successful as all the activities are carried out by volunteers. It has also helped in boosting the morale of the slum dwellers who take pride in keeping their locality clean.

To sum up, Solid Waste Clearance and management has succeeded when community groups are small and cohesive; local system is organised and systematic. Community involvement and local body efforts have to be complementary.

Replicability
The Civic Exnora concept is easily replicable because:

- The planning, implementation and maintenance is done by the local residents themselves,The functioning can be altered suitably to meet the needs of the residents

- Each Civic Exnora is an autonomous CBO that can chalk its own local programmes. The replication should not ignore the basic concept of Civic Exnora, i.e, local initiative and peoples' participation is very necessary for the success, sustainability of the movement.

Impact of Civic Exnora Concept on Municipality of Madras city - a case study
The Municipal Corporation of Madras has adopted the concept of Civic Exnora in one its projects called the "Clean and Green Madras City Project". In this project the Municipal Corporation of Madras has employed four organisations in Madras city : Don Bosco Anbu Illam, Asha Nivas, Asian Youth Centre, Nesakaram, who are working towards the cause of street children and ragpickers. The four organisations have been given specific divisions in the City of Madras. About 45 ragpickers, are employed in cleaning, transporting the garbage in the earmarked places to the nearest Municipal secondary clearance point. The tricycles given to the organisations are designed exactly like those of the Civic Exnoras.

This programme of the Corporation of Madras is only partially successful as it lacks a participatory approach, it is not altered suitably to meet the local needs and there is very little accountability from the public. This has proved that citizens participation is utmost necessary in efficient solid waste management.

In a recent study conducted by the Municipal Corporation of Madras it was found that majority of the residents in Madras city were willing to pay for the civic services rendered by the Municipal Corporation, and were willing to accept the Civic Exnora method of managing household garbage at the primary level. This is indeed a great success that can be attributed to the Civic Exnora movement.

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Swiss Agency
for
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UMP/SDC Collaborative Programme on MSWM
in Low-income Countries

CASE STUDY

COMMUNITY INVOLVEMENT THROUGH PRIVATE INITIATIVES: An Alternative Approach to Solid Waste Management IN DHAKA CITY, BANGLADESH

Prepared by
UNDP-World Bank Water and Sanitation Programme - South Asia
(RWSG-SA)
Dhaka, Bangladesh

Presented to the
Workshop on Micro-Enterprises Involvement
in Municipal Solid Waste Management
in Developing Countries

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COMMUNITY INVOLVEMENT THROUGH PRIVATE INITIATIVES: An Alternative Approach to Solid Waste Management in Dhaka City

Haroon Ur Rashid
Consultant, RWSG-SA
RWSG-SA, Dhaka

Syed Zahir Sadeque
Team Leader
Dhaka, Bangladesh

Iftekhar Haider
Project Officer, RWSG-SA
Dhaka, bangladesh

Introduction

Solid Waste Management (SWM) in urban centres is an increasing source of concern. The pourashavas responsible for SWM, do not have adequate resources to deal with the situation. There is approximately 25 million urban population generating about 6000 tons of garbage daily. It is doubtful whether even 20% of it is collected. The rest is left on the streets or finds its way into drains and water courses or is dumped into low lying areas and vacant land. Bigger the urban centre, more acute the problem. Apart from a few areas in Dhaka and Chittagong, the situation is deplorable. Most people in large and medium sized urban areas are condemned to live in a polluted and stinky environmental mess.

Even Dhaka City Corporation (DCC), the biggest and the best endowed among the city corporations, has not been able to keep pace with the growing need for SWM in the city. Being the primate city, Dhaka attracts huge number of people every year, and the latest census of 1991, records the population of Dhaka SMA at 6.5 million With such a high population and a plethora of economic and commercial activities, solid waste of huge proportion is generated every day. A 1991 estimate states that approximately 1500 tons of solid waste is generated daily of which only half is collected. With over 150 five-ton garbage trucks in the pool, about 1900 hand carts, over 5000 sweepers and a budget of over Tk. 90 million, this is indeed a very low level of service. It is evident that even the existing limited resources are not being managed optimally. Over the years DCC has improved on its work force and equipment for SWM, but there has been little tangible improvement in the quality of services. Except for a few areas inhabited or frequented by very important people, garbage has almost become a permanent feature of the cityscape. DCC solid waste management system is too centralized, unwieldy to involve community or encourage private initiatives in providing services to the people. Yet there are concrete evidences in Dhaka of what can be achieved through popular participation and private initiatives The following case study on solid waste management in Kathalbagan and Kalabagan, two densely populated unplanned neighborhoods of Dhaka city, demonstrates the wisdom and efficacy of private-community partnership in solid waste management. At a time when solid waste management is of increasing concern to city dwellers and officials, such examples can provide a lessons to pave the way for institutional reforms for demand based service provisions and management at the lowest appropriate levels. Much to the delight of cash strapped local government institutions, this is an unique example of cost sharing.

Location

The Kathalbagan and Kalabagan are densely built-up areas inhabited by middle and low middle income households most of whom live on rented premises. Settlement pattern and development here have occurred incrementally on individual initiatives without reference to a master plan or what others are doing. Laissez faire physical development has eroded open spaces and has resulted in a network of narrow and tortuous roads. It is virtually impossible for large DCC garbage trucks to enter these areas. The streets are too narrow and constricted to allow the construction of masonry garbage bins, an usual practice in Dhaka city. DCC garbage collection can not cope with garbage on the main roads, let alone lanes and by-lanes. The garbage collectors are neither closely supervised nor is there any accountability. They do not have any real incentive or compulsion to discharge their assigned duty. Much to the consternation of the inhabitants, garbage strewn all over lie uncollected for weeks or at times for months. Pollution aside, the ambient stench of putrescible waste is a nauseating experience. The DCC garbage collection system has clearly failed the people of the areas.

The Evolution of a Privately Managed Solid Waste Collection System

This was a couple years ago. Today there is hardly any garbage and no stench. The area is clean although surprisingly not even a single garbage bin is in sight. Every day from noon till evening the sweepers go from door to door collecting garbage in wheel barrows or rickshaw vans and transports them to the garbage bins on Green Road, the main street. This has been brought about in Kathalbagan by the ingenuity and entrepreneurship of two DCC sweepers and in Kalabagan by the initiative and enthusiasm of a young and dedicated individual. In both the cases, it could not have been done without the cooperation of the residents.

Kathalbagan

Two sweepers both named Chand Mia could barely make ends meet on a monthly salary of Tk. 2100 they made as street sweepers of DCC. They supplemented their income by selling whatever they could salvage from garbage bins. Even this was not enough. The filth and garbage laying about uncollected gave the sweepers an idea. They saw for themselves a real opportunity of using the situation to their advantage and augmenting their income. They discussed it with the then ward commissioner of the area, who lent them his support and encouragement. They went round from door to door assessing people's willingness to pay for regular home visits to collect household garbage and carry it out of the neighborhood. The response was not uniform, but was encouraging enough for the sweepers to make a start. They have divided the Kathalbagan area defined by the Green road on the west, the Crescent Road on the south and the Al-Amin Road on the east and north between themselves and make daily rounds collecting household wastes at the door steps in wheel barrows provided by DCC for street sweeping. They start around noon and continue till late in the evening. Their normal duty of street sweeping is done late at night and early in the morning.

Initial apprehension and doubt among residents, gave way to confidence in the reliability of the service. As the neighborhood realized the merit of the system, more people joined in paying for the service. Today the majority of the households pay for the collection. There is no fixed rate. It varies from Tk.10 and Tk. 15 per month per household. Each of the sweepers makes on a average of Tk. 2000 per month. Paper, glass, metal cans, plastics are sorted out by the sweepers and sold. This fetches them an additional Tk. 600 - 750 per month.

The sweepers occasionally collect garbage from even the non-paying households on the hope that they will change their attitude. As it is the cooperation of the residents that rendered the area clean, there is a social pressure against dumping garbage within the neighborhood. The non-paying households have to walk long distance to reach the garbage bin on the Green Road.

Kalabagan

Khurram Mahboob, a dedicated young man with initiatives and enthusiasm, returned in 1987 after completing his studies abroad. He was dismayed with the stench and the sight of garbage lying uncollected everywhere in and around his locality in School Road, Kalabagan. With most drains clogged with solid waste, the situation became worse during the monsoons.

This was where Khurram grew up and spent most of his childhood. He had a sense of belonging to the area and was distressed at observing the environmental mess. To address the problem, Khurram conceived of a community based house collection of garbage. He discussed his plans informally with friends and neighbors. Though some responses were positive, most were either indifferent or cynical. The then chief engineer of DCC who was a resident of the locality, even interpreted the plan as an undue interference in the functions of DCC. But Khurram was not a person to be easily discouraged. General apathy strengthened his resolve. With the support and encouragement of his elder brother and a few friends, he decided to test out his idea in his own street.

A request to DCC to loan two vans for the purpose was turned down despite the fact that many impounded rickshaw vans were lying idle with DCC. Khurram and a friend worked out the details, campaigned from door to door discussing with people the collection procedure and seeking their cooperation in managing solid waste on a trial basis. Monthly charges for the service were to be levied only if the system worked. Popular response was not uniformly enthusiastic but the community gave its tacit approval. The stage was set for implementing the idea.

Two rickshaw vans were constructed at a cost of approximately Tk. 10,000 each; and four sweepers were hired. People held their garbage within their own compounds in containers or plastic bags. The sweepers made their daily rounds between 11.30 and 16.30 hours collecting the garbage and dumping it in a municipal bin on Mirpur Road.

The collection was regular; the community cooperated; and general environment of the area improved. But the system was not without problems. People had mixed feelings about the system. All houses did not have suitable places to hold garbage; it was not always placed in containers and even where containers were used, garbage spilled over. The natural scavengers, -- the crows and pye dogs -- further aggravated the situation. The place where the garbage was temporarily held was always dirty with no one taking responsibility for its upkeep. People often dumped garbage after the sweepers had left for the day. The system had, to a degree, transferred the problem from the road into the compounds. The house owners were not comfortable with sweepers entering their compounds unsupervised. A change was clearly necessary

It was then decided that garbage would be held in plastic bags within the households till the sweepers come. For reasons of security and efficiency, the sweepers were not to go up to the door steps of individual units but were to wait at the entrance of the building. The jingle of a bell attached to the van would announce their arrival and the households would then hand over the garbage to them. The bells created a confusion Street vendors and rickshaws use similar bells. The households could never be certain whether the jingle was of the sweepers or of some vendors passing by. Consequently the bells were replaced by blow-horns

Service in the first month was free with the salary of sweepers and the initial expenditure on logistics, borne by Khurram. The system had proved itself and had won the confidence of the people. A fee of Tk.10.00 per household per month was then levied.
With the lessons learnt the system was ready to be extended to a larger area in the vicinity. Two additional sweepers were hired, bringing the total to six. A collector to collect contributions and supervise the operation, was later added to the team. The sweepers are mostly DCC street sweepers who work part time in the Kalabagan Solid Waste Management. The salary of the sweepers vary between Tk. 400 and Tk. 600, while the collector gets a salary of Tk. 1200. The sweepers make an additional income from rag picking. The overall supervision and management lie with Khurram.

Initially the garbage was disposed off on the Mirpur Road, where the DCC truck came as scheduled at 1600 hours. This created a problem. The collection from the neighborhood could not be accomplished before that time. Hence garbage lay on the main road for the next 24 hours Though this was a minor inconvenience compared to many areas in Dhaka, Khurram approached DCC to reschedule the arrival of the garbage truck to 17.00 hours. DCC fortunately obliged. The founding of the Bangabandhu Museum at Dhanmondi Road No. 32 off Mirpur Road created another problem. Mirpur Road was designated by DCC as a VIP Road where no garbage bins were to be allowed. Consequently the garbage from Kalabagan had to be hauled a longer distance to the Green Road instead of the Mirpur Road.

The Solid Waste Management in Kalabagan has been operating smoothly for about eight years. There are about 600 contributing households. About 20-25% of the households in the area are free riders while an additional 15% regularly defaults in payment. Strangely enough it is mostly the house owners who are defaulters. Safe keeping of the vans at night is yet a problem. The fees collected marginally balances the expenditure on staff salary and depreciation on the vehicles and tools such as spades and shovels. The enterprise runs on a no-profit-no-loss basis. The demand for salary increase for the sweepers is pending; new vans have to be fabricated Two more vans at a cost of Tk. 14,000 each are being constructed. The monthly contribution has to be increased to cover the additional expenditure envisaged. The contributions would probably be increased to Tk. 15 per month.

Replication Possibilities

The success of Kalabagan Solid Waste Management attracted some attention. NGOs, local and foreign organizations have visited the area and a German agency has even produced a video film and organized a small workshop on the operation. There are pending requests from adjoining areas to extend the service. DCC had approached Khurram in 1990 to take over the entire DCC SWM

operation in exchange for the conservancy taxes and the use of the logistics under DCC. Khurram has so far contained his enthusiasm and temptation. He has, however, encouraged and advised another group in Kalabagan First Lane in getting a similar venture started.

Role of DCC

Despite the fact that the erstwhile chief engineer of DCC lived in the neighborhood, DCC was generally indifferent and at times hostile to the community effort. The request for assistance was turned down. When the community had constructed its own vans, DCC objected to their operations on grounds that they were not licensed. Trade license for the vans were then obtained under the title of 'Kalabagan Garbage Cleaners". The ward commissioner of the area has shown no interest in a lowly mundane matter like solid waste management.

The extra initiatives of the DCC sweepers in Kathalbagan and Kalabagan do not have the official sanction of DCC. The sweepers are rightly apprehensive, that under existing service rules, DCC cannot continue to ignore the fact that the sweepers are putting in extra effort in return for payment. That they are doing what DCC is unable to do -- keeping at least a part of the city clean -- is besides the point.

User Satisfaction

The initiatives have resulted in marked improvement of the physical environment in the areas. The residents are generally satisfied and do not grudge the monthly contribution necessary to rid the area of the menace.

Lessons Learnt

- **Institutional environment and orientation to foster alliances with community based initiatives are indispensable in providing sustainable solid waste management services to middle income urban communities.**

Individual or group initiatives can successfully deal with solid waste management at the community level. The DCC agreeing to reschedule the routing of the garbage trucks is an indirect support to the Kalabagan SWM and constitutes a two tier collection system with the community responsible for its own locality. But this is an ad hoc measures not an institutional norms. DCC is not oriented towards community based effort which derives its strength from community cooperation and support, and modest scale of operation. DCC's offer to turn over the entire garbage collection of the city to Khurram betrays a lack of understanding of the dynamics and the basis of the system. What Khurram has done in Kalabagan through community support and motivation, cannot be expanded into a large single city-wide operation without loosing the essential ingredients of success. Cooperation of the community and small local level operation are inconsistent with large and centralized solid waste management system.

- **Government agencies can be more effective in solid waste management if the service is premised on a two tier collection system, with the community responsible for primary collection from individual households and DCC responsible for the secondary collection from the main roads. Institutional changes have to be brought about to foster such partnership and facilitate the system.**

Kathalbagan and Kalabagan communities have demonstrated that they are capable and willing to bear the responsibility and cost for cleaning their own area. Unfortunately support and encouragement from DCC were not extended, despite the fact that they are doing what DCC is unable to do. Even the request for rickshaw vans was denied.

- **Urban communities, especially those comprising of predominantly renters are more 'reactive' than 'proactive'. Social need for SWM does not spontaneously surface as economic demand unless probed and provoked through interventions. Community based SWM has to be facilitated by individuals or groups.**

The communities in Kathalbagan and Kalabagan have quietly suffered the unabated indignity of polluted environments. There was no initiative from the community to deal with the situation. It was only when the sweepers approached them in Kathalbagan and Khurram initiated the solid waste collection in Kalabagan, that the residents agreed to support the process. Such is the nature of urban communities comprising predominantly of renters. Seldom do they identify themselves with the locality. They consider themselves transient, and are averse to getting directly

involved in local initiatives and leadership. While there may not be Chand Mias and Khurrams in every locality to coalesce the community into collective action, institutional actors like ward commissioners or neighborhood groups can spearhead such initiatives.

- **Economic demand for solid waste disposal service is necessary to establish and sustain a system. Private initiatives responds to economic demands more than social needs.**

Efficient solid waste management as a 'social need' was ever present in Kathalbagan and Kalabagan, but it was only when the 'social need' overtly transformed itself as 'economic demand' in the residents' willingness to pay, did regular solid waste collection become a reality. It is to the 'economic demand' that the DCC sweepers in Kathalbagan have responded. However, for Khurram in Kalabagan it was a mission based on social need which only succeeded when it found an ally in the demand for services in the community

- **SWM at the local community level cannot be achieved without the involvement of the community. People's participation, even as passive beneficiaries, is indispensable to the success of solid waste management at the neighborhood scale.**

The solid waste management schemes in Kathalbagan and Kalabagan would not have succeeded if it were not for the cooperation of community. It is readily conceded that there was no active community participation, but the community had agreed to try out the system; to hold the garbage within their compounds or houses; to hand it over to the sweepers; and finally to pay for the service. That in itself ensured the success of such a scheme

- **People relate well to persons they are familiar with and find it easier to trust them. Inter-personal relationship builds mutual confidence. Such reciprocity are imperative in involving communities in delivery of service provisions. Centralized utility organization without delegation of authority are too impersonal, bureaucratic and unwieldy to involve communities.**

The sweepers working in Kathalbagan have been there for the last 10-15 years but it is only recently, in the last three to four years, that their clientele has grown to include most of the residents. Khurram grew up in the locality and enjoys the trust and confidence of the residents. Yet the system instituted by him, had to prove itself before being accepted by the community. DCC as a central body with a history of inefficiency and indifference to people's needs will not be able to imbibe the level of rapport and confidence required for community based systems. It may have been possible through its ward commissioners if they were accountable and placed service before self. Unfortunately this is not always the case

- **Where reliable service can be assured the community would be willing to pay for them.**

The residents of the localities pay conservancy taxes to DCC for SWM, despite the fact that service has evaded them. Yet they do not grudge additional payments for privately provided SWM services that
works.

- **Garbage collection system based on incentives, freedom and accountability has a better chance of success than systems imposed on the beneficiaries by statutory organizations.**

The sweepers have been providing the garbage collection service because of the extra income it brings. Khurram could have organized the garbage collection on a commercial basis, but did not. He was driven by altruistic motive rather than profit. But the sweepers working for the Kalabagan SWM are doing so because of the extra income the activity generates for them. The sweepers are responsible to the community and should the community be dissatisfied with the service, it is at liberty to stop payment

Conclusion and Future Research Scope

The experience in the two areas of Dhaka city is an example of what private initiatives and community together can do, despite the lack of institutional support. Institutional environment that: i) promotes such alliances; ii) encourages private and community initiatives; and iii) builds government and community/private partnership can improve SWM in the urban areas of Bangladesh.

Solid Waste Management in Kathalbagan and Kalabagan are excellent examples of transforming 'social needs' to 'economic demands' through individual interventions; and private initiatives responding to the demands. The activity is serving the objectives it set out to achieve. Kathalbagan and Kalabagan areas are clean and free from the ubiquitous filth and squalor that plague many other parts of the city.

The case study confirms some of the issues raised in the Situation Analysis on Water and Sanitation Sector in Bangladesh. It reinforces the contention that institutional, policy and operational changes are necessary to bring about efficiency in service provision for the people. There is a need to:

- ◊ reorient and transform existing institutions to create an enabling environment to foster community/private alliances; create government community partnerships; promote the private sector; and involve communities in provision of services;
- ◊ assign priority to mobilization of financial and human resources at the local levels; and
- ◊ decentralization to empower local community to deal effectively with their own situations.

The study also raises several questions which deserve more in-depth study before the following can be answered.

- ◊ These are examples of individual initiatives with tacit support from the community. But how and when do these individualized leadership transform into new institutional arrangements? How can institutional intermediary mechanism build on individualized responses to provide more legitimate form of organizational activity?
- ◊ These examples are yet to become concerted collective actions, as elements of free riding remains. What actions or initiatives, contribute to their transformation from voluntary activity (where free riding is allowed) to a total collective action that binds the community together, are needed to be investigated further.

The experience in Kathalbagan and Kalabagan provides hope that solid waste can be effectively managed at the community level with municipal authorities playing a supportive and complementary role at the city scale. The lessons are relevant to large investments that are unsuccessfully trying to address SWM by only improving access to resources and logistics at the central level with little or no attention to community initiatives and inputs.

To learn more contact:

UNDP/World Bank Water and Sanitation Program
RWSG-SA
Flat No. 01-01, Priyo Prangan
2 Paribagh, Dhaka, Bangladesh
Tel (88 02) 865241, 504472, 504249
Fax (88 02) 865351

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in Low-income Countries

CASE STUDY

EDUCATIONAL KIT FOR THE PROMOTION OF RECYCLING COOPERATIVES IN BRAZIL

Prepared by
Brazilian Recycling Commitment
(CEMPRE)
Sao Paulo, Brazil

Presented to the
Workshop on Micro-Enterprises Involvement
in Municipal Solid Waste Management
in Developing Countries

(Cairo, 14-18 October 1996)

CEMPRE
COMPROMISSO EMPRESARIAL PARA RECICLAGEM

Educational kit for recycling co-ops

Cempre: history and mission

Cempre, a non-profit association, was founded in March 1992 by a group of multinational and major Brazilian corporations committed to promoting recycling principally of packaging. (Cempre in Portuguese stands for ***Compromisso Empresarial para Reciclagem*** and in English is known as the Brazilian Recycling Commitment.) Cempre has a staff of four, including the executive director, and an annual budget of US$500,000, funded entirely by its 13 member companies, which believe that they have an important role to play in promoting recycling and MSWM in Brazil.

Cempre's member companies are: Brahma (beverages sector), Coca-Cola, Enterpa (waste management), Lever Bros., Mercedes-Benz, Nestlé, Pepsi-Cola, Procter & Gamble, Rhône-Poulenc (chemicals), Souza Cruz (tobacco), Suzano (paper), Tetra Pak (packaging), Vega Sopave (waste management).

Cempre's initial projects focused on building a database on the rapidly-growing number of municipal recycling programs in the country as well as putting out publications aimed at helping decision-makers, such as mayors, business executives, school directors, etc., implement programs.

During the research carried out on the municipal programs, it became evident that there is a large amount of informal recycling going on in Brazil via scavengers (catadores in Portuguese). In 1993, Cempre started work on creating a mechanism for increasing the efficiency and income of this under-privileged sector of society. This mechanism materialized in 1994 in the form of an educational kit to help catadores form micro-enterprises. The details of this kit are explained in the following sections.

Due to the tremendous demand for information about solid waste in Brazil, Cempre has seen its mission broaden in two ways: (1) beyond

Rua Pedroso Alvarenga, 1254 cj.52
04531-004 - São Paulo - SP - Brasil
Fone: (011)852-5200 - Fax: (011)852-5264
E-mail: cempre@amcham.com.br

recycling of packaging to include organics and other materials, and (2) beyond recycling to encompass integrated waste management. The culmination of this wider vision was the launching, in 1995, of Brazil's first manual on integrated waste management, created in partnership with the country's foremost research institute, IPT. The first 7,000 manuals were distributed free of charge to Brazil's roughly 5,000 mayors and to universities, state environmental protection agencies and NGOs. The manual is now in its second printing.

In addition to these two main projects, Cempre has put out a dozen other publications, as well as a free bi-monthly newsletter. Cempre has an information hotline that receives about 200 calls per month about recycling, including the latest prices for recyclables all around the country. There is also a databank on solid waste, called EcoData, containing over 5,000 titles, managed by a foundation that is supported by Cempre.

Today, Cempre is the premier center of information on solid waste in Brazil and is one of the most important environmental associations in the country. It is consulted on draft legislation and was appointed to represent the country at ISO 14000 negotiations.

This ends the background section on Cempre. The following sections deal exclusively with the recycling cooperative project.

Kit Content

Cempre has created an educational kit to help non-governmental organizations (NGOs) or city governments give a course on the first steps towards setting up recycling cooperatives.

The kit, dubbed *Cooperar Reciclando Reciclar Cooperando*, is designed as a do-it-yourself or stand-alone course - Cempre does not have the staff nor the resources to execute or even supervise all of the courses that are being administered. One theme of the course is to make scavengers aware that their work is a professional activity that generates wealth and that they should be entitled to greater income generation.

At the heart of the kit is an instructor's manual written for the person who will actually execute a seven-part course to mostly illiterate scavengers on how to make the first steps towards forming a cooperative. This manual

explains about the reality in which these people live, about recycling and, most important, gives the step-by-step procedures for conducting each class.

The kit also includes a series of flip charts (with a rigid stand), comic book-style leaflets (for the participants to take home and remember what was discussed in class), a videotape (containing ten videos) and, finally, degree certificates to be given out at the end of the course.

The kit provides practical tips: how to set up a co-op, how recycling and urban cleaning programs function, advice on worker safety and hygiene, highlighting the importance of not dirtying the streets during collection and the need to maintain good relations with the rest of society.

Creation of kit

The educational material was produced in conjunction with the Fraternal Assistance Organization (OAF), a Catholic foundation that set up a successful scavenger co-op in São Paulo, called Coopamare. The design for the course structure was carried out by the National Commercial Apprenticeship Service (Senac), which runs Brazil's foremost commercial training schools. The cost of the first 200 kits, around $30,000, was entirely funded by Cempre.

With this kit, Cempre has created a mechanism for replicating success within Brazil. Cempre did not invent the notion of recycling co-ops. It is a concept that began to be put into practice in the late eighties in several Brazilian cites and earlier in Colombia.

Coopamare, model of successful recycling co-op

Coopamare was founded in São Paulo in 1989 with the help of OAF. One of the first test courses using the kit was conducted at Coopamare prior to its nationwide launch in September 1994. Coopamare, with 53 members, is one of Brazil's most successful co-ops. It alone collects 100 tons a month of recyclables, a volume equivalent to half of what the entire official São Paulo city recycling program is able to pick up - at much greater cost. (Cempre's study of the São Paulo curbside recycling program showed that it cost over $400 per ton of recyclables collection, compared with $25 for regular waste

collection by trucks. The nationwide average for curbside collection in Brazil is $262/ ton - expensive by any standard.)

The co-op members are able to earn an average of $300 a month (or more, in many cases) from the recyclables that they collect. This is twice the minimum wage in Brazil, and places them in a privileged position considering that half of the country's labor force that earns less that $150 a month. They are able to achieve these above-average earnings in part because of the wealth of high-grade packaging and newsprint materials found in São Paulo's middle-class waste, and because they are able to sell directly to large scrap brokers.

At least 7 other recycling co-ops have sprung up in the more developed Southern region of Brazil, also with handsome boosts in income levels. Some are geared towards street collectors while others are made up of scavengers who operate at dumpsites, picking out the recyclable elements before the rest of the waste is buried. Cempre's kit, though primarily geared toward street collectors, can be used for scavengers who used to live at dumpsites that have been closed by government action.

Distribution of kit within Brazil

The kit was officially launched at a ceremony in Rio, with great media coverage. The Brazilian Environment Minister made a point of appearing at the event to give a presentation, though he had not been invited as a speaker, to highlight the importance of this work and, in a unique moment, to hear the presentations from several recycling co-op members (scavengers).

Since the launch in 1994, Cempre has distributed most of the 200 kits to a wide a range of organizations. Cempre has determined the profile of those entities eligible to receive the material and execute the course:

(1) Preference is given to NGOs and religious organizations that carry out work with scavengers or with the homeless.

(2) Approval is also given to those city governments that already have support programs for scavengers and the homeless.

(3) Consideration is given to those city cleaning departments that seek to improve their services by organizing scavengers. Also important is application of the kit for scavengers that have been removed from open dumps that have been closed for sanitary reasons.

(4) Rarely is the kit passed on to private-sector firms, especially scrap dealers, as these companies will seek to further exploit these workers.

Through the use of this co-op kit, Cempre has fostered the creation of roughly two dozen associations (the first step prior to a cooperative) in Brazil. The most successful experiences have been those were there has been strong material support from the municipal government and a local NGO. Cempre maintains contact with those entities that have received the kit and keeps a file on the progress (or lack of such) of each organization in setting up an association.

In addition, kits have been sent to Argentina, Colombia, India, Puerto Rico (U.S.) and Uruguay.

Problems addressed by Cempre's kit

Cempre's kit helps mitigate some of the scavengers' problems:

(1) Unemployment - Scavenging is proliferating in both developing and developed nations as a result of two trends: the rising tide of unemployment and the "enrichment" of municipal solid waste (more aluminum, paper, plastic, glass, etc.). As long as both trendlines continue upward, there will be an ever-growing number of scavengers.

Recycling co-ops provide employment opportunities in developing countries as a whole. The kit helps provide a greater source of income for the recyclables that scavengers collect.

(2) Rising cost of sanitation services - Linked to the growth in solid waste generation is the necessity for more comprehensive, and more expensive, city cleaning services. While Cempre considers that more sophisticated sanitation services are a sign of maturity, increased costs do not always mean better services. This is especially true when attempting to stimulate recycling. Curbside collection programs, when run exclusively by city governments, tend to have high costs. Organized scavengers have proved to be a cost-saver in recycling initiatives in Brazil reducing the need for expensive collection and separation equipment.

(3) Low incomes - In Brazil, co-ops have improved the average incomes of participating scavengers by at least 50%.

The current structure of the traditional scrap industry in developing countries presupposes the exploitation of scavengers by a long chain of intermediaries who earn the real profits from the recycling industry. While scavengers can often earn incomes that are above those of the majority of the population (to the surprise of many), they have not fully realized their potential income.

(4) Social development - By forming cooperatives, scavengers make a major step in reintegrating themselves with the rest of society. This kit provides the first step towards such integration and eventual political awareness. The course does not intend to encourage individuals to take up scavenging as a permanent source of income, but rather it seeks to offer a better way of life for both co-op members and their children.

(5) Poor self-perception - Scavengers have poor self-perception. They do not realize the great benefit that they are bringing to the environment. Because of their lack of self-esteem, and their negative public image, they have little respect for the rest of society as well. This translates into carelessness in opening trash bags on the curbside, not respecting traffic regulations, among other practices that entail sanitary and safety problems. Lack of self-esteem also hinders their ability to fight for their rights as productive workers, a condition fostered by the small-time scrap dealers who buy from them.

The kit, as part of Cempre's overall strategy to boost recycling, focuses on the environmental benefits of their work.

(6) Dump closings - In certain countries, such as Brazil, the trend is for cities to close dumps and send the waste to new sanitary landfills that have the proper controls to handle the flow of leachate and gases. In Recife, Brazil, for example, more than 1,000 scavengers live off of a major dump.

The closing of any given dump, on which hundreds of scavengers may earn a living, has catastrophic consequences on the communities that live around them. The kit is being used in Brazil to help train these people so that they may be able to form co-ops that can separate specific recyclable portions of the previously-collected waste.

Swiss Agency
for
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UMP/SDC Collaborative Programme on MSWM
in Low-income Countries

CASE STUDY

MICRO-ENTERPRISES IN SOLID WASTE MANAGEMENT IN COSTA RICA

Prepared by
Asociacion Centro Ejecutor De Proyectos Economico Y De Salud
(ACEPESA)
San José, Costa Rica

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In Municipal Solid Waste Management
In Developing Countries

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MICRO-ENTERPRISES IN SOLID WASTES MANAGEMENT IN COSTA RICA

1. BACKGROUND INFORMATION

During the months of February through April of 1996, the local chapter of the Latin American Investigation on Micro-enterprises and Cooperatives in the Management of Solid Wastes took place in Costa Rica. This activity formed part of an investigation carried out simultaneously in Bolivia, Brazil, Colombia, El Salvador, Guatemala, Paraguay, and Peru.

In Costa Rica, the study was conducted using a survey sample that included 69 micro-enterprises located in the seven provinces within the national territory. According to their nature of interest, 26 are involved in solid waste collection and transportation; 39 retrieve and classify recyclable materials; 2 administer solid waste disposal facilities; and 2 clean and maintenance beaches. The study included 17 enterprises representing a variety of the existing approaches.

These micro-enterprises originated not as a result of government or municipal policies, but they have come into existence as a spontaneous response to local needs or as individual initiatives, as it is shown in TABLE 1.

TABLE 1:
Causes or motivations for the creation of micro-enterprises according to their type of activity; 1996

Causes or Motivations	*Retrieval/Classification*		*Collection/Transportation & Disposal*	
	frequency	*%*	*frequency*	*%*
To make a profit	7	70	2	16.7
To satisfy local community needs	1	10	7	58.3
To create job opportunities	2	20	1	8.3
To contribute to sustain a healthy environment	-	-	2	16.7
TOTAL:	10	100	12	100

Source: Data based on information obtained from the survey carried out in the micro-enterprises in solid waste.

The motivations to create the micro-enterprises dedicated to retrieving and classifying recyclable materials are driven primarily by a desire to generate a profit. On the other hand, the enterprises that are active in solid waste collection or disposal, but also those that clean beaches focus their interests on responding and meeting local needs.

In many instances the municipalities have limited resources to provide services in the most remote parts of the country. As a result, there has response through community initiative to solve their solid waste disposal and treatment problems by themselves. Of the enterprises dedicated to solid waste collection and transportation, 75% offer services in areas where the municipalities do not do it. Therefore, their presence should not be seen as a decentralisation of the municipal services.

It is important to consider two elements that influence the development of these micro-enterprises; 44.4% of the micro-enterprises dedicated to solid waste collection and transportation or cleaning of beaches have originated in areas of high tourist interest, visited by both national and international tourists. In these areas the majority of the population depends one way or another on the income generated by the affluence of visitors to the area. Therefore, natural resources preservation and cleanliness of the communities has become a priority to the neighbours in the community.

On the other hand, in most of the communities of the country, both urban and rural, there are base organisations that seek to promote the development of a community. In many cases, when a situation has become a problem for the community, they take charge of the administration of the water supply, public transportation routes, city parks, as well as solid waste management.

Only one of the micro-enterprises in the study has participated in a municipal tender to provide the services of solid waste collection and transportation, and an other one bided as a result of a process on municipal services decentralisation, promoted by a NGO.

With the exception of three cases, the micro-enterprises active in solid waste collection and transportation or final disposal assumed the responsibilities of the service because they possessed or had access to the minimal necessary equipment, as can be observed in the following table.

TABLE 2:
Factors that promote the formation of micro-enterprises; 1996

Promoting Factors	*Retrieval/Classification*		*Collection/Transportation & Disposal*	
	frequency	*%*	*frequency*	*%*
Own initiative	8	100	3	33
Community leaders	-	-	4	44
Municipal leaders	-	-	1	11
Community leaders, NGO and Municipal leadership	-	-	1	11
TOTAL:	8	100	9	100

Source: Data based on information obtained from the survey carried out in the micro-enterprises in solid waste.

The formation of all the micro-enterprises active in retrieving and classifying recyclable materials is a result of the initiative of private owners. On the other hand, solid waste collection and transportation, or disposal, but also cleaning of beaches are activities that have been promoted by community leaders in 44.5% of the cases.

With respect to the time that each micro-enterprise has been involved in solid waste management, 29.4% of the interviewed entrepreneurs have been active for eleven years, while one of them even has over forty years of experience within the field of solid waste management. Only 11.8% of the interviewed indicated that they have less than a year experience.

2. OBJECTIVE(S) AND BENEFICIARIES

The micro-enterprises were created through initiative taken by the local community and the entrepreneurs themselves, without the assistance of donor organisations. This means that the promoters also are the beneficiaries, who organised themselves. The micro-enterprises are promoted directly by the owners, through self-financing. The main goal of the beneficiaries and owners is to contribute to solving the solid waste management problem and at the same time generate an income.

With regards to the population serviced by the micro-enterprises, the following information was provided by the entrepreneurs, as in shown in TABLE 3.

TABLE 3:
Population serviced by the solid waste collection Micro-enterprises; 1996

Province	*Municipality*	*District*	*Population Serviced*	*Employment Generated*
AlajuelaCentral	San Antonio	La Garita	8,025	4
	Atenas	Mercedes-Barrio Jes	1,000	2
		Centro	5,000	3
	San Carlos	La Fortuna	6,000	6
		Aguas Zarcas	8,000	4
Puntarenas	Puntarenas	Monteverde	3,000	3
Limon	Siquirres	Siquirres (Parismina)	300	3
Guanacaste	Hojancha	Hojancha	1,500	4
TOTAL:			32,525	29

Source: Data based on information obtained from the survey carried out in the micro-enterprises in solid waste.

The above data suggests that the solid waste collection and transportation micro-enterprises attend most of the population of the area where they are located (>60%). Among the 32,525 users, there are 14 government institutions, 1 industry, 227 enterprises and 10 government health centres.

Because of the nature of their activities, the enterprises active in the retrieval and classification of recyclable materials do not count with a clearly defined targeted population. They buy either from enterprises, institutions, and individuals who arrive at their depots or from those who call them offering the materials.

Some of the actual entrepreneurs in retrieval and classification of recyclable materials (37%) began their activities as street collector, in order words they collected the recyclable materials in the neighbourhood with the help of handcarts, until they could establish their own depots.

The main impact of the small entrepreneurs is the creation of an alternative source of employment. Besides, there is a clear tendency for the workers being natives to the region, which means an advantage in the social level, since this avoids migration to other zones to look for employment. On the other hand, the salary collected by the entrepreneurs is above US $300 monthly, superior to the minimum salary in the country which is US $200. Some of them have in addition basic social guarantees (health, accident insurance and so on).

3. APPROACH/STRATEGY

The type of activity of the micro-enterprises influences directly the organisational structure of the enterprise. In the enterprises dedicated to the retrieval and classification of recyclable materials, the owner uses 50% of his time for planning activities and directs the workers personally. The owner dedicates the other 50% of his time to managerial activities and assigns one employee as a direct supervisor for the other workers, generally a family member (wife, brother or other).

The manner in which the enterprises, dedicated to solid waste collection and transportation, or disposal, are organised is directly related to the type of ownership:

a) enterprises where the association is the owner (in 56% of the cases). A committee is appointed in charge of solid waste management. At the same time, it appoints a person directly responsible for providing the services.

b) when the enterprise is of individual property (in 44% of the cases), the owner himself provides the service, on occasions doing only managerial duties, but in other instances also working as the driver.

In both cases, the driver implicitly takes over the responsibility of planning and supervising all the actions, becoming an authority figure with the respect to the other workers. His position is naturally placed between the workers and the owner, forming a communication channel between them.

4. INSTITUTIONAL SETUP

a. Relationships between the micro-enterprises and the communities.

Because of the nature of their activities, the micro-enterprises dedicated to solid waste collection and transportation, or disposal and those dedicated to beach maintenance and cleanliness are the ones that establish relationships with the communities.

These micro-enterprises have expressed that most of the neighbours cooperate by:

- taking out the garbage on time of collection,
- using plastic bags for wastes,
- participating in community cleaning rallies,
- paying for the service,
- showing their support, in the case of community projects.

However, some problems occur related to lack of payment and damaging of forest areas performed by some neighbours.

Of the community leaders interviewed, 60% expressed that the community organisations support the micro-enterprises dedicated to solid waste collection and transportation, or disposal and those dedicated to cleaning beaches. This support is reflected in the existence of:

- good communications,
- the enterprise depends on the decisions made by the community organisations regarding the service being offered,
- share objectives on environmental health.

The remaining 40% of the community leaders do not have any kind of relationship with the micro-enterprises in question.

Nearly 60% of the micro-enterprise managers indicated they had participated in community actions directed to the protection of the environment. These actions included community meetings and consultations; radio programs teaching the citizens to participate in voluntary work projects; the activities promoted by cleaning charge force teams in the communities; donations; publicity; and the promotion of reforestation projects.

In order to keep the communities informed about their work, 29.4% of the micro-enterprises printed flyers, aired radio spots, and edited pamphlets. As a result of these actions, the users have responded by being more cooperative, and now they show more acceptance for the service provided by the micro-enterprises.

In the case of the micro-enterprise dedicated to the retrieval and classification of recyclable materials, their relationship with the community is limited to those people who provide recyclable materials.

b. Relationships between the micro-enterprises and the municipalities.
Because of the nature of their work, which by law is regulated by the municipalities, the micro-enterprises dedicated to solid waste collection and transportation, or final disposal maintain relationships with the municipality. The situation is totally different from the micro-enterprises dedicated to retrieval and classification, which do not depend on the municipality in order to operate.

The municipalities extends permits to the micro-enterprises which allows them the use of the solid waste disposal facility. In addition they sustain good communications, provide logistical support for the maintenance of the disposal site, and are generally concerned with the service.

All the interviewed enterprises indicated that there are no negative aspects in their relationship with the municipality.

Of the interviewed municipality employees, 30% indicated that the established relationships between the enterprise and the municipality are of mutual support. However, the other 30% considered that there was not any kind of relationship.

The relationships the micro-enterprises, dedicated to solid waste collection and transportation, or disposal, have with other actors is summarised in the following models.

Model 1

Model 1 applies to those micro-enterprises that are of private property of a community organization, which administrates, provides, and controls the service to the beneficiaries. The beneficiaries pay for the service to the community association through the enterprise workers. The micro-enterprise applies for a permit from the municipality and pays for the use of the solid waste disposal site. The users establish a direct relationship with the company's workers and with the management of the community organization.

Model 2

In Model 2, the municipality contracts a micro-enterprise to provide the service of collection, the users pay for the service at the municipality offices. The municipality pays the micro-enterprise a monthly fee established in a contract. The beneficiaries establish a relationship with the municipality.

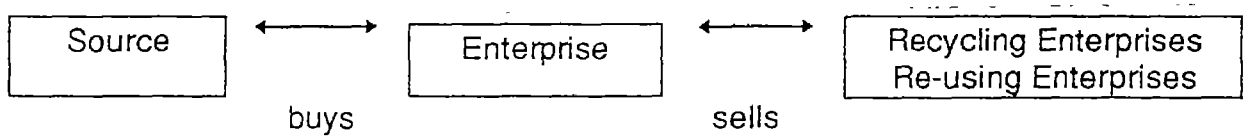
Model 3

The community organization asks a entrepreneur from the community to provide the collection service, and at the same time ensures a quality control of the service. The entrepreneur is responsible for charging the users a collection fee for the service provided and in addition establishes a relationship with the municipality in order to be able to use the solid waste disposal site.

Model 4

The entrepreneur who started providing the services at his own initiative, charges its beneficiaries directly and coordinates relationships with the community organisations and the municipalities. In order to guarantee a successful functioning of the services, it is extremely important to have approval -even if it is not a formal procedure- from both the municipality and the community. In this particular case the usage of the solid waste disposal site is paid to a private enterprise.

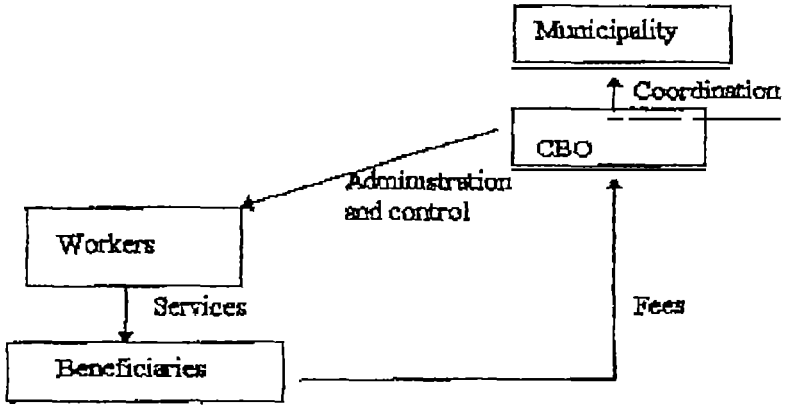
The micro-enterprises dedicated to retrieval and classification establish relationships basically with the source that supplies them with the materials, whether enterprises, institutions, street collectors or others, and with the enterprises that buy the segregated materials from them, according to the following scheme:



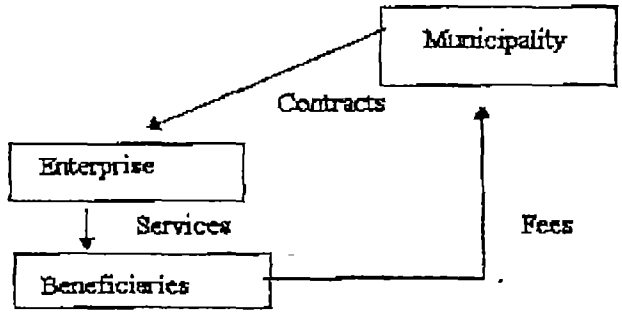
c. Relationships among micro-enterprises

More than half of the micro-enterprises have no type of relationship with enterprises operating in the same activity. In two cases, the existence of other enterprises is even unknown.

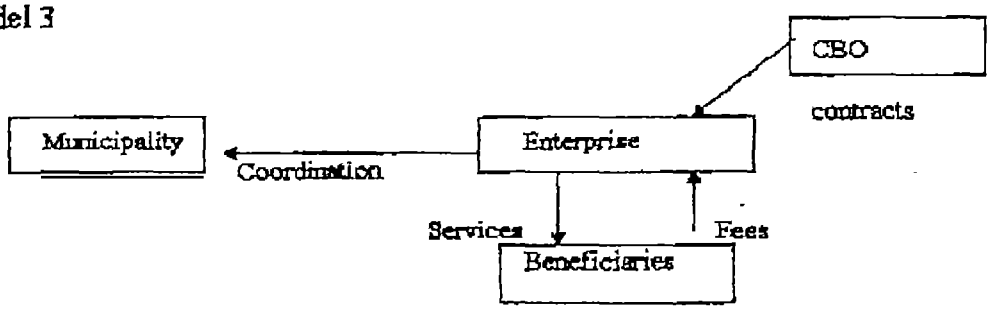
Model 1



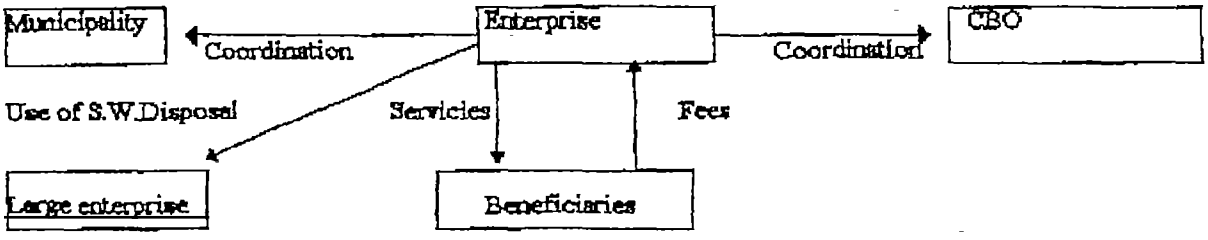
Model 2



Model 3



Model 4



Nearly 65% of the enterprises surveyed indicated that they are not associated. They mention that they have no knowledge of the existence of similar organisations, neither do they have any interest in being associated or have ever considered being part of an organization.

On the other hand, 24% of the entrepreneurs indicated that they are associated to either a cooperative, a community development association, and also to an association of micro-enterprises of solid waste collectors.

It is important to point out the existence of the organization mentioned above, located in the Province of Alajuela. Ten entrepreneurs working in solid waste collection are member of this organization, which is the only one of its kind in Costa Rica. Amongst the reasons for creating the organization were to strengthen the negotiating capacity with the municipality, to improve the search for equity while providing the service, and to maintain the security of the established market.

In general, the organised managers have manifested that the resulting benefits have been the organisational improvement of the enterprises, the increase of their competitive and negotiating capacity, and, in some cases the increase of their funding capability.

d. Cooperation with other actors.

The established relationships between the micro-enterprises and other organisations are shown in the following table:

TABLE 4:
Relationships of the Micro-enterprises with other Organisations Depending on the Type of Activity; 1996

Type of organization	*Retreval/Classification*		*Collection/Transportation & Disposal*	
	frequency	*%*	*frequency*	*%*
Non-Government Organization	-	-	1	11
Community Development Assoc.	-	-	2	22
Environmental Group	-	-	1	11
Development Assoc., NGO, Religious Group	1	12.5	1	11
None	7	7.5	3	33
TOTAL:	8	100	9	100

Source: Data based on information obtained from the survey carried out in the micro-enterprises in solid waste.

The micro-enterprises dedicated to solid waste collection and transportation, or disposal, and those dedicated to cleaning beaches tend to have relationships with other organisations within the community, but also within the Province and even at national level. However, 33.4% do not respond to this disposition. The opposite situation occurs in the micro-enterprises dedicated to retrieval and classification where the majority (>87%) have no relationships with other organisations.

As a result of these relationships, three of the micro-enterprises have received instructions in environmental education, specifically in the total management of solid wastes. Two of them have received technical assistance to enable them to provide

the service and two of them have been provided with financial assistance through donations.

The entrepreneurs consider that this assistance has contributed to the progress of the community; to give a new focus on the work, on the supervision, and on the control of the service that is being provided; and to assure a systematic environmental education program to the population.

Some micro-enterprises provide the free collection services to the community organisations: churches, health clinics, and others.

The micro-enterprises dedicated to retrieval and classification maintain relationships with the recycling plants and industries that reuse glass bottles, who buy their products. In the relationships with the recycling plants, there are serious difficulties because they are the only purchasing agents, and, therefore, they have the power to set the product's presentation standards and prices at their convenience, leaving no other commercialisation option for the micro-enterprises.

5. FINANCING

With the exception of two micro-enterprises dedicated to solid waste collection and retrieval and classification, most of the micro-enterprises financed their initial investments and activities using their own (limited) means. These enterprises are facing difficulties to gain access to credit facilities because they are not financially attractive to the banks.

The financial aid received by two of the micro-enterprises has been allocated to the purchasing of equipment. In one instance it was a donation from an NGO from the area. In the other case, the micro-enterprise received a credit fund for the creation of solid waste disposal sites, in agreement with the municipalities.

As for the users' input, 62.5% of the micro-enterprises dedicated to solid waste collection and transportation, or disposal charge their services directly to the users. In the cases where the municipality contracts the micro-enterprise, it is the municipality who is in charge of collecting the money for the payment of the service, which it attains through the usual system at their administrative offices.

The average monthly fee charged by the micro-enterprises that are dedicated to solid waste collection is 450 Costa Rican Colones (US$2,22) . This fee varies in the case of commercial facilities according to the size of the commercial enterprise. Some entrepreneurs charge reduced fees to low-income families. In some difficult situations such as illness in the family or unemployment-employment of the head of the family, they do not even charge for the service for a period of time.

The fees are fixed by the micro-enterprise and in some cases in coordination with the development associations in the community. In this particular case there is no intervention by the municipality, except in the cases in which the service is granted by bidding and the fees are fixed unilaterally by the municipality.

One of the micro-enterprises charges the municipality 150 CR. Colones (US$0,75) for each unused officially stamped plastic bag. Two other micro-enterprises receive their monthly payment for their services directly from the municipality.

In the case of the micro-enterprises dedicated to the retrieval and classification of recyclable materials, they pay their purchases in cash. The recycling company receives the material and pays the corresponding amount two weeks later.

The industries that reuse glass bottles request from the micro-enterprises the quantities required and pay them upon receipt of the merchandise.

6. TECHNICAL STANDARDS

The micro-enterprises dedicated to solid waste collection and transportation, or disposal possess heavy-duty equipment, trucks, dump-trucks and farming tractors. This equipment, with the exception of the dump-trucks, was originally used for farming activities.

In the case of the micro-enterprises dedicated to retrieval and classification, only one of them has heavy duty-equipment. They generally rent vehicles to transport the materials in the buying-selling process, as well as rent or borrow the commercial cutting blades.

The micro-enterprise dedicated to cleaning beaches administers a dump-truck, a loader and a beach cleaning engine, the latter being only one of its kind in Central America. This equipment was attained by the micro-enterprise on a concession basis, through an agreement with a government organization.

Of all the micro-enterprises, only two have adapted their equipment. One of them (collection) uses an iron frame with chain welded onto it, placed in the back of the truck in order to discharge the collected solid waste more readily. The other micro-enterprise (retrieval) adapted an electric circular saw to a wooden bench so that it works as a sliding blade.

More than 60% of the enterprises dedicated to retrieval and classification possess their own storage facilities, which usually are located within the premises of their own homes, where they have adapted their own homes to accommodate the different required activities. Although these premises usually are not large enough, the entrepreneurs have no economic resources to expand them or refurbish them.

On the other hand, 56% of the micro-enterprise dedicated to solid waste collection and transportation, or disposal but also those dedicated to beach cleaning have their own shed roof, which has been adapted to store the equipment at the owners' homes. In the case of the community micro-enterprises, these may use the community association's office and one also owns a warehouse.

7. LESSONS AND CONDITIONS

In Costa Rica, micro-enterprises play a key role in the activities of solid waste management, fulfilling the responsibility providing the services in those areas where the municipalities do not provide the services of solid waste collection and transportation, or of disposal and beach cleaning. They also play a key role in the retrieval of recyclable materials and reduction, as in the case of those micro-enterprises dedicated to the processing of recyclable materials.

In spite of the importance of their activities with respect to the protection of the environment, these micro-enterprises tend to have a marginal role within the national system of solid waste management, due to the fact that these provide services to population sectors that are of little political impact to the municipality. These population centres tend to be small communities that are located far away from the urban areas.

In addition, providing these services to these communities presents major difficulties because of the topographical and rugged conditions of these areas, the lack of roads, the scattered population nucleus, and the long distance to the solid waste disposal sites. However, these same limitations, favour the micro-enterprises in the sense that large companies find it unattractive to operate in these areas and there the municipalities usually are not forced to contract these companies to provide the services to these communities.

The work of these micro-enterprises is not formally recognised by the municipality through the signing of agreements or contracts, as is prescribed by law. They usually have verbal agreements which leaves the micro-enterprises in a vulnerable situation because the verbal agreement is subject to the political changes that affect the municipalities.

The importance of the work done by these micro-enterprises is socially recognised, especially those dedicated to solid waste collection. However, this recognition is contradictory because this kind of work is given very low social value as it is considered to be done by those who have no other options in the labour market.

The prevailing perception about retrieval and classification activities is that they are a private enterprise, legally "clean", and of a higher status than those of solid waste collection. The development of this activity is an urban phenomenon, in which the municipality does not intervene.

Recently, it is beginning to play a more important role due to the public and private publicity campaigns directed to help people become aware of the benefits of recycling and of sound environmental protection practices.

The way these micro-enterprises originated, disconnected from the national system of solid waste management, does not stimulate the need to form associations or cooperatives to build a strong front to face outside demands. For this reason, they do not strengthen themselves, neither do they develop appropriate strategies to negotiate with the different counterparts. The fact that they are not grouped together makes them vulnerable to political changes and market shifts.

As far as their relationship with the community is concerned, the micro-enterprises dedicated to solid waste collection and transportation have arisen because of the necessity within the communities. Their service is characterised by being personalised and forms a dynamic part of the community. The satisfaction of the beneficiaries is vital to the existence of the micro-enterprise.

From the investigation, it can be concluded that the relationship with the community is a necessary condition for the success of the micro-enterprises because of two main reasons: the community demands and supports the service, and at the same time, it provides a series of benefits for the workers living and working conditions.

The work performed by the micro-enterprises dedicated to retrieval and classification, is not being regulated by the municipalities or the Ministry of Health, although according to the law it should be. If the legislation were enforced, these micro-enterprises could be affected negatively, since most of them do not meet the required conditions.

The entrepreneurs do not have a clear vision of the relationship between "solid waste collection" and "retrieval and classification", which is reflected in their work. The workers involved believe that they pick up worthless "garbage", and they thus do not value the work done by them.

The solid waste disposal site is an important factor for the micro-enterprise dedicated to solid waste collection, because it is the link to a municipality or to a private company through a concession agreement. The micro-enterprise is at an disadvantage, because it is totally depended on the decisions made on the use of the site and the fees established. Another important factor to consider, is the distance between the collection points and the final disposal site. These two aspects affect the operation costs of the micro-enterprise, which in turn the users of the services have to pay through increased fees. The users then become aggravated and refuse to pay which influences the morosity.

One of the weaknesses of the retrieval and classification sector is the existing restricted market for commercialisation. The prices tend to be low for some products (glass and aluminium) while the constant fluctuation of others materials (paper) generate losses.

As long as the micro-enterprises remain informal, they are profitable. However, at the same time this restricts their development, because they have no access to credit opportunities, and cannot invest in their development and growth.

In order to face the daily difficult situation, some micro-enterprises tend to reduce their costs by eliminating equipment insurance and preventive maintenance. This affects the quality of the service and increases the workers' health risks. The micro-enterprises dedicated to retrieval and classification reduce personnel expenses, especially by employing family members without enumerating them or by hiring temporary personnel. In general, the workers are excluded from the social security benefits, especially if the micro-enterprise is going through a particularly critical situation.

There is high turn-over levels in the personnel contracted by the micro-enterprises, perhaps because of the low social status of these jobs, and the low, and therefore unattractive, salaries. This affects the efficiency and quality of the service, which requires stable and qualified manual labour.

With regards to the workers' health, there are no health promotion, prevention and attention systems established. The benefits do not include sick leave due to illnesses or accidents on the job. Perhaps, because the presence of each worker is important and his absence cannot be afforded. The absence of one worker represents a serious impact on the quality of the service, especially in the case of those who work in solid waste collection activities.

Weather changes and psychological, biological, physical, and chemical risks pose a constant threat to these workers.

The "solid waste collection" workers present more health problems than those who work in "retrieval and classification" activities, because they are exposed to more physical demands and risks.

At the end of the investigation, there was a national meeting with the entrepreneurs to provide them with the opportunity to know the results of the study. This activity initiated a process which resulted in the creation of National Chamber of Waste Retrieval, Gathering and Recycling Businessmen of Costa Rica (CANARDES). This organization envisions the following goals:

a) To consolidate the Chamber's role as an environmental protection and promotion agent, supporting the economic, social, educational, and cultural development of the Costa Rican citizens; and
b) To secure the well-being of all its members through the search of improvement in the activities of the commercial and industrial sectors of the micro-enterprises that work in the different areas of solid waste management. It refers to multiple responses.

Exchange Rate on 9-4-96: c212.50/$1.00

ACEPESA
ASOCIACION CENTRO EJECUTOR
DE PROYECTOS ECONOMICOS Y DE SALUD

CONVENIO:
Desarrollo Sostenible Costa Rica - Países Bajos
PROYECTO:
Fortalecimiento del Poder Local en la Gestión Ambiental

ACEPESA

(Executor Center of Economics and Health Projects Association)

ACEPESA (Executor Center of Economics and Health Projects Association), is a non-governmental organization, founded in 1990 by a group of professionals. The main objective of ACEPESA is to create development alternatives in three lines of programs: 1. Small Scaled tourism industry (Touristic Micro enterprises) 2.Environmental Sanitation Program (Micro enterprises in solid waste management) 3.Labour Health Center. The Executive Board of ACEPESA, is responsible for the coordination of the programs and the definition of the politics and strategies. The International Cooperation Unit is responsible for the public relations at a national and international level. ACEPESA receives support from many international cooperation institutions.

MANAGERIAL CURRICULUM

MISSION:

ACEPESA is a NGO in charge of promotion of new development alternatives, through:
the finding of new and profitable alternatives of investment,
the creation of new employment sources , using agreement coordination and union of efforts strategies with other national and centroamerican social actors
the designer of local sustained development
the support of productive organization processes and
the improvement of conditions and job environments.
It acts in Costa Rica, Panama, Nicaragua, El Salvador, Honduras and Guatemala.

PROGRAMS:

PROMOTION OF MICROMANAGERS ORGANIZATION AT TWO LEVELS: 1) Supporting touristical micromanagers organization through CANAMEI, JADE-TUR, TUR-CASA. 2)Supporting the MICROMANAGERS ORGANIZATIONS NATIONAL COORDINATOR. The objectives are: Find new and profitable alternatives of investment, create new employment sources, using agreement, coordination and union of efforts strategies, and contribute to make new social autonomous actors to face structural adjustment processes.

PROGRAM OF COMMUNITARY ENVIRONMENTAL SANITATION (PROSAC). It works with municipalities, community organizations and micromanagers to recollection treat solid waste. Objectives are: promote the strengthening of local powers of environmental sanitation to increases the participation of civil society, create employment's choices and design local sustained development strategies.

LABOR HEALTH CENTER its objective is search new alternative in which workers and managers face successfully the processes of productive restructuring, starting from:
Creation and promotion of integral methodologies that improve work conditions and environments, quality and productivity
Support coordination and agreement initiatives between different sectors to promote workers' health.
Generate self-financing and self-sustenance choices for the projects.
Transmit successful experiences to centroamerica level.

COOPERATION RELATIONSHIPS WITH NATIONAL AND INTERNATIONAL ENTITIES.
ACEPESA has kept cooperation relationships with national and international governmental and non-governmental organizations, at the level of the Program of promotion of Tourist Micromanagers Organization.

At national level it keeps relations with:
Costarrican Institute of Tourism (ICT), National Institute of Apprenticeship (INA), Latin-American University of Science and Technology (ULACIT), University College of Cartago (CUC), Bureau of Tourism Managers (CANATUR), Tourism Professionals Association (ACOPROT), Popular and Communal Development Bank, Commerce Bank (BANCOMER), International Bank of Costa Rica (BICSA), National Micromanagers Coordinator, National Program of support to micro and little companies of the department of Labor (PRONAMYPE), National Bureau of Tourist Micromanagers (CANAMET) and the National Coordinator of organizations of micro and little managers (CONAMYPE).

At international level it keeps relations with:
Panama Tourism Institute, Nicaragua Tourism Department, Guatemala Tourism Institute, Tourist Industry Association of Belize, Program of Aid to Informal Sector of Honduras, Superior School of Tourism and Transport of Holland, World Bank, Austrian Institute of Cooperation North-South, Centroamerican Committee of micromanagers (COCEMI), Bilateral Agreement for Sustained Development Costa Rica- Holland, Project PROMICO of International Organization of Job, Friedrich Ebert Stiftiung Foundation, Urban Program of administration for Latin America and Carib, Promotion and Employment Center for Informal Sector.

INSTITUTIONAL ASPECTS:

ACEPESA is an non-governmental organization which works as an association without profit from it. Juridical certificate number: three, zero zero two, one one six one two one, zero seven (3-002-116121-07). Was recognized of Public Utility by Executive Decree No.2062-J

ACEPESA develops actions of capacitation and technical aid, investigation and promotion of organization, coordination and concertation processes in novels alternatives of regional impact development.

Program's projects are developed with a reduced personnel and specialized professionals are hired for a determined job depending of needings.

Each program (methodology, budget and priorities) is managed by a technical equipment and a coordinator.

The direction of projects supports the steps of coordination between programs and needings of new projects or programs.

The Board of Directors, formed by presidency and coordinators, is responsible of determinations of general policy of the organization and supports the programs when technical equipment requests for it and/or exists a needing.

In charge of presidency is the Union of International Cooperation (UCI), who is responsible of the international relations of the organization and the programs and projects in Central America. This union supports of services at international level.

Self -financing program is cared each technical equipment and it counts with its own bank of donors. Promotion and selling of services is done by coordination between equipments and the supporting of a professional business administration.

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Address: Zapote, 300 m E, 50 m S from ITAN, San José, Costa Rica, Centroamérica
phone/fax: (506) 225 8448
e-mail: acepesa@sol.racsa.co.cr
Correspondence address: ACEPESA P.O.BOX 1247-1002 San José

Swiss Agency
for
Development
and Cooperation

UMP/SDC Collaborative Programme on MSWM
in Low-income Countries

CASE STUDY

PAYATAS ENVIRONMENTAL DEVELOPMENT PROGRAMME: MICRO-ENTERPRISE PROMOTION AND INVOLVEMENT IN SOLID WASTE MANAGEMENT

Prepared by
The Vincentian Missionaries
Social Development Foundation, Inc.
Brgy. Payatas B, Quezon City, Philippines

Presented to the
Workshop on Micro-Enterprises Involvement
in Municipal Solid Waste Management
in Developing Countries

(Cairo, 14-18 October 1996)

Case Study Summary

Payatas Environmental Development Program:

(by CARCELLAR, Norberto Fr., CM)

Background

Quezon City is a vast rolling land of 153.59 sq. km. which is about one-fourth of Metro Manila. It serves as growth center for the surrounding towns northeast of Metro Manila.

Waste Generation Estimates

1989 Population Estimate	Waste Generation Rate Factors (Kg/Cap/Day)	1989 Waste Generated (Tons/Day)	2005 Population Estimate	Waste Generation Rate Factors (Kg/Cap/Day)	2005 Waste Generated (Tons/Day)
1,590,600	0.378	601	2,302,800	0.422	1,018

Characteristics of the Area of Operation:

Area : 3,019 hectares
Households (Scavengers) : 4,000
Inhabitants : 90,000
Density : Low
Income Level . US$124.10/month
Access Roads : 56.3 kms - concrete
11.7 kms - asphalt
14.1 kms - dirt road
Topography : rolling lands, ravines, low-lying areas

Technical and Operational Parameters:

Field Offices : 3
Equipment : 2 sets water drilling
Personnel : 1 Project Manager
1 Finance Manager
5 Field Credit Officers

Services Costs and Financing:

Equipment : US$ 26,700 (grant)
Running/
Admin : US$ 23,000/year (grant)
Training : US$ 11,500/year (grant)
Loan Fund : US$230,000 (grant and local savings)

Organization and Management:

Initiated by : NGO
Established in : 1990
Managed by : Vincentian Missionaries Social Development Foundation, Inc.
Legal Status : non-profit, non-stock organization
Relation to
Community : community-based self-help promoting institution
Relations with
Other Groups : member of GO and NGO networks
Technical
Assistance from: solid waste consulting firms, microfinancing consulting firms
Other Activities: advocacy, social marketing, shelter-related projects (land tenure and housing, health, non-formal education)

Key Challenges:

Institutional : institutionalization of people's organization
Technical : product development and occupational health practices
Financial : financing of capital-intensive investments

Lessons Learned:

1. social mobilization of communities is condition sine qua non for microenterprise promotion
2. support of home-based microenterprise activities reduces costs of promotion, favors existing technologies, and provides energy- and time-saving device to women entrepreneurs

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History

Barangay Payatas is a predominantly urban poor populated barangay in the Northeastern district of Quezon City. It has been the site of the city's solid waste disposal for over two decades and, currently, the main dumping ground for the city's garbage (now reaching 810 tons per day).

Little was known about Payatas over the years until the official closure of the famous "Smokey Mountain" in 1993, which made the Payatas dumpsite, a 15-hectare open pit, the biggest and oldest operating open dumpsite in Metro Manila. It also made the dumpsite a major public concern as the next "Smokey Mountain" amid the mounting garbage crisis.

The Payatas dumpsite has provided home and livelihood to about 4,000 scavenger families within and outside of Barangay Payatas who have long considered solid waste as a resource to be recovered. This lowly-regarded workforce of waste-pickers consists of the expert but undercompensated suppliers of recyclables, including women and children, who supply recyclable materials to the established waste recovery and recycling businesses. Managing to subsist behind the shadows of these big junk shops are pockets of home-based micro-enterprises engaged in the recovery, recycling and re-use of solid waste materials, including for ornamental and functional purposes such as wall decors, tinscraft, laundry brush, dust pan and the like. The "informal" status of these waste-resourced businesses, however, makes them easy prey to usurious moneylenders.

It took two years of thorough social investigation and community integration for the Vincentian Missionaries Social Development Foundation, Inc. (VMSDFI) to recognize the actual threats and opportunities surrounding the Payatas dumpsite and the waste recycling industry. VMSDFI entered the community in 1991, at which time, pre-program activities were initiated. These pre-program activities included contact-building, investigation of existing social forces and community-based initiatives, informal caucuses and meetings which adopted adult learning process and principles to elicit the main concerns of the people.

At this early stage, the people voiced out their deplorable situation as ordinary scavengers, and this prompted the formation of their own organization to achieve greater bargaining power on issues affecting them. Up to this time, there has not been any organization mainly for and among scavengers. Existing local organizations were mostly territorial in nature and concerned with land tenure and shelter issues.

Upon the decision to form a scavengers organization, intensive chapter level organizing, coupled with service delivery for immediate needs, was undertaken in various communities. Also initiated were a micro-lending scheme (adapting a modified Grameen Bank model) and the organizing of low-income women, particularly those engaged in waste recycling micro enterprise activities. This initial issue-based and project-based organizing was simply a response to the expressed concerns and ongoing initiatives of the people which the VMSDFI learned about during the initial stage of intense social preparation.

The direction of the program gradually became clear through the base-level consultations and caucuses among scavengers' groups and through the monitoring of waste-resourced micro-enterprises. Through participatory focused group discussions, the recurring concerns of the scavengers were deliberated upon. These concerns were then presented as a "package of demands" during a dialogue held with the Quezon City Mayor in 1993. These "demands" cover a wide range of basic needs and program elements, including people-controlled buying stations of recyclables to avoid the exploitative prices of middle men, health center and health care facilities to respond to scavenging-related accidents and ailments, a public market to obtain affordable basic goods, training centers to enhance vocational and organizational skills, alternative livelihood, and security of land tenure.

This dialogue served as a rallying point for consolidating the Scavengers' Federation and the "package of demands" became a major component of the "Scavengers' Development Program" and a "Micro-enterprise Promotion Program" within an integrated Community Development Framework.

These small-scale base-level initiatives soon came to the attention of a team of advocates of environmental and urban poor issues. This team consists of NGOs which later facilitated a study tour to the Zabaleen Waste Management System of Cairo for possible technology transfer. These organizations are the Philippine Partnership of Support Services Organizations (PHILSSA), Green Forum Phils., and the United Nations Volunteers-Southeast Asia Regional Program (UNV-SRP). Two Payatas scavenger leaders were among those who participated in the study tour.

Relating the Payatas experience to the Zabaleen System paved the way for the formulation of a Payatas Environmental Development Program (PEDP) which advocates an alternative waste management system to open dumping. It involves the setting up of a community-based Materials Recovery Center (MRC), harnessing the waste-picking and recycling skills of scavengers and micro-entrepreneurs and further supplementing the skills with environment-friendly technology for solid waste processing and composting.

A technical feasibility study was conducted with the financial support of MISEREOR. This study resulted in a detailed MRC Plan for Payatas. In the absence of any comprehensive and concrete plan on the part of the government, the MRC Plan is recognized as a possible alternative system to the Payatas dumpsite and the city's garbage problem. The Plan has been approved in principle by the Department of the Environment and Natural Resources (DENR) and other government agencies in a Memorandum of Agreement inked with the VMSDFI and the Payatas Scavengers' Association.

While multi-sectoral consultations and negotiations are going on concerning the future of the Payatas dumpsite and its scavengers, the initiatives and the identity of the Payatas scavengers as a people's organization are now duly recognized by government agencies. And while the MRC Plan has yet to be fully implemented, elements of micro-enterprise involvement in solid waste management have been at work even prior to the conception of the program.

Objectives and Beneficiaries

The Payatas Environmental Development Program is not an isolated program but is part and parcel of an integral community development program for the Payatas slum community. Participatory baseline surveys, cross sectional study and wealth ranking were earlier conducted to define the target population of the poorest 20% in the community. This portion of the community are the scavenger families, particularly low-income women and working children at risk, people with disabilities, elderly, PTB patients, malnourished children and infants. The Scavengers' Development Program and Micro-enterprise Promotion Program are thus complemented with the ongoing community-based rehabilitation, health care and nutrition and other support services delivery programs for these sectors in view of helping the community attain self-reliance and adequate social security.

These initiatives are supported by donors who finance particular components or projects of this integrated community development program. Even those who initially carried out mere child sponsorship programs later switched to project partnership schemes, recognizing the values and merits behind the community development framework. In general, donors seek to support the community-based development initiatives by supporting, if not the entire program, particular components that are within their competence and interest to address. Their support goes beyond financial assistance and even includes voluntary services of expertise and other resources.

For the past five years VMSDFI has been playing the role of a community-based intermediary organization, working to promote people's participation and in support of the people's initiatives towards integral social development. Based on the expressed concerns of the people, the VMSDFI is implementing the Scavengers' Development Program which mainly involves lobbying for policy changes. In particular, the scavengers seek legal status, the upliftment of the public image and recognition of their work, increase in their bargaining power, participation in local decision-making processes, increase in productivity and value-added of their products, and the development of appropriate technology for solid waste management.

Their involvement in solid waste management is further enhanced by an accompanying Micro-enterprise Promotion Program which involves financial services, including internally-generated credit and savings facilities, enterprise development, business consultancy and other extension services tailored especially for micro-enterprises engaged in the collection, recycling and reuse of recovered solid waste materials.

The scavengers are considered more than beneficiaries but key players in the development program. Their commonly expressed "package of demands" serves as the major element of the Scavengers' Development Program while projects on waste management will help realize the potentials of their trade and their shared vision for their community.

Approach/ Strategy

This community-based Program strictly adopts people's participation as an approach and framework, whereby mechanisms are provided for the scavengers and micro-entrepreneurs to be actively involved in practically all the stages of program planning, implementation, operation, maintenance and evaluation. The initial caucuses and informal meetings yielded the basic demands that have become the major elements for planning and development of the program.

A community-wide participatory research was carried out by the scavengers on a voluntary basis. This exercise was to pave the way for the consolidation and formalization of their federation. Furthermore, the results of this research would be the bases of the assessment of future programs. For instance, training needs which emerged from the research were addressed through seminars, workshops, exposures utilizing creative learning processes. Training programs were held on program management, participatory project planning and design, and market research.

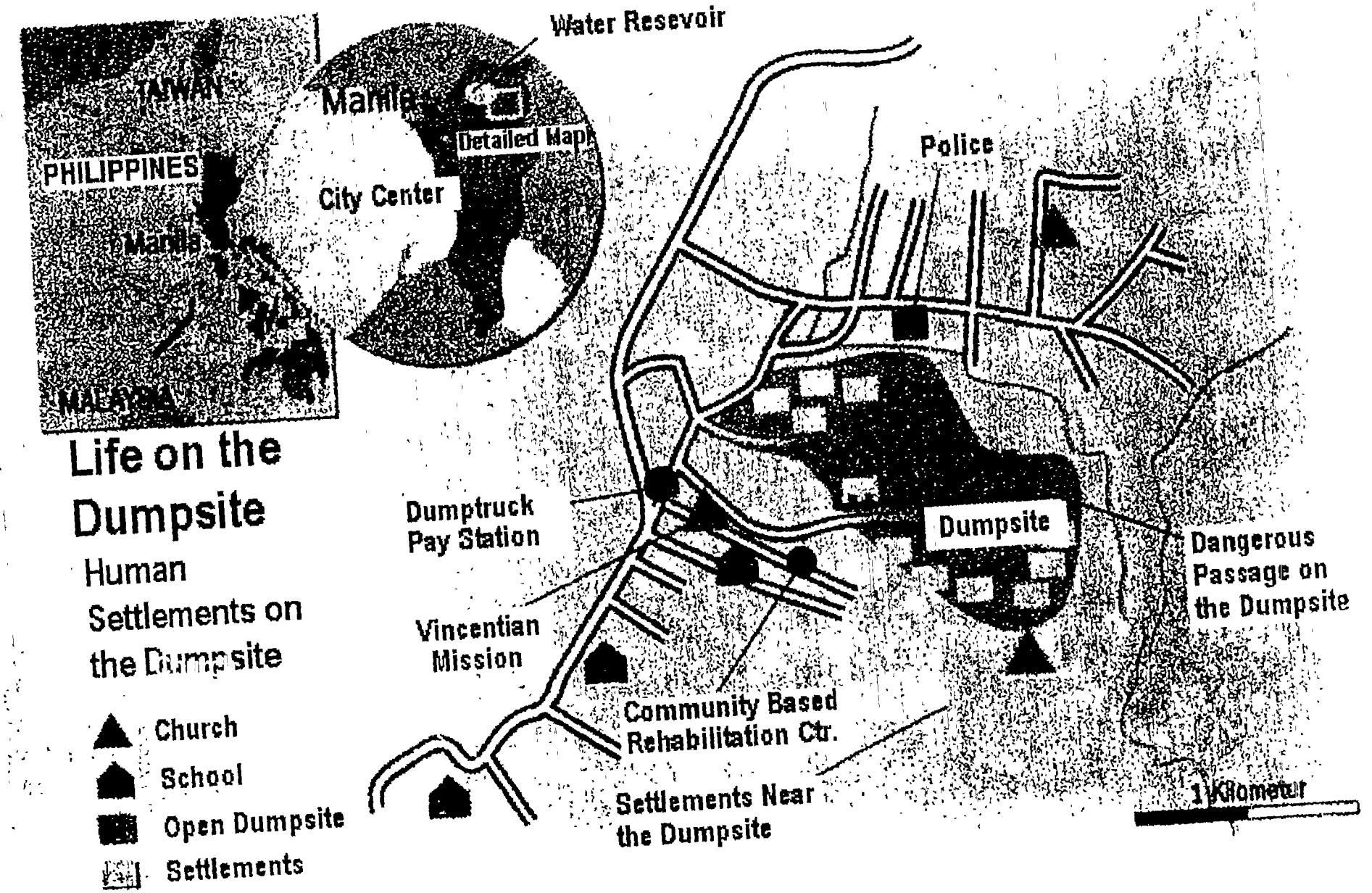
Projects were also initiated as a result. A Water-Drilling Project is now ongoing as hands-on training on project management and maintenance as well as a response to the basic and product enhancement needs of scavengers. A Handmade Paper Recycling Project was also initiated and here the scavengers are trained in the rudiments of a micro-enterprise management, from production and financing to marketing. Other related projects, such as waste composting. will be set up once stronger opportunities come.

The "Materials Recovery Center" represents a more focused approach towards supporting the existing scavenging and micro-enterprise activities in the community. Rather than creating a center per se, the MRC program highly respects and supports the self-acquired skills and ongoing micro-enterprise initiatives in the community, recognizing that the community is thoroughly familiar with the essential elements of the trade, from the collection, segregation and characterization to the processing and disposal of residual waste.

It is the vision of the VMSDFI that the people completely take over the management of the programs in due time. Their supervised involvement leading to full take-over shall involve action and policy research, exposure workshops, dialogues with policy and opinion makers, training for organizational skills, management of productive operations, cooperatives, self-help groups and family welfare.

Institutional Set-Up

Looking through the eyes of the scavengers, the Payatas Environmental Development Program considers solid waste not as a problem but as a resource to be recovered and whose value lies in the work of those behind the scavenging trade. These scavengers are actually serving at least three important but underestimated functions in society. Through their self-employment initiatives, they absorb part of the otherwise state-covered social costs of "modernization" such as unemployment and underemployment. Secondly, they shoulder part of the ecological costs of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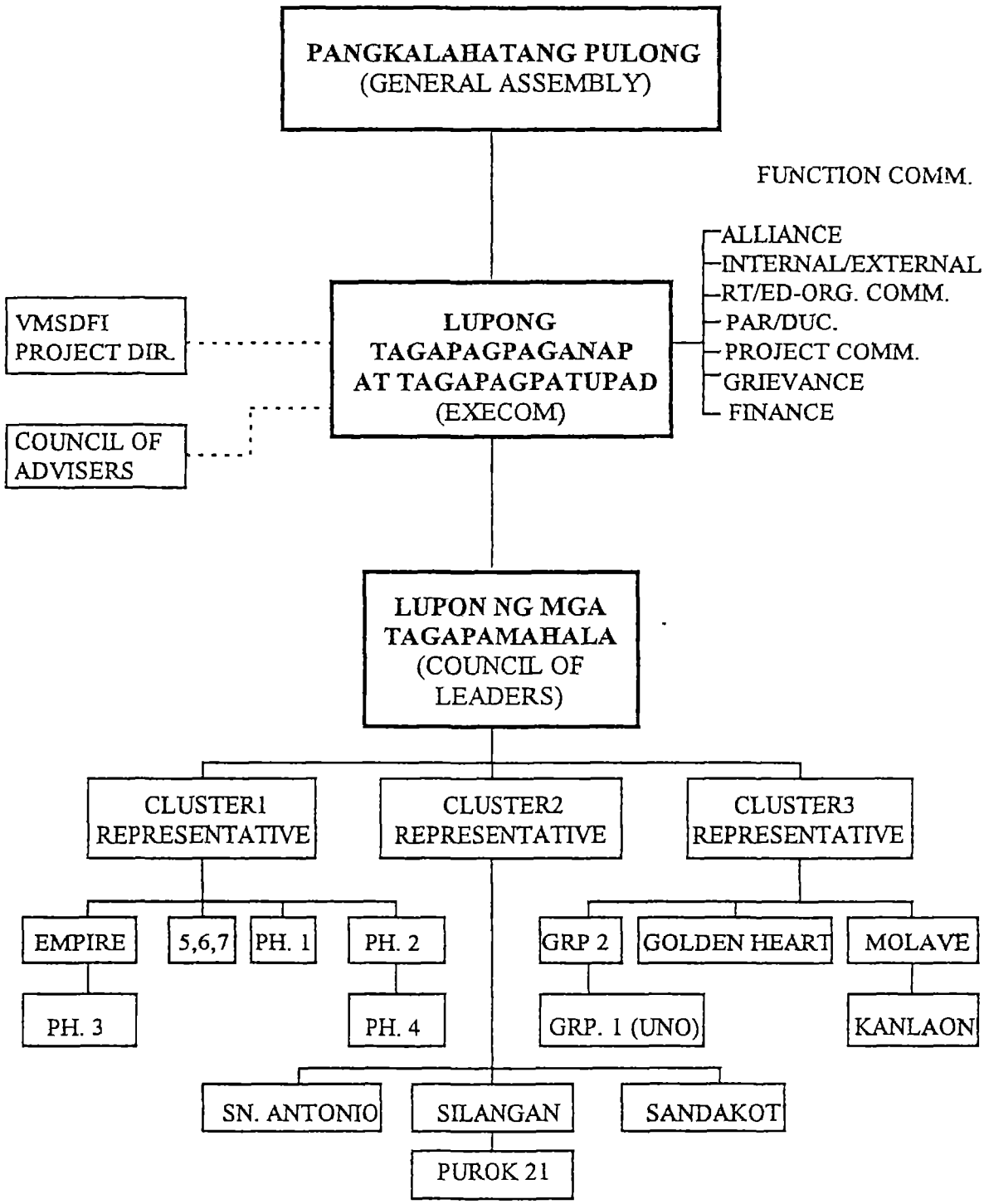
PAYATAS SCAVENGER'S ASSOCIATION, INC. (PSAI)
ORGANIZATIONAL CHART



development by processing waste which the state would otherwise have to spend for in terms of solid waste transport and disposal. Lastly, they contribute to the efficiency of the formal sector by providing raw materials from recovered waste at comparatively low prices.

As local experts in their own right, scavengers and family-based micro-entrepreneurs definitely hold a key role in solid waste management. Their roles have been well defined in the organizational set-up of the Scavengers' Federation and in the entire Community Development Program of the VMSDFI.

The Federation is currently composed of fifteen chapters, each covering a community and comprised of at least 50 households. Currently, the Federation has approximately 1,200 members spread throughout the different areas of Payatas and its neighboring barangays. Chapter consolidation has become a priority strategy for organizing work. Clustering of households according to territorial boundaries, business interests and availability of recyclables was undertaken to facilitate implementation of such projects as small-scale waste recycling and composting projects.

Committees were formed to attend to the functional areas of the organization such as alliance building, project planning, education and organization, participatory research and documentation, and finance. Special committees were created to address the specific concerns of each chapter. Examples of such concerns are livelihood, land tenure, health, and other dumpsite issues. Low-income women under the Micro-Enterprise and Self-Help Promotion Program are also carrying out the organizing and clustering of similar trades to boost their business potentials. Special focus is being given to micro-businesses affected by, and dependent on, the Payatas Dumpsite.

In the organizational set-up, VMSDFI plays a supportive role to the Federation. The VMSDFI has assumed the role of a community-based intermediary NGO and has taken the initiative of testing development projects that would have an impact on the lowest 20 % of the population While taking an active role in the formative stages of the Federation, the VMSDFI constantly strives for the overall development and self-reliance of the community, especially its poorest. To further foster community self-reliance, it utilizes local staff, volunteers and leaders who are further trained on various project management skills, including community organizing, micro-enterprise financing and promotion, business consultancy, extension services and credit management. It also fosters volunteerism as an option specially in the local community to ensure the sustainability of the projects.

The VMSDFI works in partnership with and is ably supported by other organizations in the various project components of the Payatas Environment Development Program. The Program itself is a brainchild of a team of organizations which undertook the exposure study in Cairo, Egypt. This study team helped package the various elements of on-going solid waste management activities of Payatas scavengers and micro-enterprises into an integral environmental development program.

These support organizations include PHILSSA, a network NGO for urban poor concerns, which under the program addresses the social marketing and networking needs of the project; Green Forum Philippines, which provides technical assistance and advocacy for ecological consciousness; and the UNV-SRP which extends support for research and documentation. WASTECON was tapped to prepare the feasibility study and to provide technical consultancy. An ILO-recognized business consulting NGO, the Philippine Enterprise Development Foundation (PEDF), provides micro-enterprise management and development training. These organizations carried out a thorough "leveling-off" sessions to clarify their particular interests and stakes in the program, a process which would help prevent unnecessary conflict of interests and differences. As the main implementor of the program, VMSDFI assumes the directorial and managerial responsibility for the entire Program.

Financing

As previously noted the Program is multi-funded in terms of the different components of the integrated Program. Practically each program has a donor to account for. Notable among these are those supporting the programs which directly address the solid waste issue of Payatas. These programs are the Scavengers' Development Program and the Micro-Enterprise Financing and Promotion Program. MISEREOR of Germany has been the primary source of support right from the pre-program phase up to the ongoing organizing initiatives. It has expressed commitment to support the long-term plans for Payatas. The initial revolving fund for the micro-finance facilities came from the Philippine Charity Sweepstakes Office (PCSO) and this revolving fund has adequately provided for the loan cycles during the past three years. Additional revolving fund for larger business loans for qualified entrepreneurs comes from Manos Unidas of Spain. Internally generated funds through savings mobilization further augment the loan portfolio of this community-based financial system as described below.

A small-scale micro-lending scheme for financing micro-enterprises was initiated at an early stage. This scheme gradually led to the setting up of an alternative community-based financing system which can sustain part of the program's operations. Operating as an informal community bank without the encumbrances of a formal banking system but with the essential processes totally accessible to the poor, this financial system banks heavily on internally-generated funds through compulsory regular savings mobilization among self-help groups proceeding at the pace based on their own saving capacity. What started as a micro-financing strictly for business purposes has become a savings-financing scheme having loan windows for welfare needs.

With the consensus of one's group (of seven to ten members), loans can be applied for by any member against his/her accumulated savings. Loans can be obtained up to 1.8 times one's savings for providential loans and up to four times for business loans. Members are actively involved in the appraisal and approval of their loan applications. Such evolving financing system has yet to reach full self-sustainability and maturity. However, the integrated savings and credit facilities have so far maintained a healthy cash flow with a 1:1 ratio between internal fund and external credit. This means that not only was a proper cash management system put

in place, but, more importantly, the poor are capable of both servicing their loans and collectively generating savings to support their financial needs without totally relying on external funds and grants.

As a community-based endeavor, the program values and encourages volunteerism within the local community. It has been able to gain enough response from the people to keep the work going. It has also merited the voluntary services of professionals from outside Payatas which further lessens the administrative expenses of the program. The strong option for people's participation is paying off with local leaders being fully committed to different tasks as part of their on-going training toward the eventual full-management of the Program. They are compensated on a food for work basis.

Assuring people's participation and thorough social preparation as an approach and policy throughout the program cycle gives positive signals for the self-sustainability of the program. Local staffing, particularly, hiring of young professionals and talents from the community, further complements the drive for volunteerism and enforces prospects for continuity.

As a financing institution, while the community has not yet reached the maturity of having self-help status and self-sustainability, it is on track of a seven-year Self-Help Promotion Scheme which involves progressive increases in loan portfolio, credit capability, and the capacity to absorb operational costs, delinquencies and bad debts.

Technical Standards

The scavengers and micro-entrepreneurs exhibit self-learned skills as well as innovative indigenous technology for solid waste management. Informal as these may be, these key actors have furthermore managed to learn the rudiments of the prevailing political and economic system of the Payatas dumpsite, and the means to play within and negotiate for informal arrangements with the dumpsite "authorities." Some prove to be truly enterprising enough as to actually run small-scale dumping operations of their own in their own backyard covering the entire cycle: from collection via contracts with commercial establishments, segregation, characterization, retailing of swills, deliveries to recycling plants, up to the dumping of the residual waste or "waste of waste."

To further enhance the product of the scavengers and micro-entrepreneurs, the program has facilitated the setting up of a handmade paper recycling project and a water-drilling guild among the scavengers to service the water requirements of waste recycling micro-enterprises.

The Payatas scavengers have proven their own hard-earned capacity and potentials for further development on solid waste management. In view of this, the PEDP is merely picking up from such skills as entry points for further support and direction. Even with a detailed MRC package on hand, the team is convinced of the wisdom of breaking the MRC package into viable elements of assistance for home-based micro-enterprises which have long been operating effectively within the informal dumpsite economy. Such elements include the ongoing financial facilities,

training on business management and product enhancement skills, marketing of products, and capital equipment assistance.

Plans are set to carry out study tours, development of, and training on, appropriate technologies for recycling and composting, and product enhancement to increase the value of their goods.

Significant Steps / Phases

The Payatas Environmental Development Program is not a blueprint solution to the garbage crisis of Quezon City. Rather, it constantly evolves in the process of gradual implementation and testing. Being a community-based program gives it an edge in terms of immediate integration and adjustment based on new learnings. As previously mentioned, the MRC package as initially conceptualized at once gave in to the superior option of supporting ongoing family-based recycling activities utilizing the elements defined in the MRC concept. The financing scheme has likewise integrated major changes, particularly the opening of loan windows for non-productive purposes in addition to the business loan window. This was a result of the learning that micro-financing within a community development framework should consider social welfare, health and educational investments as assets valued by the poor. In view of this, plans to include provisions for health and insurance system will soon materialize.

Adopting a "savings before credit " scheme instead of the more common credit and then savings practice was also a modification based on experience. The strategy for promoting self-help groups has also undergone necessary changes so as to accommodate the varying models/formations of SHGs that have cut through almost all sectors and issues in the community (e.g. savings for nutrition of infants, savings for education of students, savings for vehicle acquisition by transport operators and ultimately savings for land purchase). Thus, what started as self-help groups of micro-entrepreneurs have now opened to accommodate all sorts of groups committed to self-financing. The current efforts at horizontal organizing among micro-enterprises and scavengers according to their trades are also based on learnings during the course of program development.

Lessons and Conditions

The earnest efforts in pursuit of the development of the Payatas dumpsite and its people have so far gained significant qualitative and quantitative successes bidding brighter prospects yet to come. The community financing system has yielded an overall 97% rate of return and has maintained a healthy cash flow. Such records show that credit management through peer support and pressure as a mechanism works in an urban slum setting like Payatas. Contrary to claims that the poor, specially the urban poor, are not credit worthy and are incapable of saving, their track record proves that aside from being able to service their loans, they too are capable of collectively generating their own internal funds which prove sufficient in meeting their financing needs.

The official recognition of the Payatas Scavengers' Federation as the legal organization for policy dialogues and consultations concerning the Payatas dumpsite

is also a significant gain in the organizing efforts. The VMSDFI is also a recognized partner of the Department of Social Welfare and Development in the implementation of community development programs.

Supporting family-based micro-enterprises has furthermore proven to work favorably rather than forming group or cooperative enterprises. This is understandable in an urban slum context which breeds individualism for survival and is a melting pot of varying cultures of displaced people. Essential elements of cooperativism may be adopted and have already been proven effective such as peer-support-systems but establishing cooperatives per se among urban poor is a tall order which requires a longer process than is commonly presumed.

Providing loans for providential needs in addition to loans for business needs is necessary in integrating micro-enterprise promotion within a social development framework. It also fosters the credit worthiness of the urban poor inasmuch as their credit requirements cover both productive and social investment types of outlays. The people have proven their bankability in terms of successful fund generation, credit delivery and credit management, and their track record bodes well for future link-up with formal financial institutions.

At its current stage of program implementation, the Payatas Environmental Development Program is definitely not in any position to set down conditions for replication with absolute validity. Generalizations can not even be made except for experience-drawn realizations or theories that may be applicable to similar contexts.

Technology and financial resources may be readily available to support the implementation of any viable community development programs or solid waste management systems. However, what assures the viability of any project and precludes unnecessary loss of resources is the social preparation of the community involved, a condition sine qua non for any community project. This has been a tested strategy in the case of the Payatas Project wherein being community-based counted a lot in gaining people participation. Initiatives are definitely not wanting in any depressed community. They are to be supported and integrated within a more comprehensive plan. Micro-enterprise and community development are not antithetical. Rather, a healthy integration can achieve common interests with least cost. This is especially true for micro-enterprises involved in solid waste management which is not simply a business issue but a pressing community concern as well.

Urban Management Programme

Swiss Agency for Development and Cooperation

UMP/SDC Collaborative Programme on MSWM
in Low-income Countries

CASE STUDY

PROMOTION OF ENTERPRISES SUPPORTING RECYCLERS FOR THE INTEGRATED MANAGEMENT OF URBAN SOLID WASTE IN COLOMBIA

Prepared by
National Association of Recyclers
(Fundacion Social)
Bogota, Colombia

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WORKSHOP

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CASE STUDY: NATIONAL ASSOCIATION OF RECYCLERS (COLOMBIA)- PROMOTION OF ENTERPRISES SUPPORTING RECYCLERS FOR THE INTEGRATED MANAGEMENT OF URBAN SOLID WASTE

María Eugenia Querubín
Fundación Social
Vice-President of Community Development
Bogotá, September, 1996

1. HISTORY:

In 1986, the regional office of the Fundación Social in Manizales began to support a group of 150 families who worked in recovering the recyclable waste contained in the 150 tons of refuse discarded in a mountain stream called "Los Olivares" by the city public service companies. Due to the construction of a sanitary dump to replace Los Olivares, causing obvious consequences for the recyclers' work and income, the Manizales Public Sanitary Companies summoned different organizations--among them the Fundación Social -- to coordinate efforts and work together even more in favor of the groups of families of recyclers in order to attend to their newly developed needs. The main purpose of the initiative was to offer these families an anternative for improving their general economic conditions through a solid organizational process.

The resulting dynamic effort and its promising future for meeting the recyclers' needs motivated the Fundación social to begin the National Recycling Program in 1991. 8 cities were involved where the Fundación already had other types of projets and actions in operation: Bogotá, Medellín, Cali, Barranquilla, Cartagena, Pasto, Ibagué and Neiva.

2. OBJECTIVES:

2.1 GENERAL OBJECTIVE:

To improve the quality of life of the recyclers and their families through organizational processes manifested in unions and in integrated recycling projects for urban waste. These actions would permit the recyclers to become part of environmental matters and to contribute to the development of their communities.

2.2. SPECIIFIC OBJECTIVES:

To educate agents for their social development.

To strengthen their organizations which are capable of improving their living conditions and of participating in the decision-making concerning their social, political, economic, cultural and environmental lives in their communities.

To implement models of urban sanitary companies which contribute to the recycling of wastes with the participation of the communities.

2.3. OBJETIVE OF THE NRA:

To defend the interests of the associated recyclers and their families, promoting human and economic development projects which raise their standard of life and contribute to the environmental development of their communities.

3. FAVORED MEMBERS OF SOCIETY:

In Colombia, there are more than 50,000 families (250,000 individuals) dedicated to collect solid wastes. Among them, there are 4,500 families of recyclers (22,500 individuals) directly associated in 90 supporrt groups. In addition, the community that receives the collection and sanitary services offered by the recyclers are indirectly favored.

4. APPROACH AND STRATEGIES:

Planning is coordinated by the Fundación Social´s National Recycling Program with the direct participation of the associated recyclers and the professionals from the Fundación in the cities where the program exists. Operational aspects and monitoring of the programmed activities fall under the responsibility of the recyclers´ organizations. Moreover, advice and institutional support are provided by specialists from the Fundación.

The Fundación Social develops 5 basic strategies with the recyclers:

4.1 EDUCATION:

This is understood and developed to be a learning process which arises from the recyclers´ practice and reality, conceived to improve and transform their context.

4.2 UNIONS:

This process addresses the institucionalization of the recyclers´ interests and projects within public and legitimate realms which enable them to compete under equal conditions compared to the other groups of society. This organizational process occurs on different levels:

- The local level in which individuals are associated to form cooperatives.

- The regional level in which the cooperatives from one or more cities come together in a regional association.

- The national level in which regional associations are grouped in the N.R.A. - The National Recyclers´ Association.

These organizational structures should operate under strong democratic systems for their decision-making and the election of representatives.

4.3 FINANCING:

The financial strategy is developed on two levels:

1. Capital Donations, which are non-refundable, for the groups to use regarding human recources, purchase of materials and financing in general, to help the organizations with their own projects and activities.

2. Loans to finance profitable urban recycling and/or sanitary projects. These loans are provided under special funding by some of the finance companies belonging to the Fundación social, i.e. Leasing Colmena and the Social Cashier´s Bank.

4.4 ADVISORY:

Specialized consultants and folow-through in technical, managerial, legal and economic matters to design, implement and evaluate urban recycling and sanitary projects are offered.

4.5 RESEARCH AND DEVELOPMENT:

This process is aimed to systematize former successful experiences and to study new technologies, methodologies and organizational structures in order for the community to develop efficient sanitary services along with the recyclers of solid urban wastes.

5. TYPES OF ECONOMIC PROJECTS THAT THE RECYCLERS DEVELOP:

5.1 COMMERCIALIZATION OF RECYCLABLE MATERIALS:

These include projects for recovering residues from the sources, classification, sendig and selling of the recycled materials. In this area, 40 centers for warehousing have been established from which groups of recyclers can sell 300.000 tons per year.

5.2 TRANSFORMATION - INDUSTRIALIZATION OF DEBRIS:

This includes projects for recyclable materials with an added value, such as: handicraft paper, with experiences in 2 cities --Manizales and Cali; production of plastic hoses in Pasto; and the raising of worms in Manizales, Pasto and Neiva.

5.3 SANITARY SERVICES OFFERED TO MUNICIPALITIES AND PRIVATE INDUSTRIES:

3 enterprises, Ecoaseo, Ecopijaos, Ecoservicios have been created and have contracted public sanitary services in four municipalities: Manizales, Chiquinquirá, La Plata and Espinal. In 9 cities where this program is carried out, services are offered to private industries by cooperative organizations. In Bogotá and Cali, 2 projects are operating under special management of hospital refuse offered by the cooperatives called "El Porvenir" and "Nuevas Luces" to San Ignacio and Rafael Carmona hospitals.

6. INSTITUTIONAL SUPPORT:

The individuals involved are those people and their families dedicated to recover recyclable materials contained in urban wasted. This work is carried out in the sources that generate the refuse, in the streets, in public areas called dumps destined for depositing garbage.

SUPPORTING ENTITIES:

6.1 FROM THE PUBLIC SECTOR

- Municipalities:

  By law, municipalities are in charge of defining and overseeing the fulfillment, coverage, quality and efficiency of the public services in each city. As representatives of public interest, municipalities can participate as associates of the companies wich render sanitary services; they can also have contracts with private companies through concessions and public biddings.

- Presidency of the Republic:

  The President's Office has financed recycling projects which increase employment opportunities, aiding to fulfill the recyclers' basic needs.

6.2 FROM THE PRIVATE SECTOR:

- Enterprises generating recyclable waste:
  Some companies in different cities have hired recyclers from existing cooperatives to pick up refuse in their headquarters.
- Recycling industries:

Industries especially involved with recycling are the paper, glass, plastic, metal and cardboard businesses wich have promoted this activity in Colombia by buying materials retrieved by the recyclers' organizations.

- NGO's:

  International and national Non-Governmental Organizations working on environmental matters and on the promotion of the disadvantaged are also involved. Moreover, there are formal agreements for sharing experiences and developing joint projects with these entities.

- Universities:

  Javeriana University (private) and the National University (public) have been consultants and offer training and studies in aspects such as industrial design, business administration, industrial and civil engineering, and architecture.

7. FINANCIAL RESOURCES:

The principal resources are:

7.1 FUNDACION SOCIAL:

This foundation donated 80% of the total cost for human, social and non-profit economic development projects in recycling organizations. For 1996, Fundación Social budgeted $700 million pesos -- US $700.000 dollars -- for the Recycling Program.

7.2 THE PUBLIC SECTOR:

The program sponsored by the Presidency or the Republic, "The Social Solidarity Network", and municipal administrations financed projects mounting to 85% of the total value of the projects generating employment in the sanitary and recycling services. In 1995, there were donations especially for, but not exclusively for, unorganized recyclers of $3.000 million pesos -- US $3 million dollars.

7.3 RECYCLING GROUPS:

In 1995, these groups donated manpower, machinery, and capital mounting to 20% of the total cost, approximately $140 million pesos -- US $140.000 dollars.

8. OWNERSHIP AND ADMINISTRATION:

The assumption of all the processes by the associated recyclers has been implemented through the institutionalization of their own union and enterprise organizations. These organizational forms are owned by the recyclers themselves and should be managed through democratic principles concerning decision-making

and election of officers. The consulting institution, in this case Fundación Social, has delegates within the recyclers' organizations; however, they can never become a majority on the board of directors and the same adviser cannot serve for more than 5 years. The Fundación has maintained consultant and support agreements with public and private entities interested in replicating the model for promoting recyclers and collective enterprises for the integrated management of urban solid wastes.

9. THE TECHNICAL LEVEL:

Some significant advances have been made in the field of designing and testing equipment and machinery in three areas:

1. For the separate storage of the debris
2. For the special vehicles for the selective collection of recyclable materials.
3. For the recycling plants adapted to the debris collected, and adjusted to the needs of the Colombian context within small and medium-sized cities.

In the field of planning and management of urban sanitary and recycling projects, special software (Mapwave) has been adapted to provide geo-referenced information. The practical applications of this information include evaluating zones, planning routes, evaluating results and other aspects related to render a better recycling service.

The development of these technical aspects is the result of assessing the country's existing conditions and situations with imported technology in order to make more appropriate adjustments in accordance with the reality of Colombia.

10. LESSONS:

10.1 The most relevant achievements are related to the development of the recyclers' identity, the associated organizational processes and the social recognition of the recyclers and their families as important environmental agents. Not long ago they were referred to as "the disposable ones". Today, most of them have worked hard to retrieve or gain their status as human beings.

10.2 Concerning the fulfillment of the recyclers' basic needs of health, education, child care and recreation, it is very important to mention the solidarity funds existing in all the organized groups as well as the two Attention Centers -- CAIR -- for the recyclers and their families in two populated cities of the country: Bogotá and Cali.

10.3 The greatest obstacle has occurred concerning the reluctance to hire the sanitary services offered. The municipalities' lack of confidence in establishing contracts with the recylers' companies is marked. In most cases, officials in charge prefer companies with large capital investments and

advanced technology, even though this technology is not adequate for Colombia´s cities and cannot be afforded by them.

10.4 The basic conditions for replication of the model in other cities are:

- The establishment of the recyclers´ associated organizations.
- The business management of urban recycling and sanitary projects.
- Interinstitutional coordination and active participation of community groups.
- Political determination on the part of local governments.
- Specialized advisory and consultation.

Urban Management Programme

Swiss Agency for Development and Cooperation

UMP/SDC Collaborative Programme on MSWM
in Low-income Countries

CASE STUDY

RECYCLE PAPER FOR TREE IN BANGKOK, THAILAND

Prepared by
Media Centre for Development
(RPTP)
Bangkok, Thailand

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Summary sheet

Recycle paper for Trees, Bangkok

Background

Paper is closely related to our daily lives. The more needs of paper using, the more needs of cutting trees for supplying to paper pulp mills. Nowadays, a Thai people uses 20-22 kilograms of paper per year. Annually, Thailand demands 1.3 million tons of paper . To produce one ton of paper, it requires 17 mature trees. This implies that to meet Thai people's needs of paper, we have to cut down 17 million trees per year. In other hand, this large amount of paper being used nowaday have been dumped as garbage into the environment. At present, a Thai people dumps 1 kg of garbage daily. Total population of Thailand dump 35,000 tons of garbage daily or 15 million tons a year. In Bangkok Metropolitan only, there are 7,000 tons of garbage daily. Amidst a vast amount of general garbage, almost a half of them is valuable which can be recycled, comprising of 19% of paper, 13 % of plastic, 8 % of glasses and 5 % of metal. It means that there are over 6,000 tons of waste paper being dumped everyday throughout the country. Today, paper factories in Thailand still need large amount of waste paper to be recycled. Thailand has to import 400,000 tons of waste paper from foreign countries every day. This is not because that we don't have enough waste paper, but we still don't have effective system of seperation and collecting waste paper from the offices and households.

The media center for development (MCD), a NGO based in Bangkok, has created and implemented the Recycle Paper for Trees to campaign and encourage seperation and collection of waste paper in the offices of business company, government agency, academic institute in Bangkok in order to deliver waste paper for recycling to reduce amount of garbage and to save trees as well as to save energy and natural resources, and also to raise fund from selling the collected waste paper to the paper factories.

Characteristics of the Area of Operation:

Area :	Bangkok Metropolis
Offices :	1,700 member offices (no. until Sep.1996)
Inhabitants:	
Density:	high
Income level:	
Access Roads:	good (but traffic jam)
Topography:	Metropolitan , flat

Service Costs & Financing

Equipment:	US$37,000
Personnel:	US$ 4,800 /mth
Maintetance:	US$ 1,600 / mth
Others:	US$ 720
Financing:	Grant, sponsorship, donation
Frequency:	

Fee Collection: member donation(US& 4 for one collecting box)
Amount:
Total income : US$ 80,000 per year (1996)

Technical & Operationa Parameters
Equipment : 5 vans
100 sq.metres warehouse
collecting box(60x75x90cm)made of cardboard
Others: uniforms
Personnel: 5 core staffs/4 drivers/4 collecting staffs/
1 warehouse keeper
% Female 28.6 %
Type of service: door to door
Distance to DS/TS: 1 km - 50 km
Frequency: daily
Working hours: 8 hrs/day
Coverage:
Productivity: 1.25 tons of waste paper a day or
30 tons a month (record in Sep 1996)
Recycling: Paper

Organization & Management
Initiated by: MCD (NGO)
Established in : June 1994
Managed by: MCD (NGO)
Legal Status: In the process of establishing foundation
Relation with target group: service provider
Participation: collect waste paper in the box and donate to the project
Relations with Municipality:
Relation with other groups:
Supervised by:
Working conditions: all year
Health conditions: acceptable
Technical assst. by:
Other activities: special event campaign

Key Challenges and Lessons:
Institutional: the foudation who concern in urban solid waste management and domestic fund raising campaign
Technical: box design for collecting waste paper,
collecting system from the member office to the warehouse
targeting at collecting and managing system at the office building
Financial: self sufficient with no grant and making profit in 3 years
Social: pioneer in paper recycling from the office in Bangkok (Thailand)
create paper recycling behavior in the office and introduce recycling box as one of neccessary office automation.

RECYCLE PAPER FOR TREES

Title of the case study : Recycle Paper for Trees

History

The project was originated by Media Center for Development (MCD) who is a non-government organization based in Bangkok working on media , communication and campaign for environment conservation and sustainable development. One of the MCD's main activities is strengthening NGOs and grassroot groups in forest revival and conservation in rural area. But MCD has gradually seen that successfulness in forest revival and conservation needs people participation both in rural and urban area. Thus MCD has desired to raise awareness and to motivate participations of urban people especially business sector in forest revival and conservation. In the beginning, MCD used method of information campaign through mass media to raise people awareness and motivate them to doante money for forest conservation activities, and sometimes invited them to joined the activities in rural area. It was not so successful in this way, because eventhough they gradually realised the problems but they still feel that it was something far from them, and there were many organization both Gos, NGOs and private agencies doing like this.

Thus, MCD tried to create and develop a new approach to make environment campaign that closely link with the urban people problems and in the same time could respond to the needs of forest revival and conservation in rural area. Which MCD could see that one of the important thing that urban people consume a lot and directly links with the forest is " paper " , because paper is produced from trees . While Bangkok and other main cities in Thailand are facing serious problem of overdumped garbage, and it is found that paper is one of the main composition of the urban garbage. Thus " paper " and " trees " came to the idea, as " paper " represented huge resources being consumed by the urban and also represented serious problem of pollution facing with the urban people, " trees " represented the forest and natural resources being destroyed and urgently needed to be revived and conserved.

So, MCD had created and developed the campaign to raise awareness of the urban people especially business company, government agency and academic institute in solving urban pollution , in conserving forest and natural resources by motivating them to maximise the utilisation of paper and to implement the office waste paper recycling activity. The campaign had also convinced them to collect and regularly donate their office waste paper to MCD. The collected waste paper had been sold to the paper recycling factory, the money earned from selling those paper would be contributed to the forest revival and conservation activities in the rural area. Thus, "the Recycle Paper for Trees project " started since June 1994.

Objectives

1.Raising environmental awareness and motivating seperation and collection of waste paper in the target offices. This aims to deliver waste paper

for recycling processing to reduce amount of garbage and to save trees for paper pulbmills as well as to save energy and natural resources.

2.Raising fund through the paper recycling campaign activity by asking for donation waste paper from the target offices. The income from selling those waste paper to the paper recycling factories will be contributed to " the Paper for Trees Fund " which will be the fund for supporting forest and natural resources conservation activities in the rural area.

Target groups

- Business companies , government agencies , academic institutes, internation organizations in Bangkok and periphery

The Beneficiaries

- Business companies, government agencies, academic institutes, international orgnizations who join the campaign
- Bangkok people and environment in Bangkok
- Environmental NGOs and grass root people
- Forest area

Approach/Strategy

The Media Center for Development is responsible for the planning , implemtation and operation ot the Recycle Paper for Trees Project.

Approach of the recycle paper for trees project is campaigning through mass media (newspaper, magazine, radio and TV) and direct contacting with the target groups who are business companies, government agencies, academic institutes and international organizations located in Bangkok and periphery to motivate them to be aware of urban pollution problems and value of paper linking with natural resources conservation, and convince them to maximize their utilization of paper, to save paper and to recycle paper by seperating and collecting their office waste paper, and donating those waste paper to the project.

The project has identified the target offices from these criteria : -location of the offices on the main business streets in Bangkok, potential of their paper usage such as research company, financial company, advertising agency, mass media, computer center et., - their interests and concerns of society and environment.

When the target offices decide to join the campaign, the project staffs will be sent to inform the goals, the obectives and procedures of the campaign to the target office staffs. After that, the project will provide them the project's boxes for collecting waste paper. When there are waste paper in those offices, their staffs will put them in the boxes. The project also provides them some media such as poster, exhibition giving information and education on concern issues.

The collecting teams (one team includes a van, a driver and collecting staff) will be regularly (once a week, every two weeks or once a month depending on amount of their waste paper) sent to the member offices to

collect waste paper from the boxes being setted. The collected waste paper will be stored in the project's warehouse waiting for selling to the paper factories to be recycled. (At present the collect waste paper are sold to the paper factory every 3-4 days)

The money earning from selling the collected waste paper will be used for the project running cost and the left will be contributed to " the Paper for Trees Fund " which aims to support forest and natural resouces conservation activities in the rural area.

Institutional Setup

The Recycle Paper for Trees Project is implemented and managed by MCD who has her own executive committee. But MCD also specificially organized the advisory board committee for the project. The advisory board committee composes of well-known persons , businessmen, government officials, academicians , mass media persons , environment NGOs workers and villagers. This advisory board committee is very useful for the project, the committee gives good image and creditbility for the project, shares the committee members' resources and fund to the project , links the committee members' network with the project.

At present (September 1996) , the project is run by 14 full-time staffs and 2 volunteers including a director, a coordinator, a secretary , a campaign staff and 2 campaign volunteers , a team manager , 4 drivers and 4 collecting staffs.

Implementation

After starting and implenting the campaign, the project has been recieved very good respond from the target groups and also from mass media (the project has recieved much coverage in the press) At the beginning, the project targeted at only 200 offices with one collecting team for the first year, but since June 1994 until June 1996 there are 1,365 offices in Bangkok joining the campaign and regularly donating waste paper to the project.

The project has 3 teams of paper collection (one team includes a van, a driver and a collecting staff). One team takes care of 400 - 500 offices. Since June 1994 to June 1996 the project could collect 295 tons of waste paper, it means that the project could decrease 295 tons of garbage and could save 5,016 trees. Since June 1994- June 1996 the project could earn US $ 44,500 from selling 295 tons of waste paper.

At present, the project can collect 25 tons of waste paper every month.(10 tons from every 500 offices in average) The amount of the collected waste paper is continuously increasing according to number of the member offices which are targeted at 3,000 offices by the end of 1996. At that time, the projcet will be able to collect 50 - 60 tons of waste paper per month.

Financing

The project funds (1995) come from different sources
- 38.4 % grant from funding agencies

- 36 % sponsorship in cash from business companies
- 8.4 % sponsorship in kind from business companies, mass media agencies
- 19.2 % income from selling the collected waste paper

The member offices regularly donate waste paper to the project, some member offices donate money for cost of the boxes being setted in their offices (US $ 4 for one box) .

The project plans to be self -reliance with least grant from funding agencies and can make profit for contribution to " the Paper for Trees Fund " in 3 years which the income will come from

- 45 % from selling the collected waste paper
- 20 % sponsorship in cash and in kind from business companies
- 15 % donation from the member offices
- 20 % grant from funding agencies or government agencies

In general, the project can achieve number of member offices and amount of collected waste paper as plan, but there are some difficulties of income from selling waste paper that the project cannot control the price.So,there are difference in the income from selling collected waste paper that can happen, because the price of waste paper in the market can be up and down. For example, the price of waste paper in 1996 is decreasing, it is 50 % of the price in 1995. Thus, the portion of the income from difference channels should be improved.

Significant Steps

At the beginning, the project targeted at small scale campaign with only 200 offices and 10 tons of waste paper a month. But after one year implementation, the result was over estimated in term of number of member offices, amount of collected waste paper and public awareness campaign, it made MCD able to good opportunities and potentials of the project to be developed into larger scale to meet demand of many others target offices that intend to join the campaign, while the recycling paper factories still need to be supplied with more waste paper.

Thus in 1996, the project develops into larger scale, targeting at 3,000 offices and 8,000 offices in 1997. By that time , the project can play an important role in the society in motivating urban people to participating in solving urban garbage problem, and supporting natural resources con servation by reducing usage of trees, energy and other resources through recycling activities.

On the other hand, it makes MCD has potentials to raise fund by earning money from selling donated waste paper and donated money from member offices, If the project has expanded into larger scale that can cover investment costs and core expenses, the project can self-sufficient and can contribute money to forest conservation activities after three years.

Lessons and conditions

The most significant success of the project is that the project can propose a concrete activity to the target people who gradually concern on environment issues can easily implement. Which such implementation (paper recycling activity) involve directly to the problem solving that they are facing , that is over-dumped garbage. In the same time , such activity can also link to the forest and natural resources conservation in the rural area both reducing forest usage and increasing forest area that the target rarely involve by themself. The project can make the target people realize and be proud that they themself can grow trees every times they put waste paper in the recycle boxes even they are in the air-condition room at the top of the building in the center of Bangkok.

The Recycle Paper for Trees Project is the pioneer in paper recycling campaign in Bangkok and Thailand. The project can create a new behavior in paper usage and paper waste management in the office. The project box seem to be a new office automation that every offices need at present and in the future. At present, the project has good image and is gradually accepted by the target groups, environment organizations both Gos and NGOs and the publics to be a specialist and a serious implementor in paper wasate management and recycling. There are some organizations in other provinces duplicate the activities and campaign to be implemented in their area. the project support them knowledges, information and some resources.

Some other conditions that make the project quite progress are

- The project has tried to motivate and raise collaboration from various sectors especially business and mass media. The project has tried to raise sponsorship from business companies for the project costs by returning them some benefits inform of public relation and coperate image advertisement.

- The project emphasize on mass media campaign to provoke interests and awareness among the target groups. Thus , the project has tried to raise collaboration from mass media to regularly disseminate information and activities for the project.

- The project has tried to communicate regularly with the member offices , inform them the progress and the activities in order to make them participate more in the campaign and feel to be partnership with the project.

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CASE STUDY

REFLECTIONS ON MANAGEMENT APPROACHES TO SOLID WASTE COLLECTION

Selected cases in Latin America

Prepared by
UMP Regional Coordination Office - LAC
(PGU/LAC)
Quito, Ecuador

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REFLECTIONS ON MANAGEMENT APPROACHES TO SOLID WASTE COLLECTION

Selected cases in Latin America

Author: Carlos Landín P., PGU/LAC, October 1996

Introduction

The purpose of this paper is to complement existing information on microenterprises that operate in the field of solid waste collection in Latin America, and to provide a comparative analysis of the services offered by these microenterprises, as well as large private and municipal companies in five cities of the Andean Region.

This analysis has the objective of contributing to the development of solid waste collection microenterprises with a panoramic vision of the competitors and partners, that share with them this field of work.

With the assistance of some performance indicators, an attempt is made to clarify interrelations among these three operative management approaches and to compare several of the service characteristics provided, .

Cases analyzed

As a basis of the analysis undertaken, the annexes provide a brief description of case studies in five cities of the Andean Region of South America: Quito and Guayaquil (Ecuador); Lima (Peru); La Paz and El Alto (Bolivia).

Reflections arising from a review of the experiences considered

1.- The operation of collection services by microenterprises is easily compatible with the operation of municipal services or municipal companies. As a general rule, microenterprise operation is always carried out under municipal supervision or at least in coordination with these entities. In some cases, the municipality directly participates in the establishment of these microenterprises.

Compatibility between microenterprises and large commercial concerns is clearly of a lesser nature than in the previous case. Commercial enterprises strive for a monopoly, and contracts frequently contain terms that award such exclusivity. According to the information obtained, large companies would be willing to admit microenterprises only in those sectors where road infrastructure is deficient, or where other factors make service mechanization difficult and the cost of operations increase.

2.- Microenterprise service operation does not demand important changes from the municipality nor does it represent significant risks, and it is performed by means of contracts, concession or in an informal manner.

However, the transfer of these operations to large companies implies a contract that entails considerable terms and amounts, which must be granted by means of a carefully studied open bid process, and requires oversight by a municipal unit (or private agency, a situation not encountered yet), of proven technical and moral standing.

Additionally, a guarantee for the adequate flow of resources to pay the contractor must be in prior existence. Excess of personnel problems must be addressed and the contractor must enjoy a stability of at least the period for investment amortization, which normally takes 7 or more years:

In other words, to contract with large companies, the municipality must solve problems that burden the rendering of its own services, clearly a difficult situation.

In conclusion, the option of operating with microenterprises, instead of with large private concerns, represents an easier decision for the municipality. If the municipality is able to obtain good results with microenterprises, it could envisage the gradual transfer of the service operation, adaptable to its own development dynamics, avoiding thus a shock therapy.

3.- Small enterprises are frequently forced to accept arbitrary contract conditions, imposed by municipalities or large private concerns. It is difficult for them to give an appearance of reliability before large private and public institutions, and must therefore have recourse to NGO's intermediation. In some cases, when through an association they have achieved a respectable management capacity, access to larger contracts is made difficult since they do not enjoy insertion in the circles of power.

4.- In other cases, when the municipalities are extremely weak, microenterprises have had to solve the complex matter of the direct collection of rates from the population. This entails large percentages of delinquent payments and great efforts, as exemplified by the El Alto case, where 28% of the microenterprise personnel is exclusively dedicated to rate collection, being able to achieve only a 20% of timely payment from users of the service.

This is a problem that private companies have not wanted to take over under any circumstance, since it is not possible to apply the main coercitive principle of providing the service only to those who pay for it.

Large private concerns would probably be quite interested in the system of concession, including the obligation of payment if the cities in the region were not segregated cities, with great differences in urban infrastructure and with large sectors of poor population, that would not be able to pay even a modest fee for this garbage collection service, except by foregoing their daily bread. Nevertheless, payment for this service, even though symbolic, seems to be an indispensable arrangement for the lesser income strata, in order to be duly appreciated.

Rate collection is truly a difficult area. In spite of their coercitive power, neither municipalities nor the Central Power have been able to find a satisfactory solution. The best solution seems to be the option of differentiated rates, according to socio-economic levels, charged in combination with other service rates, the suspension of which, in the event of delinquency, can truly represent an unbearable condition for the user, as in the

case of electricity or water. Although this seems to be the present trend, many countries have yet to accept this as a legal procedure.

5.- Both microenterprises as well as large private companies enjoy a greater flexibility in personnel management than public companies under a public personnel regime, which favors the permanence of employees, conspires against efficiency and in general leads to an excess of workers.

They also do not have labor unions that may limit the possibility of introducing changes to improve service efficiency. Due to their small size, they do not have to resort to subterfuges in order to avoid the formation of labor unions or to keep them immobilized.

6.- NGO's, and some local and international agencies, have had a protagonic role in the formation of microenterprises. With the support of international resources they have generally promoted them, and provided technical assistance, as well as acted as intermediaries before governments, banks and large companies. In so doing, in several cases, these have imbued their own logic to the process, adopting decisions not necessarily shared by the microenterprises, but which must be tolerated or accepted as the only possibility of going ahead.

In one of the cases analyzed in this paper, an influential politician has been the protagonist of this role. An attempt made to follow a model of microenterprise formation with persons selected from the community, previously determining the number of those comprising the microenterprise, how they should work and how much they should earn has fallen into many of the shortcomings mentioned before, This has apparently led to the formation of municipal employees devoid of labor union benefits, that masquerade as microentrepreneurs.

Surely, there is no absolute truth in the saying "an entrepreneur is born and can not be formed". But to make an entrepreneur is not an easy task. No matter how much training, motivation and technical assistance is given, if in that person's interior an "entrepreneurial mentality" does not already exist. The idea of first identifying microentrepreneurs and then providing them with the necessary support for autonomous development, seems to be a more reasonable strategy.

In another case, the formation and consolidation process has practically been of a spontaneous nature, and as a result, microenterprises of an individual character, as opposed to an associative one in the rest of cases, has been the result. From these experiences, it is difficult to reach final conclusions but we must pose the question whether it is correct to always bet on the associative or cooperative model, in a world where individualism is beginning to be the common norm.

Collection Service Indicators

Considering the limitations that indicators have, these are useful to provide a preliminarily guide for the analysis, especially in this case, where the socio-economic conditions of the cities analyzed are relatively similar. The following cases have been selected, the values of which appear in the chart in the annex.

-Cost per ton collected and transported to the site of final processing stated in US Dollars per ton. Cost values determined refer only to waste collection and transport, that do not include sweeping, transfer or final processing, but these do include equipment replacement and oversight of services in the pertinent cases.

-Population served by each operative worker in the service. The truck driver is included with the workers that directly collect waste. This population data corresponds to that which is effectively served, and not to the total population in the city.

-Population served by each motorized vehicle participating in waste collection.

-Tons collected per operative worker in daily service.

-Tons collected by each motorized vehicle per day.

Comments regarding indicators

Even though it is possible to make extensive comments regarding indicators, we would like to limit these to the following:

7.- In the case of Quito, microenterprise costs are clearly higher than those of the municipal service. In the case of La Paz, these are somewhat lower than the Starco Company. In the case of Peru, microenterprise costs are considerably lower to those of the Municipality of Lima. As can be observed, in several cities, the services provided by microenterprises are less expensive, while in others it is the opposite. It all depends on each specific case.

On the other hand, even though comparison between countries and even cities in the same country is always subject to debate, the costs of Vachagnon (Guayaquil) are much lower than the rest, excepting those of the Amersea microenterprise (El Alto). In favor of the larger enterprises we must state that the quality of the service provided is considerably superior. However, in favor of Amersea we must state that the municipality must not be concerned by paying for services provided, since this organization also carries out the collection of rates.

8.- In the sample analyzed, microenterprises present a wide variation in costs, from very low to very high. Municipalities present very high and medium costs and large private companies, medium to low costs.

On the basis of observations of other cases not included in this analysis, we can state in general terms that in a larger sample we could probably detect cases of more efficient municipalities and also probably inefficient large private companies. Consequently, it seems more logical to conclude a priori that none of the management approaches can be considered as the most convenient.

9.- Indicators obtained are quite positive in relation to the averages reported for the region (as an example PAHO reports 900 inhabitants served by each worker and .76 tons per worker/day). This indicates that in the sample selected, there is a predominance of successful cases.

10.- We have been impressed by the great yields obtained by private enterprise, especially with operating machinery that contributed to higher personnel performance. Municipal companies could also follow this strategy, and if they derive more realistic rates, they could also reach a level of sufficient investment. However, microenterprises would generally not be able to do the same.

11.- Some microenterprises have been able to survive without any help or payment from the municipality, and have even been able to overcome municipal boycotts as in the case of El Alto, where in spite of being of individual private property and not cooperative like the rest, the company seems to have been been able to develop in its workers and owners the vitality that is necessary to compete successfully.

12.- In general it is very difficult to obtain information regarding cleaning services, especially that relative to costs or yields. There is no experience documenting culture. The great advantage of having available self-evaluating mechanisms, documenting and disseminating experiences is not perceived as a matter that offers great advantages.

Recommendations

The following are the recommendations submitted for microenterprises. In the same order, these refer to the comments offered previously.

1, 2 and 5. It is convenient for microenterprises to actively develop contacts with municipalities, to better prepare their image in order to sell better and try to jointly determine the spaces in which their participation is more convenient for both parties. It is also advisable to do the same with large private companies, even though it may be more difficult to find common interests with them.

3. It behoves microenterprises to promote associations in order to improve their possibilities for competition, management capacities and the probabilities of having access to training and technologic development. They must use all mechanisms available to them to exert pressure upon municipalities to promote an equality of opportunities.

4.- They must use their influence within the community to pressure municipalities into fulfilling their obligation of providing adequate cleaning services to the entire population and to fully collect the corresponding rates for said services.

6. Microenterprises, their promoters and supporters must build more horizontal communication spaces.

7 and 8.- We must bear in mind that small and large enterprises, both public and private can essentially be efficient or inefficient, although under present circumstances we can observe certain trends. Each case should be specifically analyzed and without granting privileges nor detriments to anyone, society must open spaces for competition, .

10. In view of the fact that it is difficult for microenterprises to compete with the investment capacity of large private or public companies, it is probably more convenient

for them to focus their field of action towards those conditions where service mechanization is not productive, as in the case of smaller cities and neighborhoods with deficit road infrastructures or limitations for the use of machinery.

Another resource that could be capitalized in their favor is their better contact with the population. This allows them to better adapt to diverse situations and even reduce rates to certain citizens provided they take over certain tasks such as carrying waste to a specific collection point. This is something that is not convenient for large companies.

12.- Financial and international organizations should use mechanism to pressure municipalities to introduce monitoring mechanisms of their work and finances to disseminate results. The municipalities themselves would benefit from this, as well as small and large companies and foremost the entire citizenry.

Likewise it would be useful to dedicate efforts to strengthen non-academic information disseminating mechanisms addressed to municipalities, enterprises, leaders, etc.

ANNEX 1:

Basic Data for Solid Waste Services

Name	Users (1000)	Operative Personnel	Cost/month (US$)	Collected (ton/month)	Vehicles	Cost factor	Personnel factor
Emaseo Quito	1154	465	389000	16600	86	0.83	1
Microempresas Quito	20	24	3300	130	6	1.05	1
Vachagnon Guayaquil	1768	843	549000	42300	40	0.69	0.5
Municipios de Lima ESMLL	3600	2232	2622000	55400	372	0.83	1
Microempresas Peru	263	325	40300	2600	15	1	1
Starco La Paz	468	144	185000	8040	36	0.74	1
Microempresas La Paz	248	120	38000	1675	9	0.69	1
AMERSEA El Alto	334	66	16300	2053	10	1	1

Collection Service Indicators

Name	Cost/ton (US$/ton)	Users served		Tons collected	
		x worker	x vehicle	x worker	x vehicle
Emaseo Quito	19.45	2482	13419	1 37	7.42
Microempresas Quito	26.65	833	3333	0.21	0.83
Vachagnon Guayaquil	8.96	4195	44200	0.96	40.67
Municipios de Lima ESMLL	39.28	1613	9677	0.95	5.73
Microempresas Peru	15.50	809	17533	0.31	6.67
Starco La Paz	17.03	3250	13000	2.15	8.59
Microempresas La Paz	15.65	2067	27556	0.54	7.16
AMERSEA El Alto	7.94	5061	33400	1.20	7.90
Average	18.81	2539	20265	0.96	10.62

Sources:

1.-Environmental Businesses Seminar - Memoirs. Emaseo. Quito, 1996
2.-History of garbage Services of Guayaquil. Guayaquil Cleaning Department. 1996
3.-Garbage in Lima. IPES. 1996
4.-Study on solid waste microenterprises in Latin America. Waste, Acepesa. Ipes.
5.-Papers prepared by Amersea for the "City for Live" event.
6.-Interviews information and observations carried out by the working team organized by the author, Cecilia Castro, Ipes, Javier Abasto, Magaly Merchan and Katherine Endara.

ANNEX 2: DESCRIPTION OF CASES ANALYZED

Quito , Ecuador.

Until the end of 1993, the Cleaning Service was in charge of the Municipal Directorate of Hygiene, when the Metropolitan Cleaning Company. EMESEO was formed, and all equipment and personnel in charge of this service were transferred to same.

This change improved process agility, which before required municipal approval but was unable to eliminate several constraints represented by labor movement conquests, nor lift the burden that represents trying to work with personnel that had grown accustomed to another work dynamic.

In a parallel manner, and thanks to the initiative of a dynamic municipal counsellor, six microenterprises were established in 1994 to collect waste of 20.000 inhabitants. Most of the waste collected by these microenterprises is placed in containers, from which it is collected by Emaseo. This produces serious inefficiencies that are presently trying to be corrected. Recently, Emaseo has formed a new microenterprise, designed to serve 150.000 inhabitants. Said company was not considered in this analysis.

Emaseo, whose income is generated by a 10% of the electric energy rates, has declared satisfactory results, but considers that due to high personnel costs (pressure exerted by a labor union) it would be convenient to privatize this service.

Guayaquil Ecuador.

In Guayaquil, where the Municipal Cleaning Department had suffered a long a grave crisis, service operation was transfered in 1992 to a private company (Bande and Ecualimpia).A parallel rate collection mechanism was established through electricity rates (12%).

Since 1994, collection service is in charge of the Vachagnon Consortium, with a 7 year contract. Final processing is done by the I.L.M. Consortium, for a period of 10 years. A truly dramatic change has been achieved in service quality and an increase in coverage that presently exceeds 90% of a population of approximately 2'000.000 inhabitants.

The consortia provide the service under exclusivity, and there are no microenterprises, except those that dedicate themselves to the collection of recyclable waste at source.

Payment is performed to contractors on the basis of weight collected and placed into a sanitary land fill. Contractor's technical control and oversight is of an excellent quality and costs are convenient. Due to these elements, the information provided by the Cleaning Directorate has been highly detailed and complete.

Lima Peru

Collection of solid waste in Lima has been truly chaotic for a long time and has been under the responsibility of district municipalities and the Municipal Cleaning Services Company of Lima. ESMLL, reaching a collection coverage of approximately 60% of a total population of 6 million people. Only a 26% of waste collected reaches the officially accepted sites for final disposal.

Service has been financed through a property tax but, for a long time, it has been almost fully subsidized by the central government, excepting a very short period when it was possible to charge rates together with the electric bill, a resource later declared unconstitutional.

The ESMLL has recently been eliminated and there is a process for contracting cleaning services for the central part of the city with a foreign company, that charges unit costs that far exceed those obtained by other cities in Latin America.

In those principal areas of the city which have not received attention by municipal services, several Peruvian NGO's, among them the Social Economy Institute of Peru - IPES- enjoying undeniable leadership since 1989, and with the assistance of German NGO's, have been forming waste collection microenterprises since 1987.

The sample under consideration includes 9 microenterprises in Lima and 6 in other cities of Peru. According to estimates, these serve a population of 263.000 people. Most of the microenterprises are engaged and paid by the municipalities and others directly by the inhabitants. Waste is delivered by them in previously agreed schedules and microenterprises transport it in manual cars pushed by two people to a dumptruck. In most cases, this vehicle transports waste to the final sites officially authorized by the district municipality.

The service provided by microenterprises is acceptable and rate collection allows them to pay their expenses, but it is difficult for them to be able to accumulate resources to replace investments or even turn a profit. There is no doubt that their main problem is collecting monthly bills for their services especially in those cases where the population should pay directly. Another serious problem is that of a lack of stability, since contracts, when these exist, are for periods normally not exceeding one year.

La Paz Bolivia.

Although the establishment of the La Paz Cleaning Company (EMA) in 1989 represents a step forward in the management of solid waste of the city, two years later it was reorganized, in order to overcome a basically financial deficit situation. In 1991 an open bid contest was annulled, and the hiring of service operations was entrusted for a period of 7 years to Starco, a private enterprise formed by Chilean capital.

Unfortunately the financial problem had not resolved, since as late as 1992, the Senate approved the collection of rates as a fraction of the electric energy bills (7%). As a consequences, payments for services had to be made against a Municipal Loan (4

million US), reaching an arrears of up to one million dollars. This precluded the possibility of having EMA demand an adequate fulfillment of the contractor's obligations.

Also, several microenterprises had been formed prior to the Starco contract, to service the more difficult sections of the city. The hiring of these microenterprises entailed a contractual obligation for Starco. Nevertheless, claiming that contract payment terms were not being honored, Starco ceased its payments to microenterprises.

In order to solve this difficult situation, made worse by the lack of financial reserves of microenterprises, the contract was renegotiated with Starco. Starco was left with the easier sections of the city at the same contractual prices, while the EMA contracts with the microenterprises, which in spite of working in more difficult areas, received a slightly lower rate that Starco.

Coverage of the 730.000 inhabitants of La Paz corresponds to a 64% by Starco and 31% by microenterprises. Service quality is acceptable and contractors seem to be willing to continue under present contractual conditions.

El Alto, Bolivia.

Originally a suburb of La Paz, but faced with an explosive rate of growth, El Alto soon became an independent city. The young municipality was unable to comply with even the minimum urban cleaning demands of the city, which forced the community to organize a waste collection service managed by its leaders. This service was theoretically to be paid by all, even though in practice, payments have always had a high degree of arrears.

The administration's tasks constituted a heavy burden to carry for the leading group, and these were taken over in a personal manner by several of the leaders who became the managers of small waste collection enterprises.

The development of these microenterprises is faster than the development of the waste management capacity of the Municipality which in 1989, entered into a contract with the first of these. In the ensuing years there have been periods of great tension among the microenterprises and the Municipality, and many instances of harsh attitudes and power abuses have been evident.

With the goal of balancing forces with the Municipality. in 1990, nine microenterprises merged, establishing the El Alto Solid Waste Collection Association, AMERSEA. In 1992 an agreement was signed through which the municipality empowered Amersea to continue providing services and made it responsible for collecting rates, reserving for itself the power to regulate and control the service.

Later, the Municipality, which provided a fully subsidized waste collection service of modest coverage, received a millionaire donation of equipment from Japanese Cooperation, under the condition of privatizing the service. It called for an open bid process in which it did not allow Amersea to participate. The latter denounced irregularities and finally sued the Municipality for breach of contract.

Amersea has declared its willingness to share the provision of these services for El Alto with any other company and is examining the possibility of offering its services to other cities in Bolivia, confident of its capacity to deliver. It would be agreeable to a contract with the Municipality instead of directly collecting rates from users, due to a high degree of late payments, in spite of the fact that a 28% of its labor force is exclusively dedicated to the effort of collecting bills for services rendered.

Urban Management Programme

Swiss Agency for Development and Cooperation

UMP/SDC Collaborative Programme on MSWM
in Low-Income Countries

CASE STUDY

REGIONAL OVERVIEW: ARAB STATES

Prepared by
UMP Coordination Office for Arab States
(UMP-Arab States)
Cairo, Egypt

Presented to the
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in Developing Countries

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I. INTRODUCTION

For many cities in the Middle East and North Africa, and throughout the developing world, dealing with the environmental costs of rapid growth and urbanization represents a phenomenal challenge. This is particularly true in the area of solid waste management. While cities are generating an ever-increasing volume of garbage, the effectiveness of their solid waste collection and disposal systems are declining. In urban centers throughout the developing world less than half of the solid waste produced is collected, and 95% of that amount is neither contained nor controlled It is either indiscriminately thrown away at various dump sites on the periphery of urban centers, or at a number of so-called temporary sites - typically empty lots scattered throughout the city. These open landfills often have environmental impacts that extend beyond their boundaries, polluting nearby water sources and serving as breeding grounds for disease-bearing rodents and insects. Additionally, the garbage that spills out of these sites impairs the operation of infrastructure systems, destroys pavements and street surfaces, and consequently hinders pedestrian and vehicular flow. Furthermore, as existing sites are filled to capacity and new sites become increasingly hard to find, the costs of disposal rise sharply, exacting a huge toll on already strained municipal budgets.

Many urban centers in developing countries have two parallel but separate systems that handle solid waste. The first, which is formal, is administered by the government and tends to be costly and inefficient The second, which is informal, involves communities of scavengers that compensate for the slack in municipal services by collecting, sorting, recycling and selling waste. The scavengers, often the city's most physically, socially and economically marginalized inhabitants, recognize the potential value of certain materials, such as plastic, paper, tin, and bones, and turn to the recovery and marketing of these materials as a source of income. However, cooperation between the formal and informal systems is exceedingly rare. In Cairo, where the government has entered into partnership with the informal garbage collectors, the fusion of the two systems has been successful on many levels. The experience in Cairo demonstrates how this type of merger can both increase the efficiency of municipal services by reducing the cost of street cleaning and waste disposal, and create work for the urban poor.

II. PARTNERSHIPS FOR THE URBAN ENVIRONMENT: SME PARTICIPATION IN SOLID WASTE MANAGEMENT

To fully grasp the vast potential for small and micro enterprises (SMEs) to help solve the solid waste management predicament prevalent in urban centers in the Middle East and North Africa, it is crucial to keep in mind that SMEs, formal and informal, are truly the engines of economic growth in the region. They are a principle element in strategies developed by the poor to escape poverty.

1. ENGINES OF THE REGION'S ECONOMY

Supporting the entrepreneurship of the poor is central to promoting sustainable development and broad-based urban economic growth in the Middle East and North Africa Many of the poor are small and micro-enterprise owners, and their businesses represent the mainstream of private sector economic activity in the region. In Egypt, for example, they account for somewhere between 75% and 90% of private non-agricultural employment. While there is definitely a substantial variety among the small and micro-scale businesses in the region, there are certain characteristics that they share. They tend to be labor intensive operations that use basic technologies. They also have quick start-up times, are remarkably innovative, and have shown themselves to be extremely agile in responding to shifts in market forces. While their access to new technologies is generally limited, they are quick to incorporate appropriate technologies whenever they are made available to them. Furthermore, these operations provide products and services primarily to low-income communities at affordable prices, a market often ignored and rarely reached by larger companies. More than any other economic sector in the region, small businesses show outstanding potential for job creation, particularly among the poor, a very important attribute given the pressure of the region's rapid population growth. When small businesses receive the right support they flourish, and as they do so they spark other enterprises, infusing urban economies with much needed momentum.

Despite the enormous potential of this sector, its growth is significantly handicapped by the paucity of financial services available to it, in particular savings accounts and loans These entrepreneurs consistently list their limited access to credit as a major obstacle to the growth of their businesses. In a 1992 survey of small business owners in Egypt, over 95% of the respondents identified a lack of working capital as either the most important or the second most important constraint faced at business start-up. Small businesses face this scarcity of credit for two main reasons: first, because traditional lending institutions such as banks are structured to meet the needs of medium to large size businesses and high net worth individuals, rather than those of small businesses; and second, because other organizations that could potentially provide these services are either not set up to do so, or are hindered from doing so by constraining regulatory frameworks. As a result, practical steps, such as recycling the savings of the poor back into their communities through setting up loan pools, are not taken because there are no available institutional means to facilitate this.

No matter how much potential small businesses have, these engines for growth can go nowhere unless they have access to economic fuel Consequently, one of the most important actions that can be taken to promote urban development in these regions is to create the means through which much needed financial services can reach those individuals whose access to these services would otherwise be severely constrained or nonexistent.

2. SMES AND SOLID WASTE MANAGEMENT: PROPOSED UMP-ASR APPROACH

The experience of Cairo's garbage collectors is, to date, the most successful attempt in the region at solving the problem of solid waste. Since the government formally integrated the garbage collectors, called Zabbaleen, into the city's waste management system, it has been able to improve and expand its solid waste collection system, while developing the entrepreneurial potential of the poor and improving their living conditions. The organization of the Zabbaleen into small franchises has allowed them to provide adequate collection services without having to incur the costs of the machines and technology otherwise used by private waste collection organizations to cover larger territories. In addition, through the help of an urban upgrading program, and the provision of credit in the Zabbaleen settlement, many of the garbage collectors have been able to establish small businesses for the processing of recycled waste which has in turn allowed them to increase their profits. Significantly, once a business model was introduced into the community, several other recycling-related enterprises sprang up - businesses producing merchandise from recovered waste, businesses conducting trade and commerce, and businesses providing services.

Adapting this successful experience to other similarly afflicted urban centers in the region could help achieve a sustainable solution to the problem of solid waste management in these centers and improve the living conditions of the poorest urban dwellers. The Zabbaleen model could be replicated through a two-phase approach: Phase I, the formal integration of both formal and informal sectors in the municipal solid waste management system, and Phase II, the promotion of small businesses among scavenger communities. Each phase would consist of a number of well defined steps necessary for the successful implementation of that phase. Step one of Phase I would be to introduce the concept of formal integration to all parties involved: the municipality (government), the scavengers, and relevant community organizations. Likely obstacles to be encountered will be government skepticism about the possibility of sustaining a truly synergistic relationship with the scavengers, and scavenger suspicion of governmental authority, since they exist on the margins of legality. Specific measures to reduce the cost of entry of the poor into the solid waste collection trade must also be included as part of this initial presentation. Such measures would include parceling out the city into small service units (some as small as a few city blocks) that the scavengers could feasibly afford to bid for, or abolishing competitive bidding practices altogether. Step two of Phase I would be to provide the legal and technical support necessary to establish a working partnership between government and scavengers. A third step would be to provide the garbage collectors with the necessary training and technical assistance to ensure that they are able to profitably operate their solid waste collection and recycling franchises.

Phase II concerns the establishment and support of small recycling businesses in the scavenger settlement. The purpose of this phase is to ensure the sustainability of the association between the formal and informal solid waste management systems through support for a broad and growing economic base for the marginalized community. Step one of Phase II would entail conducting a thorough investigation of the income-generating recycling opportunities available to the garbage collectors, as well as a carrying out a careful market analysis to determine the

size and location of the market demand for the various recycled waste products. Step two of Phase II would be to interest entrepreneurs in the community in the establishment of small recycling businesses. Appropriate technologies for processing the garbage would be introduced, and credit would be provided for the purchase of machinery and to cover the initial investments needed to start these businesses. Phase II must also be accompanied with a comprehensive environmental and infrastructural upgrading program aimed at improving the abysmal conditions in scavenger settlements, which not only impact the health of the inhabitants, but also hinder the growth of small businesses in these communities - few machines can function without electricity, and water is essential to many waste processing activities.

III. REGIONAL EXPERIENCES IN SME SUPPORT AND SOLID WASTE MANAGEMENT

1. THE ALEXANDRIA BUSINESS ASSOCIATION AND THE EGYPTIAN SMALL AND MICRO ENTERPRISE DEVELOPMENT FOUNDATION: BRINGING THE EFFICIENCY AND RESPONSIVENESS OF THE PRIVATE SECTOR TO MICRO FINANCE

A review of different channels for the disbursement of credit to small and micro enterprises underscores the importance of private sector qualities to the success of micro-finance operations. The experiences of two micro-finance ventures in Egypt show that program effectiveness and sustainability hinge on the adoption of a private sector approach. Both organizations are non-profit NGOs, one located in Alexandria, and the other in Cairo. The Alexandria Business Association (ABA) was originally a business association made up of entrepreneurs from the local community and has had a fairly pronounced private sector dimension since its inception. The Egyptian Small and Micro Enterprise Development Foundation of Cairo (ESED) on the other hand, has only recently made the necessary changes to its management structure to incorporate private sector strengths.

In 1990, the foundations each received a collateral fund from the United States Agency for International Development (USAID) against which to borrow money at commercial rates to on-lend to their clients. ABA received $8,000,000. ESED $2,650,000. In addition, they each received separate grants - $2,000,000 for ABA and $1,407,300 for ESED - to pay for management and operation expenses until they could cover these costs from the revenue generated through loan recovery. Both institutions practice a similar methodology for loan disbursal - they extend short-term loans for use as working capital, require minimum collateral, offer flexible loan repayment terms, and provide technical assistance to their clients. Additionally, the organizations send employees directly into the communities they serve. These employees, known as extension officers, identify clients, assess their needs, and monitor and collect loan repayments. This methodology, a typical NGO approach to micro finance characterized by a high level of client-extension officer interaction, circumvents traditional

barriers to the delivery of credit to small and micro entrepreneurs and has proved remarkably effective when combined with a private sector management style.

Since the project was initiated, ABA has been run by a Board of Directors made up of members from the local business community This has resulted in a particularly productive and sustainable operation. Several indicators point indisputably to its effectiveness. For example, the foundation has served approximately 21,000 clients, achieving a range of outreach comparable to some of the most successful micro-finance ventures in the world. Its loan portfolio is diverse, including loans to small and micro enterprises involved in manufacturing processes, trade and commerce, and the service industry. The rate of increase in the number of borrowers hovers at around 138% a year, demonstrating an impressive demand for, and satisfaction with services. The loan repayment rate, a critical factor in the financial sustainability of the organization, is as high as 99.2%. The level of productivity of the foundation's loan officers, an accurate gauge of the organization's effectiveness, is strong, averaging 100 clients per credit officer The approach used by the foundation to attain such high levels of extension officer productivity was borrowed from the private sector. It included offering basic salary incentives based on the loan repayment rate and the number of clients served. As a result of the foundation's effectiveness in the areas mentioned above, it began covering its operating costs from loan recovery revenue in 1992, fully two years ahead of schedule.

ESED's track record, on the other hand, has been mixed, and its less successful performance is a compelling illustration of the importance of a private sector approach to the success of micro-finance operations. In the project's early stages, the foundation was directed by a management team with a limited business culture who made decisions without operation profitability as the first priority. Some of the less than ideal early management practices included micro management by the NGO's Board of Directors that undermined the Executive Director's authority, hiring decisions that were not made with the productivity of the organization as a primary consideration, and inappropriate distribution of responsibility among staff resulting in some employees being under-utilized, while others had to fill more than one role. In addition, a reluctance by upper echelon management to streamline the organizational structure and to update the NGO's information systems also undermined the foundation's efficiency This management approach led to disappointing performance indicators. Two years into the project, loan officers were reaching only about 57 clients each, the total number of SMEs served was only 748, and the level of delinquency on loan repayment was as high as 17%

In early 1994, the foundation experienced a change in management personnel and style. A former banker was hired as the new executive director, more representatives from private business were integrated into the Board, and a strategic plan focusing on improving extension officer productivity and reducing loan delinquency was developed with the goal of turning the foundation into a profitable operation. Through the strategic plan several key changes were implemented: the organizational structure was modified so that more responsibility was

delegated to the Executive Director and his subordinates; the bureaucracy of the foundation was trimmed through the reduction of paperwork and the increased use of automated record-keeping; and an incentive system similar to that in use at ABA was instituted in order to improve the productivity of extension officers. These private sector style changes to the management structure resulted in a dramatic improvement in performance: the foundation's loan officers now serve an average of 116 clients; the loan repayment rate has increased from 83% to 98%; and the total number of small and micro entrepreneurs who have borrowed from the NGO has grown from 748 to 23,450, representing an annual rate of increase of up to 200%.

2. HARNESSING THE POWER OF THE INFORMAL SECTOR: THE CASE OF THE ZABBALEEN

In Cairo, responsibility for the management of the solid waste system is currently shared by the Cairo Cleaning and Beautification Authority (CCBA) and a traditional private-sector waste collection system that has evolved over the last fifty years In the traditional configuration of this system the Wahis, or people of the oasis, have served as brokers and administrators, while the Zabbaleen have performed the actual garbage collection. The Zabbaleen were originally landless agricultural laborers who migrated to Cairo from Upper Egypt in several waves beginning in the 1930s and 1940s. Because they had little education and were equipped with few technical skills, they turned to garbage collection for their livelihood, purchasing the right to collect waste from the Wahis who had been involved in the trade since the turn of the century. The Zabbaleen used organic waste as pig-feed and earned limited profits by selling pork products. They complemented this revenue with the sale of recyclables they sorted from the garbage, such as bone, glass, plastic, and paper.

This system served Cairo relatively well until the mid-1970s, when it began to fray under the pressure of the capital's explosive growth. The fragmented character of the work force and the informal work arrangements limited the system's ability to meet the needs of the rapidly expanding city. At one point, the municipality seriously considered replacing the traditional system with a modern, mechanized one. However, it eventually implemented policy initiatives integrating the Zabbaleen into Cairo's waste management system. In cooperation with EQI and two NGOs working in the scavenger community - the Association for the Protection of the Environment and the Garbage Collectors Association - the municipality opted for a franchise arrangement in which the Zabbaleen and Wahis were organized into more than 80 small independent companies, each responsible for a terrain of about 500 households.

This solution not only enabled the Zabbaleen to continue collecting Cairo's garbage and to survive economically, but it also introduced a business framework that would serve as the basis for the development of various cottage industries related to solid waste The limited areas the Zabbaleen serviced meant that they did not have to invest a large amount of capital to upgrade their technology, but could build on their skills and experience instead. The Zabbaleen were generally assigned the neighborhoods that they had historically served. Consequently, they

were able to increase their prices to cover the small additional organizational costs of becoming franchises without the threat of being underbid by competitors. The Zabbaleen franchises soon began to display the characteristics typical of vital small businesses: they were labor intensive operations that used basic technology, they were cost effective and efficient in delivering their services, and they were responsive to their markets.

The division of Cairo into small bidding units was supplemented by several projects designated to improve the living conditions of the Zabbaleen. The Governorate of Cairo targeted the Manshiet Nasser Settlement, home to about half of Cairo's garbage collectors, as a significant beneficiary of the urban upgrading program of the late 1970s. The settlement was targeted because its upgrading needs were particularly urgent, and because it was thought that the improvement of living conditions in the settlement would allow the Zabbaleen to provide a better quality of service At that time, the settlement lacked water, sewerage, electricity, and roads. The garbage collectors had few resources to build permanent housing structures, and most lived in homes made of low-grade steel sheeting. The settlement was choked with garbage, and the health standards were abysmal

The upgrading program was limited, however, as it lacked the capacity to ensure that an improved standard of living for the Zabbaleen would be maintained over the long term. What was needed was a strategy to foster sustainable economic growth in the community. A study tracing the life cycle of the collected garbage revealed that the Zabbaleen sold the sorted waste to recyclers at very low prices, and the latter, after limited processing, resold it at a substantial profit. This study sparked the idea of promoting businesses among the Zabbaleen themselves for the processing of recyclables, and thereby increasing their profits.

The Small Industries Project launched in 1983 promoted these businesses among the Zabbaleen. EQI worked with a handful of garbage collectors to help them set up small-scale waste recycling businesses The entrepreneurs were exposed to low-cost technologies for waste recycling such as plastic granulation and composting, and were loaned the needed capital to purchase the equipment necessary for starting the new businesses. Technical assistance for the proper use and maintenance of the new machinery followed, and markets were found for the entrepreneurs' goods. When members of the community observed the success of these half-dozen initial recycling modules, several other Zabbaleen sought loans and technical assistance through the project to establish similar businesses.

One of the most remarkable effects of the project, however, was the mushrooming of similar industries within the settlement that neither sought nor received the project's financial backing. While prior to the project not a single garbage collector owned a machine for processing recyclable waste, observation of the successful performance of the machines and the profitability of the modules led others in the community to risk their own money, or money borrowed through community networks, to set up their own businesses, often direct replicas of those already in operation.

The impact of the project has been dramatic. Before its inception, not only was no recycling carried out in the settlement, but only a bare minimum of services were available. However, by 1993, just ten years after the project began, 215 flourishing enterprises had emerged Of these, 42% were commercial establishments, 36% industrial, and 22% service related. A number of recycling enterprises even went beyond simple recycling to the manufacture of plastic goods such as clothes hangers and toys from the raw materials generated from the recycling process. As they were able sell their products at very reasonable prices, these manufacturers were able to tap a very large market of low-income consumers who could not otherwise afford these products.

The rapid spread of industries in the Manshiet Nasser Settlement is evidence of an effective method for generating sustainable development. A development initiative that makes good business sense and is widely accessible can spread like wildfire The success of the Small Industries Project was a result of the introduction of a simple business model into the community which proved itself capable of generating a profit. This, in turn, motivated others to shoulder the perceived risk of setting up a business. This indicates that development initiatives can have a profound and lasting impact when the means of economic growth are placed in the hands of the communities they seek to serve.

The proliferation of informal businesses generated through solid waste collection, in combination with government upgrade efforts, has resulted in a striking transformation of the standard of living in the settlement. Whereas in 1981 there was no infrastructure whatsoever, by 1993 most of the roads were leveled, and the large majority of houses had access to potable water and electricity These changes have been accompanied by an overall improvement in the health status of residents thanks to better sanitation, improved hygiene, and the various community-based health programs that were initiated as a direct result of this project. The infant mortality rate in the settlement is a strong indicator of this improvement. Infant mortality has dropped from 240 per thousand in 1979 to 117 per thousand in 1991

As EQI has brought to completion most of its activities in the settlement, the Association for the Protection for the Environment and the Garbage Collectors Association have assumed a more prominent role in promoting community development activities. They have expanded their community health and literacy programs and continue to actively nurture the growth of recycling related cottage industries. This NGO commitment coupled with the high level of community involvement indicates a high probability of sustainability for the changes brought to the settlement through the Small Industries Project.

3. REGIONAL AND IN-COUNTRY SOLID WASTE MANAGEMENT ACTIVITIES: UMP-ASR'S EXPERIENCE IN TRANSFERRING INNOVATIVE SOLID WASTE MANAGEMENT PRACTICES

One of the first major initiatives of the Urban Management Programme - Arab States Region (UMP-ASR) was a regional solid waste management transfer of innovation which was designed to raise the awareness of urban managers regarding the merits of recycling and reuse. The underlying objectives of this activity were to promote waste management policies and programs that support the conversion of solid waste into useful products, foster the engagement of both private and informal sectors in the waste management industry, and build the capacity of urban managers to develop policies and implement programs for resource conservation and pollution prevention. The first phase consisted of a field study tour during which representatives from Lebanon, Yemen, and Morocco were introduced to the concepts underlying the Zabbaleen experience Participants participated in a workshop and conducted visits to key recycling locations in Cairo where they were introduced to recycling innovations and technology. This activity has had a significant impact in Yemen and Lebanon, mobilizing support among urban managers and community leaders for the expansion of waste recycling operations through informal sector involvement. In cooperation with the UMP, both countries developed strategies and designed activities to expand recycling and to institutionalize improved waste management practices in the region.

As part of UMP Lebanon's effort to promote the minimization, recycling, and reuse of solid waste, a study was conducted in Beirut whose purpose was to identify potential users of reclaimed materials, determine market demand, and pinpoint the optimal price and volume of production for each kind of material. The study was conducted in two sections covering two periods: summer and winter The study found that throughout the year Beirut generated an average of 1400 tons of waste per day of which organic waste constituted over 60%, paper and cardboard about 15%, plastic 11% and glass 7% The study also found that there was a strong potential domestic market for recycled plastics, and that the level of awareness of the population regarding recycling was relatively high In brief, the study confirmed that there was strong potential for the development of recycling activities in Lebanon.

Once the first results of the study confirmed the viability of recycling in Lebanon, the UMP Lebanon panel developed a poverty reduction project to support the development of income-generating activities related to waste collection, recycling, and reuse. The first component of the project (which is ongoing) is an educational campaign to inform women in low-income communities of available opportunities for the establishment of small businesses in solid waste recycling. The educational campaign is to be followed by training in production and recycling techniques for all interested women. Specifically, interested women will be educated in the techniques for sorting solid household waste, recycling cloth, producing rag-rugs and patchwork, and recycling used glass. The panel will then develop a credit delivery program to support women-owned small and micro enterprises. A socioeconomic survey was conducted in

the selected area and is currently being used for the design and development of an educational campaign, and for project implementation.

Following the field study tour organized in Cairo, the UMP Regional Office commissioned two solid waste management consultants to go to Yemen to provide technical support, to monitor the progress of the Yemeni panel in implementing their action plan, and to demonstrate appropriate recycling techniques. The solid waste management activity in Yemen, which is also ongoing, is being conducted in two phases. In the first phase, a study was carried out in which the existing solid waste management system in Sana'a was documented, the design of a pilot project for plastic recycling evaluated, and the potential for marketing the recycled plastic assessed. Phase two comprises the actual implementation of the pilot project. Implementation includes adding selected recycling and reuse practices into Sana'a's waste management system, and expanding private-sector involvement in Sana'a's municipal solid waste management. Emphasis is to be placed on the role of the community and the private sector in the implementation of solid waste management programs, and on building the capacity of urban managers to develop policies and implement programs for resource conservation and pollution prevention. This ongoing pilot project has already improved the appearance of the city's streets through plastic waste removal Government authorities have expressed their desire to see the project replicated throughout the country

4. THE POTENTIAL FOR INVOLVING THE URBAN POOR IN SOLID WASTE MANAGEMENT IN JORDAN

Over the past three decades, urban growth in Jordan has been fueled by rural-urban migration, high demographic growth, and a large influx of refugees. The impact of this rapid urbanization has been felt in all urban centers but has been particularly acute in the capital city of Amman. The Amman-Zarqa metropolitan area now accommodates over 60% of the country's population, up from 39% in 1952, and is home to 81% of the country's urban poor. The area's infrastructure network is currently strained beyond capacity, and municipal services are insufficient. This is particularly true in the area of solid waste management. There is no infrastructure in place to handle the huge volumes of waste generated daily. The present waste collection system is random and inconsistent. Whatever waste the city does manage to pick up is dumped at sites on the outskirts of the city This has stimulated the growth of a scavenger community similar to the Zabbaleen. In Jordan, as in Cairo, scavengers derive their living from retrieving and selling waste material.

A UMP-sponsored Jordanian panel carried out a study on urban poverty in Amman with the main objectives of gaining a better understanding of the different manifestations of poverty, identifying the needs and resources of the urban poor as well as the obstacles they face in their attempts to escape poverty, and deriving policy recommendations. The study confirmed that in Jordan, as in other developing countries, scavengers are among the most destitute and marginalized of urban dwellers. The study also indicated that involving the informal sector in

solid waste management could not only be of great benefit in Amman as it clearly has been in Cairo, but that the Zabbaleen experience offers a blueprint for effective solid waste management with vast potential throughout the Middle East and North Africa.

One of the main findings of the study was that urban poverty is a multiform phenomenon covering a variety of situations. Three broad categories of urban poor were identified, each necessitating an approach tailored to their specific needs: the urban poor, the new poor, and the traditionally poor. The urban poor tend to be of rural origin and have migrated either by choice (in search of opportunity), or through forcible eviction, as is the case with Palestinian refugees. The people falling into this category tend to be motivated, and are likely to be actively seeking to improve their situation and to prepare a better future for themselves and their families. The new poor are those people who, for the most part, are victims of technological advances. The skills they possess and that allowed them to provide a modest but steady income to their families have been made obsolete, and they have consequently lost their means of livelihood. For this category, poverty is often only temporary Retraining is the best solution for this group to help them improve their situation. The third group, the traditionally poor, offer the most daunting challenge for poverty alleviation programs. Poverty in this group is transmitted from generation to generation and is viewed as destiny and a burden to be accepted. Out of all the groups, this resignation of the traditionally poor to chronic poverty is the most difficult barrier to surmount. Not surprisingly, Amman's scavengers are among the most marginalized members of the traditionally poor

The recommendation of the study committee was that future anti-poverty efforts should focus on the traditionally poor, and in particular on the scavengers, in an effort to break the vicious cycle of self-perpetuating poverty. An opportunity for action presented itself when the municipality of Amman decided to contract a major international firm to build and manage a recycling plant to process the city's solid waste This project presented a grave threat to the livelihood of the scavengers who would lose access to the waste that represents their main source of income The UMP panel, understanding this threat, met with the municipality of Amman and other involved parties to express their concerns over the situation. They argued that the needed modernization and improvement of the city's solid waste management capabilities did not have to occur at the expense of the scavenger community and that, on the contrary, it provided an opportunity to both enhance their living conditions and to improve the city's environment. The Municipality ultimately agreed to hold a consultation with all stakeholders to determine the ways in which the scavengers could be integrated into the project and to outline such a project.

CONCLUSION

This brief overview of SME involvement in the area of solid waste management shows that while the concept is perhaps new and runs counter to traditional management methods, it has great potential for alleviating the growing solid waste predicament in urban centers throughout the Middle East, as well as for alleviating the poverty of the poorest residents of these centers.

As they are labor intensive, innovative, and use simple yet effective technologies, SMEs are particularly well suited for solid waste management. They easily adapt to areas where streets are too narrow for mechanized methods of solid waste collection, and where overburdened governmental infrastructures lack the funds to provide adequate services. They are also strategically positioned to take advantage of the largely untapped markets for recycled waste, especially plastics and paper.

Involving SMEs and the informal sector in solid waste management significantly contributes to the welfare of the poorest and most marginalized communities of urban dwellers. Scavengers throughout the Middle East and North Africa have long recognized the potential economic value of waste through reuse and recycling. However, most have lacked the knowledge, the financial resources, and the organizational skills necessary to transform waste collection from a subsistence activity into a dependable source of income In addition to training and financial help, the experience of the Zabbaleen indicates that successful SME support programs must also be accompanied by both environmental upgrading and tenure regularization programs for squatters. For recycling-related businesses to flourish, these communities must be provided with adequate infrastructure, and with a sense of permanence and security that only full tenure can bring.

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CASE STUDY

REGIONAL OVERVIEW: LATIN AMERICA

Prepared by
I
(WASTE, ACEPESA/IPES)
Lima, Peru

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SOLID WASTE MANAGEMENT MICRO-ENTERPRISES IN LATIN AMERICA

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0. INTRODUCTION

Solid waste management in developing countries is a serious problem which grows day by day. In spite of many serious attempts to allay it in the last decades few municipalities in these countries have adequately managed to handle the accelerated production of solid waste. Due to this civil society increasingly assumes, primarily through entrepreneurial units, some of the labors and duties which were priorly municipal responsibilities despite the fact that in many cases the municipalities offer no type of aid in the fulfillment of these functions. The distinct entrepreneurial forms (basically micro-enterprises and cooperatives) detected in various latin american countries have constituted an effective alternative for solving the public solid waste management service crisis in the cities.

This document very briefly presents the results of the investigation «Small businesses, micro-enterprises and cooperatives (PYME/COOP) involved in solid waste management in Latin America». Said investigation proposed to document and analyze the experiences of the entrepreneurial economic units dedicated to street cleaning and sweeping activities, solid waste transportation and transportation, final disposal of solid waste, and the recovery and segregation of waste in Bolivia, Brazil, Colombia, Costa Rica, El Salvador, Guatemala and Peru. The investigation was carried out between January and May 1996. Its two principle objectives were:

-to contribute to the improvement of the solid waste management services; and,
-to expedite the carrying out of national, regional, local and sectorial policy adjustments, so that they permit and simplify the formation of this type of management micro-enterprises and cooperatives in Latin America.

The investigation was carried out by WASTE, *Urban Environmental Management and Development Consultants*, of Holland; *The Central Executor Association of Economic and Health Projects* (ACEPESA), of Costa Rica; and the *Institute for the Development of the Social Economy* (IPES), of Peru. The investigation has taken place within the scope of the «Urban Waste Expertise Program» (UWEP) of WASTE, and of the Urban Management Program for Latin America and the Caribbean (PGU-LAC) of the United Nations and the World Bank.

The number of enterprises from each country are included in the following table according to their type of activity.

PYME/COOP INVESTIGATED BY COUNTRY AND ACTIVITY

Country	Principal activity/service	Number of enterprises	Initial year
Guatemala	Sweeping and cleaning Collection and transportation Final Disposal Recovery	2 6 1 5	± 1984 ± 1980 1982 ± 1990
El Salvador	Collection and transportation Recovery Composting	5 4 1	± 1983 1970-1985 1984
Costa Rica	Collection and transportation Recovery Final Disposal Beach sanitation	7 8 1 1	1952-1995 1982-1993 1993 1987
Colombia	Collection and transportation Recovery	5 3	1990-1994 1985,1989,1990
Brazil	Recovery Selective collection	1 2	1989 1985-1987
Bolivia	Sweeping/collection/transportation Collection and transportation	9 9	1991 1987 1994
Peru	Sweeping and cleaning Collection and transportation Final disposal Recovery and segregation	1 15 1 2	1993 1989-1994 1984 1989,1992

1. THE SOCIAL PRIVATIZATION OF SOLID WASTE MANAGEMENT

1.1. Solid waste management in Latin America

In Latin America (LA) where solid waste management is a municipal responsibility serious problems due to its inadequate management are common. In 1995 the urban population of LA produced 240,000 tons of solid waste daily. It is predicted that this will have increased to 300,000 tons in the year 2000. The *per capita* domestic waste production is between 300 and 800 grams daily. When total solid waste production is considered, that is taking into account that from commercial and industrial establishments, that from hospitals, that from the markets, street cleaning and others, the amount increases by 25% to 50% and becomes 500 to 1,200 grams *per capita* daily. (The average for the large cities is 790 grams.)

Historically, it has been the municipal corporations which regulate and operate the urban sanitation services. Only recently, as a result of state reforms in some of the countries, have traditional privatization processes begun in a few cities[1]. In these cases only the responsibility for operating the services has been transferred.

[1]The expression "traditional privatization" is used here to mean the sale of municipal public enterprises (urban sanitation services) or the transference (through concession) of their respective services to the private entrepreneurial sector usual represented by the large and medium enterprises.

In LA, it can be stated without a doubt that all the solid waste management services are deficient and/or deficit producing. Street cleaning and sweeping takes place only on paved streets with high pedestrian traffic completely ignoring those areas, usually in the low income sectors, where unpaved streets are predominant. Very few municipalities encourage active community participation in this service; and, when they do, the attitude of the people is usually of little consequence, mainly as a result of the deficient quality of the collection and transport services which keep the public streets filthy. The solid waste collection and transportation services in the LA cities with populations of over a million reaches deal with about 70% of the solid waste. In the smaller cities, this coverage is estimated to be within 50% and 70%. In this case it is also the high and middle class sectors which benefit from regular service; the low income sectors only count with erratic service when they have it. In many of the capital cities of LA (for example in Tegucigalpa, Managua, San Salvador, Caracas, Lima and Asunci´n), the coverage of the garbage collection and transportation services does not even reach 40% in the low income sectors.

The final disposal service situation is clear, irrefutable evidence of the actual condition of solid waste management in LA. Of the solid waste collected and transported in the area's principal cities, only about 60% , the equivalent of little more that 35% of the total waste, is technically and hygienically treated. The rest, without any type of control, usually ends up in open air dumps which do not meet the minimum norms of environmental safety and are to the contrary permanent sources of contamination and environmental risk. The situation in the medium and small cities is dramatically worse. Rough calculations indicate that no more than 20% of the waste produced in the area is being treated.

On the other hand there are no existing programs in LA aimed at the reduction of solid waste generation. A few organizations, which are usually private or development support institutions, carry out limited efforts but with few satisfactory results. To the contrary, and as a consequence of a misunderstanding of what being modern is, many commercial establishments, such as the supermarkets, encourage uses and consumptions which are quite bluntly solid waste producing, as are those of the "throw away culture".

In LA recovery and recycling[2] are not generally part of the formal waste management circuit. In this sense, they have never been perceived as a public and/or municipal responsibility. To the contrary, they have been quelled and punished. However, owing to the serious economical situation of the countries in the region, these activities have been assumed by vast depressed sectors of the population as the only way to generate income. It is calculated that principal cities alone of LA there are more than 45,000 people (often with their families) involved in largely informal recovery and recycling activities. The problem is presented in more or less the same form in almost all of the

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[2]Given that recovery and/or segregation activities are often confused with recycling, it is pertinent to point out that these refer to three different activities. Recovery implies the rescue of waste for its reuse. Segregation is the separation, classification, and eventual conditioning for production of the waste rescued or recovered. Lastly, recycling implicates the transformation processes of the recovered and segregated waste into intermediate products such as crushed glass and ground or extruded plastic or into final products for consumption. These activities may be carried out independently or in combination. It is also important to remember that at many times the only objective of recovery and segregation is reuse.

important cities of LA. This is true regardless of the small amount of recoverable material produced by the homes in the region.

In this case as well only a few organizations, usually private or development support institutions, act in favor of those involved in recovery or recycling. The municipalities absence usually shines out in spite of the role which recovery and recycling activities should play in the reduction of waste volume and the conservation of natural resources.
If the urban sanitation services are frankly deficient and deficit producing and waste minimization activities are almost non-existent, civil education for the population to adopt attitudes and conducts favorable to waste is something that simply does not occur to the corresponding authorities. In this case, although with more difficulty, there are a few private organizations which have endeavored to achieve favorable public attitudes and conduct towards waste. This happens regardless of the fact that a good number of municipal authorities presume that the serious inadequate waste management problem is due to the lack of civic education. The organizations which work in this field also tend to fall into this error.

What is going on with solid waste in Latin America? Why does the described situation arise? If all the mechanisms and technical instruments necessary to solve the inadequate solid waste management problem exist, why isn't it solved?
In some cases, the municipal authorities say that the problem is financial. In others, that it is due to the lack of civic education, or that it is a political problem. Exactly, what is the problem and what causes it? In reality, there are various problems which give rise to this situation. The most important are mentioned below:

- accelerated urban growth, which surpasses the State's capacity to deal with the population's growing demands for service;
- the larger amount of generated waste;
- the economic crisis in the countries and the reduction of the public expenditure;
- the structural difficulty of the municipalities to adequately offer this and other services;
- the normally high costs of the respective services; and,
- the indifference of the population to the problem, to which is added the lack of sanitary education and community participation.

What can be done? In the last fifteen years a series of "solutions" for the problem have been tried in LA; however, little advance has been made in spite of large investments, which have in many cases meant the growth of the foreign debt of our countries. Because of this, important sectors of the latin american population have understood that no other alternative exists but their own active decisive participation. As a result, they have decided, as a civil society, to take the responsibility for the corresponding services into their own hands.

1.2 The social perspective of privatization

Since the beginning of the eighties privatization processes have been carried out which constitute part of the State reforms

encouraged as an "indispensable" complement to the structural adjustment programs. These privatization processes, which have usually taken place within the reorganization of the state apparatus, have been biased by the search for more rationality in the assignment of State resources and in the reduction of the public sector, significantly neglecting its chief objective, that is, achieving more efficiency in the administration of the responsibilities assumed by the States. Due to this, the sale of public enterprises to the private business sector is almost automatically considered whenever privatization is thought about, disavowing other forms of privatization and reducing their possibilities of carrying out an economic activity once performed by the State.

In the more social and less traditional broader sense, privatization is understood as the transference of attributes which normally and historically "belong" to the State, to the distinctively organized civil society without diminishing the local government's responsibility of watching over public interest. This type of privatization will be called *social privatization* to distinguish it from another which is more traditionally connected to the economic activity of the States.

There are many examples of social privatization; from the oldest, such as the private educational centers, to the most recent, such as private police services. In both cases, privatization arose from the necessity of some sectors faced with the ineffectiveness and inefficiency of the State to guarantee adequate education or reliable civil protection respectively. However, as is obvious, these forms of privatization have been limited to the higher income sectors of the population, since only they have had the economic possibility of substituting the State in the fulfillment of these labors. Due to the reduction of public expenditure caused by the growth of the economic crisis in the countries of the region, in the last few years, more and more social sectors, regardless of their economic limitations, have sought to either directly or indirectly take charge of those services which the State can not offer adequately or simply does not offer.

Social privatization is also a government mechanism of the same civil society and a medium to promote the well-being of the population. This social privatization, which implies the transference of responsibility and power to the civil society organized in enterprises (large, medium, small, micro-, cooperatives, etc.), in community or development associations, in professional associations, in women's clubs, and in non-government organizations among others, does not in any way deny the need for the States' participation. To the contrary, its efficiency depends upon the State's effective presence, for example, the regulation and control of the transferred responsibilities.

The success of social privatization is necessarily sustained by the triangular integration of the civil society, the organization which takes charge of the responsibilities - in public hands before - and of the State.

In the last fifteen years, and especially in the last five, some large cities in LA have expanded the traditional privatization processes which have permitted the concession of environmental sanitation services. However, these processes have exclusively benefitted the wealthier sectors of society, to the neglect of the low income sectors who were usually completely excluded, even from indispensable urban sanitation.

In many latin american countries, many social privatization experiments have been begun by the civil society itself to take charge of the solid waste management services through the efforts of small businesses, micro-enterprises, and cooperatives (PYME/COOP). The majority of them are the property of their workers, have efficient organizations, use simple technology, and make intensive use of manual labor.

These forms of social privatization help solve the urban environmental management problem, by dealing directly with its principal causes:

- by introducing efficiency in environmental management through the transferal of the corresponding services to private PYME/COOP;
- by reducing investment costs and, above all, the operation costs of the sanitation services, which is accomplished through the use of non-conventional systems characterized by the usage of simple technologies and manual labor; and,
- making the population actively participate in solving environmental problems; by seeking to modify their attitudes.

These solid waste management PYME/COOP have demonstrated their potential to form part of a sustainable integrated waste system, which is understood as that system which guarantees long term service and permanent benefit for the community, economic development and the environment.

2. A DESCRIPTION OF THE SOLID WASTE MANAGEMENT PYME/COOP

2.1. Portrayal of the experiments

By considering their origin and the principal characteristics of their function, four "types" of social privatization have been found, those initiated by: groups of small businessmen, informal recovery workers, the communities, and development organizations.

a. Small businessmen

This type is represented by the cases of the City of Guatemala, El Salvador and some from Costa Rica (such as that of Alajuela). They are the initiatives of small businessmen which offer urban sanitation services directly to the population with municipal approval.

For the small businessmen, their activity implies the administration of the "businesses" with social sense.

b. Informal recovery workers

In this type, the entrepreneurial organization arises as the initiative of the recovery workers to assure the permanence of their jobs. This is the case of the Recover Cooperative (Cooperativa Recuperar in Spanish) in Medellin.

The municipality's role is supportive, even when it later contracts the services of the Cooperative for other activities, since contractual relations take place directly between the cooperative and the private enterprises at the places where it carries out recovery.

c. The communities

These are organizations formed by the community involved in answer to its own necessities. This model is represented by the cases of recuperation and recycling in El Salvador and in the case of urban sanitation by some experiments in Costa Rica. The PYME/COOP that have their origin in the community's interest and effort to solve the solid waste problem basically respond to community interest, in such a way that their relationships with the municipalities, when they exist, are very limited.

d. Development organizations

This is the case of the PYME/COOP formed with the backing of development promoting organizations which are related to the communities. In urban sanitation, the cases of Peru, Bolivia and Cucuta (Colombia), which follow the same intervention plan sponsored by IPES, stand out.

All of these entrepreneurial forms are characterized by the intensive use of manual labor, with a large number of workers in proportion to the capital invested, a circumstance which has permitted many PYME/COOP to emerge and profit in the real world of free competition without depending on donations or international loans for financing. Their permanence in the market demonstrates that there is a relationship between cost and income, which can give us the clue to the economic-financial sustainment of an integrated waste management system.

Despite the possibilities these entrepreneurial forms offer, they are confined by an under-developed institutional framework, which often places them on the sidelines of the formal environmental management circuits. On the other hand, the municipalities, on which the PYME/COOP depend to a large degree, have serious problems which affect the relationship between them: almost non-existent professionalism in waste management, inefficient administrative and financial systems, and non-existent or dated legislation. In this context, the municipalities can only with difficulty fulfill their normative, regulatory and supervisory functions. This fulfillment is indispensable for the micro-enterprises and cooperatives to carry out their work with order and integration.

2.2 PYME/COOP Activities

The different entrepreneurial forms studied are found in every part of the waste cycle: some of them promote recovery at the point of origin and form part of activities instigated by different civil society organizations to avoid waste generation; others play an important role in the sweeping and cleaning of public streets, in garbage collection and in its transportation in the final disposal of the waste, using appropriate technology which has been adapted to local necessities.

In many of the cases investigated, the enterprises carried out one principal activity and some secondary ones.

a. Public street cleaning and sweeping

This activity is carried out under different modalities. Only in one case, Peru, does it concern micro-enterprises specialized in offering this service, the same which is contracted by the municipality. In another case, Guatemala, the Neighborhood Committees contract a group of people who are given this job. In both cases these activities are carried out in residential areas. The garbage collection micro-enterprises in La Paz, Bolivia are responsible for sweeping the streets in the areas they serve although as a secondary activity.

The micro-enterprises in Peru, in addition to sweeping the principle avenues and the quieter streets of the district are responsible for cleaning the public areas such as the squares and the park benches as well as for scrubbing the concrete areas of the parks. These enterprises are permanently supervised by municipal inspectors and indirectly by the neighbors. Those contracted in Guatemala also maintain the neighborhood green areas and parks. They are supervised by the people themselves. In La Paz, the micro-enterprises use rakes and metal brooms to remove the solid waste left in streets, both paved and unpaved.

The operative modalities differ from country to country. In Peru, the workers cover preestablished routes within a geographical area determined by the district municipality. They work in shifts and carry out this activity daily, using carts, brooms and dustpans. In Guatemala, the workers dedicate some days to sweeping and others to maintaining the green areas. Each worker has an assigned area. They do not use carts but rather plastic bags. In La Paz, the workers sweep those areas in which they also carry out the garbage collection service.

b. Solid waste collection and transportation

PYME/COOP dedicated to solid waste collection and service were found in almost all of the countries investigated. Brazil constitutes the exception and it is necessary to point out that in this country selective collection activities are directed towards recovery and segregation.

The experiments studied are carried out under different entrepreneurial forms. In Costa Rica, El Salvador and Guatemala they do so as individual ownership micro-enterprises (which arose from their own initiative) or as community businesses and one of them in El Salvador is an NGO. In Peru and Bolivia the large majority of the PYME/COOP are associations. In Colombia, they operated as pre-cooperatives.

Many of the entrepreneurial forms studied were conceived and promoted to proportion urban sanitation services to the poorest communities, which were usually unattended by both the municipalities as well as the large businesses. Nevertheless, others dedicated to waste collection and transportation have reduced their service to include only those with the ability to pay, a phenomenon which is due to the complete abandonment of this responsibility by the municipalities.

The majority of the enterprises handle the collection and transportation of the waste to its final disposal site. For this they use vehicles which they own or rent. In a few cases, where the enterprises do not have their own vehicles, and they coordinate their labor with

the municipalities, they only collect the solid waste and transport it to determined collection sites or containers. They then coordinate their operations with the municipal vehicles which transport the waste to its final disposal site. The micro-enterprises of Ilo, Peru and the majority of the garbage collection micro-enterprises of El Salvador are examples of the latter.

The oldest garbage collection micro-enterprise experiments are registered in Guatemala in 1950 and in Costa Rica in 1952. These micro-enterprises arose spontaneously, at the initiative of their owners, who discovered in them a way to meet an unsatisfied necessity of the people and at the same time generate income for themselves. Only a few of them had the backing of public or private institutions for their formation.

In South America, the PYME/COOP experiments began in the late eighties. They arose in El Alto, Bolivia in 1987, in Peru in 1989 and in Colombia in 1990. They basically originated through the initiative of some NGOs and municipalities in the areas to be attended, as a way to solve the serious public sanitation problems and to generate employment in the peripheral areas. In these countries the micro-enterprises were adjoined to the conventional system.

Regarding the population served, in Guatemala, El Salvador and Costa Rica the clients are not necessarily the residents of low social-economic level peripheral areas. In the majority of the cases, clients who are willing to pay for the service are attended. Since the majority of the PYME/COOP are not contracted by the municipalities and they establish market relations with the neighbor-clients as well as with the other competing micro-enterprises.

This relationship is observed more clearly in Guatemala, where the yellow truck micro-enterprises compete amongst themselves. They offer different tariffs to the clients and even run the same routes.

In Colombia, Peru and Bolivia, the PYME/COOP serve the peripheral communities and the majority of them are contracted by the municipalities. These PYME/COOP operate in these areas because they are difficult for the municipal garbage trucks to reach and the population density is low.

Some PYME/COOP in the peripheral areas inhabited by the most poor and whose municipal contracts have not been renewed have continued collecting the population's waste. To do this they have developed a system of direct charge of standard tariffs to the inhabitants in order to cover their minimum operative costs. These cases have arisen in the district of Villa El Salvador in Peru and in El Alto, Bolivia.

c. Recovery and segregation of recyclable materials

The recovery of recyclable material occupies second place in terms of the numbers of PYME/COOP workers concerned. Experiments related to this type of activity were found in almost all of the countries investigated.

A large percentage of the economic units are formally constituted. They are legalized under different modalities: limited individual enterprises (EIRL), one person

businesses as in Costa Rica, Guatemala, El Salvador, Bolivia and Peru, or as pre-cooperatives and cooperatives as in Colombia and Brazil.

The majority of the experiments investigated were the initiative of their owners, who sought to generate income through exercising this activity. In the case of Brazil, the cooperatives were the initiative of philanthropic organizations and the Church. In Colombia, the informal recovery street laborers and those who lived in the dumps found the formation of cooperatives and pre-cooperatives to be a way of organizing their activities.

In Brazil as well as Colombia, the objectives of the experiments investigated were to dignify the work of the recovery street laborers and guarantee that they carry out their activities in better conditions and with less risks.

The principal products recovered and sold vary from enterprise to enterprise and from cooperative to cooperative. Some recover all kinds of recyclable materials, but others only one or two. For example, in El Salvador the principal products sold by the micro-enterprises are aluminum and paper. In Coopamare, Brazil paper and carton are principally recovered, whereas in Canoas paper, carton, glass, plastics, metals, clothes, books and medicine bottles are recovered.

In Guatemala and Peru there are PYME/COOP specialized in the purchase, classification, conditioning and sale of recyclable materials (plastics, textiles, etc.). They have equipment which permits them to carry out this labor and obtain clean materials which can later be sold at better prices to the industries.

Recyclable materials are obtained in different ways. In the majority of the cases the enterprises and cooperatives recur to the generation points (offices, schools, homes, industry) or buy materials from recovery workers at the final disposal site.

In Costa Rica and some Guatemalan enterprises the owners buy the materials from the suppliers in their own strategically located sites or shops. In Peru, El Salvador, Colombia and Brazil materials are collected door to door in periodical visits to previously identified suppliers. Some micro-enterprises in El Salvador and Peru stock themselves from the dumps and final disposal sites, where they buy directly from the scavengers or recovery workers.

In Brazil and Colombia, there are interesting selective garbage collection experiments. The "collectors" travel the streets and the people give them the materials at no cost. One variation of this was found in Canoas, Brazil and in the micro-enterprise FUNTEC in Guatemala, which decided to place containers in strategic places so that the people would leave the materials there.

In Colombia, the National Association of Recoverers (ANR), which is formed by the pre-cooperatives and cooperatives, has permitted the recovery workers to confront the commercial barriers imposed by the large industries, which previously determined the market rules by setting the selling volumes, prices and payment plans for marketable recyclable materials.

In the other countries investigated no other similar organization has been found, but individual independent micro-enterprises have been found.

d. Other activities of the PYME/COOP

The investigation has included interesting experiments in other types of activities, such as the cleaning of beaches in Costa Rica, the integral treatment of solid waste in Guatemala and composting in El Salvador.

In respect to final disposal activity, two totally different types of experiments were found. The first is the Integrated Treatment Plant in Alameda Norte (*Planta Integral de Tratamiento*) in Guatemala, which carries out among other activities the final disposal of that waste which can not be recycled or used in the elaboration of compost. The waste is compacted into blocks which are sent to an area assigned for this. The other experiment is that which occurs in Ilo, Peru where the micro-enterprise carries this activity out exclusively in a manually operated land fill. Here the reusable and recyclable waste is separated from the rest which is disposed of in the land fill.

In Guatemala, the plant was begun by the community as an alternative for the integral management of the area's solid waste. In Ilo, the micro-enterprise was started through the initiative of the municipality and an NGO, who found it convenient and cheaper to operate a land fill with specialized micro-enterprises.

2.3. PYME/COOP Technologies

The enterprises investigated use completely different technologies. These vary from carts fabricated with waste to trucks.

a. Recovery of materials

If the cooperatives of Brazil and Colombia are considered, it can be found that the garbage collectors use almost the same type of carts to collect the recoverable solid waste in the neighborhoods. Due to the large amounts transported and the distance travelled, trucks are used more frequently to transport the material for direct sale to the industries.

In Peru, the PYME/COOP collect the recoverable solid waste at the dumps, large collection points, or at the generation points (welfare dining halls, schools, textile factories). For this large vehicles (trucks), trenching spades, rakes, shovels and bags are used. Then the recovered waste is transported to a warehouse (rented or owned), where the workers separate and place the material in specially conditioned bales in this same locale. Whenever there is enough and contact has been make with a client, the bales are transferred to the place where they will be sold.

b. Solid waste collection

Different technologies are used to collect domestic waste. The election of one of them depends largely on the accessibility (that is, the breadth of the streets , wide or narrow, and if they are straight or curved), the type of terrain (flat or irregular), the

physical condition of the streets (paved or not), the amount of waste and materials to transport and the distance which must be traveled.

In Peru, where the garbage collection micro-enterprises operate in the poor neighborhoods, cargo tricycles and carts are used. The majority use three-wheeled cargo tricycles which have been conditioned for irregular terrain and which have a cargo capacity of 1 m^3. The tricycles are ridden by pairs of workers, because this facilitates the control of the vehicle in the generally irregular terrain. The workers cover 4 to 6 micro-routes daily, in which they serve an average of 600 lots. When filled, they take the tricycles to predetermined collection points (or containers), where they leave the waste collected. They continue their labor until the route is finished, and then go to the collection point, where, with the other workers, they load the solid waste onto the vehicle which will transport it to its final disposal point.

This vehicle can be a truck, a dump truck or a tractor and trailer. Almost all the micro-enterprises take on the responsibility of transporting the waste to its final disposal point. For this they have two options: to contract a vehicle which transports it, or to load it themselves in their own vehicles (high-sided trucks or tractors connect to wagons or trailers).

In the neighborhoods located in the steep slopes of La Paz, Bolivia, hand carts similar to those used in Guatemala are used to load the waste onto the trucks. In this last country, where the enterprises tend to collect the garbage in the middle and upper class neighborhoods, 80% to 90% of the vehicles are trucks; 9% to 19% are mule drawn carts, and less than 10% are carts powered by human effort.

Some waste collectors in El Salvador have learned to construct collection vehicles using refuse and bicycle tires. In Costa Rica, the collection, transportation and final disposal enterprises possess heavy equipment consisting of trucks, carts and farm tractors with trailers. This equipment is characterized as having been originally destined to agricultural activities, with the exception of the carts.

Owing to diverse motives, not all of the vehicles used for collection can be used wherever needed. The large trucks can not be used in neighborhoods where the streets are very narrow, and the cargo tricycles and hand carts can not transport large amounts of waste over long distances.

Some PYME/COOP have worked out solutions to these problems. That is, certain enterprises possess distinct methods of transportation. In Peru, some enterprises have six tricycles and a truck. In the Sao Paulo cooperative there are thirty-five carts and a truck. And, in El Salvador, some micro-enterprises take the waste in hand carts to "collection points" which are previously assigned by the municipalities. In this last case, the municipal vehicles transport the waste to its final disposal point.

In El Salvador it is observed that collection takes place in two stages: one primary collection and one secondary collection. The primary collection is that carried out by the micro-enterprise, which takes the waste to the predetermined collection points; and the secondary collection which is carried out by the municipal units at the collection point. In this manner, the micro-enterprises are become dependent upon the municipal

transportation service. This situation has caused them problems because the municipality does not always carry out this secondary collection responsibly, and leaves waste at the collection points.

c. Technology ownership

In the majority of the cases investigated, the technology used is owned by the PYME/COOP themselves. They have acquired the equipment which they use in their work in different ways: by making it, through financing, or through donations.

For example, the cooperatives in Brazil and Colombia use carts and trucks (sometimes donated). The recovery and collection micro-enterprises in Peru have their own vehicles (cargo tricycles and trucks acquired through loans or their own income). This situation is similar in Guatemala, Costa Rica and Bolivia. In some cases, in Costa Rica, the equipment does not belong to the businessmen. This is the case of a beach maintenance micro-enterprise which uses a cart, a loader and a cleaning machine as a service concession through an agreement with a governmental institution. Likewise, the recovery and segregation enterprises rent vehicles to transport the materials which they buy and sell, or solicit the loan of guillotines. In Colombia, ECOASEO can use the municipal equipment such as the compactor truck. In the same way, the machines used in the conditioning and processing of the materials are generally on loan (from other enterprises or sometimes the municipalities) or donated.

d. Technological adaptations

Distinct examples of technological adaptations exist. In Costa Rica, two enterprises have adapted the equipment. One of them (garbage collection) uses a truck with a partition and chain for emptying the solid waste. The other (recovery) uses a circular table saw instead of a guillotine.

ECOASEO has a three ton garbage truck, in which the compacting system has been removed in order to facilitate the recovery of recyclable materials. This vehicle has been designed, at the suggestion of the recycling workers, by an engineer (a Social Foundation functionary) and assembled by a national firm using local technology.

In the majority of the garbage collection micro-enterprises investigated in Peru the equipment used was made with certain ergonomic considerations in mind. This has been the case in the design of the garbage collection tricycles and *capachos*(this is a fifty gallon drum on wheels with a handle for pushing it). In some cases the micro-enterprise workers have detected defects in the equipment and have introduced improvements in order to make their work easier and quicker.

In spite of the adaptations made, there are still technological aspects which need improvement. For example, the principal technical problem with the carts in El Salvador is the bicycle wheels, which are easily damaged by the weight of the refuse and the conditions of the terrain. These are small problems which cause an increase in the operational costs of the enterprises.

e. Effectiveness *versus* efficiency

The techniques and technology used for the collection and transportation of waste have been adapted to the situations existing in each locality and have inclusively been improvised. The collection method is effective, but at the same time it can be inefficient. This situation has no relationship to the technology used, but rather to the logistic organization of the enterprise.

By using the garbage collection micro-enterprises of Guatemala as an example, it can be said that the collection is effective, because with appropriate technology it collects 90 to 95% of the waste produced by the population (60 to 70%) willing to pay for the service. However the system established to collect this 90% is not efficient. The clients are not concentrated in the same work area (a collector works in at least three different zones), and the distance between the work area and the workers place of abode is great (the worker must travel at least half an hour to get to his work area). At the same time, in some cases the unloading of the waste at the final disposal sites is slow, thus prolonging the operation time.

2.4 RELATIONSHIPS BETWEEN THE PYME/COOP AND THE MUNICIPALITIES

a. Contractual relations

In the majority of the cities investigated the micro-enterprises operate under contract or concession from the municipality. This contract varies in extent from a period of 4 to 6 months as in Cucuta, Colombia to periods of several years. For example in Costa Rica and in Villa Nueva, Guatemala some PYME/COOP have managed to get contracts for up to ten years. However, the majority of the contracts with the enterprises are for an average of one year.

On the other hand, there exist cases in which the PYME/COOP operate without written or oral contracts, but have the authority from the municipality to operate. In the City of Guatemala, more than 300 micro-enterprises have collected solid waste without any form of contract for the last forty years. Likewise, there are the examples of the city of El Alto, Bolivia, the district of Villa El Salvador in Lima, Peru and the majority of the cities where micro-enterprises operate in Costa Rica.

Even when there exists no contract between the PYME/COOP and the municipalities, these sustain a dependency relationship with them, especially in regard to the authorization necessary for access to the final disposal sites. These places are almost always administrated by the municipality, which is the reason why the PYME/COOP require municipal permission to depose of the solid waste collected. Another dependency relationship is the coordination which must exist between the garbage collection enterprises, which do not directly transport the waste to final disposal, and the municipal vehicles which should carry out this labor.

The contract conditions for the offering of the services vary from country to country. In the majority of the cases the contract determines the zone to be served, the length of the service and the form of payment. However, in Peru some of the micro-enterprise contracts specify the number of lots to be served, the amount of service to be given (in terms of tons, cubic meters, and kilometers), the frequency of collection and the work hours.

In respect to the payment for the service, this falls under different criteria. In La Paz, Bolivia, for example, the enterprises are paid according to an established price (by contract) per ton collected. Other criteria which are less objective, for example the "*cleanliness of the zone attended*", are used in cities such as Cochabamba, Bolivia and Cajamarca, Peru.

In general, to control the service offered by the PYME/COOP, the municipalities use supervisors from the departments responsible for urban sanitation. The results of their evaluation influences the possible extension of the contract or determine the penalties that the micro-enterprises receive. So, for example, in La Paz, Bolivia and in Miraflores, Lima, Peru, the municipality controls such aspects as running the route according to the plan, the quality of the job and the demeanor of the worker.

b. The responsibility of the municipalities

In all cases, municipal responsibility for solid waste encompasses all of the corresponding services.

However, only is some cases does solid waste management occupy a position of first importance in the municipal agenda. Only in Costa Rica and Colombia does the subject of solid waste receive political attention, although this does not always guarantee good solid waste management.

c. Types of relationships

The relationships between the municipalities and the PYME/COOP are very different in the countries investigated. On one hand, in Guatemala the relationship is *distant*, because the municipality does not intervene in any way in the functioning of the garbage collection system. There the micro-enterprises decide for themselves who they will attend, how much they will charge their clients, when they will attend them, and so forth. In Peru, to the contrary, the relationship is very close. The municipality determines in great detail how the PYME/COOP must operate.

There exist different relationships between the diverse actors involved in solid waste management. The principle performers are: the municipality (sometimes represented by municipal enterprises), the micro-enterprise and the population. In addition, there are other participants which influence this process, such as the NGOs, the community organizations, private development organizations and the electric companies.

Two different modalities of paying the PYME/COOP for their services can be distinguished. On one hand, that where the population pays the PYME/COOP directly for the service given. On the other hand, that where the population pays the municipality or the electric company the tariffs corresponding to the service. The PYME/COOP in the latter case receive a remuneration from the municipality, which has been agreed upon in the service contract. These two methods have their different variations in the cities investigated.

Some outstanding aspects of the municipality-PYME/COOP relationships found in the different countries are the following:

- In some places (Villa Nueva), the micro-enterprises are required to pay a sum to the municipality in order to offer the service.
- In La Paz, the municipality facilitates the formation of the micro-enterprises by giving loans for the acquisition of tools, equipment, furniture and its legal conformation.
- In San Salvador, some micro-enterprises depend on the municipal trucks to transport the solid waste collected from the transference points to the final disposal site.
- In Piura, Peru, the micro-enterprises charge the people for their service, with which they become the municipal tariff collectors. However they do not administer all the money collected, but rather turn it over to the municipality. The municipality pays the micro-enterprise an amount which should cover the minimum costs of the service.

2.5 COMMUNITY PARTICIPATION

The PYME/COOP dedicated to garbage collection and transportation are those which establish closer relationships with the communities as a result of the characteristics of their activity. In this case the PYME/COOP are born to meet the necessities of the community. They offer personalized service and form part of the community. From the analysis it is concluded that the client's satisfaction with the service offered is vital to the permanence of the PYME/COOP in the communities and is a necessary condition for their success.

From the start of their activities, and especially during the operation, the participation of the community is given in distinct ways:

- They put the waste out in time for collection and they store it as desired by the enterprises.
- They participate in community cleaning labors.
- They pay for the service.
- They control and supervise the work. For example, they control the quality of the work, the running of the route according to the plan, the demeanor of the worker, the correct use of the uniform and equipment, etc. They also opine on the service rendered, discuss the operative problems, and make suggestions concerning how the service can be improved.
- They participate in the direction of the job. For example, an enterprise in El Salvador and another in Brazil are the property of a community organization.
- They pressure the municipal authorities so that the PYME/COOP can offer the service. For example, there is the case of a community which obliged the municipality to retract its decision to not recontract the enterprise.
- They participate in the design of solid waste collection projects to be presented to the municipality, in the convocation and selection of workers, in the establishing of tariffs, etc.

The community organizations play an important role in the life of the PYME/COOP. For example, there are organizations in the majority of the urban and rural communities in Costa Rica which watch over the development of their communities. In many cases they assume the administration of aqueducts, transportation lines, parks and of course, solid waste management when this becomes a problem for the community. These organizations are stimulated and financed by the government. 60% of the community leaders interviewed manifested that community organizations back the garbage collection enterprises. In Peru, there also exists a vast network of community organizations, such as the neighborhood committees, and the women's organizations such as the welfare restaurants and the *vaso de leche* (a glass of milk) program, which back the garbage collection micro-enterprises.

In Guatemala, the situation is completely opposite. It has only been for about six to eight years, that a political climate has existed which allows the existence of a neighborhood committee. The PYME/COOP in this country are characterized for maintaining very direct relationships with the people served, who are quite disposed to pay them for their services.

On the other hand there are also many cases in which the workers mentioned that their relationship with the population is not easy. The people are slowly learning to keep the streets clean, to take the garbage out in time for collection and to no longer throw it into refuse heaps. However, they consider that the population still needs to be educated in environmental care.

The fact that not all of the inhabitants are disposed to pay for the service has caused many enterprises to also interact with the community through educational campaigns. This situation can be seen in several countries. In El Salvador educational campaigns for the people are always taking place, and a vigilance system has been set up by the association directorate which supervises the fulfillment of the sanitary norms established by the general assemblies.

In Peru and Bolivia, these types of educational activities are also being carried out in order to sensitize the population to the environmental problem and teach them the importance of regularly paying for the cost of the garbage collection service to preserve their health and the environment. These activities have been directed and organized by government entities in Bolivia and with the aid of the NGOs in Peru.

The enterprises dedicated to recovery have a less personalized relationship with the population since they are not paid by the inhabitants. However, the importance of the populations collaboration for the optimum collection of waste (separate collection for example) must be considered.

Another important point which should be mentioned is the disrespectful attitude of the population for waste collectors. For this reason, the cooperatives in Brazil and Colombia give a lot of attention to the organization of educational campaigns for the population to become aware of the importance of recycling and to obtain the collaboration of the community in recovery activities.

2.6 THE FINANCIAL SITUATION OF THE PYME/COOP

Even when the income levels and the costs of all the PYME/COOP[3] have not been determined exactly, there are relevant factors which indicate that these have a "basic" income which permits them to continue operating and in some degree guarantees their future growth. In general the enterprises make enormous efforts to reach the best possible income. Because of this, all of them continuously seek to reduce their costs and maximize their income.

It is important to point out that there is a basic difference in respect to the income obtained by the PYME/COOP which charge the population directly for their services and those which are paid by the municipalities. In the first case the results are completely opposite in the two countries investigated. In Guatemala, there is a perfectly competitive market for the waste collection and transportation services and this method of direct payment by the people is very effective. This has permitted the growth of the PYME/COOP in various cases. However, in Peru, where the municipality has conceded the right to the PYME/COOP to charge the people directly for this service in some areas, this method has had little success and delinquent payments are myriad. This situation in Peru is basically due to two factors: (a) There is a *non-payment culture or tradition* for these services because the people consider that the government should give these services for free. (b) The unconcerned attitude of the people towards the solid waste problem.

In order to be present in the market and compete, the PYME/COOP have had to recur to "defense" mechanisms. One of these mechanisms is that of hidden costs. This refers to those costs which although they should be paid by the PYME/COOP are not. These costs are therefore not considered by them as part of their real costs.

This concept was introduced in the investigation with the object of evaluating and understanding the operating logic of the micro-enterprises and cooperatives and to be able to understand how they remain in the market and above all how the participation of external agents in this type of enterprises in one way or another contributes to their existence[4].

It has been found that there are common hidden costs in all of the PYME/COOP. One of the most representative examples which permits the comparison of the economic units is the cost of labor or personnel. The hidden cost of personnel includes the unpaid labor of family members of the owners of the PYME/COOP, and the unpaid legal social benefits[5], such as medical insurance and old age pensions, of many of the workers.

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[3]This is true of all the units investigated. However in some cases it was more difficult to acquire information because no accounts were kept, nor was there a register of the waste collected, selected or disposed. This situation has limited the possibility of having detailed comparisons.

[4]In Brazil, these experiments exist thanks to the support of philanthropic entities such as is the case of the support of the Association of Carters and Recyclers of Material of Canoas by the Capuchin Friars. In Peru, Bolivia, Costa Rica, El Salvador and Colombia NGOs which promoted these experiments were present at their initiation.

[5]It could be said that an informal work contract exists.

In general, the PYME/COOP workers earn wages above the minimum wage established by law. If the wages are compared by activity in the investigated countries, with the exception of recovery and segregation in Costa Rica, all of the PYME/COOP workers earn higher wages.

AVERAGE WAGES RECEIVED PER ACTIVITY AND MINIMUM LEGAL WAGES

Concept	Peru	Colombia	Bolivia	Brazil	Costa Rica	El Salvador	Guatemala
Country's minimum wage	60.00	140 00	46.00	112.00	200.00	130.35	94.00
Collection and transport[6]	124.00	271.00	96.33	n i	258.00	144 00	285 80
Recovery and segregation	106.00	243.33	n i.	275.14	149.00	133.00	169.30
Sweeping	136.00	no info.	n i	n i.	n.i.	no info.	129.00
Final Disposal	129.00	no info.	n.i	n i.	n i.	no info.	650.00

If the salaries are analyzed by activity, the garbage collection and transport workers of Guatemala are the most well paid, since they receive 3.03 times the minimum wage[7]. The average salary for this activity includes the salary of the helper, the chauffeur, and the owner, the last being the one who obtains the largest benefit. In absolute terms, second place is occupied by the workers of Colombia, who receive and average of US$ 271 per mes, which is 1.94 times the minimum wage.

THE RELATIONSHIP BETWEEN THE AVERAGE SALARIES RECEIVED PER ACTIVITY AND MINIMUM WAGES PER COUNTRY

Concept	Peru	Colombia	Bolivia	Brazil	Costa Rica	El Salvador	Guatemala
Collection and transport	2.07	1 94	2 09		1.29	1 10	3.03
Recovery and segregation	1 77	1.74		2.46	0.75	1 02	1 80
Sweeping	2 27						1.37
Final Disposal	2 15						6.91

On the other hand in Bolivia the workers receive US$ 96.33 monthly, which is 2.09 times the minimum wage. Although the proportion between the average salary and the minimum wage in Bolivia is greater, in absolute terms the Bolivian salary is less than the Colombian salary. However, in spite of the lower salary, the economic situation of the Bolivian workers is partially compensated by the lower prices of some consumer goods and transportation.

In respect to the recovery and segregation workers, in relative terms (average salary/minimum wage) as well as absolute terms, those in Brazil are the best paid because they receive 2.46 times the minimum wage.

The sweeping activity was only compared in Guatemala and Peru. In is in this last where the PYME/COOP workers receive the highest salaries.

At the national levels, in Peru the best remunerated activity is sweeping followed by collection and transportation. In Colombia, Costa Rica, El Salvador and Guatemala the best remunerated activity is collection and transportation.

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[6] In Bolivia, the cleaning activity includes everything, collection, transportation, and area sweeping.

[7] In absolute and relative terms they have the best salaries. They receive an average of US$ 284.94 monthly.

2.7 The gender perspective of work in the PYME/COOP

The functions carried out by women in waste management are closely related to the way men and women divide their labor both within and without the home.

a. Street sweeping and cleaning

In Peru, the micro-enterprise studied is made up exclusively of women who live in the marginal-urban areas of Lima. It is owned by the workers. Here it is made evident that the street sweeping PYME/COOP prefer to contract women because they consider them to be more efficient than men at this job. This decision is based on the stereotype, that women would feel more identified with this labor, at transferring their home cleaning experience to the public arena.

b. Garbage collection and transportation

The following table shows the participation percentages of men and women in the study sample of solid waste collection and transportation micro-enterprises.

It is especially interesting to note the differences in the intervention of women in this type of activity in the PYME/COOP in the central american countries and that of women in Peru and Bolivia. In the south american countries mentioned the enterprises arose spontaneously and the participation of the NGOs has been very important in the development of this type of initiatives.

THE PARTICIPATION OF MEN AND WOMEN IN THE GARBAGE COLLECTION ENTERPRISES

Country	Total number of workers	Number of woman	Number of men	Percentage of women	Percentage of men
El Salvador	25	2	23	8%	92%
Costa Rica	31	2	29	6%	94%
Guatemala	49	1	48	1%	98%
Colombia	55	9	46	16%	84%
Peru	123	72	51	59%	41%
Bolivia	231	76	155	33%	67%

The participation of women in this type of activity in Central American is minimum. In Peru and Bolivia, the participation of women is much higher and one of the reasons for this difference is the influence of the majority of the NGOs, participants in the formation processes of the enterprises, in the initial involvement of poor, unemployed women from the marginal-urban areas.

The initial decision to constitute enterprises with the participation of women is owed not only to the necessity of attending the needs of a population affected by the economic crisis, but also because it is in the marginal-urban areas where the disadvantages of women in respect to men are more evident. This not only occurs in the different social

and political aspects of their lives but also in their access to work opportunities and therefore to the economic resources of their communities.

One of the results of the investigation in Peru indicates that women stay in the enterprises longer whereas most of the men consider it to be a temporary job. Many men prefer to leave the PYME/COOP immediately, if they find a more socially prestigious job or occupation than collecting garbage. The women, however, see this job as their only source of income and they therefore take it with more responsibility and continuity.

The above mentioned situation permits understanding to a certain point why the ownership and management of the enterprises are principally in the hands of women. The majority of the active associates are women and almost 70% are informal or informal leaders (managers). It should be pointed out that some of these women had previously acted as leaders in community organizations, a circumstance which in some cases allowed them to become leaders in the enterprises.

In general, although the women are in power, the leaders try to maintain democratic labor relations with the men. All of the workers share equally the responsibilities pertaining to their labor. Therefore, the differences in gender have not caused discrimination in wages. Both men and women receive the same salaries for the same jobs, and there have been no problems due to unfair treatment or personal confrontations due to differences of gender. But good collaboration between men and women does not always exist. In the three garbage collection enterprises in the department of Piura, Peru a marked preference for hiring only men for garbage collection activities was detected. This is because the population as well as some municipal authorities have cultural prejudices which discriminate women. According to these prejudices, it is not convenient for women to carry out such a strenuous labor as garbage collection. However, in the rest of the cities investigated in Peru, it is being demonstrated that this does not hold true. It is frequent to find women in all the garbage collection micro-enterprises who feel as capable as men of carrying out their day to day labors such as changing tires, tightening screws, carrying large bags of garbage and repairing some mechanical problems among others.

In as far as the women have placed themselves at the head of the PYME/COOP, they recognize having modified their traditional roles and having developed a gender identity which has permitted them to change their position in society. They feel emotionally strong and have decided to confront the challenges of their work and the problems in their homes. The majority of them (leaders and associates) manifest having assumed new functions at home. They share domestic chores with their children and in some cases with their mates, and in this way initiate the formation of democratic practices in their homes. This process has confronted them in various occasions with domestic violence (psychological and physical), which has provoked temporary separation in some cases and divorce in others.

Their membership in the PYME/COOP has produced changes in their family relationship evidenced by the continual complaints of their children and mates concerning the greater number of hours which they must be out of the home and the physical effort which they must make. However it is important to point out that the contribution which they make to the family income is recognized by them (and their mates) as being important.

A specific aspect to be considered is the high number of women in the peruvian and colombian garbage collection enterprises who present menstrual problems and also some vaginal pains and inflammations. It is not yet clear whether or not these are related to the type of labor they carry out in garbage collection activities.

c. Final disposal

A total of six men and two women work in the Industrial Treatment Plant in North Alameda, Guatemala. The men work in collection, the preparation area, and in the cultivation of agricultural products. The women, on the other hand, work in the classification area.

All of the workers of the micro-enterprises investigated in Ilo, Peru are men in virtue of the decision made by the owners and the municipal authorities to employ men for all the work performed at the land fill.

d. Recovery

In the following table, the participation of men and women in the solid waste recovery activities of the sample PYME/COOP can be appreciated.

THE PARTICIPATION OF MEN AND WOMEN IN THE RECOVERY ENTERPRISES

Country	Total number of workers	Number of women	Number of men	Percentage of women	Percentage of men
El Salvador	27	11	17	39	61
Costa Rica	40	7	33	17	83
Guatemala	113	102	11	90	10
Peru	17	11	6	65	35

In the cases of the cooperatives in Colombia and Brazil, it is difficult to determine the percentages of participation due to the permanent fluctuation of the number of workers in the cooperatives. In way of example, in the *PROSPERAR* cooperative, in Manizales, Colombia the men occupy 69% of the jobs, women 23% and children 8%. These numbers give an idea of the situation.

In the ANR, gender is not an important aspect in the division of labor. There men and women perform the same jobs from the beginning. The ANR concerns itself with permanently stimulating the work of both sexes. Notwithstanding this effort, the woman finds herself in a more difficult position than the man. This is so, because at the selfsame sources of work the administrators or owners reject women because they believe that they have little physical strength and they qualify them as "poor little dears", who they consider should not be carrying out this kind of physical labor because they do not consider it to be apt for women.

The participation of female manual labor is greater in recovery activities than it is in garbage collection, probably because the classification work requires visual-motor abilities

and prolonged periods of concentration. Both abilities are traditionally associated with women. Another condition which facilitates the incorporation of women to the type of labor is the fact that in general the installations of the enterprise where they carry out the classification is located in some room of their own home. Therefore they can attend both the home and the work of the micro-enterprise.

3. THE FODA ANALYSIS OF THE PYME/COOP

a. Strengths

The majority of the PYME/COOP are stable enterprises which have been offering this service for years. Therefore, their owners have acquired important experience. It is a flexible, diverse, personalized service which is operated and controlled directly by its owners. This leads to much closer interpersonal relationships with the personnel and at the same time, greater and better control over the quality of the service.

In spite of the lack of exact indicators in all of the cases, it is possible to affirm that the creation of these enterprises has helped diminish environmental contamination in the areas attended. This is because thee garbage collection service helps stop waste from being disposed of in inadequate places, and with the recovery of recyclable material the "burial" of useful material is avoided.

The cooperatives and enterprises have generated employment. The major part of the PYME/COOP possess equipment and technology appropriate for the areas served.

In the majority of the cooperatives and enterprises of an associative character, the style of command is democratic. The workers have the opportunity for training and to receive primary health attention. In addition, some offer small loans to the workers. The directorates and associates have developed their leadership and management capacity.

In particular, the majority of the garbage collection enterprises present the following strengths:

- They have the basic equipment for completing their labor.
- The stability of their work in the community depends upon the degree of satisfaction of the community served and/or the contracting municipality. That is the quality of the service rendered. In this sense, when a high percentage of the users manifest satisfaction with the service received the PYME/COOP are stable.
- There exists organizational potential in the area. A sample of this is that in some of the countries important experiments with guild organizations have arisen.
- They operate in peripheral areas. Therefore, there are less possibilities of competition with big business.

On the other part, the operation of the cooperatives and enterprises dedicated to the recovery and segregation of recyclable material requires little investment in machines and equipment.

b. The opportunities

The ambient opportunities for the outset and development of these enterprises are:

- The importance given to environmental matters in both the national and international arena.
- The possibility of counting with the backing of the municipalities, NGOs, government institutions, the Church and international cooperation for the strengthening of their activities.

The PYME/COOP are gaining social, political, guild and economic ground before some sectors of national and international society. The opinion of the social organizations gain importance daily in the decisions of the local governments concerning sanitation programs.

In reference to the garbage collection, transportation, and final disposal enterprises, the growing urbanization of the peripheral populations and the development of tourist activity (in some countries), added to the impossibility of the municipality to cover all the areas, causes the necessity of rendering the service to the communities to arise.

In addition, the enterprises have the backing of the community organizations and of the communities in general for the fulfillment of their activities. All of them have the authorization to use the municipal waste final disposal sites.

Privatization processes of the cleaning services and garbage collection have been initiated in some municipalities.

c. Weaknesses

The PYME/COOP share a series of weaknesses which are hindering their fortitude and development. Among the most important are the following:

- The lack of installations and adequate equipment for offering the service, and the lack of resources to invest in these.
- The lack of technical training and environmental education for the personnel of the PYME/COOP.
- Low returns.
- There is no promotion of the service among the users: there is the need to establish some mechanisms of information, communication, and education of the population concerning the measures adopted in the service organization; the absence of indicators concerning the management of waste, its separation, and others.
- Internal organization problems, which are manifested in the deficiencies in the administrative-financial management.
- The scarcity of ideal personnel and the high turnover of personnel, since this job is not attractive and the personnel prefer to work in more socially acceptable jobs.

- The lack of formal contracts with their counterparts (the recycling enterprises, the municipalities, etc.) which assure the stability of the activity.

In particular, the garbage collection enterprises also confront the following difficulties: delinquent payments and the fact that the waste is collected and disposed without the classification or recovery of recyclable material.

The recovery enterprises are weak in the following aspects:

- Opportune information concerning the fluctuation of prices for the recyclable material is not available in some cases.
- There are permanent conflicts in some PYME/COOP caused by the lack of collaboration between men and women.
- In some countries the enterprises find themselves in a situation of complete informality regarding their legal status.
- Economic and technical dependence on the NGOs.
- The majority have deficient registers of their economic state. A high incidence of hidden costs has been verified.

d. Threats

Among the threats which can obstruct the strengthening of these enterprises, are found the following:

- The lack of assess to financing, which hinders the organizational and economic development of the sector.
- The inadequate management of solid waste by the users, due to ignorance or the lack of motivation.
- The lack of an institutional, legal and regulatory framework which guarantees the continuity of the PYME/COOP.
- The economic limitations of the municipalities delay the payment for the services of the enterprises.

The specific threats to the garbage collection, transportation and final disposal services are the following:

- In the last few years, big businesses have started to develop this activity.
- The use of the final disposal sites presents threats from various perspectives:
  - The PYME/COOP depend on the municipalities or enterprises for the use of the final disposal sites.
  - There are no land fills in some places for adequate final disposal of the waste.
  - In other cases, PYME/COOP must travel long distances between the areas served and the final disposal site.
  - To a lesser degree, the control of the large private enterprises which increases the operation costs.

On the other hand, the dependence of the municipalities on political party support makes the relationship between the enterprises and the municipalities erratic.

In respect to the recovery and segregation enterprises, the following threats are presented:

- Market limitations due to an emerging monopoly and the fluctuations in prices.
- Difficulties in the sale of plastic and glass.
- treacherous competition.
- The drying up of funds in many cases when these are donations.
- The general existence of conflictive relationships with the municipality.

PERFORMANCE INDICATORS
THE PERUVIAN CASE

Performance indicators	Collection	Sweeping	Final Disposal
Tons/operator/day	1.00		2.67
Tons/micro-enterprise/day	8.07		16
Tons/vehicle/trip	0.44		
Tons/vehicle/day	1.77		
Tons per trip/nominal vehicle capacity	0.91		
Population served/operator	4,624.37	705	2,412
Population served/micro-enterprise	33,660.67	8,466	14,477
Population served/vehicle	8,414.57		
Number of operators/number of supervisors	8.50	12	
Number of operators/total number of workers	0.81	1.0	1
Number of workers/number of owners	2.20	1.2	3
Kilometers/operator/day	0.71	2.5	
Daily time per operator:			
Effective work time (in hours)	8.80	8	8
Rest during the work shift (in minutes)	19.07	0	60
Waiting (in minutes)	14.33	0	120
Movement during the work shift (kilometers)	6.70	2.2	2
Time to travel to and from work (in minutes)	25.33	85	62
Economic indicators (in US$)			
Cost/tons/month	15.31		3.35
Cost/kilometers/month		4.04	
Micro-enterprise income per ton	13 50		3.93
Cost/inhabitant served/month	0.11	4.52	0.06
Operational cost/total cost	0.96	0.99	0.99
Average salary per worker	94 32	170.00	103.50
Average family monthly income	162.31	277.40	128.00
Gender indicators			
Percentage of female workers in the enterprise	46%	100%	0%
Associate female owners/associate male owners	57%	12%	0%
Percentage of male leaders	7%		50%

PERFORMANCE INDICATORS
THE GUATEMALA CASE

Performance indicators	Collection	Recovery & Segregation	Sweeping	Final Disposal
Tons/operator/day	1.29	0.13		0 93
Tons/micro-enterprise/day	8.88	0.77		1.86
Tons/vehicle/trip	4 16			0.06
Tons/vehicle/day	5.55			0.93
Tons per trip/nominal vehicle capacity	0.30			
Population served/operator	123.00		825	1,864
Population served/micro-enterprise	1,040		1,650	3,728
Population served/vehicle	558.00			1,864
Number of operators/number of supervisors	6.83	5.18	1.5	1.2
Number of operators/total number of workers	0.83	0.78	1.0	0.5
Number of workers/number of owners	8.17	19.4		
Daily time per operator:				
Effective work time (in hours)	n.a.	8	8	8
Rest during the work shift (in minutes)	n.a	1	1	1
Economic indicators (in US$)				
Cost/tons/month	10.70			1527.00
Micro-enterprise income per ton	18.00			350.00
Cost/inhabitant served/month	4.69	0.84		
Operational cost/total cost	0 83	0.08		0.99
Average salary per worker	285.9	169.30	129 00	650.00
Average family monthly income				
Gender indicators				
Associate female owners/associate male owners	100%	92,5%	n a.	n.a

Urban Management Programme

Swiss Agency for Development and Cooperation

UMP/SDC Collaborative Programme on MSWM
in Low-income Countries

CASE STUDY

SOLID WASTE MANAGEMENT AND RECYCLING POSSIBILILITIES IN ASWAN, EGYPT

Prepared by
GTZ - Aswan Solid Waste Management Project
(SWMA)
Aswan, Egypt

Presented to the
Workshop on Micro-Enterprises Involvement
in Municipal Solid Waste Management
in Developing Countries

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RECYCLING POSSIBILITIES OF ASWAN SOLID WASTE*

By: Ahmed El Nimr**

Abstract

The City of Aswan is in bad need to have it's waste management process improved. A program is in progress to design a new solid waste landfill for the city and to study the recycling possibilities of solid waste components.

An intensive field research is conducted to determine the rate of solid waste generation from different sources and the recycling possibilities from the technical and economic points of view. The effects of different factors such as standard of living, ethnic, family size and residence type are studied.

The study revealed that the wastes contain a large portion of dust and a poor in quantity and quality organic component. The rates of other components such as glass, plastic and paper are determined. The obtained results are presented in tabular and graphical forms

The final part of the study is devoted to the investigation of the present working conditions of the existing micro recycling enterprises in the city as well as the possibilities of improving their efficiency and starting new recycling plants.

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* The work presented in this paper is conducted on behalf of Solid Waste Management Aswan (SWMA), Egyptian German Technical Co-operation, GTZ

** Prof. of Civil Engineering, Mansoura University, Consultant of SWMA

The Solid Waste Management Aswan (SWMA) of the Egyptian -German Technical Co-operation (GTZ) is conducting a program to design a solid waste landfill for the city and study the recycling possibilities of solid waste components.

1. Introduction

The city of Aswan, Egypt is internationally famous with its historic value as well as its warm sun and mild weather during the winter season. The River Nile which penetrates the city adds to it more beauty. The population of the city is estimated to be between 270,000 and 300,000.

Added to the natives, a variable number of tourists occupy the hotels, tourist villages, hostile and Nile Cruisers. Unfortunately it is very difficult to estimate an average for the number of tourists as this is an item highly dependent on many factors among which are politics and world economy. However, a fair estimate would be that in Aswan, the number of tourist nights per year lies between 500,000 and 1.5 Millions.

The difficulty involved in the statistical design of the experiment planned to determine the city solid waste quantity and quality relies on three factors, namely, the heterogeneity of the Aswan Society, the unreliability of the tourist number estimation and the existence of different means of waste collection.

The study is separated into 5 independent experiments. The method of data collection, number of samples as well as the analyses procedure of any experiment may differ completely from the others. The obtained results are integrated in a latter stage.

2. Design of Experiments

The study presented in this work concentrates mainly on household, office and hospital wastes. However, estimation of construction and industrial wastes are also calculated.

In order to determine the amount and components of waste for 300,000 people, a number of samples that represent about 3000 persons is required. This figure can be considered enough if the society is relatively homogeneous and there is a common mean of waste disposal and collection.

Unfortunately, however, this is not the case in Aswan. The city contains three main ethnic groups , the Aswan natives, the Nubians and the immigrants who are mainly Saeydies(from upper Egypt). Some of the natives live in private huts and produce a lot of ashes and dust as they bake their bread twice a week

or even daily. Together with these aspects, the standard of living plays a major role as the waste quantity and quality are influenced greatly by the sort of consumed goods and rate of consumption . For these reasons the number of chosen samples is increased to include 4500 persons.

In the study, the city is divided into three categories according to standard of living, medium to high, medium to submedium and low. Each of the previous categories is divided further according to two aspects, namely, the ethnic and whether the family Lives in a house or in an apartment. The samples are chosen such that each of the sub-groups is represented by a number of samples which represents at least 1% of its population.

The test includes the analyses of wastes produced by three building complexes which include about 1500 employees. These are ,buildings of Aswan Governerate, Aswan Regional Planning Center and Arab Contractors Company offices.

The Aswan General Hospital is chosen to represent the category of hospital wastes. The design included the evaluation of the total hospital waste at two different days. The number of hospital beds is 516. About 650 employees including doctors serve those patients. It is estimated that 2000 visitors remain for three hours daily with the patients.

This experiments are designed to analyze the waste from the quantity and quality points of view. The location of the sets of collected samples are indicated in the map of Aswan City as illustrated in Fig.1

3. Data Collection and Sorting of Samples

The process of data collection consists of three consecutive steps. These steps are:

- Choice of sites for sampling to represent the hole community according to the settlement structure and socio-economic distribution of city population.
- Collection of information about the occupants of the sites from which the samples are to be collected. This is conducted by a team of 4 persons with previous experience. They used questionnaire forms specially designed for the job.
- Sample collection is conducted using a tipper truck, a tractor with trailer, 4 laborers and a team leader. The samples are collected in plastic bags which

are sealed after collection. A ticket is pasted on each sample with necessary information.

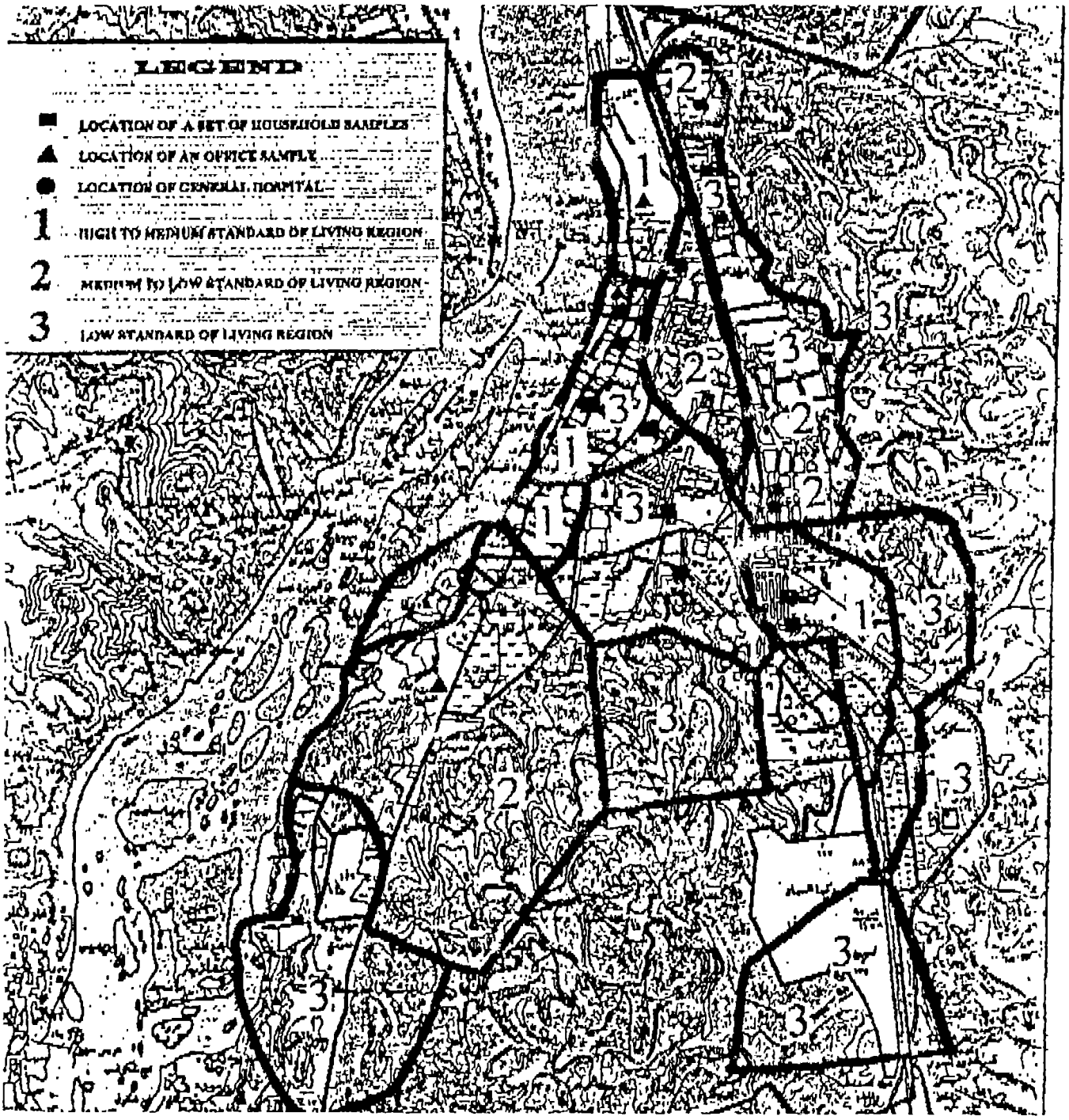


Fig. 1 Location of Sample Sets

- The samples sorting is conducted in a specially prepared site. The sorting team consists of a specialist, a clerk and four laborers. The tools used are a scale (up to 200 kg), a sieve with opening width 10 mm, a sieve with opening width 40 mm, a container with calibrated volume marks, a long table and a small hand spring scale with capacity up to 10 kg.

The sample sorting is conducted manually. The separated elements are, metal, glass (several kinds), paper (books& notes, newspapers, scrape and cardboard), rags& shoes, Plastic (foils, bottles or others), organic matter as well as sand and dust.

4- Results and Analyses

The conducted experiments on the chosen samples lead to the evaluation of the rate of waste generation of different sectors. It lead also to the determination of the components of the wastes for different city districts and business locations.

The total city solid waste from the households sector is 105.75 t/d. This corresponds to a volume of 394.00 m^3. The percentages of the different components of solid wastes are illustrated in Fig.2.

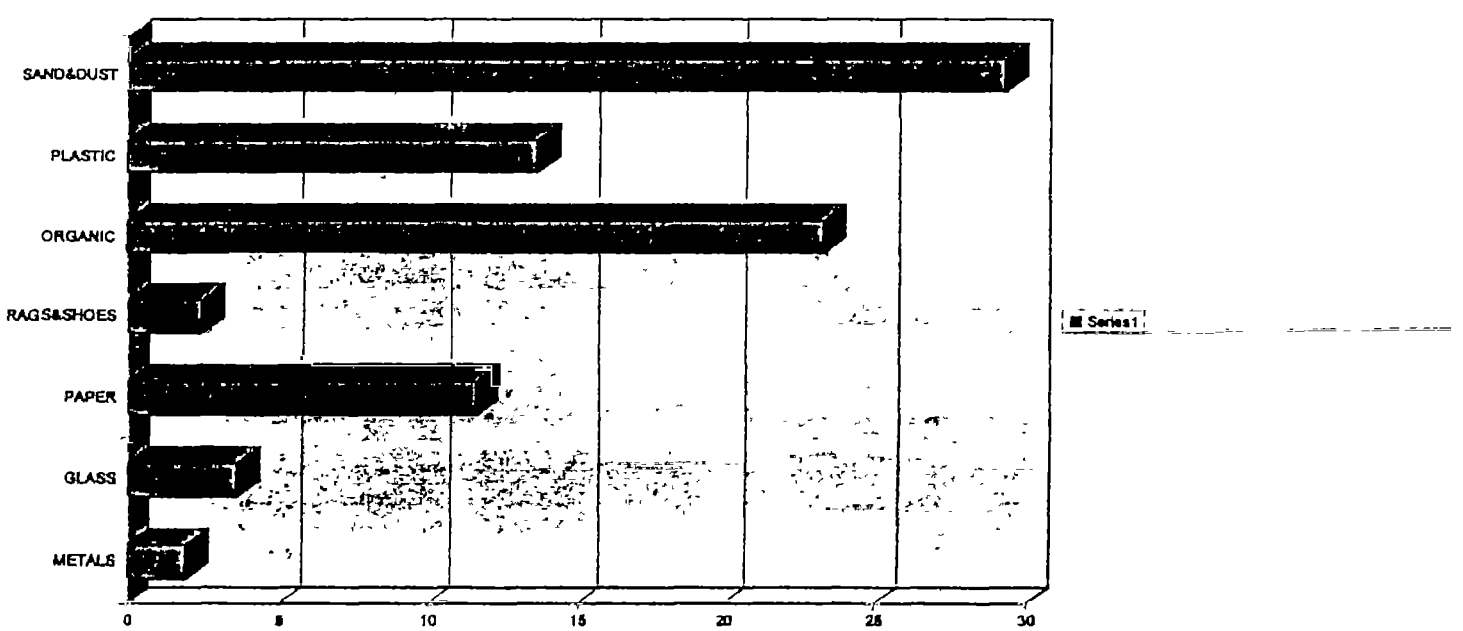


Fig. 2 Solid Waste Components

It is clear from the figure that sand and dust represent a considerable portion of the wastes. The wastes from samples collected from householders living in huts and private houses are responsible for most of this component. Paper and plastic contents are generally produced with higher rates in regions with medium to high level.

The office buildings produce wastes that contain about 72% paper and 11% dust . The sum of the percentage of all other components is as small as 17%. The details of waste components are illustrated in Fig . 3.

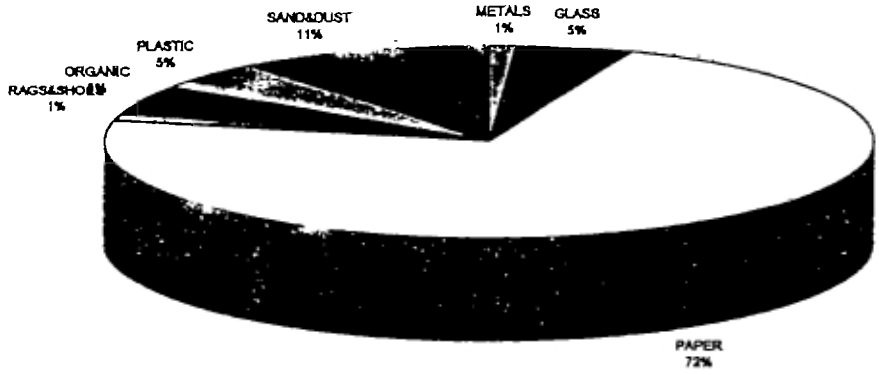


Fig. 3 Waste Components of Office Buildings

The results obtained from the analyses of the total wastes of Aswan general hospital are considered to be applicable for the other hospitals in the

city. The total weight of wastes could be determined exactly. As for the waste components, it could be only analyzed by visual means. The wastes contain a considerable percentage of hazardous waste and it is found risky to allow the team do the manual sorting.

The sorting is done through analyses of waste photographs. An estimation of 18% for each of hazardous wastes, paper and organic matter seems to be close to the actual condition. The dusts must be below 20%. The sum of the nonhazardous parts of plastic and glass may be about 10%. The rest can be considered as unsortable elements.

Table 1 contains a list of the total wastes and waste rate per capita in different city regions.

NR.	Liv. Standard	Population	Wt rate*	Total Wt *t	Vol. Rate+	Vol. Total+t
1	Med.-High1	57000	0.31	17.67	1.5	85.5
2	Med. high2	27000	.23	6.21	1.41	38.07
3	Med-Sub Med	52000	.45	32.31	2.49	129.48
4	Low1	66000	.22	14.52	1.11	73.26
5	low2	48000	.73	35.04	1.41	67.68
6	Offices	49000	.12	5.88	2.5	122.5
7	Schools	70000	.03(0)	2.1	.06(0)	4.2
8	Constr.	-	-	151-	-	126
9	Hospitals	1000++	5++	5	4++	4
10	Hotels+N. Cr.	1300-4000	.35	0.5-1.5	2.1	2.73-8.19

*** kg/cap/day *t tons/day**
+ l/cap/day +t m^3/day
() estimated values
- Calculated from building permissions
++ calculated per bed (values inclusive wastes of employees, doctors, visitors and hazardous)

Table 1. Solid wastes generation rates in Aswan city

A special study is made to investigate the effect of family size on the per capita waste generation, The treated samples are chosen such that all other parameters with the exception of family size are as identical as possible. All families live in one story huts, they are all Saeydies (Natives of Upper Egypt) and are classified as having a low standard of living.

The results are analyzed using curvilinear regression analyses. The obtained curves are shown in Fig. 4. From the figure, it can be noticed that the volume and weight of waste per capita reduces with the increase of the number of family members.

In the mean time, the rate of decrease reduces as the family size increases. However, it does not reach a constant value ; even when the family size approaches 10 members.

As an example, the waste quantity is 5.5 l/cap/d if the family consists of one member while it reduces to 2 l/cap/d for a large family with 10 members. Similarly, a one person family generates 1.75 kg/cap/d while a family of 10 persons generates only 0.09 kg/cap/d

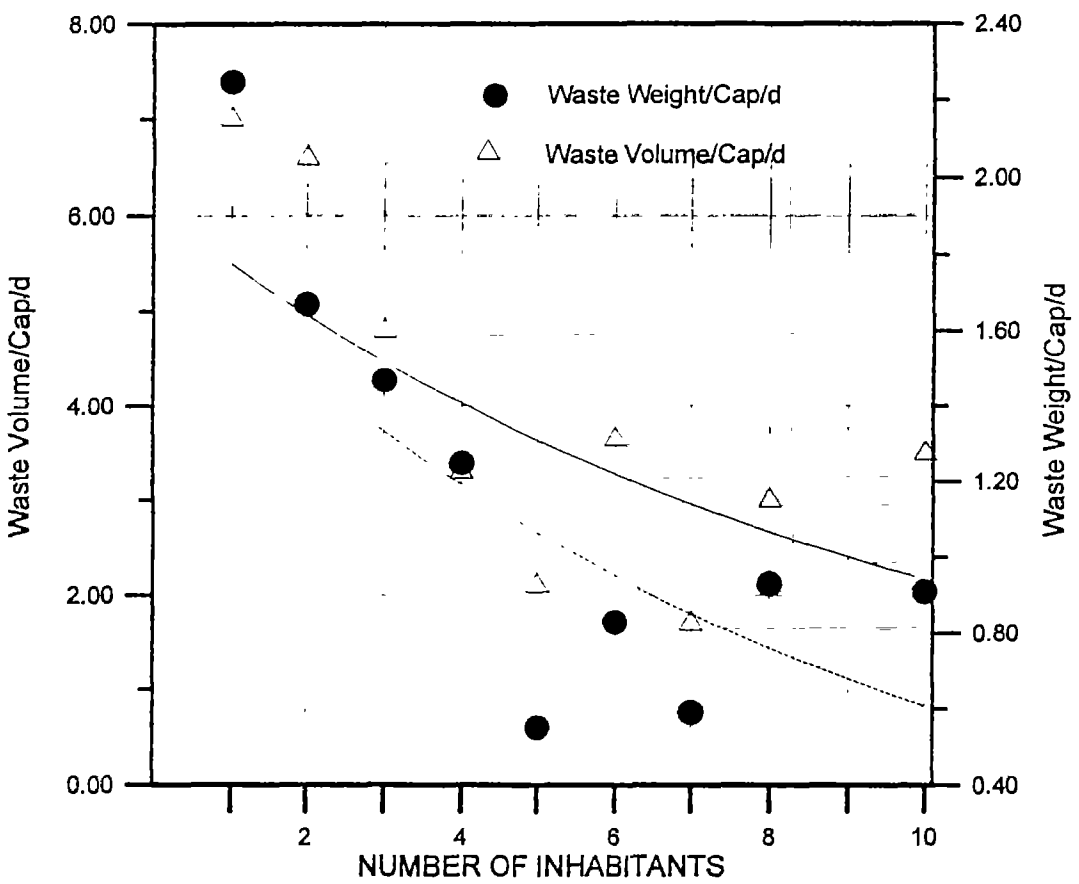
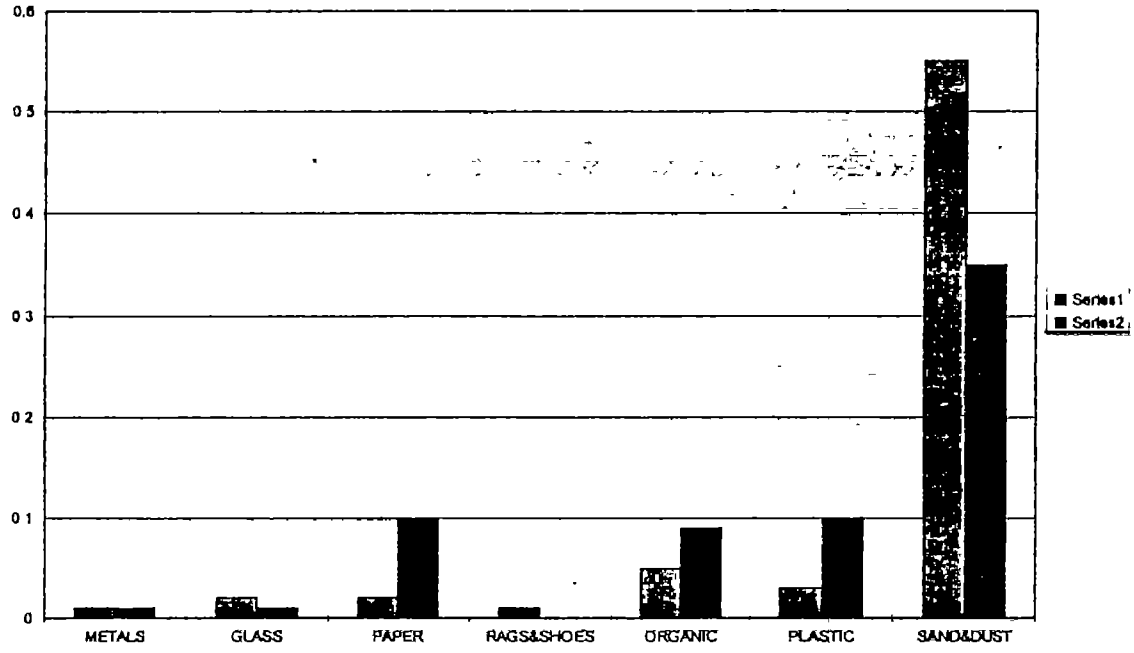


Fig. 4 Effect of Family Size on Waste Generation

To study the effect of ethnic on waste generation, a comparative study is conducted between two groups of families living in huts in Khour Awada and Nasseria. Families of both groups have baking ovens and .having about the same standard of living. One group is Saeydies and the others are Nubians.

It is found that the per capita weights of waste generation by Saeydies and Nubians are almost equal. The values are respectively 0.712 kg/cap/d and 0.727 kg/cap/d. The volume of wastes produced by Saeydies is, however, much higher. It reaches 4.75 liter/cap/day while for Nubians, is as low as 1.321 /cap/d. Fig. 5 includes the obtained results.

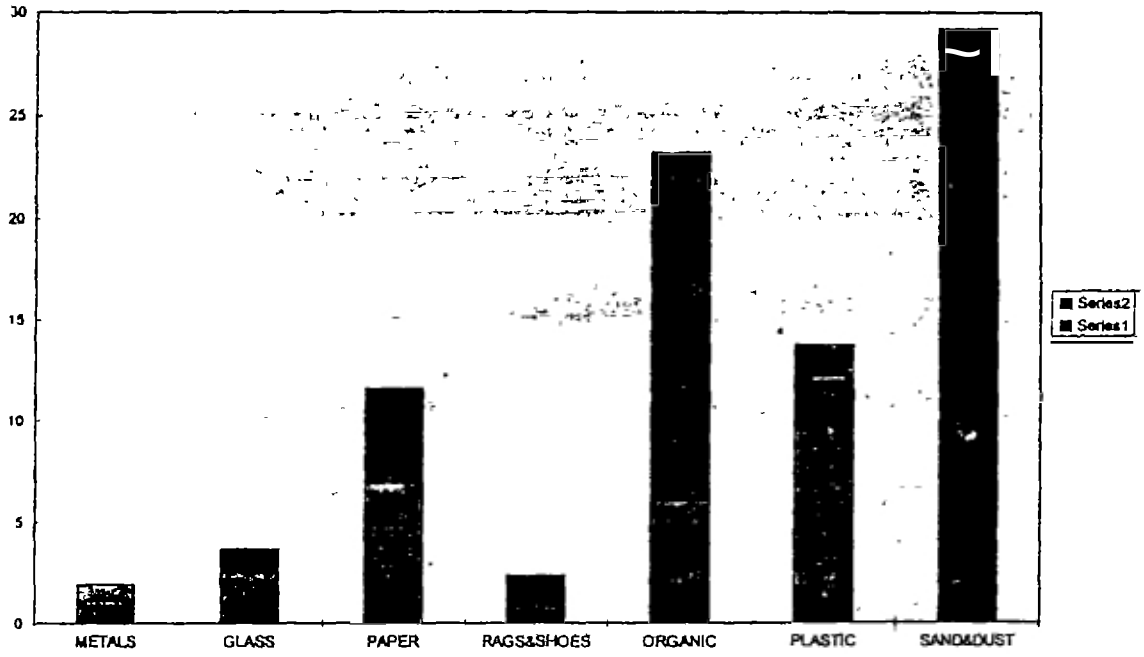


Series1 : Saeydies Series 2 : Nubians

Fig. 5 Effect of Ethnic on Waste Generation

5- Existing and Suggested Recycling Enterprises

The conducted tests led to the conclusion that the solid waste in Aswan contains a considerable amount of recyclable elements. In Fig. 6, the portions of waste elements which are suitable for recycling are drawn in correlation with the nonrecyclable quantities.



Series 1: Recyclable Series 2 : Nonrecyclable

Fig. 6 Recyclable and Nonrecyclable Portions of Waste Components

Actually, several local business men were aware of this fact even before the conduction of the intensive study which is presented here. They started micro recycling enterprises for metal and plastic wastes. However, due to lack of information about the technological and economic aspects as well as the awareness of environmental and health impacts, their success is found to be limited.

One of the major tasks included in the study is to investigate the possibility of improving the efficiency of the work, increase the benefit/cost ratio of the enterprises as well as create environmentally better working conditions to the laborers. Three of the treated cases are presented in this work, the first is that of an existing metal recycling plant, the second is a recycling plastic factory while the third is a proposed sugar-cane remains recycling enterprise.

The metal micro plant collects metal wastes from landfills, waste containers and waste collecting trucks. About 20 children are used for this job. They heap the collected objects on street edge before they are collected by a truck at intervals (Fig. 7).

The collected metals are brought to a workshop which contains a single compression machine and a storage yard. The machine is used to press the metal into cubes with side length of 50 cm. The plant works 3 shifts (18 hours) 7 days a week and produces 3.6 -4.5 tons of cubes daily. The production cost is 105 LE/ton and it is sold in Cairo for 180-220 LE/ton.

A study is made to investigate the possibility of expanding the factory to produce manhole covers and similar items, replacement of children by four grown ups as well as improving the working conditions in the plant. It is found that this will double the capital of the project while keeping the benefit/cost ratio almost unchanged.

Fig. 7 Collection and Transportation of Metal Wastes

The plastic recycling plant is build in a highly populated residential area. The plastic wastes are bought from scavengers who use wooden cars towed by donkeys to carry the articles to the plant. The objects are washed mechanically and sorted according to color before they are grounded by a special machine (Fig. 8). The powder is filled in plastic bags and transported to Cairo where it is mixed with imported powder to produce average to low quality house ware items.

A study is made to move the factory to a new wider place in the special industrial district and in the mean time expand the factory to do the complementary recycling stages until the final product is produced. It is found that this requires an extra capital about 1.5 of the present worth of the factory. The expected benefit/ cost ratio is well above 1.5

Fig.8 A Plastic Recycling Plant in Aswan

The proposed plant is related to sugar- cane remains. In Aswan there are 55 shops of sugar cane juice. An experiment is done in the study to calculate the weight of generated wastes. It is found that 46% of the pressed sugar cane sticks. It is estimated that the daily sugar cane wastes amounts to 7.00 ton.

Two alternative possibilities are found economically feasible. They are composting and paper production. The results are presented to local investors for consideration

Fig. 9 Sugar Cane Wastes in Front a Juice Shop

6- Conclusions

In Aswan, the generated wastes contain a high dust content. A considerable portion of the citizens use the organic wastes to feed their animals and birds. Moreover, the weather conditions do not favor the process of wastes composting.

Scavengers (who were identified during the test) collect waste elements of some value such as glass, metals, bones and plastics. The collected matters are treated to be reduced into a form that is suitable to be transported to Cairo.

The private sector can be encouraged to upgrade their micro recycling plants or establish new ones especially for metals and plastics. Sugar cane waste can be recycled economically through composting or paper production.

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Urban Management Programme

Swiss Agency for Development and Cooperation

UMP/SDC Collaborative Programme on MSWM
in Low-income Countries

CASE STUDY

SOLID WASTE MANAGEMENT MICRO-ENTERPRISES IN PERU

Prepared by
Institute for the Development of the Social Economy
(IPES)
Lima, Peru

Presented to the
Workshop on Micro-Enterprises Involvement
In Municipal Solid Waste Management
In Developing Countries

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SOLID WASTE MANAGEMENT MICRO-ENTERPRISES IN PERU

0. PRESENTATION

This document contains the results of the study carried out by the Institute for the Development of the Social Economy (IPES), concerning the micro-enterprises involved in the management of solid waste, within the framework of *The Investigation of Cooperatives and Micro-enterprises involved in the Management of Solid Waste in Latin America* carried out by WASTE of Holland, ACEPESA of Costa Rica and IPES of Peru, with the financial backing of WASTE, the World Bank and the Urban Management Program for Latin America and the Caribbean. The investigation covered seven latin american countries and took place in Peru between January and May 1996. It was the responsibility of a team of investigators, comprised of Cecilia Castro and Jorge Price.

In this document the central aspects of the study are developed according to the references of the organizers of the Workshop on micro-enterprises involvement in MSWM which will take place in Cairo.

1. HISTORY

Solid waste management in Perú is not only alarmingly deficient, but also highly inefficient. It represents one of the most widely felt problems by the urban population, especially by the people living in the poorer low income sectors. In Lima, only those districts which house the higher income levels (about two million people, of a total of six million) administrate the public sanitation services with some degree of technical capacity. In the rest of the city, these services are simply not offered or are so badly carried out as to be virtually useless. This situation repeats itself in the other large cities of the country and even more so in the small and intermediate localities where the service is not even offered by the municipalities which are responsible for it.

In 1989, with the sharpening of the economic crisis, the municipal public sanitation services were not able to cover the necessities of even 50% of the population, particularly that of the low income areas. It was common to find large amounts of solid waste in the streets and unpopulated areas. These became permanent focal points of infectious agents which were a serious health risk for the population.

It was in this situation that the first experiments with solid waste management micro-enterprises in Peru began. In January 1989, neighborhood leaders from Villa El Salvador in the south of Lima, a largely low income level population with some

three hundred thousand people, requested help from IPES to find a definite solution to the garbage problem. Due to this a series of actions were begun in mid-1989 which set the first public sanitation micro-enterprises (MEGA) into motion in the district of Villa El Salvador. These micro-enterprises arose as an answer reached by the population, the respective municipality and the promoting NGO (IPES). In this solution the protagonistic participation of the population to resolve the garbage problem was both fundamental and indispensable.

Due to its several years of experience as advisor to the Lima Municipal Sanitation Service Firm (ESMLL), IPES had previously developed and tested the idea of offering public sanitation services in marginal urban areas with difficult geographic conditions, using low cost non-conventional local technology and the wide use of manual labor.

The setting up of the first MEGAs permitted IPES to develop a model and an intervention method (denominated PROESA for the name of the project in which it originated: *Promotion of Work, Health and the Environment*) which have later allowed it to repeat the experiment in Peru as well as in other countries of the area.

According to this methodology the population has a decisive role in the starting up of MEGAs: it defines its necessities and service requirements (by means of waste studies and pilot tests), it coordinates with the municipalities, participates in the selection of the micro-enterprises and actively intervenes in the supervision of the MEGA services.

With the successful completion of the first experiment in Villa El Salvador, the populations and municipalities of different places solicited the creation of MEGAs in their districts. Therefore, starting in 1990, the micro-enterprises were replicated in other parts of Lima and in other cities of the country.

Other NGOs and private technical support organisms as well as municipalities also promoted and developed similar micro-enterprise experiments (in some cases with the technical assistance of IPES) in Lima and the provinces. Among these organizations are found RUTAS, in Cajamarca; Labor-Ilo, in Ilo; Alternativa, in Ancon; IDERN (The Institute for the Regional Development of the North), in Piura, and OACA (The Office of Environmental Consultation and Advisement), in Comas.

Most of the MEGAs which currently operate in Peru were created between 1989 and 1995. IPES has identified 163 micro-enterprises[1] created in this period. The majority (132 or 80.9%) were created within the framework of the project *Promotion of Work, Health and the Environment* (PROESA) of IPES; the others (31 or 19.1%) were the initiative of other NGOs and the communities themselves.

Of the 91 micro-enterprises[2] forming the Environmental Sanitation Micro-enterprises Association, 19 were studied. This group attends an estimated 401,255 inhabitants effectively[3]. Henceforth only these representative micro-enterprises will be referred to.

The micro-enterprises are principally dedicated to the collection and transportation of solid waste, although there are also some dedicated to other activities such as the production of compost, the maintenance of parks and gardens, etc. The following table shows the activities to which they are dedicated:

Micro-enterprises of the environmental sanitation micro-enterprises association dedicated to environmental sanitation activities

ACTIVITY	N° of micro-enterprises	%
Collection and transportation	46	50.6
Maintenance of parks and gardens	14	15.4
Street cleaning and sweeping	12	13.2
Recovery and separation	10	11.0
General services	3	3.3
Separation and recycling	2	2 2
Administration of services Public bathrooms	2	2 2
Manual final disposal	1	1.1
Composting	1	1.1

The 19 micro-enterprises considered in the study carry out the following services:

Solid waste management micro-enterprises investigated

ACTIVITY	N° of micro-enterprises	%
Collection and transportation	15	78.9
Street cleaning and sweeping	1	5.3
Recovery and separation	2	10 5
Manual final disposal	1	5.3

[1] The total number of micro-enterprises stated corresponds to official information concerning the institutions involved in the creation of enterprises, such as OACA, IPES, LABOR, and IDERN.

[2] The number which appears in the table corresponds to the total number of micro-enterprises identified in the inventory elaborated for the nationwide investigation.

[3] The 91 micro-enterprises attend 937,780 inhabitants.

2. MEGA DESCRIPTION

The IPES intervention model for the formation of environmental sanitation micro-enterprises proposes the transference of solid waste management from the municipalities to private micro-enterprises, preferably of an associative character, in close touch with the population.

It is an environmental health development strategy conforming to the principles of sustainable urban development and efficiency in public office. This strategy is based on the strengthening of local power, through the decentralization of the municipal services which are assumed by the micro-enterprises.

The intention is to solve the urban sanitation service problem by directly dealing with the primary causes which originate it: (1) by introducing efficiency in solid waste management through the transference of the corresponding services to private micro-enterprises; (2) by reducing investment costs and, above all, the operation costs of the sanitation services. This can be achieved by the employment of non-conventional systems characterized, the application of simple technologies and the extensive use of manual labor; and, (3) by having the population actively participate in the solution to environmental problems; that is, trying to modify their attitudes.

The decentralization of the municipal services in favor of micro-enterprises is directed towards the transformation of the public apparatus. It is also aimed at generating employment, at improving family income and public consumption, and at elevating the return and efficiency of the urban municipal services, by propitiating a close relationship between participation and decentralization.

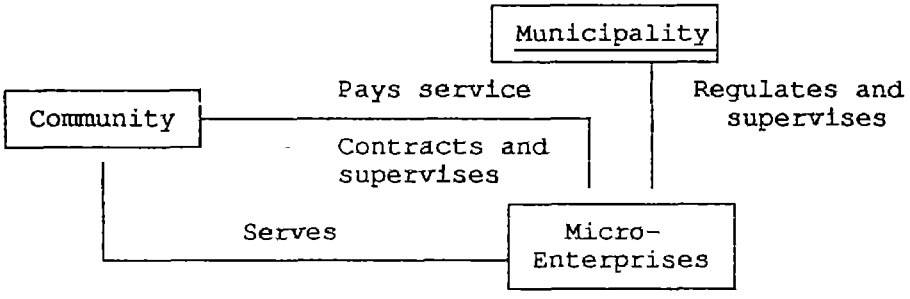
Starting from the local necessities, aspirations, demands and projects, decentralization represents not only the possibility of organizing the public services, but it is also an alternative in which the beneficiaries themselves guarantee their effective participation in the decisions related to their own development.

3. Strategy

The MEGAs are conformed by people from the communities in which they offer their services, usually the most needy sectors of the cities. The MEGAs are contracted by the municipalities or the organized communities, in which they receive a service concession. In the first, the municipalities pay the MEGAs with funds from the costs which the population pays (or should pay) for the services indicated. In the second, the Megas are paid directly by the users. These two forms of contracts constitute the basis for the micro-enterprise intervention strategy.

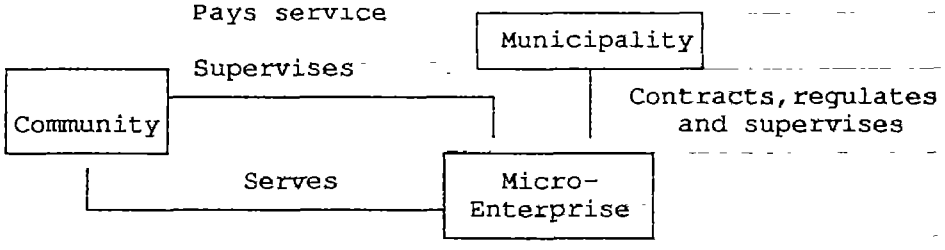
The following basic designs present the form in which the intervention is proposed:

ALTERNATIVE 1



In this case the community establishes a direct relationship with the micro-enterprises, which it contracts and pays for their services. It is always desirable that the municipality regulate and supervise the contractual relationship between the community and the micro-enterprises.

ALTERNATIVE 2



In this alternative, the community pays the municipality for the service. The municipality contracts and pays the micro-enterprises. The municipalities, with previous agreement from the social organizations, are responsible for formally contracting the micro-enterprises, for the monthly payments to the micro-enterprises, for supervising the service given and for proportioning the opportunities for their adequate functioning. It is the municipality which contracts the service and pays the enterprise for it. The population must pay for this service through their tariffs.

The concertation of the municipality and the social organizations for the formation of the MEGAs is carried out with the advice of an NGO. In almost all cases, the NGOs promote the implementation of micro-enterprises.

In some cases the leaders of the community have developed their own initiatives and have solicited the aid of an NGO to organize a micro-enterprise in their community.

In addition to the corresponding service, these enterprises quite often carry out cleaning campaigns with the population and actively participate in the environmental education of the community through lectures in the environmental education workshops offered by some NGOs.

4. OBJECTIVES AND BENEFICIARIES

The beneficiaries of the MEGAs are three:

- All of the residents of the area - principally poor people - in which they operate: 401,255 inhabitants[4].

- The workers of the micro-enterprises are residents of the zone attended. The workers receive an average salary equivalent to almost double the minimum salary required by law. There are a total of 203 workers in the 19 micro-enterprises investigated[5].

- The municipalities of the areas where the micro-enterprises operate: 11 in total[6]. These complement the services of the micro-enterprises in covering the public sanitation services. The Municipalities spend less on these services when they contract the MEGA.

As already indicated, the implementation and starting off of micro-enterprises have been carried out by various NGOs and have been financed by cooperation entities such as MISEREOR of Germany, CRS and LWR of the United States, and the Peru-France Countervalue Fund among others. In every case the objective of the donator was to aid local development, especially the generation of employment and the care of the urban environment of the low income sectors. It was particularly sought to benefit the unemployed (especially female heads of families) and to contribute to better living conditions for the inhabitants of the lowest income areas.

[4] The 91 micro-enterprises attend 937,780 inhabitants.

[5] The 91 micro-enterprises employ 597 workers.

[6] The micro-enterprises operate in 22 districts of the country.

The NGOs, which in the majority of the cases actively involved the benefiting populations, had the same objectives as the donating entities.

The beneficiaries' objective was to solve the overwhelming garbage problem in their localities, which means having public sanitation services which are regular, efficient and low cost.

5. INSTITUTIONAL FRAMEWORK

The chief actors in the MEGA experience are the workers in the micro-enterprises, the community organizations, the municipal authorities and the NGOs as promoters (in the planning and implementation process) and as almost permanent advisors (of the micro-enterprises).

The workers of the micro-enterprises assume the double responsibility of serving their community and auto-administrating their own economic unit, in order to guarantee the permanency of their work source.

With the functioning of the micro-enterprises the population makes itself responsible, in an organized way, for supervising the services rendered by each of them. In the case of the recovery and recycling enterprises it simplifies their provisioning. Said supervision implies maintaining a permanent relation with the workers of each micro-enterprise and establishing the formal channels with the municipality in order to inform it about the services given by each enterprise.

The contracting of the micro-enterprises depends on the municipalities. Once the MEGAs are formed and constituted, they contract, or are authorized by the municipalities, the concession of the respective services. At the same time, when the community directly contracts the micro-enterprises, the municipality regulates and supervises the adequate contractual relationship between the community and the micro-enterprise.

The promoter or NGO concerns itself with making possible, from its initial contacts with the future workers of the micro-enterprises, the conditions and mechanisms which make it viable for said enterprises to continue operating successfully without any aid after a period of six to twelve months.

The NGO takes charge of promoting the formation of the MEGAs: it gives preliminary training to the candidates proposed by the community, after which (based on the evaluation carried out with the participation of the local leaders, municipal officials and the NGO promoting team) the best candidates which fulfill the necessary requirements for forming part of these enterprises are selected. The

NGOs also assist these enterprises to obtain credit for their equipment from international cooperation funds or from the conventional financial system. This credit has at times been given by the NGOs themselves.

There have been cases of promoting teams, instead of an NGO, constituted by community organizations which seek to broaden their bases or replicate the experiment of other areas.

6. FINANCING

The finance for planning and technical consultation for the setting up of micro-enterprises was through international cooperation funds. The implementation of the micro-enterprises was carried out through loans given to these from the rotating funds (in three cases non-reimbursable funds were used) of the NGOs. In the case of the recovery and separation micro-enterprises the owners' funds were used.

The cost of the services are paid in two ways:

- by the municipality with funds collected from the community or with those from the municipal budget; or,

- personally by the users, to the micro-enterprises, whenever they directly contract the service.

The economic-financial analysis permits concluding that the micro-enterprises generate social benefits through the services rendered, but with impairment to their own economic benefit. The enterprises do not cover their total expenses; there are very few with make a profit. They do not count with additional income from the sale of waste or of any other unrelated activity. In general, the income has no relation to the costs: in some cases, because the tariffs are established by the municipality, which tries to impose the lowest one possible; in others, when the community is directly charged, because the amount of non-payment is very high. Certain hidden costs are also incurred; of these, personnel is the principal one, given that not all the workers are formally hired and therefore do not receive the legal social benefits.

7. TECHNICAL STANDARDS

The **solid waste collection and transportation micro-enterprises** use tricycle carts, with two wheels especially conditioned for all terrain, with a $1m^3$ capacity for a maximum weight of 350 kg. The tricycles are generally ridden by pairs

of workers, because this eases the control of the vehicle in terrain which is usually irregular. The workers daily cover 4 and 6 micro-routes, in which they attend an average of 600 lots. The waste is placed in plastic or burlap bags which have a 50 kg. capacity.

Once the tricycles are full, they are taken to the predetermined collection points (or containers), where they leave the collected waste. They continue their labor until they finish their route and then go to the collection point, where they load the waste onto a truck, dump-truck, or trailer attached to a tractor. This then transports the waste to its final disposal.

Apart from the mentioned equipment, the collection workers use assorted tools: rakes (to pull and pile up the loose waste at the collection point), bags (to collect and transport the neighborhood solid waste), spades (to spread it), and shovels (for lifting it from the ground).

Almost all the micro-enterprises, apart from collection, also transport the solid waste to its final disposal. For this they have two options: hire a vehicle which transports it, or to transport it themselves in their own vehicles (high-sided trucks or trailers hooked to a tractor).

The **street sweeping micro-enterprises** collect all inert material (dust, dirt, etc.) and organic and inorganic waste found in the streets or public areas. The sidewalks and street curbs are swept daily.

The operative system has been determined by the municipality. The street cleaning micro-enterprises has distributed its workers in routes. In each one the workers must collect the inert waste and all other waste which is found in the public streets using a broom and a dustpan. They accumulate the waste in a 100 liter bag or in a plastic sack which they generally transport in a manual cart, a large drum with wheels ("capachos"). When the bag or sack is full, they take it to a collection center or a nearby container. They dispose of it there and return to finish their route.

The municipality personnel are responsible for the cleaning of the containers or, directly of the carts, and they transfer them to final disposal.

The **final disposal micro-enterprises** manually compact the solid waste which reaches the land fill. The compacting is done on the surface and slopes of the landfill platform. The process used is the following: after the garbage collection vehicles leave the waste, the workers begin to spread it out with shovels and rakes. They separate the reusable material with spades. The waste is transferred to cells in wheelbarrows using the ramp gradient method; there a worker spreads out the

garbage with a rake, while another uses a roller (cañeca) to compact the surface; pounders are little used because they are considered to be awkward and heavy. The garbage is compacted until it reaches a height between 35 and 50 cm.

When an area is compacted, shovels are use to cover the waste with dirt from the succeeding area. Lastly, the surface and slopes are compacted with the roller. When finished the workers take the recoverable material to an area where they deposit and classify it by material type (paper, plastic, glass, etc.).

8. PHASES / SIGNIFICANT STEPS

During the first years of operation, the system worked perfectly: the micro-enterprises rendered the service and the municipality paid for, supervised and controlled it. But progressively, the municipalities began to delay payment for the services, due to the decrease in the collection of tariffs.

This decrease is closely related to the substantive reduction of the people's capacity to pay caused by the country's economic crisis, the freezing of salaries and the large breach between real salaries and nominative salaries. This situation was aggravated by Legislative Decree 776 emitted in December 1993. This decree restricted collection, which until then had been carried out by including the tariff in the electric bill, to the municipal governments in the first instance and only in the second instance to the banking-financial system.

According to the Legislative Decree indicated, the municipality must use its own means to collect the tariffs from the population, in view of the fact that a coercive mechanism no longer existed which would guarantee payment from month to month. The Central Government had previously decreed in Law Decree (D.L. 25988) that the electric companies were prohibited from continuing to charge tariffs (such as that for the public sanitation services.)

Some municipalities decided to collect the tariffs corresponding to public sanitation along with the land tax. The collection levels fell and to date the municipalities have been unable to revert this situation. This explains why their funds for the public sanitation services are low.

The micro-enterprises were significantly affected by this situation. In addition to the delay in payment, many contracts were not renewed, and some micro-enterprises continued working without the assurance that due payment would be recognized. This situation determined the temporal or definite paralyzation of some businesses.

In other cases the municipality, faced with low collection of tariffs and the danger of not being able to sustain public sanitation with its recourses, decided to not directly contract the micro-enterprises. In agreement with them, it opted to transfer the responsibility of collecting the tariffs from the population to cover the costs of the service to them. Therefore, in some districts the municipalities detached themselves from the responsibility of rendering the public sanitation services. In addition, in many cases it relinquished its responsibility for supervising and effectively controlling this service.

The municipalities continue contracting the micro-enterprises in very few places for collection services[7]. Those which continue have however reduced their efficiency and quality of service because the negotiated tariffs only cover their minimum operational costs.

A similar situation has presented itself in those micro-enterprises which charge the population directly. This shows an indifferent attitude to the necessity of paying a fair tariff which permits the micro-enterprise to cover the costs incurred in rendering efficient service. Therefore, the micro-enterprises have been obliged to "survive" on the money collected. With the passing of time, a conspicuous deterioration of their equipment has become evident in spite of tremendous efforts to maintain adequate quality and notwithstanding campaigns directed towards awakening the populations' consciousness of the importance of the work carried out, especially by the collection micro-enterprises.

Today the perspective for the micro-enterprises is favorable, in the measure that the majority of the local and political leaders are convinced of the advantages of the decentralization of the urban sanitation services. The MEGAs count with laws which promote private investment in the environmental health field. However, in spite of the indicated, the lack of an environmental authority and of regulation which guarantees better stability for them is evident.

9. LESSONS

The micro-enterprises efficiently offer solid waste management services for low income families at low cost using non-conventional technologies. They have

[7] It is known that 35% of the micro-enterprises created by IPES before 1993, have definitely stopped their operations. The micro-enterprises were thus obliged due to the continued lack of payment by the municipalities for the public cleaning service rendered and because the Mayors refused to renew the micro-enterprises' contracts due to the budget cuts to which they were subjected as a result of Legislative decree 776.

completely eradicated the dumps in the areas attended and have given regular service.

For this they hire unemployed inhabitants of the area. The associates-workers of the enterprises have developed awareness of the importance of their labor in the community. They feel recognized by their neighbours and also by the municipal authorities. At the same time the activity allows them to obtain an income superior to that which they would have received in other types of activities.

Some leaders took the initiative of promoting micro-enterprises in their areas and/or became involved in the planning and implementation process. For this they had the valuable support of the NGOs, who offered the counseling necessary for the micro-enterprises to function.

The involvement of some municipalities in the experiment has been very important, some of them did so due to their own initiative in creating the MEGAs, and others did so during the formation process in order to maintain good relationships with them. The authorities in the municipalities involved are convinced that it is only through the MEGAs uniting non-conventional technologies with the conventional ones and at lower costs that the public cleaning and sanitation system will work.

Despite this, it is necessary that the MEGAs establish service contracts with the municipalities in which the duties and obligations of both parties are clearly defined. In particular, it is necessary that the municipality commit itself to the control and supervision of the service and at the same time to a fair payment for this service.

For this type of experiment to be replicable it is necessary to have the following considerations:

- The MEGAs are technically replicable in those places where the population density doe not excede 220 inhabitants per square block.

- In economic terms, they are replicable in those places where, medium or large capital has no interest in investing in public sanitation; and, on the other hand, the population and the municipality have the capacity, although limited, to pay and are predisposed to cover the charges of public sanitation.

- They are socially replicable if the following occurs: (1) the population is aware of its role in public sanitation and is ready to participate; (2) the municipality is disposed towards the decentralization of the public cleaning services

through the MEGAs and to assume the risks which this implies; and, (3) if in the intervention ambit (or in nearby districts) there exists important MEGA experiences.

The following tables present the results obtained by the MEGAs.

PERFORMANCE INDICATORS

Type of enterprise	MEGA Collection and Transportation	MEGA Sweeping	MEGA Final Disposal
Tons/operator/daily	1.00		2.67
Tons/micro-enterprise/daily	8.07		16
Tons/vehicle/trip	0.44		
Tons/vehicle/daily	1 77		
Tons transported per trip/nominal vehicle capacity	0.91		
Population served/operator	4,624.37	705	2,412
Population served/micro-enterprise	33,660.67	8,466	14,477
Population served/vehicle	8,414.57		
Number of operators/number of supervisors	8.50	12	
Number of operators/total number of workers	0.81	1.0	1
Number of workers/number of owners	2.20	1.2	3
Kilometers/operator/daily	0.71	2.5	
Daily time per operator:			
Effective work (in hours)	8.80	6	8
Rest during work hours (in minutes)	19.07	0	60
Waiting (in minutes)	14.33	0	120
Displacement during work hours (in kilometers)	6.70	2.2	2
Displacement from house to place of work and vice-versa (in minutes)	25 33	85	62
Economic indicators ($US)			
Cost/ton/monthly	15.31		3.35
Cost/kilometer/monthly		4.04	
Micro-enterprise income per ton	13 50		3.93
Micro-enterprise income per kilometer		4 52	
Cost/inhabitant served/monthly	0 11		0.06
Cost of operation/total costs	0.96	0.99	0.99
Average worker's salary	94 32	170.00	103.50
Average family monthly income	162 31	277.40	129.00
Gender indicators			
Percentage of workers (women) in the enterprise	46%	100%	0%
Women associate owners/male associate owners	57%	12%	0%
Percentage of male leader	7%		50%

COVERAGE AND COSTS OF THE MEGA

Type of enterprise	Coverage	Investment costs	Monthly Operational costs
MEGA SWEEPING	24 kms. of street	$US 2,330.00	$US 2,859.85
MEGA COLLECTION AND TRANSPORTATION	42% of the collection demand of the cities and districts attended. the neighborhoods of areas surrounding the center. This means about 80,251 homes, or about 401,255 people, which produce about 108 tons of garbage daily.	$US 4,180.00	$US 1901.72
MEGA FINAL DISPOSAL	50% of the demand of the city attended. An average of 16 tons daily.	$US 2,320.00	$US 1,275.78

PROYECTO / PROESA

IPES
INSTITUTO de PROMOCION
de la ECONOMIA SOCIAL

PROMOCION DEL EMPLEO LA SALUD Y EL AMBIENTE

MICROEMPRESAS PROESA

Las microempresas PROESA son formadas en el marco del Proyecto "Promoción del empleo, la salud y el ambiente", como respuesta al grave problema del saneamiento ambiental básico.

La creación de microempresas para atender servicios públicos, en el marco de una *estrategia de privatización social* de algunos servicios que actualmente brinda el Estado deficitariamente, es una iniciativa que se viene ejecutando en varios países latinoamericanos de forma exitosa, con la enorme ventaja de generar empleo estable y permanente en favor de sectores desocupados de la población.

El IPES ha demostrado que las microempresas PROESA pueden ser una solución definitiva al problema de la inadecuada gestión ambiental urbana, particularmente para las zonas urbano-marginales. También ha probado que es posible y conveniente que otros servicios públicos, como los que prestan los municipios, sean transferidos a microempresas, reduciendo costos gracias al uso de sistemas no convencionales y a la eficiencia de estas unidades económicas que, además de generar empleo, reducen el riesgo de enfermedades de la población y protegen el ambiente.

PROESA implica la transferencia de los servicios de gestión ambiental, actualmente a cargo de las municipalidades, a microempresas; con lo que se pretende resolver el problema del inadecuado manejo ambiental urbano, atendiendo de manera directa las tres causas principales que lo originan:

(1) reduciendo los costos de inversión y, sobre todo, los de operación de los servicios ambientales, lo que se logra con el empleo de sistemas no convencionales caracterizados por el empleo de tecnologías simples y el uso intensivo de mano de obra;

(2) introduciendo la eficiencia en la gestión ambiental a través de la transferencia de los servicios correspondientes a microempresas privadas, y

(3) haciendo participar activamente a la población en la solución de los problemas ambientales; esto es, buscando modificar sus actitudes

Se trata, pues, de la formación de microempresas asociativas con criterios de eficiencia en las tareas propias de la gestión ambiental. Las microempresas establecen una relación contractual con los municipios (o, las comunidades organizadas), libre de paternalismos o de favoritismos políticos insensatos, que busca desarrollar la conciencia de los trabajadores de las microempresas como empresarios y profesionales en el manejo ambiental.

Es objetivo de las microempresas PROESA prestar adecuados y eficientes servicios de saneamiento básico.

VENTAJAS

- Ofrecen servicios de calidad y eficientes y de muy bajo costo. Su trabajo es altamente competitivo respecto de otros servicios privados o municipales.
- Permiten una efectiva participación comunitaria en la solución de los problemas locales.
- Reducen significativamente los costos municipales de supervisión -tradicionalmente elevados-, al implicar menores exigencias de control
- Facilitan el mejor funcionamiento de las corporaciones municipales.

ORGANIZACIÓN E IMPLEMENTACIÓN

El Instituto de Promoción de la Economía Social (IPES), directamente o a través de otras organizaciones de promoción del desarrollo, apoya la formación y constitución de las microempresas PROESA y les brinda asistencia técnica en aspectos legales, técnicos, sociales y financieros.

Para el caso, los Municipios o las organizaciones vecinales interesadas solicitan al IPES la implementación de las microempresas y firman un convenio de cooperación. El IPES realiza un estudio de factibilidad y en función de sus resultados formula una propuesta técnica y económica para la puesta en marcha de las microempresas PROESA. Una vez que el Municipio o la organización vecinal involucrada aprueba el estudio y sus recomendaciones, solicita al IPES la formación y constitución de las microempresas y el financiamiento de la inversión inicial. Cuando las microempresas han sido habilitadas, constituidas legalmente y adecuadamente capacitadas son contratadas por el Municipio o la organización vecinal, que paga mensualmente por los servicios, con cargo a las tasas de aseo urbano que debe cubrir la población.

Desde 1989 a enero de 1995, PROESA se ejecuta en más de veinte localidades del Perú, sirviendo a más de 1'200,000 personas.

MESH MICROEMPRESAS DE SERVICIOS HIGIÉNICOS

Cada microempresa administra tres módulos de servicios higiénicos ubicados en zonas eminentemente comerciales de cada distrito o localidad. Cada módulo consta de dos cabinas: una para varones y otra para damas, colocadas frente a frente, con un pasillo entre ambas, donde se sitúa la persona que cobra por el servicio.

Cada módulo requiere un área de 6 metros cuadrados y son fabricados con estructura metálica y paredes de madera o fibra de vidrio.

Los Municipios deben autorizar el uso de la vía pública a las microempresas a través de resolución municipal, de manera que los servicios higiénicos puedan conectarse a la red de agua y desagüe públicos.

CAPACIDAD

Cada módulo tiene una capacidad instalada para servir a 360 personas por día, en dos turnos de 13 horas en conjunto. Una MESH tipo la conforman siete personas.

COSTOS

Los Municipios no tienen que invertir en la habilitación de los módulos; sólo deben autorizar -bajo la modalidad de concesión de servicios- el funcionamiento de la MESH.

Los usuarios de los servicios deben pagar montos promedios de US$ 0.10 por el empleo de los servicios higiénicos.

MEB MICROEMPRESA DE BARRIDO DE CALLES

Cada MEB realiza el barrido y recojo manual de los desechos que se encuentran en calles, avenidas y plazas públicas. Los desechos son recogidos con escoba y recogedor y puestos en una bolsa de 100 lt. que transporta un carrito manual. Una vez que la bolsa del carrito se llena, ésta es recogida por un triciclo, el cual traslada los desechos hasta un centro de acopio o contenedor más cercano.

CAPACIDAD

Cada MEB tiene una capacidad de barrido y limpieza de 22 km. de calle por día, considerando que la conforman once personas: diez barrenderos y un "triciclero".

COSTOS

El costo de operación mensual, promedio, de una MEB tipo es de US$ 5.00 por km. de calle. Considerando que las MEB trabajan 26 días al mes, su costo mensual es de US$ 2,860.00. (Es importante indicar que los costos municipales o de otras empresas privadas se hallan por encima de los US$ 8.00 por km. de calle).

MER MICROEMPRESA DE RECOLECCIÓN DE DESECHOS

Cada MER realiza el recojo y transporte de los desechos domiciliarios y comerciales que se producen en una zona determinada. Para el caso, utilizan tecnologías apropiadas, simples y de uso intensivo de mano de obra, consistentes en triciclos de un metro cúbico de capacidad, adecuadamente acondicionados para el caso. Cada triciclo es conducido por dos personas que recorren 6-8 micro rutas diariamente y cargan, en cada una, alrededor de 300 kg. Una vez que los triciclos se llenan son trasladados hasta un centro de acopio, en el que se encuentra un volquete o carreta articulada con tractor agrícola, que transporta los desechos hasta el lugar de la disposición final.

CAPACIDAD

Cada MER tipo tiene una capacidad de recojo y transporte de 09 tn. de desechos por día. Una MER tipo la conforman doce personas.

COSTOS

El costo mensual de operación, promedio, de una MER tipo varía entre US$ 10 y 15 por tn. recogida y transportada hasta el lugar de la disposición final. Considerando el monto mayor y que las MER trabajan 26 días al mes, su costo mensual es de US$ 3,510.00. (Es importante indicar que los costos municipales y de otras empresas privadas se hallan por encima de los US$ 26.00 por tn. de desechos).

MEDF MICROEMPRESAS DE DISPOSICIÓN FINAL

Cada MEDF opera un micro-relleno sanitario manual. En éste se reciben los desechos sólidos y se los dispone finalmente. La MEDF trabaja con el sistema de "relleno sanitario", que es una técnica para la disposición final de la basura, que no causa perjuicio al medio ambiente y no causa molestias o peligro para la salud y seguridad públicas. Este sistema utiliza principios de ingeniería para confinar la basura en un área reducida, disminuyendo su volumen al mínimo practicable por compactación, para luego cubrirla con una capa de tierra, con una frecuencia necesaria. La compactación es realizada manualmente con pisones y rodillos pesados.

CAPACIDAD

Cada MEDF tipo tiene una capacidad de disposición final de 18 tn. de desechos por día. Una MEDF tipo la conforman entre seis y diez personas.

COSTOS

El costo de operación promedio de una MEDF tipo es de US$ 5.00 por tn. dispuesta finalmente. Considerando que las MEDF trabajan 26 días al mes, su costo mensual es de US$ 2,340.00. (Es importante indicar que los costos municipales y de otras empresas privadas se hallan por encima de los US$ 6.00 por tn. de desechos).

MEPJ MICROEMPRESAS DE PARQUES Y JARDINES

Estas microempresas prestan servicios de mantenimiento de parques, jardines, bermas y demás áreas verdes públicas. El trabajo típico de las MEPJ comprende dos fases: la primera consiste en habilitar el terreno, limpiarlo de desmonte, piedras, malezas, removerlo y abonarlo. La segunda fase implica la siembra de plantas ornamentales, frutales, flores y grass, riego permanente, fumigación, poda, retocado, resembrado y enriquecimiento de suelos.

Cada MEPJ tipo tiene una capacidad de mantenimiento de 5 a 9 ha., dependiendo de las condiciones físicas de cada lugar. Una MEPJ tipo la conforman diez trabajadores.

COSTOS

El costo promedio de operación mensual de una MEPJ tipo es de US$ 800 por ha. de área verde. Considerando que las MEPJ atienden, en promedio, 7 ha. por mes, su costo mensual es de US$ 5,600.00. (Es importante indicar que los costos municipales y de otras empresas privadas se hallan por encima de los US$ 1,000 por ha./mes).

IPES / Av. Javier Prado Este 1530, Lima 27 - PERU / A. P. Nº 110466
Teléfonos (51-1) 475 1325 - 475 1690 Fax (51-1) 475 0368
E – Mail: postmast @ ipes. org. pe

directa coordinación con las entidades gubernamentales, municipios, organizaciones de base, parroquias, gremios, centros educativos y ONG, entre otros. En este momento, también se hace la revisión y ajuste definitivo del compromiso de dichas entidades para la formación y operación de las ADEL.

En tercer lugar, se realiza un taller de Planificación Estratégica, con todos los agentes involucrados, a partir de cuyos resultados se formula un Plan Estratégico y se diseña de forma específica la manera de operación y funcionamiento de la Agencia. También se suscribe el acta de fundación de la ADEL.

¿QUÉ FUNCIONES CUMPLE UNA ADEL?

- Identifica las necesidades económicas insatisfechas y el potencial productivo de su ámbito de influencia.
- Motiva y sensibiliza a la población en relación a la necesidad de generar una "cultura empresarial" como base del desarrollo económico.
- Facilita la evaluación y formulación de proyectos de inversión locales.
- Promueve la puesta en marcha de empresas y facilita su creación.
- Facilita y apoya los esfuerzos locales para el fortalecimiento y crecimiento de las microempresas existentes.
- Promueve y pone en marcha programas de capacitación y educación empresarial y técnica en relación a los proyectos de inversión formulados y a los resultados del diagnóstico sobre necesidades económicas insatisfechas.
- Gestiona la obtención de recursos financieros y técnicos para poner en marcha los proyectos de inversión (o las empresas) de su localidad.
- Brinda servicios técnicos especializados en gestión empresarial.

¿CÓMO SE ORGANIZA UNA ADEL?

Las ADEL cuentan con las siguientes instancias

- La Asamblea o mesa de concertación que la constituyen todos los representantes de las organizaciones locales (privadas y públicas) con responsabilidades en el desarrollo económico local, debidamente acreditadas.
- La Coordinación, elegida por la Asamblea, y a cargo de un equipo de cinco representantes. Esta Coordinación designa, de entre sus miembros, a un (a) Coordinador(a) General.
- Los equipos técnicos constituidos por los profesionales, técnicos y otros de las distintas instancias de apoyo existentes.

IPES / Av. Javier Prado Este 1530, Lima 27 - PERU / A. P. Nº 110466
Teléfonos (51-1) 475 1325 - 475 1690 Fax (51-1) 475 0368
E – Mail: postmast @ ipes. org. pe

PROYECTO / PROADEL

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Las Agencias de Desarrollo Económico Local (ADEL) son el instrumento del trabajo de promoción del empleo del IPES. Las ADEL se soportan en una permanente acción de concertación entre los distintos agentes del desarrollo de cada lugar. Luego de un período inicial de intervención, el IPES busca que las ADEL lo sustituyan de manera que ellas sean las hacedoras de su propio desarrollo y de la concertación y articulación permanentes entre las instituciones y recursos existentes en sus localidades. Por esto, el trabajo de promoción es asumido por el IPES como un conjunto de acciones tendentes a generar condiciones para el fortalecimiento de las organizaciones de base y la creación y consolidación de las ADEL, en la construcción de su propio desarrollo.

Las ADEL permiten que los agentes del desarrollo existentes en los sectores más deprimidos de la sociedad encuentren oportunidades y formas de acceso a los circuitos productivos, en la medida en que facilitan una adecuada y racional utilización de los escasos recursos disponibles y toman decisiones en forma concertada sobre las iniciativas de un desarrollo económico autosostenido y equilibrado.

Las ADEL facilitan el diagnóstico, la planificación y la puesta en marcha de programas de empleo en los lugares de intervención, logrando elevados niveles de concertación entre las organizaciones de base y las entidades públicas y privadas concernidas.

Las ADEL son una instancia autónoma de *encuentro funcional* de las organizaciones locales (Comités Vecinales, Gremios, Municipios, Unidades de Servicio del Estado, etc.) de una localidad determinada; en tal sentido, no constituyen necesariamente estructuras de organización distintas. Por esto, las ADEL se dedican fundamentalmente a tareas de intermediación y facilitación en apoyo al desarrollo económico, a través de acciones de diagnóstico, animación empresarial, formulación de proyectos de inversión, difusión tecnológica, comercialización, financiamiento, desarrollo de recursos humanos así como canalización y gestión de información sobre actividades productivas. Asimismo, las ADEL, como instancias válidas de interlocución y de dinamización del desarrollo local, proponen y gestionan el desarrollo de servicios complementarios de apoyo a la producción.

El principal instrumento de las ADEL para promover la generación y la consolidación del empleo son las microempresas de producción y servicios. El fomento a la creación de nuevas empresas y el apoyo a las existentes es una ocupación cotidiana de las ADEL.

El IPES, a través de estas Agencias, y concertando con ellas, busca el aprovisionamiento de los recursos necesarios para una adecuada puesta en marcha de los programas de empleo requeridos.

¿QUIÉNES INTERVIENEN EN LAS ADEL?

Todos los agentes de una localidad integrada en términos territoriales con responsabilidad en el desarrollo económico local: gremios, asociaciones vecinales, comedores populares, comités del vaso de leche, municipios, unidades operativas de los ministerios, ONG, universidades y otras entidades con disposición de apoyar el desarrollo económico local.

¿DÓNDE OPERAN LAS ADEL?

Las ADEL operan en los sectores populares, principalmente aquellos que tienen las siguientes características·

- Carencia casi total, de apoyo externo, privado o público.
- Altos niveles de desempleo y subempleo, a pesar de la existencia de importantes contingentes de autoempleados y de microempresarios, que -sin embargo- producen casi exclusivamente para el mercado local.
- Inexistencia de inversiones productivas importantes, privadas o públicas, de manera que la presencia de agentes del sector moderno de la economía es inexistente.
- Ubicación en el mapa de la pobreza, en condiciones críticas.
- Historia básica de organización local.
- Presencia importante de desplazados por la violencia; aunque, en algunos casos, no necesariamente.
- Dificultad para la gestión de recursos.

¿CÓMO SE FORMA UNA ADEL?

En primer lugar se determinan las zonas de trabajo. El IPES promueve su quehacer en las zonas deprimidas de los Departamentos en los que trabaja y, a partir de la solicitud de apoyo de alguna (s) organización (es) local (es), realiza un estudio preliminar que le permite seleccionar aquellos lugares en donde se cumplen las características indicadas.

En segundo lugar, se selecciona a las organizaciones locales con interés y voluntad de incorporarse en las ADEL. Este trabajo es realizado en

[1] Las Agencias de Desarrollo Económico Local (ADEL), originalmente son una propuesta organizativa impulsada en el Programa de Desarrollo para Desplazados, Refugiados y Repatriados en Centroamérica (PRODERE) por el PNUD y la Oficina Internacional del Trabajo (OIT)

IDES / Av. Javier Prado Este 1530, Lima 27 - PERU / A. P. Nº 11-0466
Teléfonos (51-1) 475 1325 - 475 1690 Fax (51-1) 475 0368

IDES

INSTITUTO de PROMOCION
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INFORMACIÓN GENERAL

El Instituto de Promoción de la Economía Social (IPES) es una organización privada de desarrollo (con personería jurídica de asociación civil sin fines de lucro) que opera en el Perú, desde 1984.

El IPES se halla registrado en:

- Registros Públicos de Lima: Ficha Nº 6252 del Registro de Asociaciones del 15-06-84.
- Superintendencia Nacional de Administración Tributaria con RUC Nº 10686024.
- Ministerio de Educación: R.M. Nº 108-86-84 ED
- Ministerio de la Presidencia: R.D. Nº 002-91/INP.19.

El IPES es miembro del Consorcio de ONG que apoyan a la Pequeña y Microempresa en el Perú (COPEME), de la Unión Mundial para la Naturaleza (UICN), del Centro Internacional para la Auto-Gestión (ICS) y de la Red Peruana de Manejo Ambiental (REPEMAR)

AMBITOS DE ACCION

El grupo objetivo del IPES lo componen los desempleados, los subempleados (en situación de autoempleo) y los empleados propietarios y trabajadores de micro y pequeñas empresas.

El quehacer del IPES es proyectado y difundido a nivel de todo el país; aunque su intervención en el campo de la promoción está limitada a tres Departamentos del Perú.

Sus actividades comprenden, particularmente, los servicios de Promoción, Investigación aplicada y Consultoría en los campos de su especialidad. En el ámbito de la promoción da especial atención a los servicios de: Fortalecimiento organizacional, Asistencia técnica, Capacitación, Mercadeo, Financiamiento, Información, Asesoría legal y contable, Desarrollo gerencial e Investigación.

MISION INSTITUCIONAL

Al año 2,000, la misión del IPES es la promoción del empleo para mejorar la calidad de vida de desempleados y de autoempleados; así como de propietarios y trabajadores de microempresas, a través de la ejecución directa de programas y proyectos que favorecen y potencian el desarrollo económico local.

CRITERIOS DE INTERVENCION

Los criterios siguientes orientan de manera permanente su quehacer:

(1) El IPES apuesta por el desarrollo sostenible, en este sentido promueve la puesta en marcha de proyectos rentables (económica, social y ambientalmente) y con garantía de calidad y permanencia.

(2) La selección de las poblaciones-objetivo del IPES considera las capacidades de éstas para involucrarse activamente en su propio desarrollo, buscando su participación activa y protagónica.

(3) El IPES propone alternativas para el desarrollo recogiendo las experiencias existentes y los modelos probados, creando espacios para la promoción, coordinación y concertación. Sin embargo, también explora modelos de promoción nuevos, hasta que los valida y los generaliza. En este sentido, el quehacer del IPES es caracterizado por un trabajo de carácter modular, con intervenciones terminales, de tiempos y espacios definidos para su inicio y fin.

(4) El IPES trabaja con mujeres y hombres por igual, pero considerando la apertura de mayores oportunidades a las mujeres que, por razones de exclusión o disminución, no son atendidas en la mayoría de proyectos y programas de desarrollo. Igualmente da especial atención a los jóvenes entre 18 y 25 años, particularmente en sus programas de generación de empleo

(5) El IPES promueve una relación permanente con las entidades del Estado (gobiernos central y locales) y las otras organizaciones de la Sociedad Civil con el propósito de utilizar y potenciar los recursos disponibles en el entorno de manera concertada, buscando siempre su complementariedad.

(6) Inicialmente, el IPES mantiene un trabajo de relación directa con sus beneficiarios, para -posteriormente y de manera progresiva- lograr la intermediación de las propias organizaciones de beneficiarios a través de *las agencias locales de desarrollo*. Una vez que se consolidan las agencias locales de desarrollo, el IPES inicia su «retirada» del ámbito de intervención.

ESTRATEGIA DE INTERVENCION

El IPES concibe su estrategia de intervención en función de dos tipos de acción centrales. las acciones orientadas a lograr su misión y las acciones que buscan su fortalecimiento y eficiencia para garantizar lo primero.

Para el logro de su misión, el IPES cuenta como componente básico con su trabajo de promoción el que se desarrolla con el soporte de una muy activa acción de concertación entre los distintos agentes del desarrollo de cada lugar de intervención.

El trabajo de promoción del IPES busca el mejoramiento de la calidad de vida de las poblaciones de los lugares en los que interviene, atendiendo de forma directa a sectores desempleados y a propietarios y trabajadores de ME Luego de un periodo inicial de intervención, el IPES busca que las organizaciones lo sustituyan y sean las hacedoras protagónicas de su propio desarrollo y de la concertación y articulación permanente entre instituciones y recursos existentes a través de las Agencias de Desarrollo Económico Local (ADEL).

El trabajo de promoción siempre se inicia con una investigación acción (inventario o diagnóstico de necesidades de desarrollo) de los lugares de intervención, cuyos resultados permiten definir las acciones propiamente de promoción: servicios empresariales, financiamiento, articulación y/o apoyo a la comercialización.

En el caso de las acciones orientadas a lograr su fortalecimiento y eficiencia institucional, el IPES desarrolla dos ejes centrales: (1) la sistematización, la investigación y la divulgación de aquellos aspectos y temas vinculados con su

quehacer, y (2) el fortalecimiento de su institucionalidad, entendiéndose por esto la búsqueda y encuentro permanentes de formas y mecanismos de gestión que le garanticen un eficaz y eficiente funcionamiento y una correcta utilización de los recursos disponibles, logrando los mecanismos y formas que garanticen el financiamiento de sus costos fijos.

PROGRAMAS Y PROYECTOS

A la fecha (enero/95) el IPES cuenta con los siguientes Programas y Proyectos principales:

PROGRAMA DE EMPLEO EN SECTORES ALTERNATIVOS

Comprende proyectos orientados a la generación de empleo para desocupados a través de la formación de microempresas de servicios públicos, en el marco de una estrategia de *privatización social* de algunos servicios que actualmente brinda el Estado deficitaria e ineficientemente. También involucra la formación de microempresas en sectores tradicionalmente abandonados, como el segregado y reciclaje de desechos. El Programa involucra 32 ámbitos de acción, sin embargo, actualmente sólo opera en saneamiento básico, reciclaje de desechos, mantenimiento vial y servicios municipales, a través de sus proyectos modulares como- **PROESA, PROAMBIENTE, PROAGUA y PROMOVIAS.**

PROGRAMA DE PROMOCIÓN Y DESARROLLO EMPRESARIAL

Implica proyectos dirigidos a fortalecer, mejorar y facilitar el crecimiento y desarrollo del autoempleo y de las micro y pequeñas empresas, preferen-

temente productivas, a través de la asistencia técnica, el apoyo a la comercialización, la capacitación y el financiamiento. Actualmente (enero 95) se ejecutan los proyectos PRODEM, PROPESCA y se hallan en vías de ejecución sus proyectos *Centro de Información y Desarrollo de Productos para la microempresa y Asistencia Gerencial para la Microempresa*

PROGRAMA FINANCIERO

Para el adecuado manejo de sus proyectos el IPES administra fondos de créditos e intermedia la colocación de recursos con entidades financieras comerciales.

Como una forma de garantizar la autosostenibilidad de sus proyectos, es política del IPES no ceder gratuitamente los recursos, sino otorgarlos en forma de créditos a fin de recuperarlos y volver a colocarlos.

PROGRAMAS DESCENTRALIZADOS

De otro lado, y para favorecer su trabajo, el IPES ha generado dos empresas las mismas que operan de manera independiente. Estas son:

RUTAS, asistencia al desarrollo sostenible

Es una empresa especializada en promover el desarrollo. Brinda servicios de asesoría, consultoría y asistencia a las organizaciones con responsabilidades de desarrollo. Apoya la reingeniería y calificación de las organizaciones para atender los requerimientos del desarrollo sostenible. Orienta la formulación de propuestas innovadoras para el desarrollo económico

Su trabajo se orienta a entidades estatales y privadas de servicio público,

organismos no gubernamentales de desarrollo y agencias de cooperación.

POLYTRADING S.A.

POLYTRADING es una empresa exportadora Sirve a grupos de pequeños productores: artesanos, agricultores, pescadores e industriales, exportando sus productos.

Sus servicios también incluyen la asistencia técnica en aspectos de manufactura y marketing.

POLYTRADING S.A. ha establecido directamente fuertes lazos con productores a fin de evitar largas cadenas de comercialización que sólo incrementan los precios y restan competitividad a los pequeños industriales, artesanos, agricultores y pescadores. Con esto se pretende mejorar los precios y organizar ofertas exportables, adecuándolas a las exigencias y tendencias de los distintos mercados.

El IPES debe agradecer la generosa cooperación de las entidades que le permiten, o han permitido, la ejecución de sus proyectos. Estas entidades son:

- MISEREOR, de Alemania;
- CEBEMO, de Holanda;
- Lutheran World Relief (LWR);
- Entraide et Fraternité, de Bélgica;
- Fondo de Compensación y Desarrollo Social (FONCODES);
- Fondo Canadiense para Iniciativas Locales (FCIL);
- Programa de Gestión Urbana de Naciones Unidas;
- Catholic Relief Service (CRS);
- Embajada de Holanda;
- Unión Europea: Programas "MICROEMPRESA" y
  " Alimentación de Agua potable para P.P.J.J. de Lima";
- CONCYTEC (Consejo Nacional de Ciencia y Tecnología);
- DIAKONIA (Acción Ecuménica Sueca);
- Instituto Nacional de Desarrollo (INADE); y
- 24 Municipalidades distritales y
- 5 Municipalidades provinciales del Perú.

IPES

INSTITUTO de PROMOCION
de la ECONOMIA SOCIAL

Carta Nº 173-96/IPES

Lima, 06 de marzo de 1996

Señor
Jürg Christen
Swiss Centre for Development Cooperation In
Technology and Management
Switzerland

De mi mayor consideración:

Tengo el agrado de dirigirme a usted para enviarle publicaciones y folletos informativos de nuestra institución.

El Instituto de Promoción de la Economía Social (IPES), desde hace diez años viene creando e implementando proyectos para el desarrollo urbano mediante la creación o consolidación de micro y pequeñas empresas de recolección de residuos sólidos, mantenimiento de áreas verdes, reciclaje, etc.

Mucho agradeceré mantenerse en contacto con nosotros para en el futuro complementar y coordinar actividades e información.

Sin otro particular, lo saluda

Solidariamente,

p. **Jorge L. Price**
Director Ejecutivo

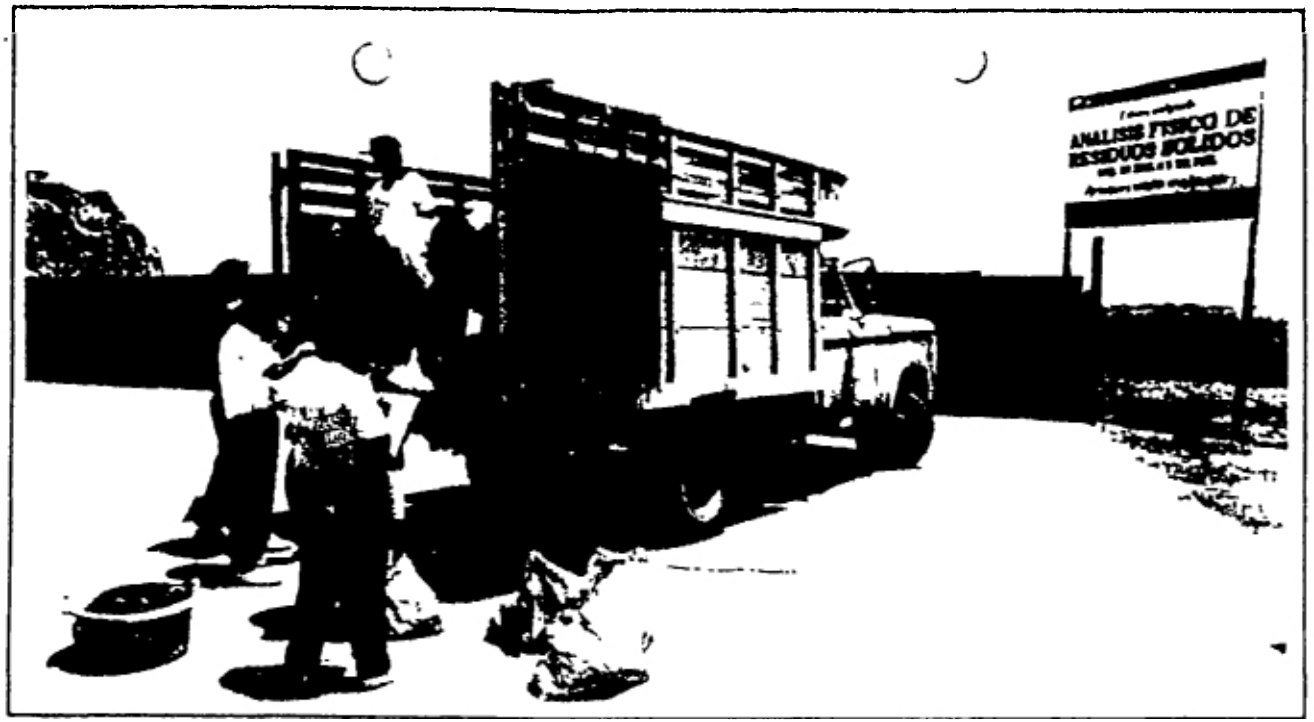
Adj. Libro "La basura en Lima, problemas y soluciones"
Libro "Rescatando vida"
Folleto IPES
Folleto Proyecto Proadel
Folleto Proyecto Procsa

Av. Javier Prado Este 1530, Lima 27 - PERU Teléfonos (511) 475 1325 - 475 1690 -Fax (511) 475 0368 / A. P. Nº 11-0466

In der Beilae übermitle ich Ihnen Publikationen und Broschüren unserer Institution.

Das Institut zur Förderung der Sozialökonomie (IPES) führt seit zehn Jahren im Rahmen der städtischen Entwicklung Projekte in den Bereichen Collection of Solid Waste, Erhaltung von Grünzonen, Recycling, etc. aus, durch den Aufbau oder die Unterstützung von Mikro- und Kleinunternehmen.

Es würde mich sehr freuen, wenn wir in Zukunft unsere Aktivitäten und Informationen koordinieren bzw. austauschen könnten.



ESTUDIAN RECICLAJE DE BASURA

La Municipalidad de Miraflores, la Casa del Vecino y el Instituto Peruano de la Economía Social (IPES) realizan un mancomunado estudio sobre el reciclaje de la basura preocupados por la protección del medio ambiente como tarea de todos.

Personal especializado del IPES se abocaron al análisis físico de residuos sólidos a partir del muestreo diario de una tonelada de basura, previa determinación de estratos sociales de la población y durante un tiempo prudencial.

La Casa del Vecino se encargó de promover este programa, incentivando su importancia entre los vecinos y distribuyendo bolsas de polietileno de tres colores distintos para facilitar la identificación de la basura, según su condición social.

Existe material recuperable como plástico y papel de archivo y otro reutilizable como juguetes y productos de madera a los cuales hay que darles un valor agregado, según adelantan los expertos.

El trabajo es posible por un acuerdo entre la Municipalidad y el IPES.

EXPERTOS RECOMIENDAN PRIVATIZAR SERVICIO DE RECOJO DE BASURA

Una ciudad limpia y ordenada

SECCION INFORMES ESPECIALES

La necesidad de desarrollar un eficiente servicio de limpieza pública ha motivado a autoridades ediles, de distintos distritos periféricos de la capital, a plantear la privatización del aseo urbano como una de las mejores alternativas de solución al problema de la basura en la ciudad.

[illegible] los cerros que [illegible] más de 400 toneladas.

Transitar por las cuadras 20 y 25 de la avenida México resulta una tortura. La fetidez que expelen los "cerros" de basura, amontonados en las calles, espanta a todo aquel que pasa por allí.

Los transeúntes caminan presurosos, los conductores aumentan la velocidad de sus carros y los pasajeros cierran de inmediato sus ventanas, mientras que el fuerte olor les obliga a cubrirse las narices y [illegible] la respiración.

Escenas como ésta, que se repiten en diversos puntos de la ciudad, han convertido a la Tres Veces Coronada Villa –a decir de los especialistas– en una de las ciudades más sucias de Latinoamérica.

El problema

Según datos del Instituto de Promoción de la Economía Social (IPES), Lima produce diariamente tres mil 535 toneladas métricas de basura, de las cuales sólo se recogen tres mil 130, lo que significa que unas mil 400 toneladas no son recolectadas por los servicios municipales responsables del aseo urbano.

Pero lo más grave es que de lo que se recoge diariamente sólo llegan a los dos rellenos sanitarios existentes –Zapallal y Portillo Grande– mil 100 toneladas, el resto se "pierde" en el trayecto para ser reciclado por empresas informales y llevado a criaderos clandestinos de cerdos.

Lo que no puede ser reutilizado es arrojado en los ríos (Rímac y Chillón), en las calles y en los lugares descampados, con lo que contaminan el medio ambiente y perjudican la salud de la población.

Esto debido a que la Empresa de Servicios Municipales de Limpieza de Lima (ESMLL), no puede afrontar con éxito la inmensa tarea de limpiar la ciudad.

Jorge Price, director ejecutivo del IPES, considera que son tres las causas que históricamente han originado un deficiente servicio de limpieza pública:

La dificultad estructural de las municipalidades para administrar total y directamente el servicio de manera eficaz; el elevado costo para operar los servicios con sistemas convencionales; y la actitud desaprensiva de la población.

Una buena opción

En este sentido, especialistas consultados y un gran número de autoridades ediles coinciden en señalar que una de las mejores alternativas para solucionar el grave problema de limpieza pública, es privatizar el servicio.

Ya en 1992, mediante el Decreto Legislativo 697, el Gobierno declaró de interés nacional la promoción de la inversión privada en el campo del saneamiento, específicamente en las actividades de explotación de los servicios de agua potable, alcantarillado, disposición de excretas, reúso de aguas servidas y limpieza pública.

Enrique Peramás, alcalde de Ate Vitarte, comenta que su distrito ya tiene experiencia en la privatización de los servicios de aseo urbano, los cuales están a cargo de una sola empresa.

"Queremos que la privatización beneficie a los pobladores y genere puestos de trabajo. Con este fin, hemos formado un consorcio con seis alcaldes del cono este de Lima. Estudiamos la propuesta del IPES para privatizar el servicio y trabajar con microempresas."

Por su parte, el alcalde de El Agustino, Francisco Antiporta, expresa que privatizar los servicios de limpieza pública en su jurisdicción si no perjudica económicamente a la población y optimiza el servicio.

Indudablemente, explica Price, la privatización es la mejor opción para aliviar el problema del aseo urbano, pues "una empresa privada invierte para ganar, y la única forma de tener utilidades es brindando un buen servicio".

"Además –agrega–, el inversionista buscaría abaratar los costos de su servicio para que lo contraten. Este proceso también eliminaría el monopolio y la corrupción de los gobiernos locales."

La participación del sector privado en la limpieza pública es una forma de mejorar el servicio.

Criterios a considerar

Este proceso no es nada nuevo en Latinoamérica, pues países como Brasil, Colombia, Bolivia y Chile desde hace muchos años han privatizado los servicios del aseo urbano y hoy son un ejemplo de limpieza.

Sin embargo, el ingeniero Alvaro Cantanhede, asesor en residuos sólidos del Centro Panamericano de Ingeniería Sanitaria y Ciencias del Ambiente (Cepis), advierte que esta no es una receta que pueda aplicarse indiscriminadamente. "Para que sea un éxito se debe tomar en cuenta ciertos criterios básicos."

"La idea no es privatizar por privatizar –enfatiza Cantanhede–. Que no piensen las autoridades ediles que el problema se acaba al entregar la tarea a terceros."

El especialista explica que es indispensable que la municipalidad tenga suficiente capacidad institucional para contratar a los empresarios, para fiscalizarlos y regular su trabajo.

Es decir, las municipalidades no deben renunciar a la supervisión, control y fiscalización de la calidad del servicio que presta la empresa privada.

Se debe tener en cuenta, además, la capacidad de pago de los vecinos, pues la participación de la comunidad es fundamental.

Por su parte, el ingeniero Marcos Alegre, director adjunto de la Oficina de Asesoría y Consultoría Ambiental (OACA), asegura que cualquier proceso de privatización en Lima va a ser bastante difícil debido a que la ciudad tiene 43 distritos, "es decir, 43 pequeñas burocracias que se encargan de la limpieza de la ciudad, y está sucia".

"Si los distritos deciden privatizar los servicios por separado, no va a resultar –advierte el especialista– porque sería una privatización parcial."

Esto debido a que sólo las jurisdicciones con mayores recursos serían atractivas para las empresas, pues éstas invierten para ganar.

Además, no debe olvidarse que los desechos sólidos son atractivos para el sector privado sólo cuando tienen determinado nivel de riqueza, por eso no es raro que los municipios más pudientes hayan resuelto el problema en sus distritos.

En este sentido, "la forma ideal de privatizar el servicio sería dividir a Lima en cuatro grandes áreas –enfatiza Marcos Alegre– y mantener a ESMLL para que siga trabajando sobre el casco urbano".

CRITERIOS BASICOS

La privatización podrá ser una alternativa para muchos municipios, siempre y cuando tengan la capacidad de planear y controlar la prestación del servicio

La participación ciudadana es fundamental. En este sentido, todos deben pagar por los servicios prestados pero según su capacidad de pago. Los posibles problemas sociales deben ser atendidos de forma especial.

La competitividad es saludable, pero también es imprescindible que la municipalidad tenga una capacidad de pago para evitar que ésta se quede sin autoridad frente a los contratistas

Es necesario definir los reglamentos ambientales. Además es indispensable tener un catastro municipal actualizado para esclarecer un proceso de cobro de impuesto y tarifas públicas

Fuente: OPS- Reunión de Santa Cruz de la Sierra 1994 Elaboración: Diario Oficial El Peruano

BENEFICIO PARA LOS VECINOS

Las microempresas

▶ Cada mañana, Joaquín Urrutia se desplaza por las calles del distrito de Villa María del Triunfo en un triciclo que le sirve para recoger, casa por casa, los desechos que a diario producen sus vecinos, por lo cual percibe una remuneración mensual de la municipalidad.

Joaquín, al igual que otras mil 500 personas, forma parte de una de las 140 microempresas de limpieza, que el Instituto de Promoción de la Economía Social (IPES), promueve desde 1989 en diversos puntos de la ciudad.

Estas microempresas, además de generar puestos de trabajo para las personas de escasos recursos, permiten reducir los costos en servicios ambientales, a través del empleo de tecnología simple.

La experiencia acumulada por el IPES durante estos años le ha permitido diseñar alternativas de solución al problema del aseo urbano.

Su propuesta es que se privaticen los servicios, pero que las empresas que ganen la licitación trabajen con tecnología convencional y con microempresas.

Es decir, que la privatización se dé en dos niveles: con tecnología convencional para los distritos de medianos recursos para arriba y la llamada privatización social, con microempresas de limpieza para los distritos con bajos recursos.

La privatización social –como hasta ahora se da en lugares como Villa María, Villa El Salvador, Miraflores y otros más– tiene como objetivo brindar un eficiente servicio de limpieza que involucre fundamentalmente el uso de la mano de obra.

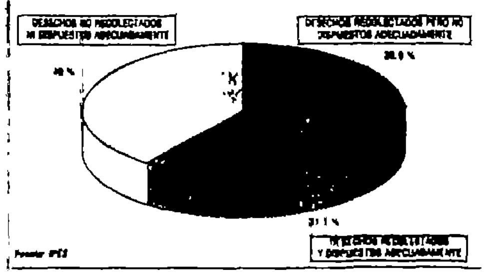
Como estas microempresas trabajan fundamentalmente con triciclos, una vez que éstos se repletan, los trasladan hasta un centro de acopio, desde donde un volquete articulado a un tractor agrícola lleva los desechos a los rellenos sanitarios.

Es así que un grupo de alcaldes del cono este, motivados con esta idea, el año pasado formaron el Consorcio Municipal del Ambiente del Cono Este (Comace), con el asesoramiento del IPES.

Este consorcio –que privatizará los servicios de limpieza pública– beneficiará a más de dos mil familias y aliviará el problema del aseo urbano en estos distritos.

La actitud desaprensiva de la población ha permitido que el problema del aseo urbano se agudice

DEFICIT DE COBERTURA DEL ASEO URBANO



Fuente: IPES

RAZON tienen los limeños en considerar como primera prioridad el problema de la basura.

Todos los servicios urbanos han colapsado. Naturalmente el de baja policía también. Extendida en un área que abarca más allá del Chillón y casi llega al río Lurín, Lima produce 106,500 toneladas mensuales de basura, cuya recolección y tratamiento corresponde a los distritos y a la empresa municipal de basura, que ahora trabaja sólo al 40% de su capacidad real por limitaciones presupuestales.

Para nadie es un secreto que el aseo urbano de la capital es altamente deficitario e ineficiente. Pero, cómo dominar a un monstruo como Lima que produce 106,500 toneladas mensuales de basura con una empresa municipal de limpieza que sólo trabaja al 40% de su capacidad por falta de presupuesto. Aunque parezca increíble la solución estaría en la misma basura.

De acuerdo a un estudio realizado por el Instituto de Promoción de la Economía Social, IPES, el promedio de la producción per cápita (PPC) diaria en los distritos de Lima es de 0.589 kilos por habitante. Pero esta PPC está vinculada a la capacidad de consumo de la población y a su nivel de ingresos. Esta es la razón por la que la PPC de distritos populosos como Villa María del Triunfo o San Juan de Lurigancho es de 0.380 kilos por habitante al día, mientras que en San Isidro o Miraflores es de un kilo. El porqué estos distritos siempre están limpios es por la "riqueza" de su basura: mucho plástico, papel, cartón, hojalata y vidrio, asunto que explica la existencia de providenciales y prestos recogedores. Esta prolijidad no se ve, empero, en las zonas marginales de la ciudad, donde la basura es tan pobre como sus habitantes y como tal se queda en la calle. Sólo lo que "vale" se lleva al relleno sanitario o al botadero.

Lo más apreciado son los metales, cuyo valor por tonelada es de US$ 650 pero lo que más se recicla es el papel y el cartón, seguido de plásticos, vidrio, material textil y hojalata. Los precios por tonelada de estos desechos son US$ 19.50; US$ 120; US$ 35; US$ 150; y US$ 35, respectivamente. El valor estimado de los desechos recuperados es de US$ 24,069 pero el precio de venta de los mismos asciende a US$ 55,919.

De la basura que se produce en la Capital diariamente, se calcula que alrededor de 571 toneladas son reciclables pero los estudios señalan que sólo se recuperan 292.32 toneladas. Se estima que aproximadamente 5,000 personas, y sus familias, viven de la recuperación de desechos. Según IPES, estas personas recuperan alrededor de 290 toneladas por día (50.8% del total recuperable), distribuidas de la siguiente manera:

–10 toneladas se recuperan en el relleno sanitario "El Zapallal", involucrando aproximadamente a 400 personas.

–145 toneladas provienen de los trece botaderos a cielo abierto que existen en Lima, para lo que se cuenta con la intervención de unos 2,000 recuperadores.

–135 toneladas se recogen de los domicilios, comercios, industrias y oficinas, calles contenedores, descampados y riberas de los ríos Rímac y Chillón con la participación de alrededor de 2,600 personas, incluyendo a los trabajadores de aseo urbano de los municipios.

De acuerdo a la legislación vigente, sólo se permite la recuperación en el relleno sanitario "El Zapallal", donde se recicla el 3.45% del total. El 99.55% restante es recuperado informalmente de los 13 botaderos clandestinos existentes en Lima.

Sucesivos estudios sobre la basura, señalan que los desechos limeños están compuestos de 46.5% de materia orgánica y 53.5% de materia inorgánica. De esta última, el 36.80% no tiene valor de cambio pero sí el 16.70% restante, lo que supone 590.35 toneladas diarias potencialmente recuperables.

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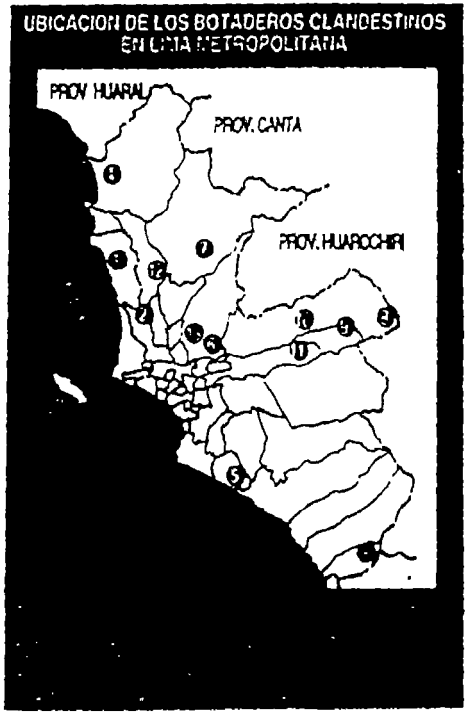

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REVISTA CARETAS 01/02/96

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Workshop on Micro-Enterprise Involvement in Municipal Waste Management in Developing Countries, 14-17 October 1996, Cairo

Solid Waste Management Micro-Enterprises: Asian Regional Overview

Antonio L. Fernandez
Training Officer, United Nations Centre for Regional Development
1-47-1 Nagono, Nagoya 450, Japan

1. Introduction

Asia's urban population will reach 2.2 billion by the year 2020, according to the United Nations's World Urbanization Prospects 1990. This means that 54% of the Asian population will occupies cities compared with only 30% in 1990. The Asia-Pacific region is expected to be a high growth region in terms of economic size The gross national product (GNP) of the newly industrialized economies (NIEs), and some countries in South and Southeast Asia are projected to rise accordingly.

As the experience of industrialized countries, rising GNP means more waste generated. Already, the per capita waste generation of Korea is highest at 2.8 kg/capita/day, in comparison with1.36 kg/capita in 1970.[1]

Solid waste management studies that deal with the so-called micro-enterprises are few. They are basically related to recycling. This is an attemot at the "state-of-the-art" of micro-enterprise involvement in solid waste management in the Asia-Pacific region. (The author deals with the same subject from the public-private partnership point of view for a forthcoming conference of the Asian Productivity Organization.)[2]

The following paragraphs assemble a few facts and observations from studies made by reasearchers in the region, including those conducted for a project of the United Nations Centre for Regional Development (UNCRD) began in 1987.

Levitsky[3] descibe micro-enterprises as "very small income generating units, owned and managed by enterpreneurs who worked in it themselves, owned and managed by entrepreneurs who worked in it themselves, from which they derived most of their livelihood, which employed very few people, if any, mainly relying on family members, and using very little capital." They are what may be called cottage industries. The scale of operation is evident from the term.itself.

Countries may have different definitions of small and medium scale industries with regards to capitalization and number of employees (size of business establishment). There may be a thin line that separates microentreprises from small and medium scale industries in some country contexts. Doubtless, though, microenterprises are labour-intensive.

2. The Solid Waste Management System and the Informal Sector

Solid waste management is an neglected urban service until recently when environmental awareness increased. It is an expensive venture and usually undertaken by departments of local government authorities that deal with health or public works. Accounting is not accurately

defined in terms of solid waste management *per se*. However, as the UNCRD and a survey of the Malaysian government confirms, collection takes up most of the budget for solid waste management.

Recently , privatization and a more efficient and accountable forms of sub-contracting are getting to be quite important. Micro-enterprises are potential parties in this form of operation.

Recyclable wastes based on waste characteristics can be estimated. Wastes can be classified into wet and dry - wet, as compostable matter, and dry, as those that can be recycled or reused. In the case of dry wastes, the role of waste pickers cannot be ignored. Bangkok Metropolitan Authority (ca. 1992) reported that recyclable waste collected by waste pickers were estimated at 286 tons or five per cent of the total waste produced in Bangkok. The waste pickers belong to the so-called informal sector of the economy.

Amin[4] says it would be safe to assume that ten per cent of the urban informal sector (UIS) in Asian cities are engaged in various recycling activities (including waste picking). Based on a study of seven cities in South and Southeast Asia, estimates of the size of the informal sector in Asian cities as a percentage of total urban employed labour engaged in the UIS ranged between 50% in Metro Manila to 69.1% in Karachi.

3. Recycling and Reprocesssing as Viable Microenterprises

A UNCHS report[5] of a workshop concerning five (5) Asian cities states: "It has been estimated that, if waste recycling and reprocessing is fully developed, the sector could employ around two per cent of the urban population " This assumption may be sligthly lower than the estimated given by Amin in the previous paragraph The same report reports that local studies calculate that in the present situation, around one per cent of the people living in cities make a living out of recycling.

The studies reported in the said workshop summarized average monthly income figure for the groups of people engaed in waste recycling and reuse as follows.

Table 1. Average monthly income of waste microenterpreneurs

Type of group	Average monthly income (US$), 1992
Scavengers	44
Street peddlars (itinerant pickers)	60
Small-scale, cottage-based waste recycling (SCWRI) industry worker	100
Dealer	385

Source: UNCHS, 1993.

Another study of Bangkok was made by a team from the Asian Institute of Technology (AIT).[6] It has been reported in Bangkok Post (20 August 1988) that dump site scavengers could range from US$40 to US$200. A paper collector earns less than a collector of metals and plastics. Nine traders in Bangkok were surveyed. The following table shows daily expenses, sales and profits of

these nine traders.

Table 2. Bangkok waste traders - economic data

(US$)

	Minimum	Maximum
Investment	12	557
Sales	28	464
Profit	3	195

The size of investment can be quite helpful in determining how and what forms of support can be offered to such microenterprises.

4. The Case of the *lapak*[7]

In Indonesia, the lapak is a distributor (junk shop) which may operate with their owned assigned wastepickers as "workers." Some do not associate with wastepickers at all. The lapak is a microentrepreneur who for most cases operate in a legal area. The space he uses may range from a mere 100 m^2 to as large as 5,000 m^2. He may use state land with permission from the appropriate government authority. Rent costs between $400-6000. At the lapak's place, the materials are segregated, pressed (for metal), cleaned (in the case of plastics) and sold to buyers who have specifications regarding what they intend to buy.

The lapak is not however free from problems of legal nature. Among these relates to the employment of wastepickers, irregularity in the acquistion of the business location and inaccessibility to credit. By and all, lapaks enjoy a relatively stable position in the recycling business. His capital investment may range from $40 to $2,000.

Table 3. Economics of the operations of the *lapak.*

(US$)

	Minimum	Maximum
Sales	20	120
Profit	6	40

Source: DKI (Jakarta Metropolitan Government).

The lapak often gives credit to the permanent wastepickers. This establishes the relationship between the wastepicker and the lapak. a lapak usually has 10 to 100 wastepickers who sell to the same lapak. The wastepickers then sells the materials to the lapak who gave credit. A large percentage of lapaks sells directly to suppliers of recycling factories. The rest are sold to the bandar/trader while the least can be amount may be sold to another lapak. Selling to a bandar/trader is generally not regarded as profitable.

5. Microenterprises: Who, What, How

The microenterprise involved in MSWM can be encountered in any of the follwoing stages of the SWM system:

- primary collection
- recovery operations
- intermediate collection/ transfer
- reclamation: recovery, reuse, recycling, by-product generation
- ultimate disposal

Surveys in 1988[8] of waste pickers indicated that the operation usually incolves 5-6 members per family in Bangkok, Jakarta and Manila survey; this was observed in dumpsite operations. Similar observations may be made about temporary transfer station sites such as those found in Indonesia (in so-called TPAs).

The street-based enterprise (neighbourhood itinerant scavengers) are also among the micro-enterpreneurs. To date, there are several surveys[9] of scavengers with data concerning respondent profiles (age, sex, years of residence, i.e. year migrated), daily and/or monthly income

Table 4. Estimated number of wastepickers and collection method

Collection method	Bangkok	Bombay	Kuala Lumpur	Shanghai
Door-to-door	954	15,500	-	3,000
At main dump site	2,585	24,500	80	500
At intermediary site (transfer station)	307	19,000	-	150
Direct from factory and other sources	-	11,000	-	-
Total	3,4867	70,000	80	3,650

Source: Urban environment qestionnaire survey data, ESCAP, 1990. (Quoted from Amin, ca. 1993).

Other sources, though, give different figures. In Metro Manila, some 30,000 persons are estimated to be involved in waste recycling, in Jakarta, 130,000. In Bangalore, between 20,000 and 30,000 work part-time and full-time as street pickers.[10] The number of persons involved in this venture phases may depend on the phase of economic development of the country.

To get a picture of the situation and the potential of waste that can be recovered the following table summarizes the case of two Asian cities - quite divergent in terms of population (Table 5).

While considering the above, it can also be seen that the "success" of microenterprise as dependent on the state of social participation in community and political affairs. It may even depend on the political climate, as well as the level of militarization. Regulatory or legal framework in the forms of legislations are also important. One cannot ignore the legal provisions that should accompany hospital wastes and hazardous wastes.

On another plane, the social status of waste pickers are also at issue here. For instance, the *eta* or *burakumin* of Japan are in a category where waste pickers became social outcasts. However, it is interesting to note that the traditional waste economy in the past of East Asian countries such as China, Japan, and Korea holds as examples from the past.

The situation in the recycling industry in the reclamation level is shown in table 5.

Table 5. Some characteristics of recycling establishments in the UNCHS study

		Facts about waste material	Scale of operation	Comments
Bones	Bone processing to soap	5-10 tons of bone/day	5-10 workers	
Waste paper and cardboard	Paper making	1 ton/day	12-16 workers/shift	In Jakarta, nine factories recycle paper for producing carton boxes, and paper products.
	1000 tons/year per unit	2-3 tons waste paper processed per day	Less than 10 workers	In Karachi, about 200 small-scale units operate.
Plastics	Toys, household furniture, clothing accessories, buildign materials and raw plastic material		-	In Jakarta, 48 out of 57 plastic recycling factories are small-scale. In Metro Cebu, some 15 plastic users/processors need 1.000 tons/year (tpy) of hard plastic and at least 500 tpy of plastic film
Glass	Bottles	4-12 tons of glass cullet/day, 60% of raw material from Karachi itself	-	In Karachi, half of the 35-40 glass-processing industries are small-scale (150-250 m^2 fllor area) In Metro Cebu, waste pickers could only 15% of the demand for empty bottles and 3% of that of cullet.
Metals		Reprocessing a minor proportion of the scrap metal and metal wastes (broken pipes, taps, bicycle parts)	Four levels: (a) urban street dwellers, (b) small operators with very small investments, (c) small-scale factories with larger investments, and (d) large-scale factories.	In Kanpur, India, small oeprators use iron waste mainly, while some use fractions of waste iron mixed with new materials. They may be sub-contracted by large metal manufacturers. In Metro Cebu, waste pickers recovered 1,400 tpy of assorted metals; the demand lies between 2,000-3000 tpy (1982).

6. The Emergence of Other Actors or Stakeholders

In recent years, the role of non-governmental organizations and interventions by these anbd governmental groups have proved to be influential for some Asian cities There are also community-base efforts, though, that should not be overlooked, such as those that can be observed in Indonesia. Some interventions by external and internal groups/ stakeholders may be necessary in some cases. Consider the the cases below.

Table 6 Two cases of waste recovery

	Population	Decription of waste recovered by waste pickers
Metro Cebu, Philippines[11]	1 270,000 (1990)	About 30% of potentially recoverable portion of waste in 1982 or less than 1,500 tons per year were reported to have been salvaged by the 113 collection crew members and 85 dumpsite scavengers About 400 street buyers and junk dealers (37, in number) were estimated to collect somewhere between 4,500-11,500 tons, equivalent to about 3-8% of toal waste generated in 1982 (Reported in 1983)
Panaji, India	42,915 (1991)	About 1.8 tons per days are collected by waste pickers, based on the average of 9 kg/ waste picker.

In reality, some NGOs have started to mobilize some citizens in Cebu, while in the case of Panaji, the study indicated the potential role that NGOs can play. Project preparation studies such as those prepared for Panaji, India[12] recommend that waste pickers be organized into a formal group through a local NGO and that they be provided with tools for sorting out wastes.

An example of an NGO intervention is that of the Metro Manila Council of Women Balikatan Movement which started to mobilize people and junk shops in one of the towns comprising the metropolitan government of Metro Manila [13]

It is not only the NGOs but most importantly the local government cooperating with waste picker cooperatives. For example, when siting plastics recycling facilities such as where sorting can be done, such decisions made with the local government are important.[14] The role that religious organizations and civic organizations cannot also be ignored specially with regards to skills improvement programmes that may help people involved in SWM microenterprises earn more.

The legal status of housing of those engaged in SWM can be a great factor in determining the sustainability of operations. Official recognition of the roles of waste pickers by no less than the president of the land (such as the case of Indonesia) drives the whole message concerning housing policy. The *Kampung Improvement Programme (KIP)* of Indonesia implicitly recognizes housing rights for what would normally be be classsifed as squatters. *KIP* recognizes that human settlements develop organically as cities in the past did.

Regulatory measures, not necessarily concerning MSWM itself or housing, may impinge on the success or failure of actors to accomplish their goals. For example, in the Payatas case,[15] granting license to operate by the Department of Social Welfare and Development to the Vincentian Missionaries Social Development Foundation, Inc. (VMSDFI) was crucial to

carry out their programmes.

Other factors that can influence microenterprises in MSWM are policies related to planning as a whole, employment, and industrial promotion. Environmental management is definitely a plus factor contributing to microenterprise development in MSWM as waste minimization (reduction) strategies are adopted and the adoption and implementation of environmental standards as typified by the ISO 14000 takes place in the coming years.

7. Opportunities and Threats

Various studies identified the following issues concerning microenterprises in MSWM. Among these are: (1) sustainability of community programmes; (2) shortage of finance; (3) competition with traditional junk shops; (4) lack of government legislation, policies and incentives to support the programmes.

The institutional and financial aspects must be faced realistically and public-private partnerships explored. The "Pera-sa-Basura" Project in the 1970s in Manila proved that government should not compete with private sector. Methods of community organization and development (CO/CD) must be utilized to hasten social preparation and produce purposeful participatory action planning

Intermediaries such as NGOs and other organizations may have to perform directorial and managerial roles. The rest of society can provide the social marketing/networking necessary. Some technical assistance, research and documentation will help. Community leaders and planners must practice advocacy to realize the potential of family-based, cooperative-based micro-enterprises. Lending and credit facilities may be needed to complement compulsory regular savings mobilization (note community mechanisms such as *arisan* in Indonesia).

There are also issues pertaining to occupational health protection that deserve immediate attention.

Some questions we may ask are as follows.

- What is (was) the motivation to form a micro-enterpise?
- How strong is the commitment of government to support the micro-enterpise ventures and activities that go with it?
- Is wastepicking in landfills permissible? How long will the landfill or disposal site last?
- If the disposal site is an open dump, will it ever be converted to a sanitary landfill? In the event that the site is converted to sanitary landfill, will scavengers be allowed to work in the site? What is to be done with the landfill after it is filled up?

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Urban Management Programme

Swiss Agency for Development and Cooperation

UMP/SDC Collaborative Programme on MSWM
in Low-income Countries

CASE STUDY

MOBILISING OF SMALL MICRO-ENTERPRISES IN THE FIELD OF MUNICIPAL SOLID WASTE MANAGEMENT

Prepared by
Association Co-operative For Cleansing Services
(ACCS)
Sana'a, Yemen

Presented to the
Workshop on Micro-Enterprises Involvement
in Municipal Solid Waste Management
in Developing Countries

(Cairo, 14-18 October 1996)

VERY URGENT

To Mai Abnabhan

Fax 002023413331 Cairo

From Abdalla Sunbul.

Forward:

Sana'a city, the capital of the republic of Yemen, like other capitals of developing countries had witnessed an unplanned accelerated construction expansion during the three past decades. Therefore many urban problems have emerged the most serious of which is the municipal solid waste.

The Government failed to solve this problem, due to many financial and institutional obstacles.

During the past few years the Government, for political and economic reasons, has become convinced by involving the private sector in solving this problem. But the experiment has proved that having this conviction alone cannot solve problem. That the transfer of the responsibility from the public sector to the private sector is not an easy task, particularly in countries where the per- capital income is very low, as the experience has proved in a number of Yemeni towns in which attempts contracts with the private sector failed. However, the experiment of the Association co-peratiive for cleansing services of whom I am a chairman .Detailed in this paper, constitute the first experiment which paved the way for the micro-enterprises to play a role in solid waste management. And prove their capabilities in playing an effective role in management of municipal solid waste in Yemen.

Historical background:

Up to year 1990 operations of solid waste collection and disposal had been run in an acceptable way in Sana'a. That was through a public project run by the municipality and financed by the Ministry through the central budget and administratively and technically under the Mayor of Sana'a. Addition to that finance by the local council was the additional fees (5%) surcharge were added to the electricity bill.

In early 90 because of the gulf war about one million Yemeni immigrant were repatriated without any prior arrangement most of them resided in Sana'a, as a result an unexpected increase in Sana'a population from 600,000 to one million. This situation worsen the problem of solid waste in the capital of Sana'a (Annex no-1) This, in addition to the deterioration of the Yemeni Rial currency against foreign currencies, due to stoppage of external aid, resulted in the deterioration of solid wastes collection resulting in following:

- The capital, Sana'a, cleaning services deteriorated seriously.

- Government failed to provide required fianance to cope with these developments
- Insufficiency of the financial support and equipment's of the solid waste collection project and has weakened the performance
- Deterioration of living standards of government officials as a result of inflation afected the performance of the solid waste collection employment and labours

Faced by these problems and daily suffering used by the aforesaid situation, together with a number of my colleagues in local authority, we began to think over practical methods which may remedy the deteriorating situation.

We agreed to establish the Association co-operative for Cleaning and Environmental Services, as an NGO which has following objectives

Support and help the efforts in solid waste collection

Initiate cost recovery from commercial area to support both the solid waste collection project with required operational funds which was not made available due to bureaucratic obstacle

Increase Government labourers income and enhancing labourers medical care level as well as their social status in orders to encourage them to put more efforts and to work overtime.

Give opportunities for micro-enterprises in the solid wastes management. Also support and encourage recycling to increase income of the poor

Extend CO-operative relations with similar societies, enterprises and organizations locally, in Arab countries and internationally.

Utilize local and external facilities to realize society's targets.

The statute of the Association co-coperative was made in co-operation with Ministry of Social work in may 93 Membership constitute of .

Shareholders (No 82) composed of individual and micro enterprises involve in solid waste collection

Labours working in solid waste collection as share holders (N O.111)

labours who was paid fees as members (No. 490)

2.ORGANIZATIONAL AND ADMINISTRATIVE SET-UP:

In march 94, a working strategy was designed by the management of the official of the mayor and the Association Co-operative board of directors,detailed programs of work and documents were produced plus procedures the association co-operative signed a contract with the Mayor office as provided by the articles stipulated in the agreement signed by the Association Co-operation and Mayor office

(Annex no2). .

3.ASSOCIATION CO-OPERATIVE MAIN ACTIVITIES

1.Collection of garbage from commercial and hotels, restaurants collection from industries communal area hotels and restaurant. The Association Co-operation concluded (4000) four thousand direct contract with beneficiaries. so as to remove the wastes of hotels, restaurants, markets, factories slaughter stores and hospitals finally in 1995 the Association co-operations was going to serve residential area in the diplomatic quater and charges fees. But this experiment was not concluded.

Recycling of plastic-

The association co operation was funded by UMP to make a study of plasticwaste recycling and purchase of equipment to crush plastic. The project was successful executed with co-operation with Egyptian consulting firm (Environmental Quality international) and local consulting firm (Pan Yemen Consult) the project profile includes :

(a) Preparation of a technical study on the composition of solid wastes in the capital of Sana'a

(b) Preparation of technical study on the plastic recycling potential and a work plan for plastic recycling market

(c) Preparation of a study on the role the NGOs in the development of solid wastes removal services and the recycling of waste improve public awareness about the environment.

4.The Association co-operative experience in the recycling of waste:

Through the execution of the a foresaid project by the Association Co-operative of the many other private firms started working in the area of recycling of plastic the collection of plastic started in other yemeni towns and the number of plastic factories increased considerably. These factories depend on plastic wastes as raw materials but at present the quantity collected as a whole is very small bearing in mind that these plastic wastes represent 12% of whole wastes. There is potentials for paper and glasses waste if a market is develop in the Arab region cities as Cairo this can be achieved by assistance the micro enterprise with simple appropriate technology. Concerning the organic wastes which represent the biggest percentage(56%) most of it used as animal feed by goat and sheep owners. The association has started studying the matter in order to find a proper solution.

5.Finance:

The Association Co-operative has started to charge fees for the services of garbage collection during April 94 - October 95 and collected (YR18, 500,000). This Amount was utilized as follows.

- 60% to finance the existing Solid waste project as to cover the deficit in the operation budget and as allowance and overtime for the workers who while

performing their routine work, performed the above mentioned contracts of the Association Co-operative

- 20% for the micro-enterprise involved in solid waste collection for their contribution in implementation solid waste collection under the association co-operative supervision and as sub contractor
- 8% for the shareholder as dividend
- 12% for social and health services and training which are provided by the Association for its participants(the free services provided by the association with assistance from Oxfam)

6.Success & failure of the Association Co-operative

- Co-operative activity services were separated from social charity services where an independent charity society is now established.
- The amounts allocated to the charity society remain with the association co-operative as an investment, so as to secure a source of finance to cover society social charity activities and its activities in the area of environment.
- Many small enterprises were encouraged to join the municipal services particularly the services which are payable by the beneficiaries and thereafter to join the activities payable by the Government under the association co-operative supervision.
- Re-allocation of surplus amounts generated by the association activities in order to realize the association co-operative objectives
- Gradually reduce the association co-operative dependence on public facilities

Conclusion:

7-1 The experiment succeeded in selecting the best ways and means to tackle the problems connected with solid wastes collection in the light of the conditions prevailing in Yemeni town such as.

- The necessity that public sector should continue in extending its free services in low income areas
- Private sector failure in a number of Yemeni town where enterprises work on contractual basis and these contracts are fully payable by the local authorities, because the private sector lacks the necessary facilities such as equipment's and tools besides it lack administration capacity
- Payment of services fees unfamiliar to the beneficiaries who had got used to these services done by the public sector free of charge.
- The number of individuals and micro- enterprise working in this field is limited due to social factors and due to lack of finance by special ized bank.

7-2 The events which accompanied the experiment from its very beginning up to its end, prove that such experiment depends on the support and conviction of the decision makers in the concerned Ministries.

7-3 The events which aborted this experiment made it mandatory for the co-operative among the existing NGOs and micro-enterprises involved in solid waste

collection a the responsible ministries, so as to work- out and strategy through which the role of small enterprises can be guaranteed and developed Also the concerned ministries should be authorized so as to secure the flow of grants and loans from donors to NGOs and micro-enterprises. The Social funds in the Ministry of Social work is a good example

7-4. The importance of establishing organizational framework.so as to create an effective management to secure finance and technical assistance's for programs - support by the international, regional and local levels to NGOs and micro-enterprises to expand and activate the role of NGOs and micro-enterprises in the area of solid waste collection expecially, in countries where per capital income is low

7-5 Technical assistance to both government (municipalities) and micro enterprises in the following manner:

Municipalities

i Assist municipalities to specify task to be done by the micro-enterprises in the field of solid waste collection.

ii.. Assist municipalities in the preparation of tender documents

iii. Training of specified municipal staff in monitoring of the contractors

Micro-enterprises in the field of minicipal solid waste collection

i. Train micro-enterprises staff in management, budget preparation and the operations of solid waste collection

ii .Preparation of research/ studies in recycling of solid waste recycling and assist micro-enterprises in the field of recycling.

Annex 1

INCREASE IN THE POPULATION OF THE CAPITAL , SANA'A, AND VOLUME OF DAILY 1986/93

YEAR	NO. OF POPULATION	GENERATED VOLUME MT/DAY	INCREASE %
1986	427.185	290	
1987	474.133	322	11
1988	526.240	358	23
1989	584.074	397	37
1990	687.263	461	59
1991	978.263	665	129
1992	1,017.393	692	138
1993	1,058.088	719	148

1- Calculated daily average of June per - capital 680G

2- Population is as per 1986 census.

3- Estimated increase in population in 1991(300,000) person (Repatriated immigrants and annual growth rate included

Annex 2

AGREEMENT

To prepare and to lay the principles for the peoples' participation in the responsibility of cleaning services as an important step to realize cleaning, bearing in mind the success of the Co-operative Society for cleaning which was realized through the past year until ended 28/08/95, and with regard to regulations and laws which are enforce, henceforth to completion and pass of the BI laws and co-operation sectors in cleaning activities and completion of study on privatization of cleaning services in the capital districts which is under production with assistance of Netherlands Government, and for public interest

This day the 2nd/9/95 the mayorship of capital Sana'a, represented by Mr. Hussein Mohammed Al maswary the governor of (the 1st party) and the Cooperative Society for Cleaning services, represented by Mr. Abdella Abdelwahasb Atif the General Manager (2nd party) has agreed as follows:

Articles 1

The first party have delegated some responsibilities of cleaning services to the second party within the district and thereby authorizes the second party to collect the value of these services. These include the wastes which their producers are required which their by regulations to move them to the location.

Outside the capital the services includes:

A - cleaning of central markets

B - collection of wastes of private and public institution and hospitals laboratories restaurants hospitals, laboratories,, hotels factories, big stores, big workshops, slaughter - houses, poultry farms, livestock farms cleaning enterprises and generally all institutions which their activities have a commercial or productive or service nature, where these activities produce wastes increase volume - wise form the ordinary wastes volume of individuals or different nature form the ordinary households wastes and required to be removed independently.

C - Drainage works in capital, except Nogum and Al-hassaba.

D- Removal of building debris and other hard and liquid wastes such as scrap iron

E- Removal of expired food stuffs and sale of the reclassified useful materials

F- Removal of solid wastes form the diplomat quarter against payment of be effected by capable habitants. This services should include the new quarters which lack the services. Other municipal services.

Article 2

The first party, through the local council, will provide the necessary facilities. Thereby instructing the driving of vehicles to collect the wastes, mentioned in articled(a), (b), (c), (d), (e), and (f) above, during their daily routine. The second party should pay (80%) of collected amounts against these services as per contracts signed between the second party and the beneficiaries, payment receipts and the monthly reports on the society's activities. A cheque for this

purpose should be issued quarterly (3 months). This cheque should be endorsed by the district authorities to be credited to the office's account with the Central bank and the amounts should be utilized to support cleaning budget, as petrol, spare parts, salaries and wages for workers who are requested by the first party to perform the duties stipulated in this agreement, in accordance with the reports raised by the cleaning directors and signed by the General Manager of the office, that each worker should the warded as per his exerted efforts and over- time hours devoted for the performance of duties stipulated, workers should perform these duties after doing their routine duties in quarters and sites which are served free of payment.

Article 3 The first party will penalize people who do not take the garbage to the landfill or who did not make a contract with the private sector according to cabinet decree on penalty.

Article 4 The second party is to open records and accounts to prove the activities rendered by the second party and those recording will be verified by the central government audit authority.

Article 5 Period of contract is one year starting 2/9/95 - 1/9/96 and could be renewed for another year.

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CASE STUDY

WOMEN PARTICIPATION IN URBAN MANAGEMENT: SORTING AND RECYCLING OF URBAN WASTES (CLOTH AND GLASS) IN LEBANON

Prepared by
UMP - Country Coordinator (Lebanon)
(UMP-Arab States)
Beirut, Lebanon

Presented to the
Workshop on Micro-Enterprises Involvement
in Municipal Solid Waste Management
in Developing Countries

(Cairo, 14-18 October 1996)

INTRODUCTION

Among many other serious environmental problems in Lebanon, solid waste management remains a chronic and long lasting issue. This problem has rarely received proper attention and adequate funding from the authorities concerned for the study and implementation of a national management . No doubt that 16 years of civil strife have also contributed largely in making the situation even worse.

Since two years ago now, great sfforts have been invested particularly fom the private sector in order to reach a better management of solid waste especially in the Lebanese capital. These efforts can be translated in the following steps undertaken:

1. Privatisation of solid waste collection operation in Beirut that was the Municipality's responsibility prior to that date. Work has progressed immensely in terms of frequency of solid waste collection which has lead lately to the expansion of the area served by the contractor in order to include other areas outside the boundaries of Greater Beirut.

2. A network of urban wastepickers or scavengers is currently being developped in Beirut and managed by private businesses. Cardboards and papers, plasic, metallic objects and glass are being collected from the streets and then sold to dealers or brokers. This new trend will surely reduce total urban refuse generated in Beirut.

However, Lebanon still suffers from major environmental problems in solid waste management this can be illustrated by the currently applied municipal refuse disposal methods in Greater Beirut which are undoubtedly detrimental to the residents of the capital, and possibly to other neighbouring communities..For instance, the insanitary dumping of municipal refuse at the open-dump site in Bourj Hammoud adversly affects the marine environment as well as the air in the vicinity of the site. Moreover, the fumes emitted by the incinerators at the Quarantina and A'mroussieh plants are also major contributors to the air pollution problem in greater Beirut.

On the other hand, the available information and data on the generation rates by various communities and characteristics of the wastes are generally still scanty and imprecise. Moreover even when studies are being provided, no real and concrete efforts are being employed at the Government level in order to design and implement a well integrated environmental strategy in Lebanon.

As a partial intervention of UMP in Lebanon to contribute in the mitigation of the solid waste problem, two special studies were completed with the collaboration of the American University in Beirut - Civil and Environmental Engineering Department - involving collection and analysis of data pertaining to the municipal refuse generated in Beirut and Tripoli and investigating potential users of reclaimed materials for recycling uses.

The studies were carried out over a period of two years, and included two field surveys: one covering the dry season in 1994. and the other covering the wet season in 1995/1996 (Table 1).The study also covered the issue of wastepickers in the streets of Beirut and showed the following results (Table 2).

Based on the outcome results of these studies, the UMP National panel adopted the pilot project entitled : "Women Participation in Urban Mangement: sorting and recycling of urban watses" for year 1996 that was submitted by a panel member. This project involves sorting of household waste, mainly cloth and glass, recycling activities and creating small enterprises for the production of rag-rags and patchwork, and the recycling of used glass into new containers. This project was then adopted by a reputable Lebanese NGO, Makassed Association, as the executing agency which is presently undertaking all the implementation phases.

FLOW CHART FOR KINDS OF WASTES COLLECTED FROM THE STREETS

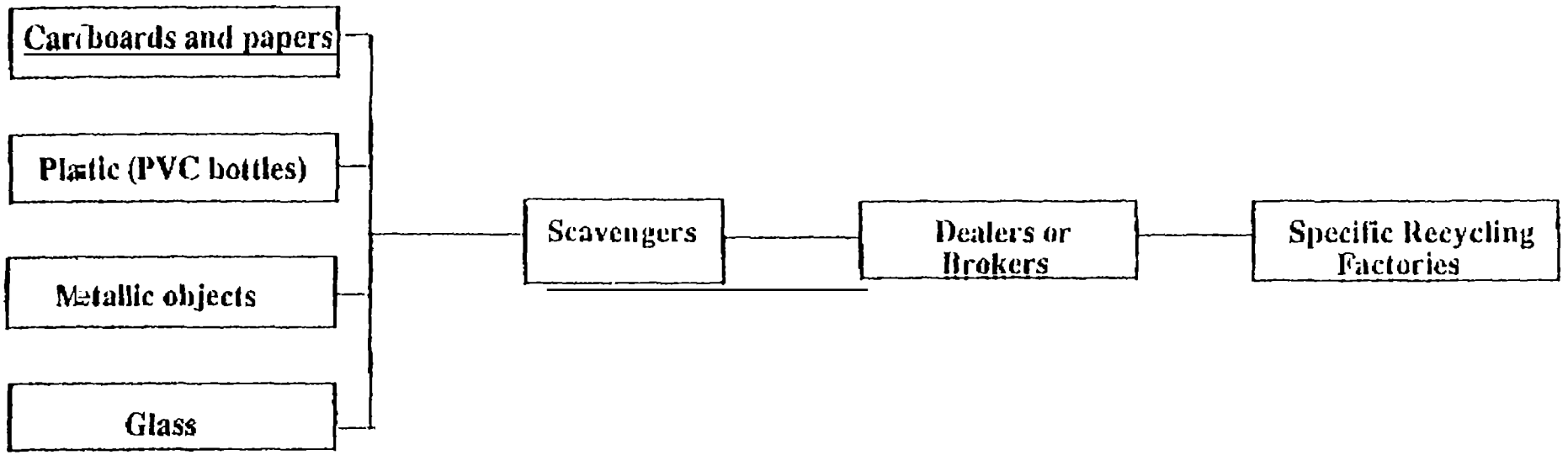

TABLE 1

FUNDAMENTAL ASPECTS OF MUNICIPAL REFUSE GENERATED IN BEIRUT

	Dry Season	Wet Season	% Annual Average
Quantity of solid waste generated	1245 t/d	1400 t/d	1322 t/d
Average generation rate	0,75 kg/p/d	0,91 kg/p/d	0,77 kg/p/d
% composition of solid wastes			
* organic materials	62,4%	61,03%	61,7%
* paper and cardboards	11,3%	16,14%	13,7%
* plastics	11%	10,87%	10,9%
* metals	2,9%	2,63%	2,7%
* textiles	4,2%	2,40%	3,3%
* glass	5,6%	4,84%	5,2%
* others	2,6%	2,04%	2,3%

TABLE 2
DAILY AVEFAGE QUANTITY OF WASTES COLLECTED FROM THE STREETS OF BEIRUT

	SCAVENGERS		DEALERS/BROKERS	
MATERIALS COLLECTED FROM THE STREETS	Average Quantity Collected KG/D/S	Selling price L.P/Kg	Average Quantity Bought KG/D/DEALER	Selling Prices to Recycling Industries $/TON
Plastics	20 Kg/d/s	250 L.P/Kg	125 Kg/d/dealer	120$/Ton
Cardboards and paper	125 Kg/d/s	100 L.P/Kg	650 Kg/d/dealer	78$/Ton
Mettalic objects	8 Kg/d/s	000 L.P/Kg	40 Kg/d/dealer	850$/Ton
Glass	6.5 Kg/d/s	Not available	30 Kg/d/dealer	40$/Ton

N.B: 1$ = 1550 L.P

THE PROJECT " Women Participation in Urban Management: sorting and recycling of urban cloth and glass"

OBJECTIVES AND BENEFICIARIES

Funded by the UMP Regional Support Office for the Arab States Region, this project falls within the main priorities of the program, stressing on sustainability and long term viability of projects with special focus on gender issues and involvement of small businesses in recycling activities as a vehicle for poverty alleviation.

Beneficiaries are citizens living in Tariq Al Jedide area in the centre of the city of Beirut. This area has been selected by Makassed as it is a densely-populated district with middle and low social class citizens and the majority of women are unemployed.

Having expressed their wish and need to live in a clean and healthy environment, citizens and more precisely women of Tariq Al Jedide area, responded positively to the project and expressed their willingness to participate in upgrading the living environment of their area. Along with this objective Makassed Association's other two major objectives are:

1.Women empowerement and the integration of their needs and roles into decision- making so that they can gain more control of resources and of development planning, rather than participating in mere "involvement ".
2. Raising environmental awareness among people in order to provide them with the attitudes and skills they need to act in an environmentally sound manner

APPROACH / STRATEGY

This project is a continuation of activities undertaken in Lebanon at the regional level It is part of a strategy to operate transfers of innovations at the regional level and aims at replicating the success of two internationnally recognized experiences: ABA (micro-enterprise support program in Alexandria) and the Zabbaleen in Cairo. This activity takes into consideration the lessons learned from both projects while adapting them to the local context.

Seeking to meet the local demands of Tariq El Jedide area the project consists of different approaches towards comprehensive, integrated urban development, it relies on three main key issues:

1. Promoting participatory approach to the community management of environmental problems
2. Involvement of small businesses in recycling activities as a vehicle for poverty alleviation
3. Women empowerement and involvement as a major active element to promote change in the society

The project will provide residents of the target area with clear environmental and economic benefits:

-saving resources through recycling raw materials
-reducing the costs of waste disposal
-allowing for the production of cheaper goods from recycled materials
-creating new jobs

Beneficiaries are involved in the different stages of the project: design, implementation and execution. This participatory approach can be translated in the following steps undertaken:

1. Regular focus group meetings with women of the target area aiming at: designing a common strategy for project imlementation in its different stages: awareness campaign, sorting recycling etc.... and to clarify the expectations and analyze the subjects desires and future projections and to assess the cooperative relationship among the participants.

2. Execution of a field survey in the target area through questionnaires and face to face interviews with a sample of 300 household. The objectives of the study were to elicit the ways in which individuals understood the environmental situation in their area, investigate the level of their environmental awareness and describe the type of participation.

The major outcome results of the study were the following:

* 55% of interviewed women said that the major environmental problems of their area is solid waste
* 78% found that this problem is not being solved in the right manner
* 95% of interviewed women agreed to sort cloth and glass from their wastes
* 45% are willing to participate in training sessions on recycling and reuse methods of cloth and glass
* 45% are ready to buy products of the project

Playing the role of a catalyst in the project, Makassed Association has mobilized local available resources (societies, clubs, organizations, dispensaries, youth associations...) for coordinating with reliable present efforts. An advisory committee was established whose main functions are to determine general policies and achieve coordination and integration amongst all parties.

Other necessary contacts were also established with actors who should be involved in the project as the Municipality of Beirut, Ministry of Environment and the private contractor, however no real support was provided.

The private sector, and more specifically the banking sector showed lots of interest to the project and contributed by sponsoring the awareness campaign (leaflets and posters) while private businesses provided incentives for residents to reduce geneartion and increase recycling. Makassed Association provided the land to establish the Centre for Environment and Development in Tariq El Jedide area which will serve as the meeting point for the local community to get involved in the project's activities.

TECHNICAL STANDARDS

The project is stressing the integrated approach for solid waste management, which among other measures includes the 3R-formula and is based on participatory approach, including an educational and public awareness raising component. Technically, project implementation relies on four major phases that are very intimately interrelated:

1. Environmental Awareness Campaign:

It aims at encouraging people to sort at household level cloth and glass wastes and to participate in the training programs to develop women's skills on the recycling techniques of sorted components.

Simple and illustrated leaflets and posters are used to provide beneficiaries with a clear idea about solid waste problem in Lebanon and the means and ways by which they could contribute to solve this problem. These leaflets and posters will be distributed amongsts households and displayed in the streets and public areas.

Focus group meetings with women of the target area were also held in order to mobilize all available human resources for the success of the campaign. The project was discussed in its smallest details and tasks were distributed among participants.

2. Household Sorting of Solid Waste:

700 to 1000 households aging between 18 and 40 yaers old will participate in the sorting process of glass and cloth right after the launching of the awareness campaign.

A motivation plan was adopted to encourage housewives in the sorting process. Symbolic prizes ranging from club entrance coupons, hair brushing in beauty shops, housing supplies...will be distributed A number of shops in the area showed interest and responded positively. This kind of private sector support to the project will provide business shops with a positive image and thus will contribute in the marketing and advertising of their businesses.

Vehicles and labour for refuse collection services will be handled by Makassed Association. Two optional collection points were suggested during focus group meetings: either at the buildings' entrance or in kerbside locations. Participants preferred house to house collection as it seemed to be the most convenient and easiest option. Even though this option is twice as expensive as the two others, the advisory committee decided to adopt it at the beginning of the project and once people got used to sorting operations, the buildings' entrance option will be adopted. Contents of the vehicle are transported to disposal site for storage at the Centre for Development and Environment.

The frequency collection depends on three main factors:
* the community's request
* number of participating households'
* performance of highest vehicle/man power productivity

Realizing the fact that insufficient quantities of glass and cloth will be sorted from household level, and in order to provide the necessary raw materials for recycling, the project will rely to the cooperation of two other sources:

1. street glass wastepickers
2. clothing manufacturers in the area

3. The training centre:

Three training programs will be undertaken by the training centre:

* Carpet weaving (carpet made from cloth) using looms. This is a traditional Lebanese craft still found in rural areas.
* Patchwork bed-covers, pillow cases...
* Glassware

Courses will last for two months each, with four sessions a week. 25-30 women will participate in each course.

4. Marketing of products:

A permanent exhibition hall will be provided to sell the centre's products, and all efforts will be made to promote their sale.

Realizing the economic conditions prevailing in Lebanon, difficulties for marketing the Centre's products have to be taken into consideration. A marketing strategy for the items produced is currently underway in order to identify potential clients and hence promote the selling operations. Support from the Ministry of Tourism, Ministry of Social Affairs and L'Artisanat du Liban will be provided with special focus on the many environmental and handicrafts exhibitions which are held in Lebanon. Expansion outside Lebanon will be considered at a later stage

CONCLUSION: Lessons and conditions

The success or the failure in reaching sustainable development in its scientific understanding depends greatly on the level of community involvement and participation within the project. Development is a not only a process FOR the people but is also a process WITH the people. This participation brings about radical changes in the behaviour and attitude of the general public, promoting positive criteria and values with regard to the living environment. Women participation in the development process is also a prerequisite for the success of the project recognising the leading role they can play if only given the opportunity, the skills and the neede training.

The implementing NGO plays a significant role in promoting participatory approach among the local community. Its image, recognition, trust and legitimacy among the community.are prerequisites for its intervention in an efficient and more effective way. When I say legitimacy I mean that the excuting agency has to be known. understood, accepted and valid among the community.

Being familiar with local conditions as well as with the social. cultural and traditional aspects of the population will for sure contribute in creating mechanisms for dialogue with the local community. Even though similar pilot projects may not have enough impact to move whole populations out of poverty and environment trap, successful programs will serve as examples and models for governments and development agencies to incorporate into large-scale policy initiatives. The key to successful developmental planning lies in finding how national governments and local participatory organizations can best coordinate their efforts.

Finally, project evaluation and study its impact on the target population requires continuous follow-up. A Monitoring and Reporting Strategy was adopted for different stages undertaken. This strategy aims at:

1. Ensuring that all concerned participants learn from experience and use these lessons to improve the programme
2. Ensuring prompt effective corrective actions through quality control

This will be helpful in designing our future aim to replicate the project in other Lebanese areas.

Swiss Agency
for
Development
and Cooperation

UMP/SDC Collaborative Programme on MSWM
in Low-income Countries

CASE STUDY

PARTICIPATION OF A MICRO-ENTERPRISE IN MUNICIPAL SOLID WASTE MANAGEMENT THE EXAMPLE OF WOGODOGO IN BURKINA FASO

Prepared by
African Institute for Urban Management
(IAGU)
Dakar, Senegal

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In Municipal Solid Waste Management
In Developing Countries

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PARTICIPATION OF A MICRO - ENTERPRISE IN MUNICIPAL SOLID WASTE MANAGEMENT: *THE EXAMPLE OF WOGODOGO IN BURKINA FASO*

Ousseynou Eddje DIOP, IAGU

1. Background

1.1. Origin of the Project

Within the framework of their programmes aimed at promoting information and activities in the field of urban environmental management the *Centre Régional pour l'Eau Potable et l'Assainissement (CREPA)* and the *African Urban Management Institute* (IAGU) initiated and carried out in 1993 a field study on Municipal Solid Waste Management in Ouagadougou (Burkina Faso).

The results of the study testified to the degradation of the living environment as a result of lacunas inherent in the system of municipal waste collection and disposal in Ouagadougou.

CREPA and IAGU therefore decided to work together in supporting a local initiative geared towards managing and improving living environments and living standards.

1.2. Choice of Site

Community 10 in Ouagadougou was selected as a pilot project site by mutual agreement with the Baskuy City Council which covers the said community. This community comprises about three thousand (3000) households with a population of about twenty-five thousand (25,000) and a population density of 38 inhabitants per hectare.

The community is characterized by a predominantly muslim population of which the Mossi ethnic group is the most representative and whose economic conditions vary between average and low standard of living . The table below illustrates some of the socio-economic characteristics of the community.

Table 1: Socio-economic Characteristics of Wogodogo

52% of the population have no school education
34% of the population are unemployed
23% of the population work in the informal sector
67% of the households have between 5 and 14 family members
67% of the households have no tap water
60% of the dwellings are built with mud
94% of the households use the traditional type of latrines (unhygienic)

The average monthly income of the households is estimated at 40,000 CFA Francs.

Some surveys were conducted and the findings concerning a sample of indicators for Ouagadougou are recorded in the table below which illustrates variations of the Municipal Solid Waste Characteristics according to living standards.

Zones	Density to/cum	Specific production kg/cap./day	Organic Matter (%)	Inert Matter (%)
High standing	0.37	0.85	60	27
Medium standing	0.47	0.65	37	52
Low standing	0.85	0.54	21	76
Average	0.63	0.62	32	60

2. Objectives and Beneficiaries of the Project

2.1. Beneficiaries

The people living in Sector 10 are the first to benefit from the project which will help improve their living environment as well as their living standards. The Baskuy City Council has also managed to provide regular solid waste pre-collection services in Community 10. Eventually, the Women's Association which initiated the project succeeded in generating income by collecting garbage disposal fees from subscribed households and selling recycled waste products (compost).

2.2. Objectives of the Supporting Institutions

CREPA and IAGU decided to (i) test the feasibility of the non conventional municipal solid waste collection technologies (animal-drawn carts); (ii) evaluate the expediency of community participation in activities aimed at improving living environments as well as living standards and (iii) promote the intervention of small-scale enterprises in providing solid waste management services in the municipalities.

2.3. Objectives of the Promoters

The aim of the promoters was to generate income and/or create employment opportunities through projects that could help improve living environments in urban areas. Moreover, it was through the efforts of the promoters that women got more involved in awareness campaigns aimed at educating the populations on the problems of sanitation and environmental hygiene.

2.4. Objectives of Beneficiaries

The City Council provided regular household refuse collection services in a suburban areas that did not benefit from such municipal services until then. The people eventually had a more healthy environment and the payment of fees particularly helped towards promoting the project and involving the households in it.

3. Operational Strategy

3.1. Planning

A project team was set up after several meetings between CREPA and IAGU, the municipal authorities and delegates of Community 10.
Members of the team were selected by the Community elders and the City Council. The latter also set up a management committee of about ten members to monitor the work of the project team.

The Management Committee worked out and planned activities e.g. household census, sensitization of inhabitants, addressing subscribed compounds, defining pre-collection networks and adopting the frequency of refuse collection and disposal.

3.2. Project implementation

The project is carried out by a small-scale enterprise made up of 6 carters (responsible for door-to-door pre-collection of garbage), 3 organizers (responsible for sensitization activities), 3 compost producers, 6 assistants to the carters and 3 caretakers (1 at the Headquarters of the Association and 1 at the garbage disposal/composting site).

The small-scale enterprise is administered by a Management Board comprising a Chairperson, 1 Secretary, 1 Treasurer, an Assistant Treasurer and an Information Officer.

The company started household refuse collection/disposal operations on 28th April 1993. At the end of the first month, the project recorded a little more than three hundred (300) subscribers. Each team takes care of the garbage collection materials and equipment as well as the ass that pulls the cart.

3.3. Monitoring/Control

The Management Board monitors and controls operations. It sees to the regularity and quality of the services and intervenes to settle any conflicts that eventually break out within the collecting teams and/or between project promoters and the subscribed households. The City Council is particularly responsible for the central refuse dump and therefore ensures that it is regularly cleared.

3.4. Managerial Procedures

The Management Board holds regular meetings to assess work progress, plan assignments and propose appropriate solutions adapted to the given situations. Each project team administers a sub-sector or division of the Community and organizes regular visits to subscribers especially at the end of every month when garbage fees are collected. The company's accounts are jointly managed and this guarantees enhanced transparency in the financial management.

4. Institutional Framework

The main agents are the Management Committee, the City Council, the Micro - Enterprise and its Management Board as well as the supporting institutions and inhabitants of the Communities concerned.

The Management Board is responsible for project planning. It is an advisory structure that promotes consultations and co-ordinates activities within the communities. The Board comprises representatives of all the Communities concerned.

The City Council is the Owner and Prime Supervisor of the project. The equipment and materials legally belong to the Council and it is responsible for the collection and disposal of garbage throughout the communal territory.

The Management Board is the administrative structure of the micro - enterprise created with the Women's Association. It acts as the prime contractor of the project. As such, it sees to the correct execution of works in conformity with decisions taken in agreement with the supporting institutions, the City Council and customary authorities of the respective communities.

The supporting institutions - IAGU and CREPA - provide the agents of the project with technical assistance and ensure the regular monitoring of operations in order to draw lessons and propose better operational methods. The supporting institutions have also provided the promoters with training in accounting, organizational and sensitization techniques, management methods and municipal solid waste recycling techniques.

5. Financial Aspects

During the take-off phase, the Project received a grant of 3,043,345 CFA Francs from CREPA and IAGU. This fund enabled the project to purchase 6 ass-drawn carts, fence off the transfer station and maintain an operating capital to cover operational expenses spanning 3 months of activities. The Commune allotted a plot for use as transfer site.

The operational expenses of the Project are covered by garbage fees of 500 CFAF paid every month by each subscribing household. This rate was fixed in the course of a study on the "Populations willingness to pay" which was conducted with a sample of 300 persons. The study indicated that: (i) out of the 150 households in the average standard category, 77% agreed to pay fees ranging between 500 and 1000 CFA F a month and (ii) 79% of the 150 low-standard households offered to pay less than 500 CFA Francs.

Pre-collected waste matter is transferred from the transit station to the Central dump in Ouagadougou by the technical units of the City Council against a contract fee of 2,000 CFA F per container load of 7m3.

Ever since January 1995, the women have been selling compost produced from the garbage. It costs more than 20,000 CFAF to produce one ton of compost and this

package is too expensive to allow for direct economic profits. In May 1995, the Lagemyam Women's Association, which promoted the project, realized a net profit of 1,300,000 CFAF and more than 88 households regularly subscribed to the solid waste pre-collection and disposal service in the sector 10.

The composting project is not yet profitable so it is partly subsidized with funds raised through refuse pre-collection operations. This is due to the fact that small quantities of compost are still produced and the compost is conveyed over long distances to marketing centres; moreover, compost production necessitates laborious efforts: manual sorting, watering and sifting.

6. Technical Aspects

IAGU and CREPA provided technical assistance for the design, execution and supervision of the project.

The resources of the micro - enterprise are:

- An office serving as Headquarters rented at 15,000 CFAF per month;
- A garbage transfer and composting station covering an area of 1,250 m2;
- 6 carts with a capacity of 1.4 m3 each, pulled by asses;
- materials: spades, pitchforks, buckets, brooms, masks, gloves, overall outfits, etc..
- a wheel barrow that conveys water for the compost swathes.

The Sector 10 is sub-divided into six (6) sub-sectors, each of which is placed under the supervision of a team comprising two (2) persons (carter and assistant). Garbage is collected once a week and the teams work six (6) days a week.

The compost operations are undertaken by three (3) women who manually sort out the garbage, prepare swathes and sell the end-product. They work three (3) half days a week and each of them produces about 100 kg of compost per working day from 480 kg of raw garbage.

The garbage transfer site is equipped with a garbage storage can with compartments 1 metre high and garbage sorting and slow composting sections. The composting section has 12 compartments measuring 3 m by 2 m and their base is coated with cement clay to make the soil waterproof. The compartments are surrounded with a drainage canal which facilitates evacuation of run-offs and leaching matter into a cesspool. The garbage transfer composting station is fenced off by a wall 1.60 m high.

The IAGU/CREPA team evaluates the activities regularly and proposes adjustments and corrective measures in order to make the project more profitable.

7. Project Implementation Phases

The Project took off with a field study and CAP surveys (Behaviour - Attitudes - Practices) that identified problems and opportunities and assessed needs and priorities in agreement with all the stakeholders concerned.

7.1. Consultations

The opinion leaders, customary heads and City Council authorities were approached to support the project and thus give it a legal backing. Moreover, an intensive information campaign was organized on a door-to-door basis for the purpose of sensitizing the populations.

7.2. Mobilization of Local Potential Resources

The Management Committee and the teams of promoters were set up after a long process of evaluation and mobilization of local potential resources. Even though there was not much dynamism in Community 10, the women and youths quickly got involved in the process.

7.3. Project Execution

The Project took off after a great deal of painstaking efforts. In this regard, several debating and arbitration sessions were held to discuss and fix the amount of fees for services rendered, particularly, the rate of remuneration for the project team members. Moreover, after a few months of activity, the women took over the entire project and drove away the young boys who had been recruited as project foremen. Their role consisted in providing the target populations with information, collecting garbage disposal fees from subscribers at the end of every month and helping with the accounts management procedures. The women then collected garbage and took care of materials, equipment and the asses. These women soon realized, however, that they could manage all the project activities by themselves and therefore took over the responsibilities of the foremen and became independent. This innovation enabled them to improve their earning capacity.

8. Results and Lessons drawn from Experience

The project helped in testing the expediency of adopting certain non-traditional technologies (the use of ass-push carts) for household refuse collection. It is true that the carts are so poorly designed that the asses cannot cope with them easily; however, with some slight adjustments, a system locally produced and maintained can help improve the living environment in the urban areas.

Moreover, it is possible to recycle organic waste matter on a small-scale (decentralized composting in swathes). Admittedly, the aspects pertaining to the marketing and economic profitability of compost should be specified but then, technically speaking, the process is rather feasible in poor suburban zones with a sudan-sahelian climate. It should be noted that even if it is not marketed, the compost produced makes it possible to reduce the quantity of solid wastes to be evacuated to the refuse dump and this helps to reduce management costs.

Finally, it is worth pointing out that even though the project is in its experimental phase, some facilities need to be constructed (offices, store room for materials and shelter for the animals, transfer stations, etc..) which readily increase the basic investment costs and operational expenses.

8.2. Community Mobilization

The populations accept to participate and commit themselves only if the objectives of a given initiative comes within the framework of their concerns. It should however be admitted that their primary motivations have nothing to do with environmental and/or public health issues; they first want to improve their living standards especially through income-generating activities or gainful employment. The women are particularly ready to engage in activities that will enable them to improve their living environment as well as their living standards.

8.3. Commitment and Political Will

The Project has revealed the need for political commitment through an appropriate institutional framework and with the participation of the City Council.

In the particular case of the Wogodogo pilot project, the major constraints have been institutional and are attributed to the City Council's inability to develop a participatory management culture, repeated absence of the representative of the Municipal Council from working sessions, late allocation of plot for use as garbage transfer station, irregularities in the pattern of waste disposal from the transfer station in spite of the financial contribution from the project and, more particularly, the slow pace at which the administrative authorities approve procedures and promulgate decrees concerning the project.

8.4. Local Potential Resources

It is true that the basic investments were provided by IAGU and CREPA; however, the Project had proved that it was capable of meeting operational expenses through service charges recovered from beneficiaries. All the same, the economic profitability margin is too low for such a service in this context and it is necessary to ensure that the management costs are rigorously optimized. This calls for a relatively heavy investment in organization and supervision on the part of IAGU and CREPA. In fact, the local management potentials (accounting, communication, project formulation, etc) are often too weak.

8.5. Replicability and Extension

Wogodogo's experience has been replicated in 3 other communities of Ouagadougou and in some outlying areas of Cotonou (Benin) and Abidjan (Côte d'Ivoire). The conceptual reference framework for project execution is the same as that of Wogodogo, apart from some slight modifications.

i) The basic investments for equipment purchases are refundable by the project promoters. That practice reduces dependence on a potential donor for local

development initiatives but access to credit for the small-scale enterprises remains a major constraint.

ii) The associations promoting pilot projects are legally established and therefore enjoy a legal status. This gives them some legal backing but the criteria for creating small and medium-scale enterprises are still too restrictive in most countries of the sub-region. Certain countries have agreed to the creation of Economic Interest Groups (GIE), which are easy to set up, but the sector and operational scope of these units are still limited.

iii) The institutional framework for implementing pilot projects while involving the City Council still constitutes a major obstacle to the promotion of micro-enterprises in the field of solid waste management in the municipal areas.

iv) The activities thus described are still at the pilot stage in terms of space and the entire system of refuse collection and disposal. In fact, the said projects are located in suburban areas and therefore appear to have impact on only part of the cities concerned. Moreover, the tasks are limited to pre-collecting refuse and/or recycling certain components of the waste matter and this often creates problems when it comes to organizing the interface with refuse collection operations and the final disposal of solid wastes in the municipalities.

Urban Management Programme

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CASE STUDY

MICRO-ENTERPRISE PARTICIPATION IN MUNICIPAL SOLID WASTE MANAGEMENT: THE CASE OF ECONFA - OUAGADOUGOU, BURKINA FASO

Prepared by
Centre Regional Pour l'eau et l'assainissment
African Institute for Urban Management
(CREPA/IAGU)
Ouagadougou, Burkina Faso - Dakar, Senegal

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MICRO-ENTERPRISE PARTICIPATION IN MUNICIPAL SOLID WASTE MANAGEMENT : THE CASE OF ECONFA - OUAGADOUGOU, BURKINA FASO

Ousseynou GUENE - CREPA
Ousseynou Eddje DIOP - IAGU

1. Background

Express pre-Coopérative du Faso (ECOFA) is a micro-entreprise involved in Municipal Solid Waste Management (MSWM) Services Delivery in Ouagadougou. It was created in 1989 by a group of unemployed graduates from Ouagadougou University. The initial idea was to create an association in order to promote self-employment among the unempioyed youths. About fifteen graduates then met to deliberate on a sector in which they could invest.

At the time the Association's rules and regulations were being prepared, the promoters decided to establish an advisory unit with governmental authorities selected from various sectors. It was through this unit that the youngsters acquired a temporary head office on the premises of ONASENE (*Office National des Services d'Entretien, de Nettoyage et d'Embellissement*), a maintenance and cleaning Company.

It was also this unit which recommended that they provisionally adopted the "pre-cooperative" status which offered the advantage of tax exemption as well as the possibility of engaging in commercial activities.

At the operational level, the promoters of ECOFA dithered over their major vocation in the initial stages as they were torn between selling fish or firewood or taking to other profitable activities.

After a series of discussions they held at meetings on the ONASENE premises, the young graduates decided to collect garbage since ONASENE was unable to cover all the communities (administrative divisions of Ouagadougou).

The Municipal Solid Waste (MSW) collection activities therefore took off in October 1990 with 24 clients served by a small "Peugeot 404" van they hired.

2. Operational Approach

Soon after ECOFA decided to collect garbage, some of the members withdrew from the Association because they were prejudiced against such a vocation. The remaining group therefore embarked on sensitization activities and registered subscribers in various areas within the city. The group is still carrying on with these activities.

However, ECOFA did not have adequate resources so the promoters collected contributions from public and private institutions, national authorities and NGOs.

The amount of contributions received in the first few months were exclusively used in developing the enterprise, purchasing adequate materials and paying slight subsidies to the drivers and labourers. The promoters were not paid any wages at that time.

3. Institutional Aspects

Membership of the Team

Only 2 out of the 15 promoters remained in the group till 1995. At present, the Enterprise employs:

- 2 promoters: President (Chief Executive) and Treasurer of the Association
- 5 drivers
- 10 labourers
- 5 service fee collectors
- 1 caretaker
- 3 permanent prospecting staff and 6 others who are working on commission.

In 1996, a misunderstanding cropped up between the two promoters so the team was divided up. The group's assets were equally shared between the two promoters. The more active group became ECONFA (*Entreprise de Collecte d'Ordures et de Nettoyage du Faso*) and was headed by the ex-President.

Other Institutions

ECONFA soon received assistance from many institutions and this enabled it to start its activities as indicated in the paragraphs on background information and the organization's financial system.

Some staff of the Ministry of Agriculture, ONASENE and the Ministry of Environment advised the group to establish company rules and regulations. ONASENE provided premises to host ECONFA's provisional head office in the early stages. The Social Services Ministry, SONABHY (Hydrocarbon Company), a number of businessmen and NGOs donated contributions in kind and BCEAO (Banking Company) offered 50,000 Francs. Similarly, FONAPE (National Employment Promotion Fund) helped the Enterprise meet the increasing demand from users by putting at its disposal some partly subsidized equipment. ECONFA is still provided with technical training by CAPEO (*Cellule d'Appui à la Petite Entreprise de Ouagadougou*), a Canadian institution. The training covers all aspects connected with management and administration. The current Chief Executive of ECONFA was awarded a scholarship by the Regional Water and Sanitation Centre (CREPA) to pursue a short course on solid waste management in Cotonou (Benin).

The second promoter also pursued a short training course at the *Centre de Traitement des Ordures Ménagères* in Cotonou on a French Co-operation Agency scholarship.

The ECONFA Chief Executive is a member of the Provincial Sanitation Awareness Committee comprising the principal agents operating in the Waste Development Sector, which was set up within the framework of the 2nd Ouagadougou Urban Development Project (World Bank Project).

In the early stages, ECONFA and ONASENE maintained sound relations between them. However, their relations soon became strained as ECONFA progressed. ONASENE gave the agencies interested in garbage collection the authorization to operate in specific areas. On the other hand, ECONFA indirectly relied on ONASENE for certain collection zones where it (ECONFA) had permission to operate. Seeing that the young enterprise was gradually competing with it, ONASENE withdrew the operational permit covering the first community where ECONFA had its first 24 clients. ONASENE tried to apply the same scenario in ECONFA's second territory and this generated some friction between workers of the two agencies in the field. Since then, ONASENE has continued to lose territories to the advantage of the micro-enterprises that have proliferated in Ouagadougou.

In December 1995, the Ministry of Environment organized a forum on "Sanitation in Burkina Faso". This forum came up with recommendations calling for the transfer of ONASENE's activities to the City Council Departments.

ECONFA also had some co-ordination problems with the Municipal Technical Services about the management of MSW containers for the Sector 7 Pilot Project in Ouagadougou. In fact, within the framework of this Project, ECONFA was assigned to managed the use of such containers by the populations who had to pay 500[1] Francs per household every month while the Municipal Technical Services conveyed garbage to the central dump against payment of some fees by ECONFA according to the number of garbage containers emptied.

Parallel to its routine operations, ECONFA was awarded some contracts by Faso Baara, a labour-intensive public works executing agency

4. Financing

Initially, the Association's capital was raised mainly from contributions of 5,000 Francs each collected from the remaining members. The group therefore had to approach potential donors for further assistance. Thus, the members received donations in kind and in cash. These included:

- 200 litres of fuel donated by the Ministry responsible for Social Services;
- 200 litres from the National Hydrocarbon Company;
- 50,000 Francs from BCEAO;

[1] All financial figures are expressed in CFA franc. 1 US$ = 500 F.CFA

- Office equipment and furniture from « Band Aid », a Non-Governmental Organization.

It was with these inputs and a hired covered truck that the Enterprise started its operations. The monthly contribution from beneficiaries amounted to 1,000 Francs per household and between 4,500 and 8,000 Francs for the public or private institutions.

The number of subscribers increased so the company had to hire a farm tractor at the cost of 75,000 Francs a month to meet the increasing demand.

The FONAPE was set up in Burkina Faso in October 1992. In January 1993, FONAPE provided ECONFA with 3 tractors and 3 trailers at the cost of 8,500,000 Francs of which 5,240,000 Francs had to be refunded at the rate of 12.5% in 3 years.

In late 1993, the Enterprise was solicited to participate in the Pilot Project on MSW collection in Sector 7. To meet this new demand, ECONFA secured a loan from FONAPE and used it to purchase 3 new tractors against a refund in 27 monthly instalments. The trailers were purchased on credit from the *Atelier Pilote de Construction de Matériel Agricole* (APICOMA). Under this Pilot Project, the households had to pay fees established at 500 Francs a month.

The recovery rate has been quite high. Before the devaluation of the CFA franc, it was estimated at 92%. In 1995, the receipts increased to 30,000,000 Francs whereas they stood at 6,000,000 Francs in 1991. Wages increased up to 7,740,000 Francs in 1995 as against 3,450,000 Francs in 1991. In 1995, the Company's profits were estimated at 16,102,369 Francs whereas they stood at 819,680 Francs in 1991. Table I illustrates the financial statement of the Enterprises between 1991 and 1995.

Table I: Financial Statement of ECONFA between 1991 and 1995

Budget Items	1991	1992	1993	1994	1995
Receipts	6,000,000	8,000,000	18,000,000	25,000,000	30,000,000
Wages	3,450,000	3,450,000	3,450,000	3,450,000	7,740,000
Operational expenses	1,730,320	1,730,320	2,979,579	4,630,888	6,157,631
Profit	819,680	2,819,680	11,570,421	16,919,112	16,102,369

From October to December 1990, no wages were paid to the workers and promoters. As from January 1991, both promoters and labourers were paid 100 Francs a day. Later, the wages were adjusted according to the amount of profits realized. The wages therefore went up to 5,000 Francs, 10,000 Francs and then to 15,000 Francs for all the members. From June 1991 onwards, the promoters and labourers received a monthly allowance of 25,000 Francs while those entrusted with prospecting operations were paid according to the number of subscribers. It was from 1993 onwards that different wages were paid to the promoters, drivers and labourers.

according to the number of subscribers. It was from 1993 onwards that different wages were paid to the promoters, drivers and labourers.

Description of Equipment

ECONFA uses farm tractors with trailers of 3m3 capacity. The tractor power is 1.5 hp and the average speed of the tractors is estimated at 20 km/h. The tractors use an average of 20 litres of gas oil per 100 kilometres and 15 litres of water a day. Each set of equipment is manned by a driver and 2 labourers. The labourers work with pitchforks, spades and brooms. The Enterprise operated with these 5 tractors in 21 out of the 30 sectors in Ouagadougou.

Each team makes 4 trips a day on average and this represents a load of 5 tons per working day of 8 hours. About 513 subscribers are served every day (Households, Companies, Embassies, Commercial establishments, etc..). The average distance covered per day is estimated at 50 km. The average life span of each tractor is about 5 years. In fact, the tractors often have tire problems (punctures).

The global operational costs of each set of equipment were estimated at 2,856,480 Francs in 1995.

6. Lessons Drawn from ECONFA

A. Household waste management constitutes a viable sector where employment opportunities can be created in African cities;

B. A small-scale garbage enterprise can be created with modest means;

C. However, the promoters have to be highly motivated to ensure their success;

D. The enterprises need to be provided with technical, financial and material support (training, equipment, political and administrative backing);

E. The developmental trend of the Enterprise in 1996 indicates that an establishment of this kind should be manned by a strong leader. In fact, the two promoters who carried on with the activities certainly had the same prerogatives; however, the treasurer seemed to be frustrated by the attention given to the Chief Executive of the Enterprise and this prompted him to exploit the Association and thus bring about a split within the group.

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COLLECTE DE DECHETS SOLIDES A OUAGADOUGOU - CAS DE ECOFA

1 Historique

Elle est née d'une volonté manifestée dès 1989 par des diplômés de l'Université de Ouagadougou en chômage l'auto-emploi des jeunes en chômage. C'est après maintes discussions qu'est née l'idée de ramasser des ordures vue que le taux de couverture de leur collecte était très faible (moins de 30%). L'activité commence alors en octobre 1990 avec 24 clients desservis par le biais d'une camionnette "peugeot 404", louée.

Une fois que ECOFA s'est fixé comme objectifs de collecter les ordures, certains membres se sont désister car ayant une idée négative d'un tel métier. Le groupe restant s'est donc attelé à la sensibilisation et au recensement des abonnés dans différents quartiers.

Ayant peu de moyens, les promoteurs ont fait des quêtes auprès d'organismes publics, privés, de personnalités nationales et d'ONG:

2 Aspects institutionnels

Composition de l'équipe

De 15 promoteurs au départ, seuls 2 sont restés jusqu'en 1995. A cette date, l'entreprise emploie 32 personnes dont 6 payées à la commission. En 1996, suite à quelques mésententes entre les 2 promoteurs, une scission s'est opérée au sein de l'équipe et 2 nouvelles structures se sont créés.

Autres Institutions

Très tôt ECOFA a bénéficié de l'appui de nombreuses structures pour le démarrage de ses activités. Ces appuis sont aussi bien en espèces qu'en nature. En marge de ses activités routinières La strucutre a été aussi appuyée en matière de formation technique et administrative. ECOFA décroche des marchés avec Faso Baara, agence de travaux publics pour l'emploi à haute intensité de main d'œuvre.

4 Les financements

Le capital inital de l'association n'était constitué que des cotisations de 5'000 francs des ses11 membres fondateurs et de dons en nature et en espèce d'une valeur totale ne dépassant pas 200'000 francs CFA

'a contribution mensuelle des bénéficiaires s'elève à 1'000 francs pour les ménages et entre 4'500 et J'000 francs pour les organismes publics ou privés.

Avec l'accroissement des activités, ECOFA a dû recourrir aux prêts du Fonds National pour la Promotion de l'Emploi (FONAPE) au taux de 12,5 % en 3 ans et de l'Atelier Pilote de Construction de Materiel Agricole (APICOMA).

De 1991 à 1995, le chiffre d'affaire de l'entreprise est passé de 6'000'000 à 30'000'000 cfa. Les salaires s'élèvent à 7'740'000 et les frais de fonctionnement 6'157'631 cfa; soit une marge bénéficiaire de 16'102'368 en 1995.

4 Equipements utilisés

Les engins utilisés par ECOFA sont 5 tracteurs agricoles de 1,5 CV avec une remorque de 3 m^3. Chaque engin nécessite 1 chauffeur et 2 manœuvres pour 513 abonnés en moyenne. Le coût d'exploitation d'un engin, toutes charges comprises, a été évalué à 2'856'480 en 1995 (d'après 3).

5 Leçons tirées de ECOFA

a - la gestion des ordures ménagères constitue un secteur sûr pour la promotion de l'emploi dans les grandes métropoles africaines;

b - une petite entreprise de collecte d'ordures peut être bâtie à partir de moyens modestes par des promoteurs très engagés;

Urban Management Programme

Swiss Agency for Development and Cooperation

UMP/SDC Collaborative Programme on MSWM
in Low-income Countries

CASE STUDY

"THE CLEAN AND GREEN CAMPAIGN"
BESTER'S CAMP CENTRAL LOCAL COUNCIL
DURBAN, SOUTH AFRICA

Prepared by
Urban Development Department
(PES Unit)
Durban, South Africa

Presented to the
Workshop on Micro-Enterprises Involvement
in Municipal Solid Waste Management
in Developing Countries

(Cairo, 14-18 October 1996)

DURBAN CASE STUDY

"THE CLEAN AND GREEN CAMPAIGN"
BESTER CAMP CENTRAL LOCAL COUNCIL

By Debra Roberts

1. **Background:** The absence of formal waste management systems in the majority of township and informal settlement areas has resulted in an extensive build up of litter and waste in South African cities. In Durban, waste management in the black townships degenerated during the 1980s along with the general breakdown in black local authority structures and service provision under the apartheid government. In informal areas (such as Bester's Camp) the situation was even more extreme as there was little or no infrastructural development in these areas and as a result few or no basic services (e.g. waste removal) were provided by the authorities in charge. The accumulation of solid waste in these settlements now poses a serious and growing threat to health and quality of life throughout the Durban Metropolitan Area. Other impacts include infrastructural damage such as the blocking of stormwater drains and sewers.

Providing improved waste removal and other services is, however, hampered by continuing fragmentation of local government in townships and informal settlement areas, rents and rates boycotts, and the extreme poverty of households and their inability to afford even basic services. Political unrest, violence and crime further exacerbate the problem. Attempts to mount waste management partnerships between poor communities and the city have also been hampered by internal conflicts and constraints in and between community based organisations and community leaders' perceptions that waste removal has a lower priority than housing, sanitation and water supply.

To try and remedy this situation in Durban and other areas around the country, three partners: the Department of Public Works, the South African Breweries Beer Division and the Keep South Africa Beautiful (KSAB) organisation, have joined forces to launch a national clean up project, the *Clean and Green* campaign.

The campaign aims to assist local authorities to set up appropriate and sustainable waste management systems or, where a sub-standard waste management system is in place, to improve it. A prime function of the *Clean and Green* campaign is to break the current

deadlock between the community and local authorities where the people want community services to be provided before they pay for them, and the authorities want services to be paid for before they are supplied. The *Clean and Green* project is not a 'handout' project but a capacity-building exercise aimed at delivering cost-effective, community-driven waste management programmes that will benefit the people through a cleaner environment, job creation and ultimately a better quality of life.

Early in 1996, the then transitional Council in Durban approved the introduction of the *Clean and Green* campaign in the informal settlement known as Bester's Camp. Bester's Camp currently consists of 7016 dwellings. There are 17 refuse hoppers in the settlement which were supplied by the Urban Foundation on behalf of the Inanda Community Development Trust. At present Bester's Camp gets rudimentary refuse removal service from Durban Solid Waste. The community is required to place their refuse for disposal into refuse hoppers, which are then service/emptied. The problem, however, is that there is always a build up of refuse around the hoppers and large amounts of misplaced refuse within the community.

2. **Objectives and beneficiaries:** The beneficiaries of the programme will be previously disadvantaged communities who have had little or no access to waste management services in the past. The capacity of the local authority to work constructively with local communities will also be strengthened by involvement in the programme.

The objectives of the campaign are summarised in the following vision statement i.e.; *"In recognition of a clear and immediate need in the country, to assist in the upliftment of disadvantaged communities by providing a demonstration of what is possible with regard to providing a healthy environment in a sustainable manner."*

The key components of this vision are:

- **demonstration:** this is not a hand-out. It is about creating the desire for the betterment of each individual's and each communities circumstances, together with the realisation that success requires effort and commitment.
- **sustainable manner:** this implies building the capacity of each community to

continue with the project on their own and with their own resources into the future.

3. **Approach/Strategy:** The objectives outlined in the vision are to be achieved by harnessing the energies and resources of those parties best able to deliver on the vision drawn from the government, NGOs and corporate sectors. The contributions of the partners to the campaign include the following:

Department of Public Works: The department will deliver the following:

- initial funding
- moral and overt support at national, regional and local government level. This could include the provision of dedicated personnel and facilities.
- commitment form senior government Ministers and their departments
- participation in a National steering committee
- participation on Regional steering committees
- senior officials for key publicity events
- ongoing monitoring and evaluation of the campaign.

South African Breweries:

- provide funding for the programme managers, namely Keep South Africa Beautiful
- provide commitment to the campaign from senior executives
- provide managerial expertise and support (personnel and resources) to national and regional structures
- participate in a National steering committee
- participate on Regional steering committees
- provide marketing, public relations and advertising support
- provide senior officials for key publicity events
- encourage other corporations to support the campaign.

Keep South Africa Beautiful:

- manage the project according to the decisions of the National steering committee
- build capacity in local authorities to progress the programme after the conclusion of the campaign
- National steering committee
- Regional steering committees
- Marketing/publicity.

4. **Institutional Setup:** At a national level the campaign will be managed by a National steering committee comprised of representatives from the founder organisations (Department of Public Works, South African Breweries and Keep South Africa Beautiful). This committee will be supported by a management committee and will be replicated in various regions around the country. The major roles of the Steering committee will be:

   - to set policy for the campaign, including the major objectives and adjustments that have to occur from time to time
   - to manage the operating budget, authorise expenditure and to make adjustments from time to time
   - to receive and consider management supports

The campaign combines two previously separate Keep South Africa Beautiful projects, the **'One Person Contract'** and the **'Tidy Town'** project into one community-driven exercise. The 'One Person Contract' is a community participatory waste management system which reduces litter and creates jobs. Each focus area is partitioned into zones consisting of 200 to 250 dwellings. In each zone an unemployed local resident is given the opportunity to enter into a contract to collect all the domestic refuse in the contracted zone. The contractor is simultaneously contracted to maintain the streets and open spaces in a litter-free condition. 'Tidy Town' is an educational project geared towards changing community attitudes and perceptions about ways of handling waste. The combination of the two makes up the *Clean and Green* campaign.

How *Clean and Green* will work: The starting point for the campaign is liaison with community leaders and local authorities to establish their waste management needs and their commitment to a cleaner environment and the subsequent nomination of one community per local authority to participate in the programme.

A representative committee then appoints contractors and supervisors to run the *Clean and Green* campaign. These nominees are trained by Keep South Africa Beautiful, and the organisation monitors their progress. Each contractor is responsible for servicing 250 homes in his/her area, removing domestic refuse from each house once a week, plus any other litter in his or her allocated area.

The refuse is placed in plastic bags and either stored at an agreed location for collection by the local authority or taken to a waste skip. The local authority transports the waste to a disposal site or recycling depot where recyclable material such as cans and bottles is sorted and organic material converted into compost. Each supervisor is responsible for managing and monitoring the activities of 15 contractors.

As no private contractor is involved in the *Clean and Green* project, there is no outside enrichment and the community is, for all practical purposes, the main contractor which manages the waste management system, with the consent of the local authority. This also means that the community is far more likely to pay for the service as its own people are being employed.

On the educational side, *Clean and Green* aims to change the attitudes, perceptions and approaches to litter and waste through voluntary community participation. To this end a local programme manager will be appointed from the local authority's fulltime staff to run this aspect of the project. He or she will be trained by Keep South Africa Beautiful and then work with a designated community committee to identify problems and then address them.

At the time of writing consultation had taken place between representatives of the *Clean and Green* campaign, Durban's Solid Waste Department and the Bester's Camp

community. As a result, 30 contractors have been appointed (10 women) in the Bester's Camp area with 2 supervisors (1 woman). The programme was officially launched at the beginning of August 1996 in Bester's Camp.

5. **Financing:** The funding for the campaign is provided by the national government, while the management fees are borne by South African Breweries. The campaign, which has been allocated R10.8 million ($1 = R4.5) by the Department of Public Works, will be managed by Keep South Africa Beautiful (in association with the local communities and authorities) who in turn will be funded by South African Breweries.

6. **Technical standards:** As the system is community driven it is seen by the people as 'their' project. The communities thus determine their own waste management standards; manage the system and check to see that the entire community is pulling its weight.

7. **Significant steps or phases:** It is anticipated that once the system has been up and running for an agreed period it will be integrated into the local authority's community service infrastructure which will then extend the programme to other areas. On-going training and capacity building of the *Clean and Green* participants is a prerequisite of the process and pre- and post-evaluation of all projects will be undertaken.

8. **Lessons and Conditions:** As the project has only recently been initiated it is still too early to speculate regarding its success or repeatability. However, the basic principles of participative planning, capacity building and self-sufficiency are in line with the requirements of the city's Local Agenda 21 programme aimed at securing sustainable development throughout the Durban Metropolitan Area.

Urban Management Programme

Swiss Agency for Development and Cooperation

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CASE STUDY

MUNICIPAL SOLID WASTE MANAGEMENT IN DAR ES SALAAM, TANZANIA

Prepared by
Sustainable Dar es Salaam Project
(SDP)
Dar es Salaam, Tanzania

Presented to the
Workshop on Micro-Enterprises Involvement
In Municipal Solid Waste Management
in Developing Countries

(Cairo, 14-18 October 1996)

MUNICIPAL SOLID WASTE MANAGEMENT IN TANZANIA

A CASE STUDY OF DAR ES SALAAM CITY

By; F.J. Magoma*
N.C.X. Mwihava**

Paper presented at the Workshop on Municipal Solid Waste Management in Low-Income Countries, 14th - 18th October, 1996: Cairo - EGYPT.

* *Former Solid Waste Coordinator SDP*

** *Solid Waste Management Coordinator for the Sustainable Dar es Salaam Project.*

1. INTRODUCTION

Dar es Salaam is the current capital city of Tanzania a country with a per capita income of US $ 110 per annum.

The city of Dar es Salaam lies between 6° 34′ and 7° 10′ South on the West of the Indian ocean, it covers about 1,350 km of land area. Dar es Salaam has a tropical coastal climate with average rainfall of 1000 mm (in two maxima) and mean annual temperature of 26 °C with a mean daily variation of 4 °C while the daily maximum humidity averages at 96% and the minimum humidity of 67% <JICA, 1996>.

The current population of the city is estimated at between 2.5 to 3 million people. This population is responsible for a daily solid waste generation of 2,000 to 2,500 tonnes.

It was in 1992 when the city's solid waste situation reached a pathetic situation which called for immediate strategies to revert it. By that time (1992) the total refuse collection was only 3% of the total generated solid waste. In the same year a city consultation was held and solid waste management was identified as one of the UNDP/UNCHS(HABITAT) environmental issue to be addressed under the Sustainable Dar es Salaam Project (SDP) within the Dar es Salaam City Council (DCC) part folio. The agreed approach included five strategies namely:

1. Launching of an Emergency City Clean up campaign,
2. Privatisation of solid waste collection.
3. Encouraging the community participation in solid waste management and
4. Improving the management of refuse disposal sites.

The experiences with each of the above mentioned strategies are highlighted below and just to have a feeling of how the DCC/SDP has been working refer to the organogram here under (Figure 1).

FIGURE 1(a)

SUSTAINABLE DAR-ES-SALAAM PROJECT — DRAFT INSTITUTIONAL FRAMEWORK

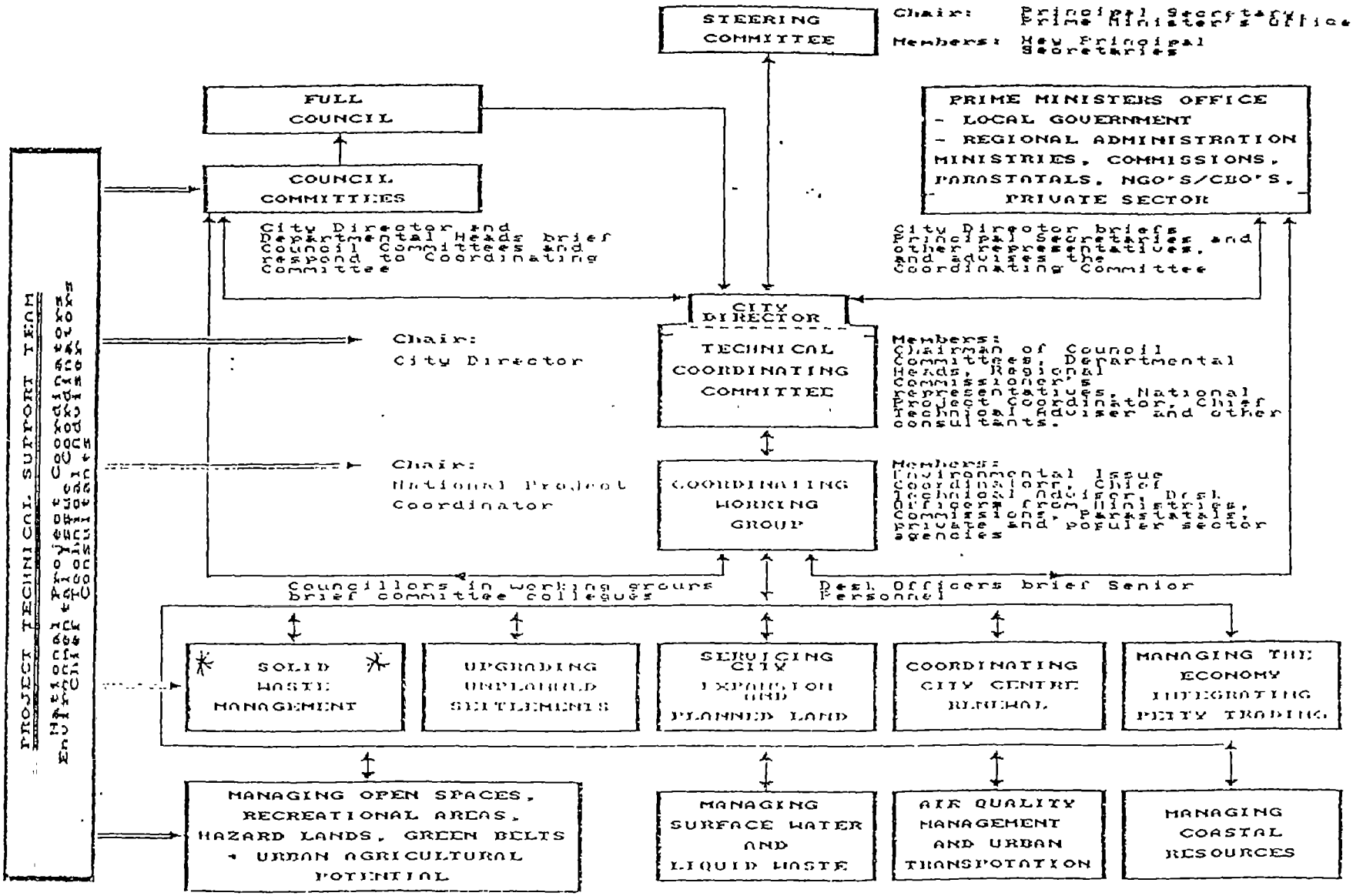
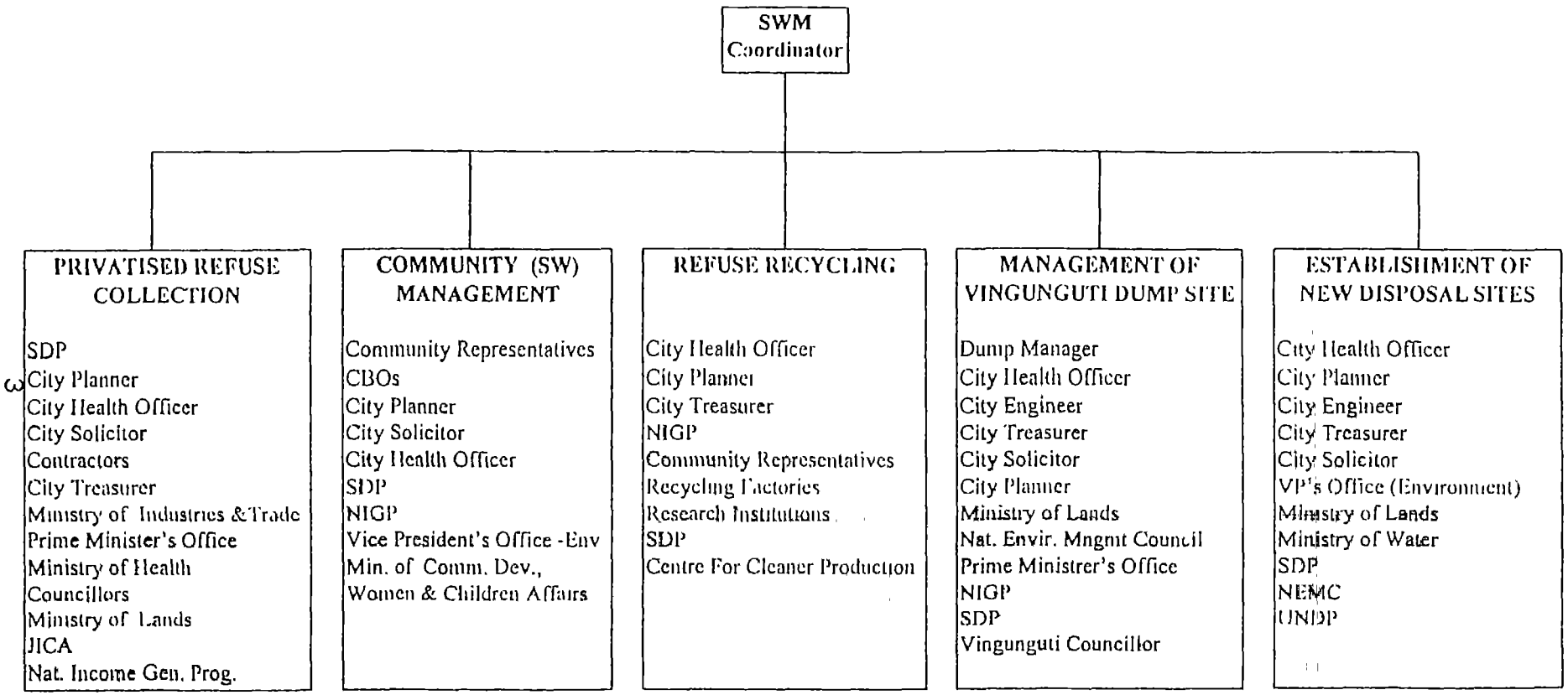


Figure 1 (b):Composition of Solid Waste Management Working Groups



2. THE EMERGENCY CLEAN UP CAMPAIGN

This was a short term strategy to clear most of the heaps of refuse which had accumulated at different parts of the city including market places, open spaces etc. Since one of the reasons for the accumulation of solid waste was the inadequate capacity of the City Council (DCC) in terms of solid waste management equipment/facilities and personnel; the Prime Minister's Office in collaboration with the Donor community raise US$1.4 million for this exercise. This fund was used for refurbishing 30 garbage trucks, opening a new dump site and facilitating the day to day refuse collection services of the council.

In addition some dump site management machines were procured by the assistance of the Governments of Japan, Italy, Canada and Denmark. The machines included a bulldozer, a wheel loader and a soil cover material truck. On the other hand the political will of the central Government through then Deputy Prime Minister contributed much to the success of the campaign. During this campaign which lasted for two years (1992 to 1994) many achievements were realized, some of these are, that;

a) The City Council gained experience on how routine refuse collection could be improved by using its own facilities and personnel, or by improving the solid waste management in partnership with all stakeholders i.e. the central Government, Private firms and individuals, local communities and the donor community.

b) The solid waste collection increased from about 30 tonnes per day to about 400 tonnes per day which led to diminishing the heaps of refuse and improving the city's solid waste situation. This also created a better environment for the private refuse contractor to commence his operations in the privatised area <Coffey, M. 1996>.

3. PRIVATISATION OF SOLID WASTE COLLECTION

3.1 Background

Under the Dar es Salaam city situation privatisation of solid waste collection means that the Dar es Salaam City Commission/Council (DCC) devolve its powers of collecting refuse to capable private firms or individuals. This is achieved by contracting through competitive bidding.

It must be understood here that the responsibility of cleaning the city falls under the Health Department of the City Commission/Council whose organisation structure is as highlighted in figure 2 and 3.

Figure 2: The Structure of the Dar es Salaam City Council

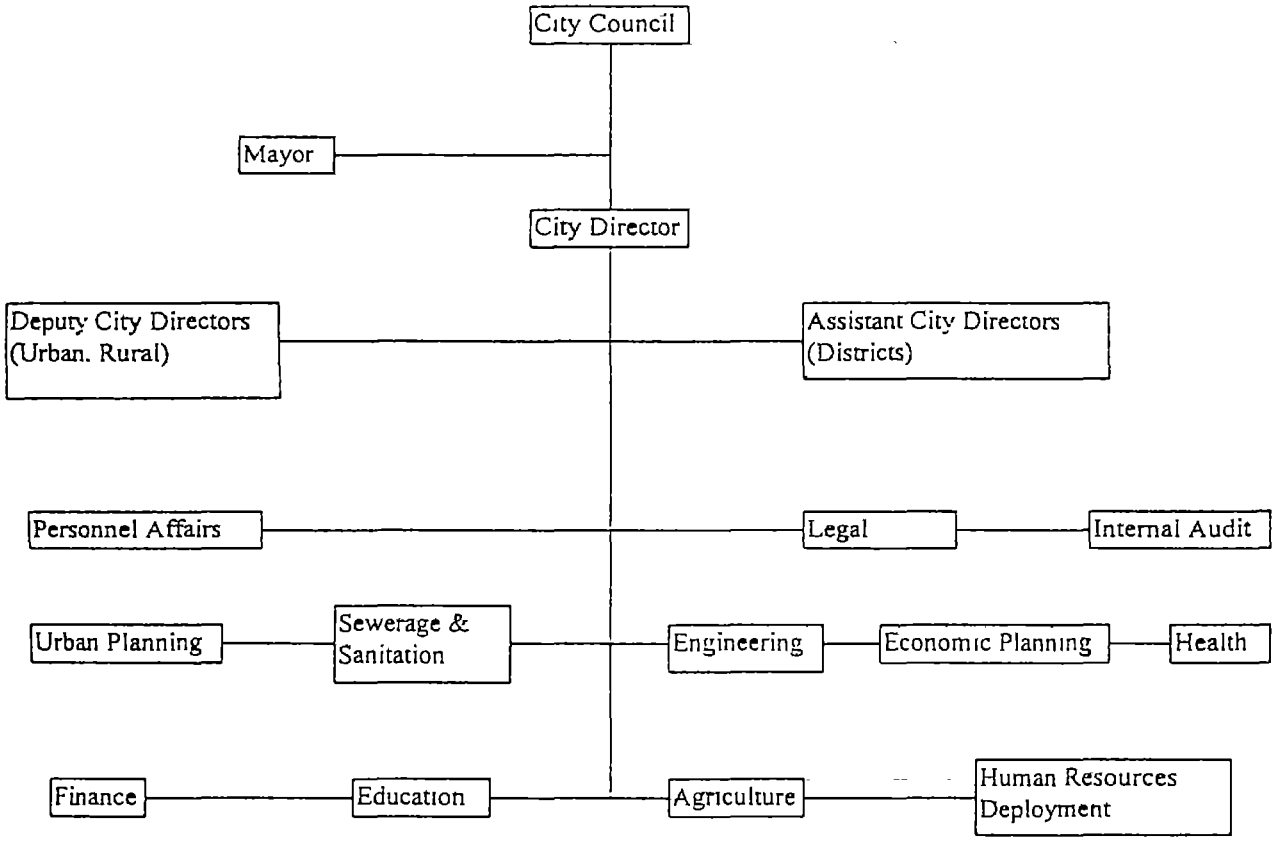
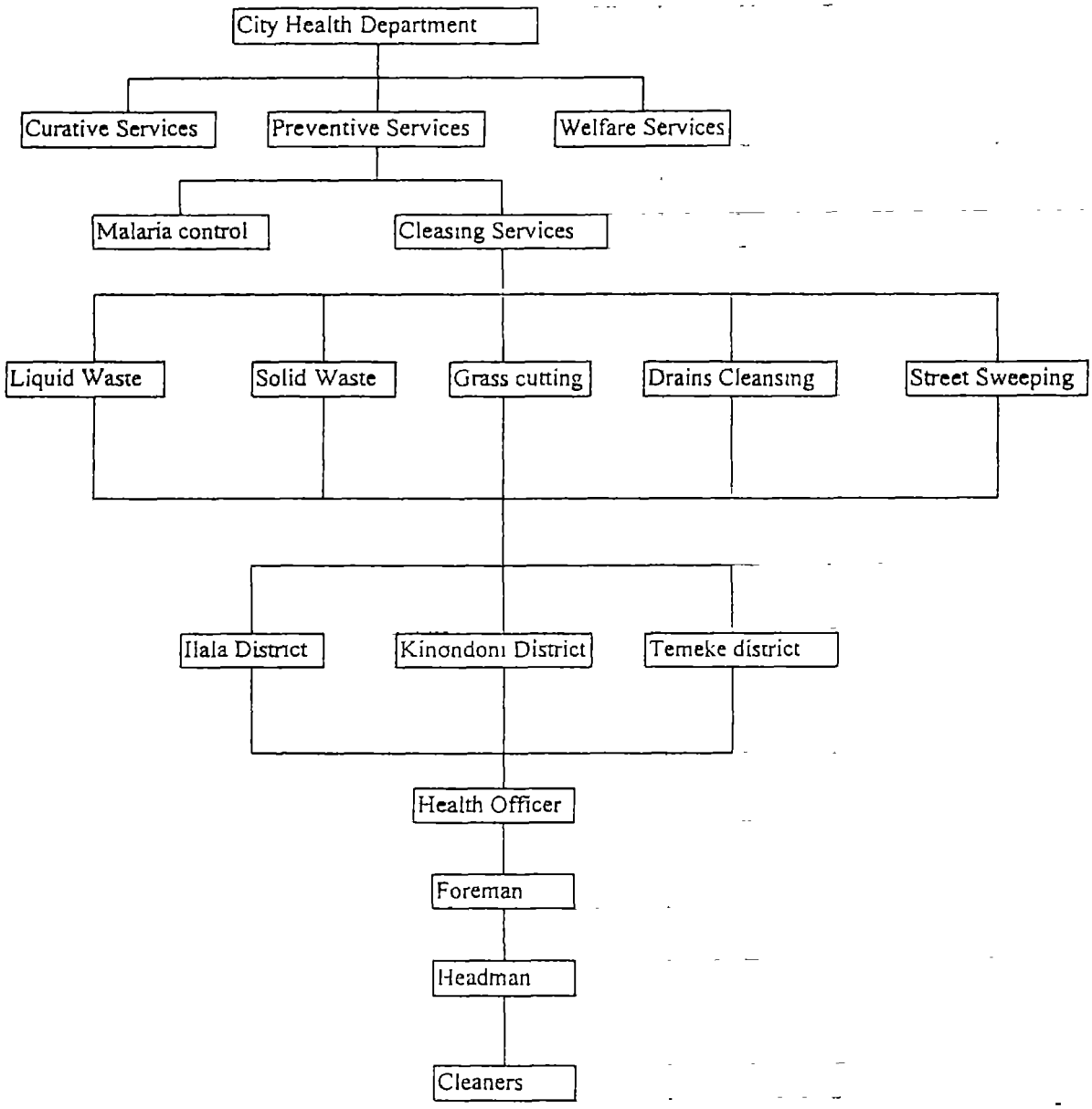


Figure 3: City Health Department's Structure as related to Waste Management



The idea of privatising refuse collection came up after learning that;

a) The DCC lacked substantially the capability to operate and manage its solid waste management equipment. This can be better explained by table 1 whereby the lifespan of different equipment is too short because of problems of maintaining them in terms of fuel and spare parts supply. The situation is further exacerbated by poor discipline of some of the DCC staff and vandalism.

b) The DCC had inadequate capacity to collect its revenues accruing from its services to the city residents.

Table 1: Acquisition of trucks and other equipment for waste management since 1987.

YEAR	EQUIPMENT PROCURED	EQUIPMENT IN OPERATION
1987	30 tipping trucks 3 container trucks	30 tipping trucks 3 container trucks
1988	-	30 tipping trucks 2 container trucks
1991	6 compactor trucks	28 tipping trucks 2 container trucks 6 compactor trucks
1992	-	28 tipping trucks 1 container truck 2 compactor trucks
1993	-	26 tipping trucks 1 container truck 4 compactor trucks
1994	3 bulldozers	24 tipping trucks 1 container truck 1 compactor truck 3 bulldozers
1995	-	20 tipping trucks 1 container truck 1 compactor truck 1 bulldozer

Source: Kironde,1995.

Therefore in order to continue with the improvement of solid waste collection, it was agreed that refuse collection system in the city be privatised by phases so that the

experiences of the initial phase are replicated to the phases to follow, at the same the DCC learn more from the exercise by taking care of the un-privatised areas. But because of reason (b) above, the privatisation exercise had to include collection of refuse collection charges (RRCs) from customers. Thus, in order to achieve this the Dar es Salaam City by-laws were revised in 1993 so as to allow private contractors to collect both revenue and refuse.

3.2 Phase I of the Privatised refuse collection

The first phase of privatised refuse collection started with ten city centre wards namely Ilala, Mchikichini, Jangwani, Kariakoo and Gerezani. Others include; Mchafukoge, Kisutu, Upanga East, Upanga west and Kivukoni (Refer the ward Map of Dar es Salaam in figure 4.)

After a competitive bidding, M/S Multinet Africa Co. Ltd won the tender to clean the ten wards but because of the lack of experience in the area of privatised refuse collection, it was agreed that the contract be of concession type where some of the DCC facilities were leased to the contractor. This contracts period was 5 year. M/S Multinet Africa started operations in November 1994. The refuse collection charges as per the above mentioned revised by-laws were (and are still valid now) as given on table 2.

This tariff system allows cross - subsidization between high income and low income earners. Such an arrangement allows the low income people to afford at the same time facilitating an equal service for all privatised localities from the contractor. However; the contractor is obliged to dispose the collected waste at a DCC owned refuse disposal site where he pays a refuse disposal charge (RDC) which at present is Tanzanian Shillings(Tshs.) 800 per tonne <SDP,1995>. For the purpose of enabling the contractor to perform as required by the contract, the DCC is required to enforce the by - laws, relevant legislation and regulations. This include taking to task all RCC defaulters.

The supervision and technical assistance to the privatisation process is continuously provided by the Sustainable Dar es Salaam project (SDP) through its Privatisation working group which is comprised of experts from different stakeholders or partners as indicated in figure 1.

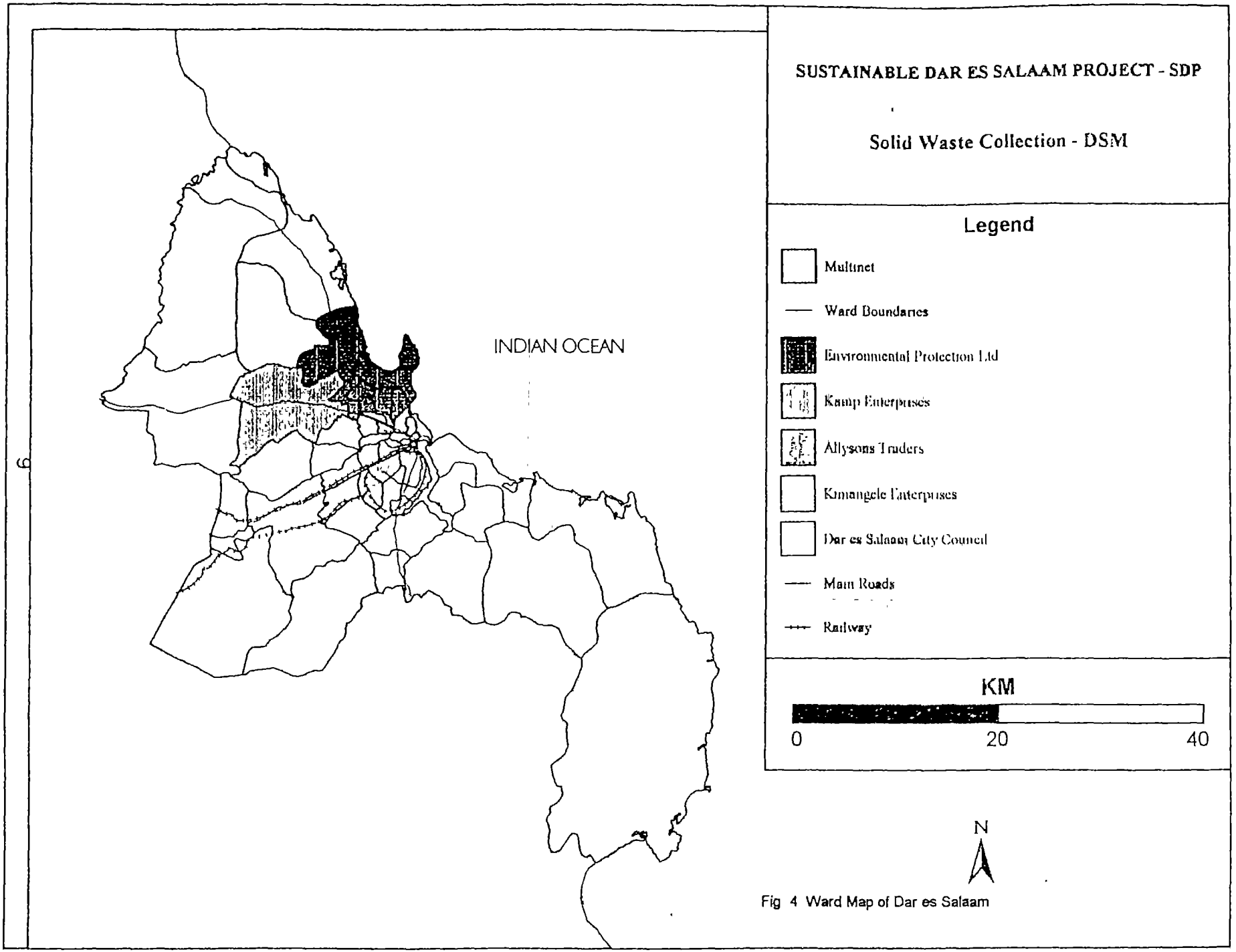


Fig 4 Ward Map of Dar es Salaam

Table 2: Monthly Refuse Collection Charges under the 1993 Bye Law [Tshs]

TYPE OF WASTE/OCCUPIER	AREA 1. UPANGA EAST & WEST, KIVUKONI, KISUTU, MCHAFUKOGE	AREA 2 GEREZANI, KARIAKOO, JANGWANI	AREA 3. MCHIKICHINI, ILALA	ALL AREAS
Domestic Refuse (payable quarterly in advance)	900	150	150	
Trade Refuse (payable annually in advance)				
a) Every trade licence holder normal trade licence nguvu kazi licence	3,500 300	1,000 200	1,000 150	
b) hotels & guest houses rooms 1-10 rooms 11-15 rooms 16-25 rooms 26-50 rooms 51-75 rooms 76-100 over 100 rooms	20,000 30,000	3,000 20 000	2,500 10 000	 55,000 75,000 100,000 150,000 200,000
c) Restaurants & Bars	30,000	15,000		
d) Shops/Offices employing 1-5 employing 6-10 employing 11-15 employing 16-20 employing 21-25 employing 26-50 employing 51-75 employing 76-100 employing over 100				 5,000 7,500 15,000 20,000 30,000 55,000 75,000 100,000 150,000
e) Construction . skips (7 m^3 container)				 10,000
f) Markets . 15 m^3 container . 7 m^3 container				 19,000 10,000

Source: Kironde, 1995

3.3 Achievements Realized todate

The major achievements realized during November, 1994 to August, 1996 period encompass;

- Improved partnership in solid waste management through the multidisciplinary working groups which comprise of the DCC, the community, contractors, etc.
- The city's solid waste picture has slightly improved in

terms of the percentage of waste collected. The collection figure rose from 3% (in 1992) to about 75% (in September, 1995) of the total waste generated in the privatised area. But this declined during October, 1995 to June, 1996 when some contractual problems persisted between the DCC and the contractor.

- The first phase's experience has contributed much in the preparations of the second phase of privatisation and
- Through the privatisation process a number of jobs have been created with the cleansing contractors and hence the strategy is contributing in solving the unemployment problems.

In addition, the experience with the first phase of privatised refuse collection system show that privatisation increases the efficiency in provision of services and collected of revenue. This is clearly justified by comparing table 3 and table 4 where 318 contractor's workers collect around 100 tonnes of refuse per day while 800 DCC workers collect only between 30 to 60 tonnes.

Table 3: Structure of the Cleansing Section Manpower of the DCC

Cleansing superintendent	1
Health officer	1
Assistant Health Officer	5
Foremen	23
Headmen	65
Loaders/Drivers	232
Street Cleaners	337
Drain Cleaners	86
Clerks	8
Casual Employees	42
TOTAL	800

Source: Kironde, 1995.

This means that, for the time being when DCC has not attained the acceptable competence to the collection of both revenue and refuse and with proper governance, cooperation and monitoring; privatisation should continue until DCC has reached a point where it can sustain the achievements of the privatised system.

Table 4: Multinet's Labour Force, July 1995

CATEGORY	NUMBERS
Operational Manager	1
Assistant Operational Manager	1
Office Staff	7
Sweepers	90*1
Casual Sweepers	20
Loaders	121*
Casual Loaders	30
Workshop	15
Collectors	12
Cash Collectors	4
Transport Officers	2
Checkpoint Controllers	3
Watchmen	5
Scouts	2
TOTAL	313

Legend

* 16 out of these groups being supervisors
1 120 in January, 1996

Source: Kironde, 1995

3.4 Constraints

Besides the achievements highlighted above, a number of problems related to the concession contract have been experienced. The first problem is related to the mode of payment for the services and facilities. Under the contact

the contractor is supposed to pay to the Dar es Salaam City Council(DCC) the monthly costs of renting trucks and the leased depot. On the other hand the DCC was obliged to pay revenue collection charges for the services provided by the contractor at DCC owned premises like schools, hospitals, dispensaries, offices etc.

Unfortunately no party had paid a cent to the other for more than a year a situation which made the DCC to withdraw its facilities is September 1995. However the contractor was supposed to procure his own garbage trucks as he collects the refuse revenue something which he did not do until September 1995. Thus in order to continue with his contractual obligations after this date, the contractor hired a small fleet of trucks which was unable to maintain the cleanliness level achieved during the first year of privatisation. Therefore the DCC was forced to reduce the contract area to only five wards in December 1996. This situation led to declined refuse collection specially on areas taken care by the DCC because the operation area had increased. After sensing that the solid waste situation was worsening, the Prime Minister made a directive to DCC that the city should be clean within six months time as from January 1996.

Secondly; the cooperation expected from the DCC basically in prosecuting the refuse collection charge (RCC) defaulters and assisting the contractor in in public health education and is providing public awareness on the concept on privatised refuse collection as per the contract was inadequate such that the contractor was unable to collect the RCCs to on acceptable level. This was one of the major reasons for the non performance of the contractor.

The third problem was related to the opening a DCC/contractor joint account during the commissioning period (the first 3 months of the contract). The purpose of such an account was to establish on how much revenue can the contractor be able to collect so as to ascertain the trend of RCC collection and also the practically of the privatised refuse collection system). This account was never opened and this contributed much to councillors to query the contractor.

3.5 How Problems dealt with

Since even with the efforts of refurbishing DCC trucks and the withdrawal of the five wards from the contractor did not improve the solid waste picture in the city, the Prime Minister directed the Dar es Salaam City Council to make sure that the city is clean within six months time as from

January, 1996

In order to satisfy the Prime Minister's directive and in addition to the plans which were already underway the following were pursued;

a) Review the first contract so as to modify or omit the controversial clauses and renegotiate the contract. If the first contractor agrees and proves his new ability to manage his original ten wards let him get back the withdrawn wards.,

b) Prepare the start up of the second phase of privatised refuse collection to cover 22 more urban wards whereby the tender specifications were prepared and contractors were invited to bid. In the tendering process four new contractors were selected and allowed to start operating by mid July this year. But given the limited capacity of contractors, only 13 wards qualified this phase's service. Other potential contractors have been given time to mobilise themselves so that they take part in the next phase.,

c) Convene a solid waste management working session to deliberate on what further steps should be taken in order to speed up the improvement of solid waste management in the city. This session drew up a set of strategies which encompassed; speeding up the tendering process of the expanded privatised refuse collection but incorporating the experiences of the first contract ie. the new contracts should not be concessional where every contractor should have his own refuse management facilities which have to be physically inspected; improve the current refuse disposal site by availing on time the funds for O&M costs of the dump site, improving the DCC and community support in the whole issue of solid waste management and encouraging refuse recycling.

After the lapse of the six months given by the Premier, most of the strategies had not taken of because of delays and confusion within the City Council where a number of councillors and executives were in a panic situation. Thus the Prime Minister dissolved the Council and instead he installed a City Commission headed by a Chairman assisted by commissioners who are heading the City departments. After the placement of the Commission a lot of stuck issues started to move fast. This included the go ahead for new contractors to commence operations and returning the five wards back to the first contractor.

4. COMMUNITY INVOLVEMENT IN SOLID WASTE MANAGEMENT

4.1 Background

It is a fact that more than 50% of the Dar es Salaam's population live in squatter (unplanned) areas. These are places where road accessibility is either very difficult or completely impossible. Thus communities in such areas have to be mobilized so that they take part in planning and implementing the agreed strategies in solving their problems. Under the SDP approach a number of existing community based organisations (CBOs) were interested in participating in solid waste management. For instance, the Kinondoni Moscow women Development Association and the Hanna Nasif Women Development Association formerly were involved in activities different from refuse management but for the last two years have been removing solid waste from drainage systems and also collecting refuse from a limited number of households using push carts bringing the refuse to sites where DCC facilities reach. These groups have plans to do some refuse composting although they have problems in acquiring space. From the experiences of the relevant working group under the SDP, it has been found that the solid waste management related income generating activities are created for the appropriate communities by putting a manual house to house refuse collection systems. Under such systems, unemployed residents are allowed to collect refuse from unaccessible places to bring such refuse to points where the DCC or contractor's trucks can reach. In this way these manual workers are paid a small amount of money which assist them to have their daily bread.

On the other hand communities are very crucial in managing and sustaining a clean environment. Thus by using the community based organisation (CBO's) or the community representatives, people are being educated on different ways of improving their environment and on the need to cooperate with the DCC, contractors and CBO'S. This is achieved by preparing proper public health awareness packages which are used by ward health officers, community representatives and when resources allow the use of mass media (radio, TV, newspapers, exhibitions etc)

4.2 Achievements

Through the participation in the SDP working groups, several CBO's with interest in solid waste management have been formed. Some are responsible for refuse collection from a limited number of households. Other CBO's in addition to collecting waste, they conduct public awareness on proper solid waste management practices which include refuse separation (sorting) at the source for the purposes of reuse

or recycling.

In addition to CBOs mentioned under 4.1 above, others include the Pollution Control Agency (POCA), the Tanzania Environment Cleanliness Association (TECA), etc.

Further more, the National Income Generation Programme (NIGP) after realizing the importance of community participation in solid waste management, formulated an Integrated SWM project proposal which has been approved for funding by the ILO and the project is expected to commence in this month of September. Through this project, it is expected that more capacity would be built within the DCC and communities in the area of Solid Waste income generating activities.

4.3 Constraints

The major barriers to community based waste collection is the in-adequacy of resources and facilities to effectively collect and manage the refuse and also the lack of funds to launch effective public awareness campaigns.

5. SOLID WASTE RECYCLING

Given the fact that solid waste re-use or recycling have several advantages, the SDP through the solid waste recycling working group has commissioned a number of studies or data collection on the status of the state of art of the recycling technology.

The information gathered is used for informing the public on the sources and market for recyclable refuse at the same time such information have been used for formulating demonstrational projects.

It was in 1992 when a project proposal on anaerobic treatment of biodegradable refuse was formulated and submitted to the UNDP for funding consideration. It was after the promising report of the Pre-investment study commissioned by the UNDP where the UNDP through its Global Environment Facility (GEF) and the Danish International Development Agency (DANIDA) agreed to finance the project to the tune of US$ 3.9 million. Under this demonstration project whose good results would be replicated to other urban centres in Tanzania and in Africa would take in about 60 tons of solid waste per day to produce biogas with about 60% methane (a green house gas). The gas would be utilized to generate about 0.6MW of electricity while the effluents would be dried to produce a high quality organic fertilizer.

The success of this project whose plant's construction works are to commence before the end of this year, would contribute much in encouraging people to separate waste at the generation point.

Further, a study on refuse composting has been conducted by the Microbiology unit of the University of Dar es Salaam and it is recommended that small scale plants which could be managed at house-hold level would be more feasible than massive centralized composting plants. As a result of this study a pilot composting plant is underway. Its results would provide guidance as to how solid waste composting could be disseminated in Dar es Salaam.

Meanwhile, industries which can recycle some of the municipal solid waste have been identified. some of them are already using specialized type of refuse to produce other products, these include; scrap metal and aluminium products' recycling, waste paper recycling, glass and plastic remains' recycling. These industries are being encouraged to make themselves known through publicity and marketing channels.

Other achievements realized since the launching of the SDP encompass; increased DCC staff awareness on the advantages of refuse recycling which among others include the reduced quantities of waste dumped at disposal sites which lead to increased life span of disposal sites and the fact that waste recycling contribute to reducing the waste management costs.

The major barriers to this approach of solid waste management include;

1) Low prices of recyclable waste at appropriate formal plants/factories which discouraging people (especially) youths to be involved in the process and

2) Low priority given to recycling by DCC and solid waste contractors due to the fact that the portion of conventional recyclable wastes in the municipal solid waste which is just about 15% (refer table 5).

This means that the recycling of inorganic refuse may not have a significant contribution towards solving the current low rate of refuse collection in the city.

Table 5: Typical Waste Component in Dar es Salaam

Waste Component	% by wet weight
Food/Vegetables	59.8
Paper	8.7
Metals	2.8
Plastics	1.9
Glass	0.4
Textile	0.9
Others	25.5
TOTAL	100.0

Source: Kironde, 1995.

6. IMPROVED MANAGEMENT OF REFUSE DISPOSAL SITES

6.1 Background

For quite some time the DCC has been experiencing problems of refuse disposal sites. Due to the crude way of dumping refuse it has been ejected by court orders or injunctions from not less than three sites by the residents.
Since refuse collection does not make sense if there is no disposal site, during the emergency clean up campaign in 1992, a new dump site was opened at Vingunguti. This site was envisaged to be managed as a sanitary landfill.
Meanwhile, because the area of the city is so spread out, the economics of solid waste collection and disposal become prohibitively high by having only one refuse disposal site at a time.
Thus it has been deliberated that every district of the city (which may later become independent municipalities) should have its own disposal facilities so as to reduce the haulage distance and hence reducing the transportation costs.

6.2. Management of Vingunguti Dump site

Although this dump site was planned to become a sanitary refuse disposal site, after its opening there has been several problems namely:

a) In adequate funds to properly run the dump site machinery,

b) Lack of funds to construct a leachate treatment pond,

c) Absence of dump manager's office and facilities and

d) Poor records of quantities of refuse disposed because of the absence of a weigh bridge which has contributed to poor refuse disposal charge collection.

The problems have compelled the residents surrounding the dump site to complain from time to time. However efforts are being made to solicit funds for improving the situation so that the dump site is used for at least the next two to three years.

Through partnership in trying to improve the city's environment and especially through the DCC/SDP approach the Japanese Government has commissioned a solid waste management (SWM) study which is envisaged to come up with a SWM Master Plan for the city. And in the implementation of the study some pilot projects would be implemented in order to generate relevant data for the study. One of the pilot projects agreed is the installation of a movable/easily detachable weigh bridge at the present dump site's entrance. Other local and foreign donors have indicated to contribute in improving the present dump site and even in establishing new refuse dump sites.

6.3 New Refuse Disposal Sites

As mentioned earlier, the need to develop more refuse disposal sites in the city is very crucial. And in the effort to develop such sites, at least two potential sites for each of the City Districts have been identified. One of the sites has been fully studied and it has been concluded that the site is suitable for sanitary land filling. Therefore the processes of acquiring it are underway. It is however not yet clear if the funds for establishing the site can be raised within the short time we have before abandoning the current site at Vingunguti.
It is also worth to mention that, the Japanese Government through its Technical Assistance Agency (JICA) is conducting detailed studies in the other earmarked possible disposal sites. This activity is within the study mentioned under 6.2 above.
the major barrier in the acquisition and management of sanitary refuse disposal sites is the lack of funds on one side and slow and bureaucratic procedures in acquiring land. Todate the DCC do not own a single site for this purpose.

7. FUTURE PLANS

The strategies for future action encompass

- Encouraging partnership in managing the city through the strategic urban planning approach involving all key stakeholders in the City development. This is to include proper coordination of different efforts in solid waste management especially the Integrated Solid waste Management project to be implemented by the national Income Generation Programme under the financial support from the International labour Organisation (ILO).,

- Enhance the privatisation of solid waste collection by expanding the privatised area and incorporating more capable contractors and other enterprises,

- Raise the public awareness on cleanliness and proper solid waste management and continue to seek community participation through CBOs and other micro-enterprises,

- Improve the operations and management of present Vingunguti dump site to allow more time for the establishment of other sanitary refuse disposal sites,

- Solicit funds and establish a new refuse disposal site at Kinzudi and other earmarked potential dump sites. The establishment of new refuse disposal site would be guided by the solid waste master plan being prepared by the Japan International Cooperation Agency (JICA).

8. CONCLUSIONS AND RECOMMENDATIONS

It can be concluded here that, the emergency clean up campaign of 1992/94 was quite successful in cleaning the city. Hence the approaches used like strong public health awareness, community involvement in cleaning the city, etc should be sustained. These products of the emergency clean up can be sustained by enhancing the privatisation exercise, community involvement, refuse re-use and recycling and establishing and properly managing the refuse disposal sites.

The DCC/SDP's strategies should be further developed and strengthened, this should include.

- Proper governance and enhanced enforcement of laws and regulations on the DCC side <NEMC, 1996>,

- Improved revenue collection and finance management

- efficient contracting and monitoring the refuse collection contractors

- enhanced cooperation between different stakeholders ie DCC, Contractors, CBO's, Communities, Donors etc. in planning and conflict resolutions. This idea is very much incorporated in the new concept of strategic urban planning which has been launched recently in Tanzania.

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The Sustainable Dar es Salaam Project
Briefing Note

BACKGROUND

The Sustainable Cities Programme; The Sustainable Dar es Salaam Project (SDP) is part of the global Sustainable Cities Programme (SCP) which is a Joint Programme of Habitat and UNEP. The Sustainable Cities Programme provides municipal authorities and their partners in the public, private and community sectors with an improved environmental planning and management capacity. The SCP is undertaking demonstration projects in 15 cities world wide. These demonstrations result in the formulation of a local Agenda 21 which include environmental management strategies, action plans and priority technical cooperation and capital investment projects for the cities concerned. The Sustainable Dar es Salaam Project is the first demonstration project and was launched in 1992.

To combat these shortcomings, the Sustainable Dar es Salaam Project (SDP) introduced a strategic urban development planning process. This process concentrates upon prioritisation of environmental issues, generation of pragmatic interventions and conflict resolution between stakeholders by participating working groups. Each group comprising representatives of institutions who are affected by and/or responsible for coordinating the city's growth and development. The Working Groups meet to generate intervention strategies, prepare Action Plan proposals and agree implementation mechanisms.

Launching SDP: SDP was launched in 1992 and became fully operational from November 1993, with the overall aim of strengthening the City Council's capacity to plan and manage the growth and development of the city in partnership with other public sector parties, the private sector and popular sector interested groups on a sustainable basis by:

- Strengthening the local capacity of the partners to jointly plan, co-ordinate and management environment/development interactions, so that they

- Prepare a long term dynamic and integrated development plan and investment strategy

SDP's main achievement is its partnership and participatory approach in which a total of 27 working groups with more than 150 representatives from both levels of government and a variety of other public, private and popular sectors institutions are actively preparing and implementing Action Plans together.

Urban Management Programme

Swiss Agency for Development and Cooperation

UMP/SDC Collaborative Programme on MSWM in Low-income Countries

CASE STUDY

MICRO-ENTERPRISES INVOLVEMENT IN MUNICIPAL SOLID WASTE MANAGEMENT: SOME EXPERIENCES IN KENYA

Prepared by
NETWAS International
(NETWAS)
Nairobi, Kenya

Presented to the
Workshop on Micro-Enterprises Involvement
in Municipal Solid Waste Management
in Developing Countries

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SYNOPSIS OF CASE STUDIES

MICROENTERPRISE INVOLVEMENT IN MUNICIPAL SOLID WASTE MANAGEMENT: SOME EXPERIENCES IN KENYA

By

By Dr. Abimbola Davies-Cole
NETWAS International
P.O. Box 15614
NAIROBI, Kenya.

INTRODUCTION

Proper Solid Waste Management in the City of Nairobi has generally been given little attention by the City Authorities in recent years. Nairobi is the largest town in Kenya with a population of 1.5 million residents. Nairobi has experienced a rapid population increase over the years. In 1969 its population was 509,286 but by 1986 the population was 1.5 million. It has a mean annual rainfall of 1049 mm. The maximum mean monthly temperature is 27.7°C. The mean monthly evaporation varies from 89 mm in July to 187 mm in January.

The rapid increase in population and the size of the city (684 km^2) has caused serious problems for planners and imposed a strain on the infrastructure. One of the major problems has been that of solid waste management. Presently, huge heaps of uncollected garbage adorn such places as city estates, shopping centres and various city lanes.

About 1000 metric tonnes of mixed municipal refuse is generated in Nairobi each day, with about 57% being from residential areas and 43% from commercial areas. Municipal waste in Nairobi consists mostly of organic matter averaging about 60-80% organic matter and 20% paper content which makes the solid waste dense and wet.

The disposal in Nairobi consists of open dumping, burning, composting and crude sanitary land filling. In low income estates where the service is very poor, the commonest mode of disposal of refuse is by dumping along the streets, playing fields and between houses. They city authorities are only able to collect about 44% of the waste produced.

WASTE RECYCLING

Individual and Organised Groups

In Kenya, collection of recyclable materials is mainly carried out by peddlers and collectors. This is done both at the household and the dumping site.

The household

There the household sell the waste to peddlers who operate from door to door. The waste is mainly old newspapers and magazines, bottles, plastic containers etc.

The Dustbins

Scavenging occurs here. Papers, bottles, plastics, rags, tins, cans etc are salvaged.

The Dumping Site (Open streets or established dumping sites

The same materials as indicated above are collected.

Vehicle Dumps

Here scavengers collect various parts of cars. The most recycled scrap metals are steel and cast iron, copper and copper alloys and aluminium products. The steel industry in Kenya depends very much on the use of recovered ferrous metals for its manufacturing plants. Toothpaste tubes are also washed and sold to factories as a source of aluminium at Ksh.10.00 per kilo (1 $ = 58 Ks) in 1991.

Recycling of Paper

Recycling of paper is a very important income earner for many people. A peddler regularly comes to my house to buy newspapers and magazines at 18 Ks ($0.13) per kg. Sometimes I sell at a grocery store which is 15 ks ($0.25) per kg.

The recycling procedure involves dissolving the waste paper and then passing through a de-inking plant. This separates the ink which becomes foam, which is then skimmed off. Chemicals are added and the pulp is washed and bleached to make it white. The treated pulp is then fed into the paper making machine to produce a cultural grade of paper suitable for textbooks, exercise books and stationery. Newsprint is recycled in the same way. Factories involved in the recycling process are Madhupaper International Limited in Nairobi and Pan Paper Mills in Webuye, Kenya.

Recycling of Tyres and Tubes

These are mainly recycled to control the movements of vehicles in parking bays, for making traditional sandals and to retrieve threads which are used in repairing shoes. The tyre manufacturing companies e.g. Firestone, East Africa Ltd, recycles the old tyres as catalyst in the vulcanizing process for making new tyres.

Recycling of Bottles

Bottles are brought from households (I always sell my empty whisky, wine or gin bottles to a peddler who comes to my house to collect them). The bottles are cleaned and sold to factories which re-use them as packing materials e.g. the soft drinks companies and breweries. Broken bottles are also collected by peddlers who sell them to glass manufacturing companies e.g. the Central Glass Industry.

WASTE RECYCLING IN NAIROBI SLUMS

Activities of the Undugu Society

Plastics

Undugu Society is a non-governmental organisation in the field of children in especially difficult circumstances. The society operates in the areas of urban development and promotion of services to children in especially difficult circumstances.

Waste recycling has been a key component of Undugu Society's work since 1981 when it was introduced as part of the community Health Programme. Even before then, the collection and resale of work paper allowed the under-privileged boys to attend schools.

Undugu Society was approached in 1992 by communities to look into ways of recycling plastic which was blocking the drainage system in Kinyago and Kanuku villages within the Kitui Pumwani Integrated Development Programme.

Following a series of research and development activities, Undugu entered into an agreement with coca cola to use recycled plastic (using simple low-cost technology) for trimmings of the coca cola coolers.

The impact has been that of job creation and income generation for low in-come waste collectors and street children and a less plastic choked environment for the communities and the City of Nairobi at large. Other activities lined up for plastic recycling are building blocks, furniture, tiles and candle making mould.

Paper Recycling

In 1989, experiments were started at the community level on briquetting paper for fuel. Today at Dandora, the 807 member Jummiya Group are being trained to make fuel briquettes for sale. The Metalwork Production Unit, with support from the Appropriate Technology unit are in the process of improving the paper making machinery.

Collaborative Ventures

One of Undugu collaborative projects is the collection of waste paper by students of International School of Kenya, which is then given to the boys at the Undugu sites in Dandora, who in turn sell it to recycling companies.

UVUMBUZI CLUB

Uvumbuzi Club started the Waste Recycling Project in October 1992. The project was the club's first activity in the area of environmental lobbying and had the primary aim of providing a solution to the solid waste disposal problem in Nairobi as well as generating income for the residents of the communities in which it was active.

The project objectives were:

- To change the attitude of Nairobi resident from apathetic to responsible.
- Create awareness concerning the health hazards of uncollected waste and provide feasible options for recycling.
- Reduce partly disposed waste.
- Improve the quality of life of the poor by selling the products of recycling.

The Dandora area of Nairobi was chosen. Dandora is a low income, high density area where income from the project can meaningfully improve the lives of the residents. The project was run as a more sustainable solution to the Management of garbage in the area.

The project has a grassroot approach and aims at working with low income communities in increasing their awareness and educating them on responsible waste disposal and recycling. The club works with organised groups as it is far easier to implement the project through groups than through individuals. Since the groups already have some form of leadership, and in some cases other existing activities, it is far easier to mobilise them for training and other activities needed to enable them to implement the project. Some of the groups that have participated in the project include Kuku Women's Group, Googan Compost Group and the Korogocho Mbolea Women's Group.

Composting is used as the main recycling technology. The participants sort their garbage at source into the organic and inorganic components. The organic component is then composted while the inorganic part is easily disposed of in City Council Garbage dumps or burnt. Most of the compost currently produced is sold to individuals with small vegetable and flower gardens and plant nurseries.

The project has contributed substantially to group incomes and activities. Since its inception, it has become the biggest income earner for some of the participating groups such as the Korogocho Women's Group. The money had helped enhance group activities such as helping the Kuku Women's Group meet water bills incurred from the nursery it owns, and the Korogocho Mbolea Women's Group lend to individual members during emergencies. Considering that some of the women are poor, single or divorced and run single headed households this project is an important source of income.

SOME RECOMMENDATIONS

From the experience of the Kenyan situation I would recommend the following:

- Training of personnel in solid waste management
- Training in various aspects of microenterprise development such as composting for urban farming.
- Research to identify various components of refuse which can be Recycled and what can be made out of them.
- Public Education and awareness of the importance of separation of various refuse components.
- Sensitisation of government officials and municipal authorities on the need for support of people at all levels who are involved in solid waste management.

- Education of farmers on the need for organic fertilisers.
- Policy formulation on separation of various refuse components.
- Financial support to by donor organisations e.g. NGOs involved in promotion of microenterprise involvement of municipal solid waste management.

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Workshop on Micro-enterprises Involvement in Municipal Solid Waste Management In Low- Income Countries, Cairo, Egypto, October 14-18

Micro-enterprises as Instruments of Municipal Solid Waste Management In Chamanculo suburban area. A Pilot Project

By: Daúde Carimo
Farida Saifodine

October. 1996

1. Background History

The Urban Management in Mozambique cities is more difficult to be realized due, fundamentally to the coexistence side by side of traditional informal sector with rural characteristics and the urban sector modern and formal. All cities in the country suffer from insufficiences in collection dumping and treatment of solid wastes, with cares of Maputo and Beira being more notorius.

In general urban solid waste has its final destination at the open dumps in the periphery of the cities often with no respect for the localization basic criteria like low density population areas, deep aquifers, less permeable soils and erosion prone areas.

About half of the two million population of Maputo live in shanty towns around the main concrete city, with limited or no acess to municipal services. The Municipal Council of Maputo is embarking on a pilot project whereby employment is generated and poverty is alleviated through micro-enterprises some of which are concerned with collection and recycling of solid wastes, and converting them into useful products and services. Table 1 gives the particulars of the proposed micro-enterprises

Recycling of waste is highly benefecial and cost-effective for the following reasons:

- Cleaing up of the surroundings, and reducing potential environmental degradation through conservation (for instance when paper is recycled, it saves trees from being cut down);
- generation of employment.
- nobody would object to the garbage being collected, and hence the "input" material for waste cycling is virtually free;
- there is considerable saving of energy (for instance, recycling of aluminium cans need only 5% of the energy required to make them), and
- only simple skills are needed in most cases.

Micro-enterprises involved in waste recycling have to perform three kinds of activities:

- Collection and sorting of garbage;
- pre-processing the garbage, and production of useful products and services;

- marketing of products and services thus produced.

Some of the activities (e.g. making of inexpensive sandals from used rubber tyres) are relatively simple whereas some others, such as recycling of plastics, glass, metal objects, etc can only be undertaken after some training.

2. Objective(s) and beneficiaries:

The Chamanculo area covers 219 ha. and has a population of about 70.000 persons. A detailed survey has been made to determine the extent of poverty in the fours wards of Chamanculo (vide Table 2 summarising the data). The average per capita consupmtion per annum is estimated to be USD 93 (this would mean a poverty gap of 4, as per the World Bank criteria).

The number of people employed in the formal sector is minuscule.Unemployment or under-employment is the rule. There is presently no provision for garbage collection. As the people in Chamanculo are poor, the amount of recyclable garbage is limited. However, since Chamanculo is a suburb of Maputo, there is enormous scope for the colection and recycling of garbage from Maputo

Poverty is sought to be alleviated, and the employment generated through the efforts of the poor people themselves with the City Council of Maputo, Government of Mozambique, and donor agencies playing essentially a facillitating role.

3. Approach/Strategy

Value-adding micro-enterprises have been custom-designed on the basis of folowing considerations:

- preferences skills, gender distribution and physical situation of the families;
- capacity to generate employment (directly and down-stream), and alleviate poverty by improving the habitation, water supply, nutrition, energy, sanitation of the community;
- economic and ecological sustainability, and
- low-cost, simple technologies which can be initiated straightaway or with short lead time and simple training

The micro-enterprises are characterised by innovative technologies, informal credit, and non-traditional loan security arrangements (a la Grameen Bank in Bangladesh). They are expected to improve the productivity, health and quality of life of the

inhabitants. The greatest single non-quantifiable benefit is the profound impact it will have on the self-respect on the operator/owner of the micro-enterprise.

4. Institutional setup

The entrapreneurs will be identified, and the micro-enterprise will be managed by the City Council in cooperation with NGOs and Consultants. The project will be managed by an apex Project Management Commitee consisting of the folllowing:

- CCM: Director of Urban Services, City Council- Chairman:
- CON: Project Coordinator (Expatriate expert on Micro-eneterprises, representing the Consultants),
- NGO: Representative of the NGO:
- DON: Representative of the Donors

As the project involves a few thousand micro-enterprises, it is necessary to computerize the relative databases. Each micro-enterprise will have a file, which will carry the following kinds of information to facilitate monitoring and follow-up actions needed:

- criteria for the allocation of the micro-enterprise, and the socio-economic and biophysical situation of the family concerned,
- the nature of the inputs allocated to the micro-enterprises, and how and when they were made available to the entrapreneur
- monitoring the progress of the micro-enterprise, and payment of instalments.

Two kinds of management modalities (World bank nomenclature) are envisaged:

1. B.O.O (Build- Own -Operate) modality: under this management modality, the entrapreneurs (a family or grouping of families) will build, own and operate their own enterprises, as the skills needed are very simple. This management modality can conveniently be adopted for

- collection and sorting out of the relative component of the wastes
- processing of wastes such as making sandals from rubber tyres, and feeding organic matter to pigs, and

- marketing of the goods and services produced as a consequence of the enterprise.

2- B.O.T. (Build- Operate- Transfer) modality: several of the waste processing operations require not only skills, but also availability of space, electricity and water. Under this management modality, the City Council will arrange for these activities by obtaining the needed equipment, training of personnel, electricit and water connection. It is obviously covenient for a grouping of families which are concerned with a given waste (say, plastics) to be concerned with the processing of it.

5. Financing

The project seeks to bring into existence over 2000 micro-enterprises involving **seed** money of USD three million spread over three years, to cover 50,000 people. and achieve specific physical targets. The amount allocated for a given micro-enterprise covers the loan amount, training and management assistance.

The following financing scenario is envisaged: The City Council will seek from the donors/financial institutions the total amount of USD three million as cash loan/grant/technical assistance/gift of materials. The City Council will bring into existence appropriate administrative entities to identify the families to which a given micro-enterprise could be entrusted, and facilitate the laucning and servicing of the micro-enterprises.

Entrapreneur(s) will be individually responsible for the return of the loans graned to them. and until the loan is repaid. the equipament/materials will remain hypothecated to the entity created by the City Council for the purpose.

The loan for a family for a micro-enterprise is generally less than USD 400. Depending upon the investment needed. several families can join together to form a grouping. After an enterprise is finally transfered to the family(ies), the loan needs to be repaid at the rate of 2,5% pe month (2% towards the loan itself, plus o,5% towards maintenance and servicing of the input equipament). After 5 years (i.e. at the end of 60 monthly instalments), the equipament would become the property of the family (ies).

6. Technical aspects

The technical aspects of the micro-enterprises for waste management identified for Chamanculo are summarised as follows:

- Human excreta disposal through Zimbabwe-type, ventilated dry latrines: fabrication of concrete blocks for latrine cover, and soil blocks for construction;

- Paper: making of egg and fruit cartons, manufacture of asphalted roofing sheets, insulating material, and other paper products, etc.
- Metal: use of forge and small foundry to recycle iron and steel waste;
- Recycling of tin cans, for remelting as metal, or to make domestic products like mugs;
- Recycling of plastic waste: granulating, pelletising, extruding;
- Recycling of tyre rubber waste: to make shoes, mats, pads, cords, etc;
- Recycing of glass waste: to make floor and wall tiles, glass blowing,
- Use of coconut waste to make natural fibre-cement sheets;
- Use of organic waste to feed the pigs and other animals.

Table 1: Management systems, costs and procurement arrangements

Management system and Type and number of micro-enterprises	Amount(x 000 USD) # including loan amount, technical assistance and management expenditure	Procurement method
A. B-O-O Habitation (i) Soil- block fabrication (400) (ii) Roofing material fabrication (50) (iii) Carpentry (50)	 320 40 80	 Local or International competitive bidding Local shopping Local shoping
Sanitation (100 Micro-enterprises)	80	Local shopping
Jikos, fabrication and marketing (100) *	80	Local competitive biding
Manual maize mills* (200)	80	Local competitive bidding
Ducks (100) *	60	Local shopping
Sewing (50) *	40	Local competitive bidding
Beer-brewing (50) *	30	Local shopping
Vending (50) *	30	Local shopping
Hair-Styling (50) *	30	Local Shopping
B. B-O-T Water supply (50 tube-wells, involving 400 micro-enterprises)	320	Local or International competitive bidding
Waste recycling (50 units, involving 150 micro-enterprises)	120	International or local competitive bidding
C. B-O-O-T		
Family planning and social services *	20	Local shopping
School and Technical training	200	Local shopping

Paving of roads (50 units, involving 400 micro-enterprises)	1000	Local competitive bidding
Construction of Community Hall (50 units. involving 250 micro-enterprises)	300	Local competitive bidding
Refund of PPF	75	Consultancy services
Total	2905	

* Gender-specific micro-enterprises
soil blocks and floor tiles can be used for the construction of houses and buildings of various types. latrines. etc. Soil lime mixtures usable as sub-base roads.

The budget for a micro-enterprise includes (i) the loan to cover the cost of the equipament and materials initially needed to get started. and to market the product or service. (ii) training, (iii) technical assistance and (iv) management expenditure

Table 2 : Poverty Assessment in Chamanculo suburb

	Ward- A	Ward- B	Ward- C	Ward- D	Average
Gender					
Males(%)	39	43	39	51	44
Females (5%)	61	57	61	49	56
Size of family (no)	7.3	8.3	7.8	8.3	7.9
No of children per family					
Boys	1.0	0.9	0.8	1.9	1.1 (47%)
Girls	1.8	1.5	0.9	0.9	1.3 (53%)
Total	2.8	2.4	1.7	2.7	2.4
Literacy					
Male (%)	84	81	95	70	81
Female (%)	64	79	86	77	76
General (%)	72	80	89	73	78
No of School-going adolesc. & children per family	2.3	2.3	1.5	1.5	1 9
Ownership of habitation					
Self (%)	60	60	67	67	63
APIE (%)	40	40	33	33	37
Av. APIE Annual rental	MT 1940 (US C 20)	MT 3504 (US C 35)	MT 3420 (US C 34)	MT 2952 (US C 30)	MT 2954 (US C 30)
Habitat. Type					
Met. sh (%)	60	53	58	53	56
Reed hut (%)	13	33	17	20	21
Others (%)	27	13	25	27	23
Roof Height					
> 2.5 m (%)	40	47	42	40	42
2.0- 2.5 m	47	47	58	33	46
<2.0 m	13	06	-	27	12
Living space per capita (m^2)	6.1	9.1	7 2	5.1	6.9
Open space per capita (m^2)	6.4	9.7	15.6	10.1	10.2
Water per capita (L/D)	26	32	31	23	29

Sanitation pour-flush toilets (%)	07	07	-	33	12
Dry latrin (%)	93	93	100	67	88
Cleanning paper (%)	93	43	83	100	78
paper and water (%)	07	57	17	0	22
Energy for cooking	93	93	92	60	84
Charcoal (%)	0	0	08	20	07
Wood (%)	0	07	0	20	07
Ch & Wo (%)	07	0	0	0	02
Electric (%)					
Energy for lighting					
Kerosene (%)	60	67	75	67	67
Electric. (%)	40	33	25	33	33
Family planning					
Use (%)	20	33	0	13	18
Not use (%)	80	67	100	87	82
Poverty grading					
A (%)	27	13	25	27	22
B (%)	40	40	50	27	39
C (%)	33	47	25	46	39