
6. LOCAL MANAGEMENT OF WASTE SERVICES.

Local management of waste services consists of a long term organisational system set up by the local authority with the purpose of providing daily urban solid waste services of an appropriate quality at a minimum cost. It implies setting up the proceedings; administration and accountability; budgeting; financing; management of personal means, equipment and facilities; deciding between public or private management; monitoring and quality control; taking into account suggestions and complaints from the public; etc.

6.1. MUNICIPAL MANAGEMENT STRATEGIES.

Local authorities and the institutions responsible for solid waste management must pay special attention to modern management approaches based on adequate information systems, decentralised responsibility, interdisciplinary interaction and co-operation among functional levels. With regard to operational planning, appropriate management methods and skills include data collection techniques, analysis of waste composition, waste generation projection and scenario techniques, formulation of equipment specifications, procurement procedures and management information systems for effective monitoring, evaluation and planning revision.

Governments may clarify the goals and priorities of urban waste management and environmental protection and formulate appropriate legislation, by-laws, regulations and standards, and the integration of solid waste management

into the general legal framework for public health and environmental protection. This framework should provide local authorities with the instruments and competence necessary to develop solid waste management system.

Development of municipal solid waste management systems implies that specific objectives are formulated and appropriate measures taken regarding a range of strategic aspects, within the national regulatory framework. The following are the strategic aims that should be considered when implementing a system:

Political Aspects.

The main political objectives are:

- To determine society's goals and priorities for waste management and mobilise public support for these goals;
- to achieve a clear definition of jurisdictional arrangements for waste management tasks among the concerned government bodies and private sector actors, as well as the roles, rights and responsibilities of service users; and
- to elaborate an appropriate legal and regulatory framework and body of instruments which enable responsible authorities to achieve and sustain their defined goals.

In pursuit of these objectives, policy makers will need to deal with numerous issues:

- Setting up trade-offs between the expansion of collection service as opposed to improved, environmentally sound disposal
 - Define a minimum acceptable level of collection and/or disposal service as a practical basis for determining necessary trade-offs
 - The way in which authorities deal with the service needs of irregularly settled residential areas
 - How much weight is to be given to other instruments of waste management: regulations and control, economic incentives, and non-economic motivations
 - Steps to be taken to incorporate financial and economic analysis into strategic planning functions
 - How much emphasis is to be placed on awareness building, demonstration of effects and/or project-linked policy dialogue
 - In the long term, priority is to be given to waste minimisation and resource recovery in relation to waste treatment and disposal.
- To establish effective institutional arrangements for waste management at the municipal level,
 - To introduce appropriate methods and procedures that enable efficient waste management services which meet the needs of the entire population,
 - To organise the structure of municipal institutions and their staff so that they are able to provide the demanded waste management services,
 - To introduce competition and increased efficiency to solid waste management through the involvement of private sector (formal and informal) enterprises, and
 - To lower costs and improve the effectiveness of waste management through the participation of communities and service users in local waste management.

Some of the main issues to consider at the institutional level are:

- Distribution of municipal solid waste management functions, responsibilities and powers
- Possibilities for local governments to develop the responsibility and authority for planning and developing waste management when these institutions lack the necessary experience and capacity
- Institutional arrangements and approaches that will foster more demand-oriented solid waste services

Institutional aspects.

The main objectives at the institutional level are:

- To distribute functions and ensure a corresponding decentralisation of power and authority,

- Introduction of a life-cycle approach to waste management among institutions whose mandate is usually limited to the functions of waste collection and disposal
- Decide which waste management functions should be contracted out to private sector enterprises

Social aspects.

The principal social aspects to be taken into account are:

- To orient municipal waste management towards the real service needs and demands of the population;
- To encourage patterns of waste handling and disposal which contribute to the effectiveness and efficiency of municipal waste services;
- To raise public awareness of solid waste management problems and priorities and promote an effective economic demand (willingness to pay) for waste collection and disposal service; and
- To protect the health of formal and informal waste workers, improve their socio-economic security and alleviate their social marginalisation.

Questions that arise regarding the social aspects of waste management include:

- The Possibility of adapting municipal waste management systems to the specific demands and requirements of residential populations, particularly, those of low-income households

- Determination of the potential role of the community in local waste management, and the types of input required for promoting community-based waste management
- Dealing with the problem of equity of service access in areas where the population cannot afford paying the full cost of waste management
- Forms of collaboration between informal sector waste workers and municipal authorities to improve the productivity and working conditions of informal sector workers
- And on the long term, instruments of awareness building and incentives to mobilise everyone's contribution to waste minimisation and recovery

Financial aspects.

The main financial objectives are:

- To establish practical systems of budgeting and cost accounting for municipal solid waste management which yield transparency with regard to the real costs of waste management and provide a basis for planning and improving operational efficiency;
- to mobilise the resources required for investment in waste management facilities and equipment;
- to achieve cost-oriented revenues for waste management operations which are based, as far as possible, on user charges, and to ensure that the collected revenues are applied to the intended purpose of waste management; and

- to reduce the costs and improve the efficiency of waste management operations.

Critical financial issues include:

- The use of appropriate cost accounting systems to promote transparency in spite of the possible reluctance of municipal officials
- The way in which incentives for cost reduction and increased operational efficiency will be integrated into municipal waste management operations
- Tasks areas and conditions in which private enterprises contribute most effectively to cost reduction and service effectiveness
- Choice of the system of municipal solid waste management revenue collection that will produce adequate cost recovery while, at the same time, creating real incentives for cost reduction and effectiveness

Economic aspects.

The main economic objectives are:

- To promote the productivity and development of the urban economy through the efficient provision of waste collection and disposal services
- To ensure the overall economic effectiveness of waste management services through the adequate evaluation of economic costs and benefits
- To generate jobs in the field of waste management

- And on the long run: to promote waste minimisation, material conservation, waste recovery and reuse – and the long-term efficiency of the economy – through the practical application of the “polluter (and user) pays” principle

Principal economic issues to consider are:

- The appropriate balance between a low-cost waste management service and optimal environmental protection
- The role of economic incentives in promoting material efficiency
- Practical steps to internalise the externalised costs of waste management and/or pollution
- Use of public subsidies to promote environmentally safe waste disposal in landfills
- Improvements needed in municipal solid waste management procedures, processes and capacities in order to facilitate public-private partnerships for waste management and improve the linkage between formal and informal private sector activities

Technical aspects.

The main technical objectives are:

- To introduce coherent technical systems adapted to the requirements and operations of all concerned actors including: service users, informal sector workers, private enterprises and public sector waste operations;
- to ensure the environmentally sound collection, recycling and disposal of all generated waste; and
- to achieve optimal life-cycle cost-effectiveness of solid waste management equipment and facilities, with due consideration of operation and maintenance requirements, operation costs and dependability.

Technical issues to be outlined are:

- Operational integration and coherence of technical systems to be achieved in spite of the diversity of local collection needs, actors and decision makers, and incremental development of facilities and equipment
- Estimation of reliable life-cycle costs of alternative equipment and facilities which take into account operating costs, maintenance requirements, down time, etc.
- System characteristics required to facilitate private and community involvement in waste management
- Technical equipment and procedures required for optimal separation of hazardous wastes at the source
- Determination of the appropriate landfill design

6.2. ORGANISING LOCAL MANAGEMENT.

Management of waste services includes having an economic, technical and social perspective.

Waste management needs to implement a quality control program (complaints hotlines, information systems, etc), with which system performance can be monitored. The system needs to be adapted to the city changes. It cannot be an annual monitoring system only, but must also cover a minimum of 5 years of operation.

Solid waste management is a service for which local government is normally responsible. This service is non-exclusive, meaning that once it is provided for some portion of a community it benefits overall public welfare, not only the resident that specifically receives the service. Any resident can enjoy the benefit of the service without diminishing the benefit of anyone else. Accordingly, it is not feasible to exclude from the service those who do not pay, because public cleanliness and the safe disposal of waste are essential to public health and environmental protection.

These qualities place responsibility for solid waste management squarely within the public domain as a public good. Because solid waste management is an urban issue, the level of government responsible is typically the local or metropolitan government. This does not, however, mean that local government has to accomplish the task of solid waste service delivery entirely with its own staff and equipment, this is where the role of the private sector comes into play.

6.3. PUBLIC OR PRIVATE MANAGEMENT?

There is a simplistic argument that public goods should be paid for by public funds and delivered by public agencies, while private goods should be paid for by private individuals (through users charges) and delivered by the private sector. Issues of private sector participation in solid waste management services should not be confused with those of cost recovery; therefore, there are sometimes reasons for involving the private sector in solid waste management activities, regardless of whether these activities are public or private goods.

Whether to involve the private sector in solid waste management services or not is an issue separate from cost recovery. Instead, the question of whether to involve the private sector is to be examined from the perspective of service coverage, efficiency, reliability, cost, economies of scale, equability, and accountability.

- Efficiency.

Within the local governments of developing countries, expenditure for municipal solid waste services is usually from 20 to 50 % of total municipal expenditure. Even at such high level of expenditure, the level of solid waste service is low, and only 50 to 70 % of solid waste is collected. In response to that, the main argument for private sector participation is that the private sector might be more efficient than the public one in providing services, deriving from management flexibility, freedom of action, greater financial discipline, and accountability to market forces.

However, public enterprises may have the same advantages as private ones if the legal framework regulating the system is appropriate. Moreover, even when there are many private companies, efficiency will not be optimised if they are in collusion over prices or good practices.

- Public accountability.

The municipal solid waste service normally involves labour-intensive street-sweeping and waste collection techniques. Because labour costs are relatively low, labour intensive techniques are appropriate.

Local governments have often provided patronage through jobs in the municipal solid waste agency. As a result, solid waste employment rolls are bulging with extra employees, whose productivity may be low. In addition to the problem of patronage, technological changes have led to labour redundancy. As urban areas become densely populated and travel time to disposal sites increases, local governments tend to change to labour-intensive systems, which use compaction trucks. Few cities, however, take any parallel steps towards reducing labour-redundancy in their refuse collection work force.

Turning solid waste collection over to the private sectors is a way for local governments to avoid accountability, and it also transfers civil responsibility to the private companies. However, if an appropriate legal frame has been set up, public and private management have the same advantages.

- Management context.

One of the most frequently cited advantages of the private sector over the government is its management flexibil-

ity. Private sector management can more easily in fire personnel for non-performance and provide upward mobility for workers with good performance. Also, the private sector is not constrained by government hours and overtime problems.

Studies on optimal municipal solid waste management have shown that cost is reduced in cities where the span of management between the manager or supervisor and the worker is appropriate. Ideally, to achieve low-cost services, the span of management for solid waste collection systems should be about one supervisor for every four solid waste collection vehicle crews, a much higher or much lower span would lead to unnecessary and high costs. In developing countries, most municipal solid waste agencies have a span of management of about one supervisor to every twenty to fifty solid waste collection crews and often the salaries for supervisory positions are not high, which makes it difficult to maintain qualified supervisors. If the private sector has a greater ability to implement more appropriate management practices than government, there is an opportunity for cost reduction through private sector participation.

Staffing ratios are important in maintenance as well as supervision. Maintenance and repair service is one area where the private sector has typically been able to perform very effectively. Vehicles used in private sector collection fleets are seldom down for repair service for more than half a day.

Private sector participation in solid waste services is not the only way to introduce management flexibility into the system. This goal can be effectively accomplished by commercialising the solid waste management entity.

- Financing

In developing countries, cities are hard pressed to obtain enough capital to finance their solid waste systems and are burdened with political constraints limiting their ability to generate revenues. In response, private sector participation is viewed as one way to secure investment finance from private companies for solid waste equipment and facilities in return for contracts to provide services. In many developing countries, the private sector has expressed an unwillingness to provide solid waste services under contract with local governments. The private sector questions the ability of local governments in developing countries to reliably meet their payment obligations to suppliers and contractors.

In countries where the private sector is unwilling to work with the government under contract, this sector is sometimes willing to work independently (through zone monopoly or open competition) and to collect its own user charges. Some problems are:

- How can the government deal with those generators of refuses that are not willing to enter into individual agreements with private haulers and pay for service?
- How can the government regulate the tariffs charged?
- How can the government limit collusion and price setting?

In countries in which the private sector is willing to invest in solid waste management, the apparent and hidden costs of private versus government service need to be carefully analysed. These need to be put into comparable and equitable terms, showing any hid-

den subsidies and costs that might exist in either service.

- Legislation.

Laws significantly influence the private sector's decision of whether to become involved in the provision of municipal solid waste management services. Reputable private companies want a field in which they can compete equitably, fairly and with minimal risk.

Few developing countries have domestic, private companies with expertise in municipal solid waste management. For foreign firms to take an interest in participating in municipal solid waste services in such a country, an attractive environment for foreign investment needs to be created. This would necessarily include the local recognition of the value of the expertise that foreign firms can contribute.

It has to be considered that the law in many developing countries has several limitations that do not protect the foreign partner against liability due to the non-performance of the local partner.

- Institutional context.

Privatising some aspects of municipal solid waste service delivery does not in any way take away the need for local governments to be fully responsible for solid waste management services. Local government needs to have adequate autonomy to enter into multiyear agreements that achieve economies of scale, as well as efficiency.

For some of these services to be effectively privatised, local governments would need to be strengthened. Only a governmental organisation with a competent professional staff and an adequately designated authority with commensurate responsibility would be

fully able to develop, negotiate, manage, monitor, and enforce a competent contract instrument.

- Cost.

At first glance, a low cost for service delivery by the private sector will be lower than the cost for local government service. After the cost for local government to monitor the performance of the private sector is added, a low cost for service delivery by the private sector would be still lower than the cost of local government service.

Sometimes there is no clear delineation between recurrent and capital expenditures. It is recommended to attempt to aggregate municipal solid waste management costs incurred by all the various agencies that participate in the system, and to track the depreciation, debt service, personnel benefits, land acquisition, and human resettlement costs within the solid waste management accounting system. The result is an accurate estimation of the municipal solid waste system costs.

6.4. CREATING AN ADMINISTRATIVE UNIT.

In a solid waste management system, it is necessary to create a municipal unit formed by experienced managers whose responsibility should be waste management and street cleansing. This management can be carried out by a private or public system.

In case a private system is chosen, the function of the administrative unit should be the preparation of the Terms of Reference and contract, the management of the tendering and contracting process, and once the enterprise has been chosen and operations have

begun, the overall direction of the waste service as a public responsibility, the monitoring of service delivery quality and the control of private contractor activities.

If a public system is the option selected, the administrative unit should be in charge of similar functions as in the private delivery case, and the service delivery should be done through a public agency. The relation between both may be regulated with a contract-programme between the municipality and the public agency.

6.5. PRIVATE MANAGEMENT METHODS.

Contracting.

Among the various options for private sector participation, contracting for solid waste services holds the greatest promise to developing countries as a way of lowering the costs. Even when only a small portion of the city is served under private contract, significant efficiencies may be achieved through the effectiveness of market principles.

In cities where there is no public monopoly, but where the public sector competes with the private, there is no evidence that contracting costs less than public service. In fact, data from several cities suggests that competition encourages the public sector to significantly improve its efficiency and lower costs, as discussed below.

In developing countries, it is difficult for the public service to implement the changes necessary to match the efficiency of the private sector. Nevertheless, it has been shown that when the public service agency is placed in competition with private contractors, and is

allowed to make the necessary adjustments to become competitive, the public agency has been able to attain costs comparable to those of the contractor. For this reason, a good arrangement may be a mix of public and private service (for example, contracting for the collection of solid waste from some zones of the city, while retaining public service for the remaining zones).

Contracting is a viable means of securing service so long as it is possible to adequately describe outputs anticipated from the contract. Thus, contracting is well-suited for discreet activities within the solid waste system, such as the operation of a transfer station or a sanitary landfill.

In many countries, local governments have successfully contracted their billing and collection of solid waste user fees to regional water and electric utilities.

Contracting to lease equipment, rather than to obtain service, is one way of obtaining equipment when the opportunity to borrow money for a capital investment is limited. In developing countries, the available equipment for solid waste service leasing has typically been fully depreciated during private sector use in construction or haulage. Most leasing involves open tipper trucks or bulldozers that are readily available from construction contractors.

To foster competition, a key factor is a good tender document: one that recognises the capabilities and limitations of the local private sector and enables it to bid competitively toward providing an acceptable standard of service.

It would be a mistake to assume that in the absence of well-defined contract performance measures, enforceable contract sanctions, vigilant contract monitoring, and cost accountability, private contractors would deliver a lower cost than that of the public service. The monitoring of the performance of the private sector is very important. A good contract clearly defines measurable outputs of service required of the contractor and thus enables performance monitoring. A good contract also clearly defines the sanctions that are to be imposed in case of non-performance.

For low cost to be achieved by contracting, it is generally agreed that the contract should have a long enough duration to enable the private sector to depreciate capital expenditures for appropriate equipment. Many developing countries have limits on whether local government can contract beyond its current fiscal year and commit funds beyond its current budget allocation.

Franchise.

Local government normally has the authority to give exclusive franchise to a qualified private firm for the right and responsibility to provide service to customers within a zone. In return for such an exclusive franchise, the private firm pays a license fee to the government. The firm subsequently charges their customers appropriate fees to cover the cost of the service.

Ceilings fixed by municipal ordinance may regulate the fees charged. Local government retains the responsibility of monitoring the performance of private firms having franchise agreements, and regulating user charges. It also retains the right to renew or revoke licenses in accordance with established criteria.

For developing countries, franchise is applicable only in the areas of the city wherein all of the households and establishments can be readily educated to be concerned about public cleanliness. Only in such areas would it be possible for the private company holding the franchise to obtain full co-operation and achieve cost recovery.

Concession.

Under concession arrangements, the private sector finances and owns solid waste management facilities and equipment (for a period of time sufficient to depreciate investments and provide a reasonable return to the equity investors). In return, the government typically grants and enables access to a specific quantity and quality of solid waste and provides some form of tipping fee. In cases in which the local government is the only purchaser of the product or output service of the concession, the local government will normally be required to enter into a binding long term agreement to purchase on a "take or pay" basis. The concession agreement might specify performance standards, methods of judging performance, penalties for delay or non-performance, risk assignment, insurance requirements, dispute resolution, and standards for worker safety and health protection and for environmental protection.

Open competition.

In open competition, each household and commercial establishment hires a private collection firm and pays the solid waste removal fee that the firm charges. Generally, this form of priva-

tising solid waste management systems leads to substantially higher costs than those incurred by local government contracting with private firms, and is often more costly than public service.

CASE EXAMPLES.

New Solid Waste Management System in Alexandria

<http://www.medcities.org/docs/2Technical%20Review%202.pdf>

The Governorate of Alexandria has decided to engage an international company to carry out collection, hauling, recycling and landfilling according to international standards. The company will be responsible for providing equipment, upgrading of already existing facilities, training and awareness and will build a secure landfill. The service fees will be collected from beneficiaries (residential houses, commercial and industrial activities, medical activities, hotels), based on the monthly Electrical bill. A 2% charge on street and square cleaning will still be charged.

After tendering and evaluation, it was decided that ONYX Company would carry out the job for Alexandria city.

Responsibilities of ONYX Company are:

- Daily collection, hauling and landfilling of all types of solid waste
- Daily cleaning and sweeping of streets and roads
- Beach and park cleaning
- Collection, treatment and disposal of medical waste
- Upgrading and development of compost plants
- Building and operation of a secure landfill
- Treatment and/or rehabilitation of already existing dump sites
- Employment of at least 50% of the already existing manpower according to Egyptian regulations
- Upgrading the existing fleet of trucks according to Governorate regulations
- Insurance of all installations, equipment and facilities against fire and all other risks
- Providing monthly reports and annual reports with a plan of action for the next year including suggestions for efficiency improvement
- Presenting the structure of the project management and a plan of action for the phases of the project taking into consideration population growth, summer and tourism seasons
- Presenting an action plan for rehabilitation of already existing dumpsites
- Finalising all commissioning activities in less than one year
- Preparation of a training programme for administrative staff, technicians and workers at all levels
- Establishment of a communication and 24 hour information centre for feedback and complaints
- Returning installations and facilities to the Governorate in a reasonable operating condition after the end of the contract.

The project covers the entire city including urban and rural areas, according to maps and databases of the normal operation of Alexandria Electricity Company.

The role of the Alexandria Governorate will be mainly:

- Technical follow-up and field surveys
- Follow up of the information centre to ensure 24 hour operation
- Receive reports according to the present schedule
- Study reports to allow for improvements and upgrade efficiency
- Activation of the cost system
- Monitoring and assessment of company services according to the contract

Private Sector Participation in Solid Waste Management of Aleppo, Syria

<http://www.unep.or.jp/ietc/Publications/TechPublications/TechPub-17/syria1.asp>

Aleppo (Halab in Arabic), is one the oldest continuously inhabited cities in the world and the second largest city in Syria. Aleppo is a major centre of agriculture, trade and industry and has a population of 1.9 million inhabitants, with a growth rate of about 3.8% per annum.

This demographic situation makes providing services, in general, and cleanliness services, in particular, a difficult problem. Other contributing factors to this problem are:

- The spread of the old city over a large area with very narrow lanes. This makes providing cleanliness services very difficult because it can be only done manually by workers.
- The mingling of residential, commercial, and small-scale and medium-scale industrial areas. This results in large quantities of mixed solid waste.
- Close social ties among Alepenes. Parties and other social activities go on until late hours at night, and the garbage generated thereby is usually left uncollected till the following day.
- High consumption of meat, fresh vegetables and fruits. Such food stuffs produce large quantities of organic waste.

Aleppo has decided to involve the private sector in solid waste management due to:

- Lack of available manpower in the Department of Cleanliness because of low pay, the availability of ready cash and improvement in the construction industry and social attitudes (in urban areas, cleanliness work has become socially unacceptable).
- Increases in the costs of running some solid waste disposal vehicles. These vehicles were owned and operated by the City Council. In 1993 and 1994, it was observed that their operation costs soared. Such costs and the poor degree of readiness of these vehicles resulted in the disruption of waste container emptying operations. Contracting the private sector was a practical way out.
- Unplanned city expansion and the growth of illegal settlement areas. Lacking proper and planned roads, they are very difficult to serve by the public sector considering its red tape and slow response. This makes it necessary to serve them by methods and means the private sector can provide more easily and effectively.

The Regulatory Framework of PSP in Urban Services in Aleppo includes the following measures, according to the Syrian Law of Contracts:

- The preparation of a study, which identifies the work concerned, the need for it, and the inability of the council staff to do it.
- The preparation by the relevant department of a dossier containing the study and what the private sector should do, a price analysis, and a complete book of terms.
- Making the dossier known to the private sector, through the press, on the Council notice board, or by direct contact.
- Approval of the Council Chair and then of the Executive Bureau. If the contract is worth between half a million and five million Syrian pounds, it is sent for the approval of the Council of State and to the Ministry of Local Administration. If it is worth more than five million pounds, it is sent to the Economic Committee of the Cabinet.

The Project of Waste Management in The Two Governorates of Khan Younis and Deir El Balah (Palestine): Implemented by The Solid Waste Management Council in Collaboration with The German Agency For Technical Co-operation (GTZ).

<http://www.unep.or.jp/ietc/Publications/TechPublications/TechPub-17/palestine1.asp>

The solid waste management project including 11 municipalities (300,000 citizens) in the two governorates of Khan Younis and Deir el Balah started in 1994. The main problem at that time was how to achieve the general aim of the project in every municipality in the governorates, taking into consideration the financial limits of the project, and the fact that some municipalities had a population below 3000 citizens while others reached 90,000 citizens.

The idea of privatising cleaning services was unknown and impractical because the standards, principles and costs of such services were unknown at that time. In effect, the regional solution was adopted, i. e. enshrining the eleven municipalities under one specialised institution (common services council). The following steps were designed to achieve the goal of the project:

- Establishing a common or regional service council specialised in solid waste management for the municipalities.
- Providing the service of waste collection regularly and efficiently for at least 90% of the population within the boundaries of the projects.
- Pursuing steps for solid waste disposal that preserved the environment, closing non-hygienic open dumps and erecting one central dumpsite with environmentally accepted standards.
- Adopting an effective administrative system to manage solid waste within an institution that functioned on the basis of cost recovery to guarantee continuity in providing the services.

The Council for Solid Waste Management in the governorates of Khan Younis and Deir el Balah was established in 1995 in collaboration with the German Agency for Technical Co-operation (GTZ), as a governmental company in charge of implementing technical projects within the German governmental external aid.

The role of GTZ was to provide the infrastructure of the project such as the garages, the waste dumps, the machinery and the technical support. The role of the Council (the Owner of the project) was to provide the working force cadre and the land, as well as implement the project and pay the full costs of operation. The heads of the eleven municipalities were members of this council.

The Palestinian ministry of local administration has approved and endorsed the council as an independent institution that works on a commercial non-profit basis with a special system unlike that of other government institutions, and endorsed its ownership by the member municipalities. The reference of the council was the Ministry of Local Administration.

The Council for Solid Waste Management carries out the secondary waste collection process (by machines), namely, emptying garbage containers and transferring garbage to the central waste dump. Those services are enjoyed by more than 240,000 citizens in 11 areas, villages and cities. As for the street sweeping and door to door garbage collection, i.e. primary collection; it is the responsibility of the local municipality.

The Council for Solid Waste Management adopts a certain system in proving its financial dealings (cost recovery) including the value of depreciation of all assets and taxes, just like any other private company, excluding the value of the dumpsite construction. Member municipalities are accounted for in accordance to their monthly quantity of collected waste. For every fiscal year, the surplus or the deficit is distributed to all the members on the basis of their quantities of waste. An independent auditor verifies the budget of the council.

The member municipalities pay their contributions for the operation of the project from their own finances through imposing cleaning fees and taxes on the citizens. They do not receive financial aid from the central government to cover any operational cost, but they have the right to attain governmental grants directly or through donor states to cover infrastructure projects only.

This was also applied to the council for solid waste management due to the fact that it is owned by member municipalities, although the system of the council is different from governmental institutions and more like the nongovernmental sector. That was one of the advantages that enabled the council to attain governmental grants through donor states. Governmental grants are classified as a regular income in a period in which certain assignments are supposed to be fulfilled.

The council is owned by the member municipalities and is considered one of the assets of those municipalities. The council took the responsibility of collecting and disposing of the wastes, relieving the municipalities from this responsibility. There is great coordination between the council and the cleanliness departments in municipalities in the primary collection processes undertaken by the municipality and the secondary collec-

tion process undertaken by the council in order to ensure integration and harmony between the two processes. There is also coordination in financial matters with every municipality in terms of assisting the municipalities to impose the proper fees and taxes that suit the actual costs of the service in a way that guarantees enough revenues to cover the contributions of the municipalities to the council.

Among the advantages of the council is that it is the only body responsible for the final waste collection in its domain, including transferring the waste to the right dump place. Hence, the random dumping of waste in open spaces no longer exists, and this, in itself, is a target, in order to preserve the environment and public health. The council also plays an important role in setting standards for the provided services and their actual costs. It also helps in setting the suitable environmental legislation.

Community Participation in the Management of the Urban Environment. Senegal.

<http://www.vcn.bc.ca/citizens-handbook/unesco/most/africa6.html>

In West Africa today, the urban population is growing at a rate of about 5-6%. More than 70% of the urban areas on this continent are completely excluded from the urban public service network of drinking water distribution, liquid waste drainage or household refuse collection, as a result of a lack of means at municipality or state level. In the commune of Rufisque, nine quartiers (neighbourhoods) are involved in the programme.

These neighbourhoods have a concentration of 51,000 inhabitants, divided up among 5,225 households, i.e. 45% of the commune's population; 30% of this population is illiterate. Each inhabitant produces around 0.70 kg of waste per day; total production for the nine neighbourhoods is 35 tonnes per day, and waste water amounts to 1,800 cubic meters per day. Statistics reveal that 75% of patients treated at the Diokoul community clinic suffer from diarrhoea, dysentery or dermatosis and belong mainly to young age groups. Within the scope of our programme, some actions increasingly call for contracts between grassroots groupings, municipalities and other competent institutions which generally claim territorial rights or demand that all local initiatives be harmonised. Early collection experiences in the poorer neighbourhoods are gaining ground across the town.

It is Enda who runs the programme. It ensures practical training for all those involved in the programme, including members of community groups and associations, and cart drivers. Management committees composed of mandated community representatives (youth, women and the elderly) and municipal technical and health services have been established to ensure continuous assessment, follow-up and planning of actions.

The municipality is involved in different actions, and is represented at the meetings of each continuous assessment committee. It approves the establishment of the routes for the early collection of solid waste in the neighbourhoods involved in the programme. The committee is based in the relevant district health centre. It signs the approved contracts with those requiring private refuse collection. A contract is signed with a cart driver, who is supplied with a horse-drawn cart for which he is responsible. The cart driver ensures door-to-door refuse collection on a determined route. The

contract only requires two hours of early collection from the cart drivers and such a link between employment and environment should not distort the cart drivers' vocation as road hauliers.

Around 450 households have been provided with private sanitation infrastructure, of which nearly 200 are linked to water treatment plants through a narrow drainage system. Up to 65% of demand has been met, which represents 15% of requirements. The population co-finances this equipment at a rate of about 70%. On the long run, the costs will be entirely covered by the beneficiaries. Cost recovery is ensured by the management committee, which countersigns the contracts for the beneficiaries of the sanitation infrastructures. The costs recovered by the programme are invested into a community revolving fund (savings account), which will allow other inhabitants requesting such infrastructures to benefit from the project.

The development of private sanitation has enabled us to confirm the ability of the neighbourhood representatives on the continuous assessment committee to administer the supply of work created by the construction sites. Youths from the neighbourhood have been trained by the programme and organised into several micro-enterprises working in enhancing the value of refuse (recycling, compost and urban agriculture).

The existence of a frame of reference at a local level - Enda TM / Local Authorities / Health Committee - allows for the harmonisation of the various initiatives with the local urban management policies.

The main impacts of the PADE (Diokoul and Surroundings Sanitation Programme) are economic (job creation, increase in revenues); social (lightening womens' workload, improvement of living conditions, home economics and especially social status of participants); environmental and sanitary (fight against the spread of faecal hazards, domestic refuse and numerous illnesses); and communal (reinforcement of independence of the community and citizenship of its inhabitants).

The most visible effect on urban policy is to illustrate the feasibility of inhabitants taking direct charge of their own waste collection and recycling, and the construction of private sanitation infrastructure within their community. Also, the municipal authorities have recognised the validity of this alternative solution, which is particularly well-suited to the layout of poor neighbourhoods. They have accepted the need to provide incentives by exempting the collection carts from municipal taxes. The treatment of liquid waste allows the spread of a new waste management policy, which will promote a new enhanced value resource.

Results:

- 4000 meters of narrow sewerage system
- 450 households benefit from private sanitation
- 2 water and waste treatment plants built
- 3000 households benefit from door-to-door waste collection
- 90 cubic meters of water recycled daily
- 3 tons of refuse recycled daily
- 70 full-time jobs created over 4 years
- 50 people trained in recycling
- US\$ 40000 in funds mobilised within the community
- 40 people participate in regional exchanges of experiences
- 1930 participants in the programme management out of 2316 are women
- 50 programme decision-makers out of 90 are women
- 33% reduction in illnesses related to the environment over 4 years
- 1.8% increase in household income over 4 years
- 86.2% decrease in annual facilities maintenance expenditure over 4 years
- 50% reduction in costs of private sanitation infrastructure over 4 years

RELATED WEB SITES.

El Estudio, Análisis y propuestas para el fortalecimiento de los programas de gestión público-privada en el manejo de los desechos sólidos y el saneamiento ambiental existentes en el Área Metropolitana de San Salvador. SEMA – EMS. Secretariado de Manejo del Medio . Ambiente para América Latina y el Caribe. Marzo 2001

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Carl R. Bartone. Course on Urban and City Management. 2002

<http://www.worldbank.org/wbi/urbancitymgt/toronto/assets/t-bartone-mod08.ppt>

Pilot Project on Solid Waste. Management in Khulna City:

Community Organisation and Management

http://www.wsp.org/pdfs/sa_pilot_khulna.pdf

Private Sector Participation Municipal Solid Waste Services in Developing Countries.
Sandra Cointreau-Levine. UNDP, UNCHS, World Bank. 1994

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