

CHAPTER 5 PRIVATIZATION

5.1 Privatization Trend

Two urban communes is Casablanca, i.e. Hay Hassani and Ain Sebaa are arranging to use contractors for waste collection. This is the first case of the use of a contractor for this type of service in Morocco. Therefore, the experience of Ain Sebaa will be useful for other interested communes.

Privatization of waste collection/transport and street sweeping services is very common in many cities of the world. Cities using contractors for waste treatment (incineration) and disposal are also increasing in number. It is the policy of the Moroccan government to encourage the privatization of SWM services. It is now time for the Moroccan urban communes and communities to seriously consider the possibility of the privatization of SWM services.

5.2 Efficiency - What Matters for Privatization

5.2.1 Unit Cost-Efficiency Indicator

Many cities in the world use SWM contractors because their service has proved to be more efficient than the service directly provided by the cities. Generally, the costs of using contractors for waste collection and street sweeping service are typically about 30 % less than the cost of the cities' direct services.

Many Moroccan urban communes think that the use of contractors for waste collection is not feasible because it is more costly. An urban commune should compare the cost of the service between the commune and a contractor on the same conditions, and ascertain cost differences. The best indicator the commune should use for comparison is the unit cost of the service, such as the cost of collecting one ton of waste.

5.2.2 Estimating the Unit Cost of the Communes' Own SWM Operations

1) Definition

To enable the communes to compare costs, the communes must know the unit cost of their own service. Knowing the own unit cost of the service is the first but very important step towards privatization.

The unit cost of collection service is estimated by the following formula:

$$\text{Unit Cost} = A/B$$

where,

A: Annual cost incurred by the commune for the waste collection service

B: Waste quantity (weight) collected by the commune for the same period

2) Estimation of Collection Service Cost

Annual costs of SWM services are comprised of the following costs:

1. Direct Costs
 - 1.1 Operation and maintenance costs
 - 1) Salary
 - 2) Fuel
 - 3) Materials
 - 4) Insurance
 - 5) Other related expenditures
 - 1.2 Capital costs
 - 1) Depreciation of equipment, trucks, communal containers and other equipment
 - 2) Interest payments if any
2. Indirect cost
 - 2.1 Part of salary of staff in proportion to the amount of time spent on SWM. (For example, administrators, municipal engineer, clerks, workshop personnel, etc.)
 - 2.2 Part of capital costs of the commune's office buildings and workshop in proportion to the extent of their use for SWM purposes.

3) Estimation of Waste Quantity

The best way to estimate the waste amount is to use a truck scale. There is a tendency to overestimate the waste collection quantity when estimated through a formula such as truck capacity multiplied by the number of trips made by trucks. If such a method is used, an assumption should be made on truck loads because trucks are not always full. Refer to Section 3.2 of Chapter 3 for details of waste quantity estimation.

5.2.3 Comparison of Unit Costs with those of Private Contractors

It is advisable for Moroccan urban communes to ask some contractors about the price they would charge for SWM service. This could be done quickly in an informal way.

To compare costs with contractors, it is relevant for the urban commune to estimate future costs that might be saved in the long term by using contractors for collection service. The estimated saving should be compared with the price the commune has to pay to contractors. If the former is larger than the latter, the use of contractors will be economically justified. It is important to note that future possible saving through the use of contractors will increase in the longer term because it takes some time for the urban communes to change their expenditure patterns after contractors have been employed.

5.2.4 Sources of Difference in Efficiency

As explained earlier, the unit cost of collection service is estimated by dividing the collection cost by waste quantity collected. It is generally found that the difference in

unit costs between contractors and communes derives from the difference in the denominators rather than from the difference in the numerators. In short, contractors tend to collect more waste by using the same equipment and manpower. The difference in the waste collection quantity derives from, for example, the difference in number of trips a collection crew makes per day. Because the communes' workers spend much time in sorting recyclable materials on the streets, they typically make 2 trips per day to a disposal site. The number of trips can increase to 3 if the communes' workers are not engaged in sorting activities. The increase in trips from 2 to 3 represents a considerable improvement in efficiency.

A private contractor will have to pay higher salaries to collection workers to prevent them from engaging in sorting activity. But higher payments are worthwhile if they can collect more waste by making more trips.

An operations manager of a contractor has an incentive to increase service efficiency as his salary tends to be correlated with his performance. Contractors are given an incentive to be efficient as otherwise they will be out of business (replaced by other contractors).

In case uncollected waste exists in a commune, a SWM manager of the commune typically would claim that more equipment and manpower are necessary to collect it. In contrast, a good contractor would consider the possibility of increasing collection efficiency, for example, by improving truck maintenance and increasing the truck utilization rate.

5.3 Kinds of SWM Services Privatized

It is possible to privatize all kinds of SWM services, i.e., street sweeping, collection/transport, treatment, and disposal. In many countries, street sweeping and collection/transport have been more commonly privatized than treatment and disposal.

Obviously, the provision of the former services requires less capital than provision of the latter. Contractors find it easier to participate in the former services than in the latter. Communes find it is less risky to use contractors for street sweeping or collection/transport service than for the latter service because:

- 1) it is possible to divide a commune's service area into small contract areas, and
- 2) it is not very difficult to replace the contractors with other contractors.

In recent years, the privatization of treatment (for example incineration) and disposal has been increasingly common. In France, about one half of incinerators and landfill sites are privately owned. In many cases, private companies offer a higher level of service than communes do. If private companies' environmental standards are found to be less than required by law, the regulatory authority can close down their operations. However, it is difficult for the authority to order the suspension of a commune's disposal service even when its standards are inadequate, as communes usually have no alternative places for waste disposal.

For the promotion of privatization of treatment and disposal services, it is necessary to develop well defined contract conditions and specifications as well as technical capacity to monitor and evaluate contractors' performance at the commune level. In addition, the government needs to develop a regulatory framework (law and responsible regulatory agency) at national level.

5.4 Form of Privatization

Applicable options regarding the form of privatization differ according to the kinds of SWM services, as shown below:

For privatization of Street Sweeping and Collection/Transport services

1. Contracting out (use of contractors)
2. Franchise
3. Free market

For privatization of Waste Treatment, Disposal, and Transfer

4. Management contract
5. Build, Operate, Own (BOO) and Build, Operate, Transfer (BOT)
6. Concession
7. Free market

1) Contracting Out

This option is very widely used by many cities in the world for street sweeping and collection/transport services. A city enters into a contractual relationship with contractors. The contractors provide the services required. The city pays the contractors.

This option is the most appropriate one for Moroccan communes.

2) Franchise

If a large city intends to use a franchise system for waste collection or street sweeping, it has to divide its area into a few sub-areas. Each area is served by a service provider (company), which is selected by the city through tender. A selected company (franchisee) is awarded with a permission (authority) to operate business (collection or street sweeping service) in the area for certain period. The franchise system for SWM services is not common.

3) Free Market (for Waste Collection Service)

In some Latin American countries, there are some cities which do not involve themselves in the waste collection and street sweeping services. There are many companies of different sizes which provide the services. They make contracts directly with individual citizens. The level of service differs by the level of fee paid by the

service users. There are some citizens who are too poor to make contracts with service providers. This option is not recommended.

4) Management Contract

Contracts for management and operation of disposal or incineration facilities are very common in Japan, France and some other countries. The main facilities are constructed and owned by cities. Contractors are usually remunerated with a lump sum payment.

The urban community of Casablanca has a management contract with a contractor which has its own bulldozers. The contractor is responsible for site management and landfill operation. A responsible official of the community commented that the contractor's service is satisfactory both technically and economically.

5) Build, Operate, Transfer (BOT) and Build Operate, Own (BOO)

Contracts for BOO or BOT are made between a city and a contractor. Under this contract, a contractor constructs and operates an incinerator or disposal site. The period of the contract is about same as the economic life of the facility. At the end of the contract, the facility may be transferred to the city under BOT. Contractors are usually remunerated according to the quantity of waste incinerated or disposed of.

BOT or BOO is advantageous for a city in the sense that the city does not require funds for initial investments. In many countries, BOO and BOT are increasingly popular for local governments not only for SWM facilities but also for other public works such as power stations, roads, etc.

The city of Bangkok is planning to use incinerators through BOO.

6) Concession

Concessions are very popular among French local governments. Concessions are similar to BOT or BOO. A main difference is that a contractor can provide its service not only for the main contract party (local government) but also for third parties, and collect fees from them.

It is advised that the Moroccan local governments should seriously consider this option for landfill.

Concessions may be also an applicable option for treatment (incineration) of hospital waste in Morocco.

7) Free Market (for Waste Treatment and Disposal)

In Europe and Japan, there are many private companies that own and operate disposal sites, and provide disposal service for mainly industrial and hazardous waste. The main users of the service are enterprises which discharge industrial waste. There are some cities where the local governments are also the service users.

5.5 Procedure and Activities Needed for Privatization

5.5.1 Procedure for Privatization

Privatization of a SWM service requires the following 3 major steps:

1. Feasibility study
2. Tender preparation, negotiation and selection of contractor
3. Monitoring and supervision of the contractor's performance

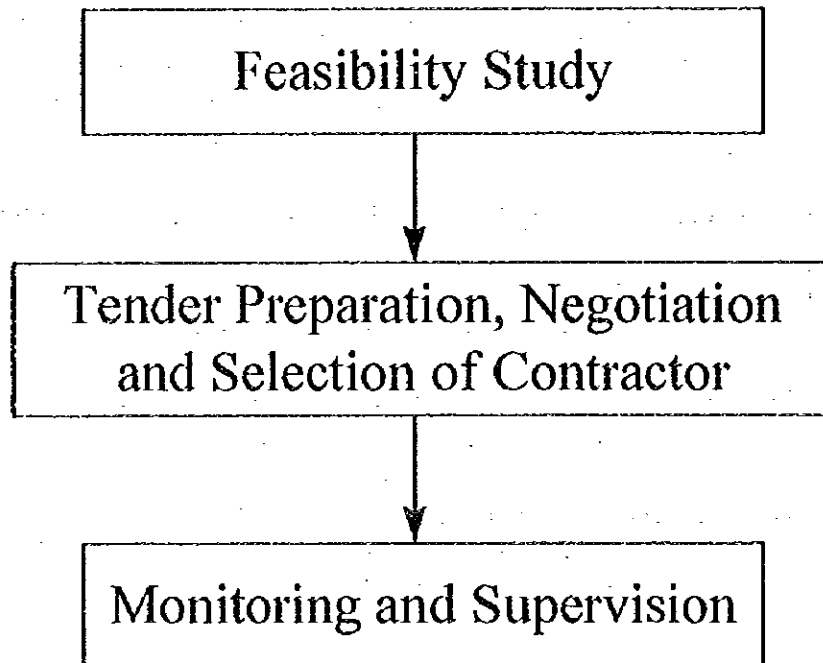


Figure 5.5-1 Procedures of Privatization

Activities needed for each step are explained in the following sections.

5.5.2 Feasibility Study

A feasibility study must show the following:

1. Economic justification of intended privatization
2. Service areas and size privatized
3. Availability of contractors
4. Measures to cope with workers' opposition
5. Schedule for privatization

1) Economic Justification of Privatization

Urban communes which intend to privatize collection or street sweeping services must convince themselves that service efficiency will improve with privatization. As explained earlier, the urban communes or communities must know the unit cost of the service provided by themselves.

It would not be difficult for interested urban communes to inquire from some companies about the price of the service, either informally or formally.

Economic justification should be considered over a five year period.

2) Service Areas and Size Privatized

To have efficient contract service, the service volume (in terms of waste collection quantity) of a contractor must be greater than a certain level. According to the Draft Field Report Solid Waste Management in Fes, Morocco, World Bank Mission by Sandra Cointreau-Levine dated June 1995, the minimum collection quantity for one contractor would be the amount collected by two trucks (one more truck is reserved as a standby). Estimated minimum waste collection amounts range from 18,000 ton/year to 21,000 ton/year depending on transport distance. This implies that the minimum serviced population ranges from 67,000 to 78,000.

For deciding on zones to be privatized, communes must know the waste generation and collection quantity of each zone.

In case of urban communes with small populations, joint use of a contractors by a few communes must be considered.

The experience of some cities in the world shows that partial privatization (use of contractors for collection of waste in some parts of a city) is helpful to increase the efficiency of the city's own collection service possibly because a competitive relationship between the city and a contractor emerges.

3) Availability of Contractors

If the contract arrangement developed by the Ain Sebaa Urban Commune of Casablanca proves to be successful, there will be some other companies interested in waste collection services. This type of contractor will increase in number according to the demand.

In France and some other countries, SWM contractors were originally bus companies or contractors of public works. In Morocco, there are many bus companies and contractors of public works which can be candidate SWM contractors in future.

4) Measures to Cope with Workers' Opposition

The Ain Sebaa Urban Commune spent a long time for negotiation with a contractor concerning transfer of municipal workers to the contractor. The commune and the contractor agreed that all collection workers can work for the contractor if they so wish. Ain Sebaa's experience will be useful for other interested communes in this respect.

To minimize the workers' problem, the commune should develop acceptable retirement and recruitment plans.

An important condition, particularly in the initial stages of privatization, is that workers are assured of future job security.

5) Schedule of Privatization

It would be useful for interested communes to plan a systematic time schedule for privatization because the process of privatization, particularly if it is the first time, could take a longer time than initially thought.

5.5.3 Tender Preparation and Selection of Contractor

Because the market for SWM services has not been established in Morocco, conventional processes for selecting contractors through tender would not be fully applicable in Morocco.

Informal discussion with candidate contractors, and the experience of communes which have used contractors would be important for decision-making on privatization and for selection of contractors.

The selection of a contractor through tender as explained below is meaningful if there are 2 or more companies which are likely to submit their offers. The tender process includes the following activities:

1. Preparation of tender documents including general and special conditions
2. Tender announcement
3. Receiving offers
4. Evaluation
5. Negotiation and contract

A contract document should stipulate all necessary conditions regarding the contract service. Success of the privatization of SWM services largely depends on the contract conditions and supervision. Some important service conditions to be included in the contract are explained in Section 5.6.

A typical contract document concerning waste collection service that could be used by the communes is available from the Ministry of Interior.

5.5.4 Monitoring and Supervision of Contractor's Performance

Monitoring and supervision of a contractor's performance is very important for Moroccan communes because neither the communes nor the contractors have much experience in privatization of SWM services.

The communes should monitor the contractor's compliance with contract conditions. For this purpose, the communes should measure the following:

- Daily waste collection amount by area (to be measured by using a truck scale)
- Frequency and regularity of the service by area
- Existence of black points (illegal dumping places)
- Citizens' response to the service

The contract conditions should include the contractor's obligation to submit reports containing information on the above listed items.

The commune should organize a committee responsible for monitoring and supervision of the contractor's performance. The committee members should include the commune's administrator, councilors, and the municipal engineer.

5.6 Important Aspects of Contract Design

5.6.1 Contract Design

The following 2 aspects should be considered in designing a contract:

1. Assurance of service continuity
2. Providing contractors with an incentive to perform their duties efficiently and adequately

The above aspects should be reflected particularly in deciding on the following matters:

1. Definition of the contractor's responsibility
2. Contract period
3. Payment method
4. Power to terminate a contract
5. Penalties for non-compliance

5.6.2 Definition of the Contractor's Responsibility

Unclear definition of the contractor's responsibility is a source of failure. The contract conditions must define the service required. The following aspects should be specified:

1. Service areas (zones)
2. Service level
 - a. Collection frequency
 - b. Collection regularity
3. Collection quantity
4. Disposal sites used
5. Collection system and major equipment used
6. Responsibility for provision of equipment
7. Periodical meetings with the citizens

Selection of a good collection system could provide the contractors with an incentive to collect more waste. For example, if collection with communal containers is applied, and the contractor is responsible for providing such containers, and if remuneration is according to the quantity of waste collected, the contractor will have an incentive to place containers even in fringe areas because it will enable more waste to be collected. This would be one method to improve collection service in fringe areas.

5.6.3 Contract Period

It is desirable that the contract period should be same as the economic life of collection trucks.

A shorter contract period may lead to a higher contract price because the contractor needs to recover the investment costs in a shorter period.

It will take a new contractor a year or two to adapt its service with the particular conditions of the area and citizens' needs, and to improve efficiency to a satisfactory level.

The contract period in the case of the Ain Sebaa is reported to be 7 years.

5.6.4 Payment Methods

There are the following 2 major payment methods:

1. Payment according to quantity (weight) of waste collected
2. Lump sum

A unit price per ton of waste has to be agreed if the first payment method is applied. This can provide a contractor with the incentive to collect an increasing quantity of waste because the amount of payment increases with the growth in collection. An urban commune should use this payment method, particularly if the existing collection coverage needs to increase.

Under this payment method, contractors might attempt to cheat; for example, by adding water to the waste loaded onto a truck to increase its weight. Periodical checking is necessary to prevent this.

A lump sum payment may be satisfactory if the contractor's collection amount reaches an adequate level, and both parties can agree on the waste quantity to be collected. Under a lump sum payment method, the waste quantity collected by a contractor must be closely monitored to ensure that the contractor collects an adequate amount. Periodic revision of the target level may be required; particularly in high growth residential and industrial areas.

5.6.5 Power to Terminate a Contract

The contract conditions should include the employer's right to terminate a contract which may be exercised in case of a serious breach of the contract.

5.7 Government Support

5.7.1 Technical Support

In the absence of experience of privatization of SWM services in Morocco, the central government can perform an important role in promoting privatization by the following activities:

1. Inform local governments about government policy for promotion of SWM privatization through seminars
2. Provide a standard contract document
3. Assist local governments in evaluating tenders offered by contractors

5.7.2 Establishment of a Regulatory Framework

The government should establish a regulatory framework to regulate contractors when the market for SWM services grows. The regulatory framework consists of 1) a law concerning privatization of SWM services, and 2) a regulatory agency which is authorized to issue permission to companies to operate SWM services. This regulatory framework is particularly needed to control waste disposal contractors to ensure that they attain certain environmental standards.

A good regulatory framework ensures:

1. fair competition in the market
2. achievement of environmental standards required by law

The government should 1) decide on the ministry responsible for setting such regulatory framework, and 2) study of a future regulatory framework. England and France have well established regulatory frameworks.



CHAPTER 6 FINANCE

This chapter presents estimates of overall local government expenditures and revenues in recent years, and then provides projections of the additional expenditures required to meet satisfactory targets in the future. The magnitude of the financial challenge involved in achieving these increased expenditures is illustrated with regard to existing levels of support for SWM by local and national authorities, and suggestions are made regarding improved financial management and revenue enhancement measures at the local level.

6.1 Overall Local Government Expenditures and Revenues

6.1.1 Expenditures

Table 6.1-1 below shows how total local government expenditures have been allocated between operating costs and capital costs over the 1990-94 period. An important feature of this table is that whereas total costs have increased by 42 percent over the period, operating costs have increased by almost 80 percent, while capital costs have only increased by 9 percent, a substantial drop in real terms. One contributor to these trends has been the continued increase in wages and salaries, which grew from 26 to 32 percent of total local government expenditures between 1988 and 1992.

Table 6.1-1 Total Local Government Expenditures 1990-94

Unit: million DH

Expenditures	1990	1991	1992	1993	1994	Total 1990-94	% 1994	% Increase 1990-94
Operating Costs	3,426.6	4,043.3	4,636.0	5,463.4	6,137.0	23,706.3	58.9	79
Capital Costs	3,916.1	4,216.5	4,133.5	4,477.8	4,281.9	21,025.8	41.1	9
Total	7,342.7	8,259.8	8,769.5	9,941.2	10,418.9	44,732.1	100.0	42

Source: Table Ronde

These expenditures are applied to a wide variety of activities. Data on operating costs of various elements of the local governments' programs are difficult to assess, but data on capital investment are more readily available. Of the 21 billion DH of expenditures on capital investment over the 1990-94 period shown in Table 6.1-1, 54% is financed out of the proceeds of VAT, 25% from local taxes, and 21% from loans. Centrally managed items (such as education and health) and "shared expenditures" accounted for 36% of the total, the remaining 64% being for explicitly local activities, of which urban streets and lighting were by far the most important item. Investment in solid waste over the period was of minor significance, accounting for only 3.4 percent of the total. Of the approximately 700 million DH invested in solid waste, about 40 percent was financed from local resources, the remainder by loans from the FEC.

6.1.2 Revenues

Sources of local government income between 1990 and 1994 are shown in Table 6.1-2 below. This indicates that local governments have been becoming increasingly reliant upon locally generated funds, in particular the ones they collect themselves. These consist of a variety of sources, including taxes on forest products, beverages, and hotels, and drivers' licenses, as well as fees for operation of markets and construction permits. Local taxes administered by the central government (the urban tax, tax d'etilite, and "patente") have also increased in relative importance, so that taken together local fees and taxes have increased from 38% of total income in 1990 to 46% in 1994. VAT and borrowing have both declined as a share of local government income during the period considered.

Table 6.2-1 Sources of Income: Local Governments, 1990-94

Unit: million DH

Source	1990	1991	1992	1993	1994	% 1994	% increase 1990-94
Local taxes <u>1/</u>	1,277.0	1,551.0	1,699.0	2,106.0	2,227.0	21.4	74
Local taxes admin. by CG <u>1/</u>	1,539.0	1,867.0	2,085.0	2,443.0	2,559.0	24.6	66
Share of VAT	3,565.0	4,019.0	4,447.0	4,375.0	4,560.0	43.8	28
Borrowing	961.7	822.8	538.5	1,017.0	1,072.9	10.3	12
Total	7,342.7	8,259.8	8,769.5	9,941.0	10,418.9	100.0	42

1/ Assessed values.

Sources: Table Ronde; Ministry of Interior; study team estimates.

6.1.3 Borrowing from FEC

Local authorities in Morocco have limited borrowing powers, and obtain loans almost entirely from one source, namely the Fonds d'Equipeement Communal (FEC), of which the central government is the sole shareholder. The FEC, which in effect promotes the government's development objectives at the local level, obtains its capital from the central government, and borrows from the World Bank and other external sources.

The FEC currently lends over 1 billion DH per year to local governments, as well as a relatively minor amount to regies (water, electricity, transport). In 1994, 73 percent of total lending was to urban communes, 5 percent to communities, and 18 percent to rural communes, with the remainder to regies. FEC loans for solid waste in 1993 amounted to 38 MDH, and in 1994 185 MDH, representing only 3.5 percent of total lending in 1993, rising to about 17 percent in 1994.

Strengthening of the FEC has been extremely important, not simply in mobilizing much needed capital resources at the local level, but also in helping to improve the quality of investment decision making and project implementation at the local level. To this end, the FEC follows principles very similar to the World Bank itself, in requiring borrowers to meet certain financial, economic, environmental, management and technical criteria as a condition for obtaining loans. Eligibility criteria include tests of financial viability. These include, for example, appropriate example, tariff policies and rates of return for revenue earning entities such as water utilities, and assurance of complementary local government funds for non-revenue earning projects such as maximum debt service ratios for the local government as a whole.

Criteria also include adequate accounting and procurement methods; economic viability and use of cost-effective methods for proposed projects. Training and staff development is also typically required. To this end, some reform of FEC financial and managerial operations itself has also been required; the World Bank loan required FEC to meet certain targets for procedures, staffing, and financial performance. Generally its performance has been satisfactory, and disbursements have been going according to plan. One problem has been in attaining the agreed debt-equity ratio target, which has not been achieved due to delays in release of capital from the central Treasury. In view of its critically important role in the decentralization process in general and in strengthening SWM in particular, priority should be given to ensuring its smooth operation at the central level.

6.2 Expenditures on SWM

6.2.1 Projected Expenditures and Additional Funding Requirements

1) Municipal Expenditures

Feasibility of the projected expenditures described in Chapter 2 of Book 1-Part 2 can most usefully be analyzed in terms of existing and projected local government expenditures, not only on itself, but in total, since SWM expenditures are committed out of general revenues. Total SWM costs for all local governments (urban as well as rural) in 1997 are projected by the study team to account for about 12% of total revenues, compared with 15% in 1994. Little change in this proportion is predicted over the 25 year projection period, the estimate for the year 2020 also being 15%.

Another relevant indicator is the sum of local taxes and borrowing (i.e. total local government revenues minus VAT transfers). The rationale for using this indicator is the possible uncertainty involved in reliance upon central government transfers (as noted earlier, VAT transfers in recent years have changed little in real terms). Moreover, VAT resources are also used to finance centrally managed, rather than purely local operations. The process of decentralization implies growing financial self-reliance at the local level. When such reliance upon local resources is used as a basis for comparison, SWM expenditure accounts for 21% of total local government income in 1997 compared with 27% in 1994. Again, little change is observed over the period, the proportion in the final year also being 27%.

In the foregoing estimates, local government income is assumed to increase at the same rate as that of GNP (here assumed as 4% per year), the results suggesting that there should be little problem in achieving the targets established in the projections. Indeed, the estimates imply that compared with 1994, projected SWM expenditures actually fall as a proportion of local government incomes. However, the data refer to both urban and rural communities, and obscure vast differences between them, in particular between the rural and urban areas of the country. Also, as will be demonstrated subsequently, the structure of costs should change, with substantial increases in investment being offset by relatively small increases in operating costs.

With regard to urban areas, where collection of solid waste is assumed to grow at a slower rate than GNP and local government revenues, and only modest improvements in coverage are envisaged (i.e. from 85% to 100% by the year 2020), there should continue to be a gradual narrowing of the financing gap over time, despite improvements in waste disposal. On the other hand, the fiscal burden will be much larger for those communities that are currently inadequately supplied with SWM services, i.e. primarily those in the rural areas, where collections are projected to increase from the current level of 10% to 50% of the population by the year 2020. The financial burden will obviously be greater in the poorer communities; although the new VAT system intends to remedy some of the inequalities between local communities, discrepancies will remain, particularly as its distribution will still partly depend upon local fiscal effort.

To be of practical use, further analysis of the fiscal burden at the local level of improving SWM operations must be conducted on a case-by-case basis. The precise methodology for doing so will be developed in the forthcoming study of SWM in Safi.

2) Industrial Costs

It is probable that industrial SWM costs will place an increasing burden on local government resources. As noted earlier, industrial solid waste costs are expected to rise sharply about ten years hence, when they will start to exceed municipal costs. By that stage, the problem may be too great to rely upon the private sector alone to handle it. Although responsibility for industrial waste may not currently lie with industry itself, local governments should be prepared to collect and dispose of industrial waste that can be handled along with conventional municipal waste. Dealing with waste legally defined as "industrial" should continue to be the financial and environmental responsibility of industry itself, subject of course to public standards and regulation.

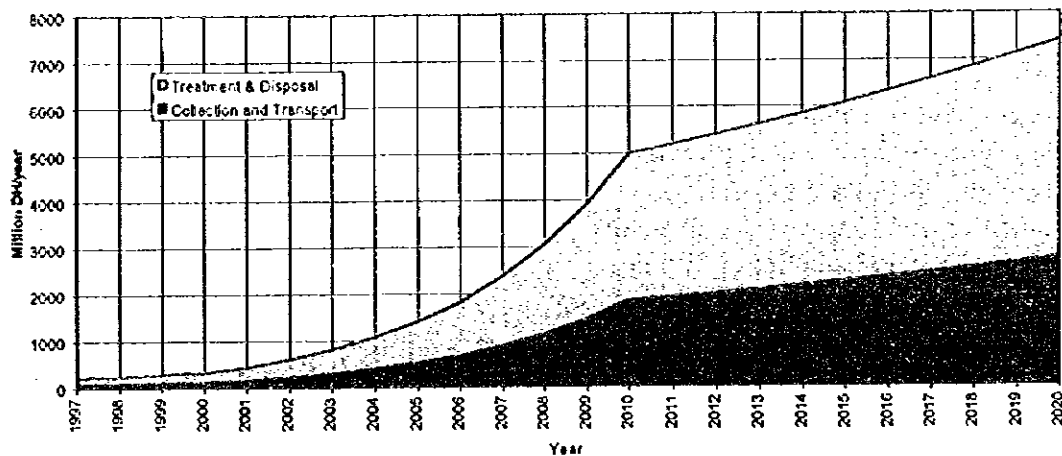


Figure 6.2-1 Industrial SWM Costs by Type of Service

As Figure 6.2.-1 shows, industrial treatment and disposal will rapidly become the dominant element of total industrial SWM costs in future years. Serious evaluation of the role of municipalities in industrial waste management should start now in anticipation of this trend; among the policies to be considered should be those relating to cost recovery, referred to below. As a general principle, local governments should not incur any fiscal burden in handling industrial waste; the "polluter pays" principle should be applied so that all relevant costs are covered by industrial waste dischargers.

6.2.2 Sources of Additional Funding

In Chapter 3 of Book 1-Part 2, it was shown that in 1997 operating and maintenance costs for SWM in urban areas are proposed to increase in per capita terms by 13% while capital costs are expected to increase by 150% over the 1994 figure. Thereafter a gradual increase in both types of expenditure is proposed. The key feature of future financing requirements is the change in the structure of SWM costs in which mobilization of investment funds is becoming of dominant importance.

In 1997, proposed expenditures on SWM in urban areas would in total amount to an average of 110 DH per capita. While a relatively large increase, this is still less than 1.5% of the national average private consumption figure, which is about 8,000 DH. Moreover, urban incomes are undoubtedly higher than the national average, so the additional burden will be even less than the above suggests.

Although this represents a small proportional increase in aggregate funding requirements, it is always difficult to raise taxes, and additional borrowing will be required. This will in fact be justified in view of the dominance of investment funding requirements. The immediate need (for 1997) would be to increase investment from the current level of 206 MDH (in 1996 prices) (i.e. 187 MDH plus overheads) per year to 565 MDH per year in urban areas. Assuming that VAT transfers do not increase in real terms, the appropriate source of such funds will be the FEC. For the two years 1993 and 1994, FEC's average annual loan commitments for SWM amounted to 127 MDH. Thus in order to meet the whole of the projected needs for investment in SWM by urban areas in 1997, FEC would have to more than quadruple its lending for

solid waste. In real terms this amount would correspond to about 45 percent of FEC's annual lending for all purposes over the 1993-4 period.

Updated figures will undoubtedly reveal a substantial increase in aggregate FEC lending since 1994, facilitated by the World Bank loan in that year. Nevertheless, if actually implemented, the increased lending for SWM indicated in the above estimates would represent a major shift in relative and absolute priorities given to SWM by the FEC. Strengthening and expanding the efforts of FEC is thus of critical importance for the future of SWM in Morocco, not only because it is the primary source of investment finance, but, equally importantly, because of the contribution it can make to improving the capacity of local governments to absorb additional funding and to plan and implement needed investment in an efficient manner.

There are no real alternatives to raising funds for additional operating costs out of local revenues, either by increasing taxes or reducing expenditure on other services. In parallel with this however, a number of reforms should take place to facilitate the cost-effective approaches implied in the projections, as well as revenue enhancement. These are discussed below.

6.3 Financial Management at the Local Level

6.3.1 Accounting Procedures

The study of solid waste management at the local level sought information on local government accounting policies. In particular, it was asked if the accounting system used at the commune level makes a clear distinction between the costs of solid waste management and those of other commune activities. In fact, the study revealed that there is usually no separate accounting for different services provided at the local government level. In practice, there is a great deal of sharing of equipment and manpower. Also, local government accounts only show cash costs, primarily salaries, consumables, and spare parts, and recently, interest payments to the FEC. Disaggregation of local expenditures are typically in terms of inputs (personnel, vehicles, etc.), rather than outputs. True costs of services are thus not represented in accounting systems, which therefore provide inadequate information for planning and management of specific services, such as solid waste management.

For local government operations as a whole, it would be desirable to introduce output budgeting and to clearly distinguish the costs of different services provided at the local level. True costs of solid waste management and other local government activities, including capital costs, should be clearly understood to facilitate planning. Although immediate implementation of such reforms will be beyond the institutional capacity of most local governments, some basic steps in this direction might be made even in the poorer communities, where, in fact, the need to know where funds are being spent is the most urgent.

While it may not currently be feasible to have profit centers for all activities in which costs and revenues from user charges are identified for different types of service, it is nevertheless desirable to identify those aspects of SWM operations which can be so

classified. Expenditures related to industrial SWM may already begin to fall into this category within those jurisdictions in which large industrial complexes are situated; more generally, this issue will become of increasing importance as industrialization in Morocco proceeds.

While accounting reform is in general desirable for most local governments in Morocco, the most useful recommendation is not to introduce more complex accounting systems, such as accrual or capital cost accounting, which will often create major administrative difficulties and delays, and give misleading information. If accounts are to be useful, they must be produced punctually, and their complexity must be tailored to the skills and equipment available, as well as the ability of decision makers to use the information generated. So it is usually most useful to concentrate attention on building upon existing systems, updating them, and introducing additions to financial records on a gradual basis. At a minimum in Morocco, the following should be attempted:

- segmentation of SWM expenditures on a cash basis, noting the distinction between operating costs and loan amortization
- allocation of costs between broad categories of waste dischargers, such as industry and households
- indicators of service efficiency in cost-output terms with year on year comparison at constant prices

The degree of sophistication of accounting reforms should therefore be seen in light of the stage of development of the local government authority concerned. In fact, reform of SWM amounting cannot be seen in isolation from overall local government accounting reforms. With regard to SWM, a number of stages might be identified, as follows:

Stage 1: No distinction at all between expenditures on SWM and other municipal activities; no accounting distinction between capital and operating costs; no specific charges/fees for SWM. (This is the prevalent situation in Morocco, as in most countries).

Stage 2: Separation of accounts so that operating and capital costs (the latter being on a cash basis, referring to debt service) for SWM are distinguished. This will typically involve some judgement in allocating certain costs (e.g. administration and vehicles) between different municipal services. At this stage, opportunities for contracting out certain functions to private contractors start to become feasible, because comparisons can be made between costs of private and public provision of services.

Stage 3: Commercialization. This refers to the creation of profit centers within the local government organization, and requires identification of those parts of the SWM operation for which fees can be levied, e.g. industrial waste management, where revenues should cover both recurrent and operating costs. Greater opportunities for private sector involvement in SWM, including fee collection, arise at this stage. Very few municipalities in Morocco fall into this category at present.

Stage 4: Corporatization. This requires similar accounting procedures as for commercialization, but the ownership structure would be that of a public corporation,

which establishes the quasi-independence of public entities and helps to insulate operations from political pressures.

Stage 5: Privatization. The burden of day-to-day accounting shifts to the private sector. However, regulation of private sector operators requires sophisticated accounting expertise in the relevant national government agency, probably the Ministry of the Interior.

Because of the predominantly social characteristic of SWM, particularly as it relates to residential services, the main focus of accounting reform should be to move from Stage 1 to Stage 2. This is not only desirable in itself, but will also help lay the foundations for possible subsequent re-allocation of responsibility to private sector or commercially oriented operations, which are generally accepted as being more efficient. Indeed, privatization, by lowering real costs of solid waste management operations, may be one means of addressing the financing gap implied by improved service. Issues to be addressed include, above all, clear legal definition of waste management standards and responsibilities, and removal of impediments to entry such as difficulty of entering into multi-year contracts, and the social implications of a probable reduction in labor force if private operators are involved.

The cost estimates shown in Section 6.2 above further indicate the importance of accounting reform. While the specified targets appear reasonable measured in these real terms, it should be noted that they may be less easy to attain if private enterprise intervention is sought, where meaningful comparisons must be made between public and private provision of services. Existing budgetary procedures tend to be inaccurate estimates of real financial costs. Thus capital costs tend to be understated, with interest and depreciation often not being reflected in public accounts. (However, in terms of social costs, these effects may be offset to the extent that wages for unskilled labour are higher than their opportunity cost, which is apparently the case in Morocco where urban unemployment is about 16%). When a profit element is included, the contract terms required to attract private sector operators would therefore place a relatively large burden upon local budgets, and thus accounting reform would appear to be essential if this impediment to local enterprise is to be removed.

6.3.2 Investment Decisions

To a large degree, the extent to which proposed investment projects are subjected to rigorous appraisal depends upon their source of funding. Communal councils undertake local investments financed out of their own local resources on the basis of analysis by consultants and staff and review by their investment and finance committees. Citizens may, but seldom do, attend council meetings. The Ministry of Interior reviews these investments on the basis of a summary description in the proposed budget and requests additional information when a proposed investment appears to be unsound. This sometimes blocks investments even in those communes with substantial funds of their own.

Before the recent reform of the VAT distribution system, local investments financed by the VAT were subject to exceptionally close scrutiny by the Ministry of Interior, which

placed high priority on those projects with significant national and regional benefits. The reform in the VAT system now gives much greater freedom to local governments; the Ministry of Interior continues to play an important role in the approval of capital expenditures, but it is planned to reduce this over time. Investments proposed for FEC financing undergo the highest degree of scrutiny; it should be noted that one of the requirements of the FEC is that the borrower has an acceptable debt service ratio. In this respect, local governments in Morocco tend to be in a relatively healthy position, since to date borrowing to finance local investments has been minimal.

In view of the reduction in real terms in local government capital expenditures in recent years (indicated in Table 6.1-1 above), combined with the large projected increase in investment requirements for solid waste shown in Figure 3.2-3, there is an urgent need to create conditions under which capital investment can be accelerated and effectively implemented. However, this requires upgrading of the capacity of local authorities and specifically training in investment planning and project implementation. In this regard, as noted, the FEC has a major role to play.

Investment projects for SWM must be built upon forecasting of the relevant "market". Demands for services and acceptable standards are continually changing as incomes increase and industrial structures change. Changes in demand as well as in the composition of waste generated imply that there should be a permanent capability to keep track and monitor different components of demand. Skills must be developed to compare the costs of alternative means of dealing with solid waste problems, taking into account both the relevant capital and operating costs, and discounting costs back to present worth equivalents over the lifetime of the alternatives being considered.

The selected investments should always be compared systematically with the benefits of the services they provide. With rare exceptions, however, it is not recommended that local governments engage in sophisticated valuation methods, but should concentrate on the achievement of cost-effective means of meeting given targets or standards for collection and disposal of solid waste. Financial analysis should accompany the economic analysis at all stages; in particular, the implications of the project for local budgets and capacity to meet operating and maintenance costs as well as to amortize any loans should be specified and agreed before embarking upon the project.

Developing this local capacity is essential. It is critically important that investment in SWM or in any other area must be demand-driven, not supply-driven. While it may be useful for the national government or FEC to identify targets for SWM, individual investments should not be pushed on local governments by the financing agencies concerned. Building capacity at the local level for investment appraisal will ensure that this does not happen.

6.3.3 Contracting

Currently, with a few exceptions, local governments in Morocco not only have the responsibility, but also carry out actual implementation, of SWM activities. There is thus little experience in contracting out services to private contractors. This process requires that tasks to be performed are clearly specified in terms of geographical

coverage, frequency and performance standards, and that performance can be measured. It is extremely important that the bidding process is transparent and that there is a clear separation between the authority issuing bids and the potential contractors.

To give contractors adequate incentives to engage in long term planning it is necessary that contracts can be renewed if performance is satisfactory, and that the contract periods themselves are long enough to cover the amortization of invested capital. In the past in Morocco this has sometimes been prevented by the Ministry of Interior; indeed there may be good grounds for this if the local authority does not have the capacity to evaluate bids or investment programs adequately. Competition is essential; one way to achieve this in larger jurisdictions by dividing the municipality into zones which are served by different contractors, or by the municipality itself. This "contestability" has been shown to be effective in some developing countries' SWM operations, and in France for water supply.

6.3.4 Revenue Collection

Collection of local taxes requires improvement. Total revenues generated by locally-administered taxes and fees in 1993 amounted to 1,665 million DH. This refers to revenues actually collected; however, tax assessments in that year were 2,106 million DH. As in the case of the three local taxes administered by the central government, there was thus a significant shortfall in revenue collection, in this case being about 21 percent. This situation poses a major problem for the adequate delivery of local services, including, of course, solid waste management.

6.4 User Charges for SWM

6.4.1 Criteria for User Charges

The study of solid waste management at the local level reveals no examples of any user fees, taxes, fines or other penalties, or income from sales that are specifically related to solid waste. Thus there are no charges for household collection, no tipping fees for industrial waste discharge, no penalties for illegal disposal, and no fees for industrial or hospital collections. No instance was cited in which local governments profited from sales of recyclable material or compost, nor were there any examples of deposit-refund systems which may be introduced either at the local or national levels, and which are discussed in the chapter on national level actions above.

It is however useful to consider possible introduction of mechanisms at the local level for raising revenues and at the same time encourage more efficient use of resources by recycling as well as actual reduction of waste discharged. Criteria for determining the appropriateness of such mechanisms parallel those referred to for market-based instruments as a whole, as discussed in Chapter 3 of Book 1-Part 2. In addition to the generic criteria of environmental effectiveness and economic efficiency mentioned earlier, specific issues surround the employment of user charges for SWM at the local level. These include administrative feasibility, political acceptability, and financial feasibility.

1) Administrative Feasibility

The main issue is whether the cost of the collection mechanism will exceed its benefits. One issue concerns collection of taxes or fees. Already this is a problem in Morocco, with substantial differences between assessments and actual collections recorded for both the local taxes collected by the central government as well as those collected by the local authorities themselves. In such cases it is sometimes proposed that fees should be collected along with electricity and water supply bills, with the possible sanction that supplies of these services to consumers can be cut off in the event of non-payment; however, in Morocco the record of collection of water supply bills, in particular, is not good.

2) Political Acceptability

The system must be acceptable to the local population. Transparency in collection and spending procedures is essential, as is involvement of community representatives in decisions which affect them. Quite aside from the difficulties involved in introducing fees which vary according to actual waste discharges, even designating additional fees for SWM will run into a particular obstacle in Morocco. This is due to the existence of the tax d'etilite, which formally is supposed to cover the costs of solid waste management, and indeed sanitation in general, but which in practice is used for various purposes. Introducing new charges will face opposition on the grounds that the tax already exists, although for practical purposes it does so only partially.

3) Financial Feasibility.

This includes both capacity and willingness to pay. Per capita costs should be compared with household disposable incomes if such information is available (the study of solid waste management at the local level provides no answers to this question). Aggregate data such as those presented in Section 6.2 above provide some guidance but in any particular case, location-specific information is required in view of the wide variations in disposable income in different parts of the country. Household surveys of willingness to pay for waste collection might be employed for this purpose. However, although in principle such surveys might reveal a theoretical capacity to pay, this by no means ensures actual acceptance of such a policy.

6.4.2 Residential Charges

In principle, charges should be based upon the economic costs of the service provided, and these might include residential fees based on volume or household characteristics. However, in light of the foregoing criteria, there appears to be no real prospect of charging individual householders on the basis of the amount of solid waste they generate. To do so would invite illegal dumping and evasion of payment for services provided. Similarly, there seems to be little scope at the moment for separately earmarking revenues for solid waste management as far as residences are concerned. However, as financial management improves, with more accurate costing of the services provided for different beneficiary groups, identification of both the costs and potential revenues from households will become increasingly feasible, and indeed a

necessary precursor for possible concessionary arrangements with private sector operators.

Much illegal dumping takes place in part due to the inadequacy of existing collection and disposal systems. Financial instruments to deter this could be in the form of financial penalties for such activities.

6.4.3 Industrial Charges

There are greater prospects of collecting fees from industrial waste dischargers on the basis of the costs they impose. However a distinction should be made between two categories of industrial waste. The first category, which can be specified as "industrial" will be defined in future legislation. It is recommended that industry will continue to assume financial and environmental responsibility for disposal and treatment of this category of waste. However, industry will also be increasingly responsible for generation of waste that can be collected and disposed of along with household and other conventional municipal waste, and thus be dealt with by the municipality, or a contractor employed by the municipality.

Where public sector management of industrial solid waste is involved, the contribution of various sectors to the total waste load and costs of collection and disposal must be assessed. The feasibility of introducing charges for each type of user should then be tested. A possible result will be to find that with regard to industrial waste, user charges, whether in the form of tipping fees, based on quality and type of waste, or collection fees based on volume, are administratively feasible, and sufficient to cover the total costs involved. For this to occur, a monitoring and regulatory system adequate to prevent evasion of payment and illegal dumping will have to be developed; in practice the first priority should be given to those industries that produce the largest and most environmentally damaging waste.

CHAPTER 7 MUNICIPAL REGULATIONS

7.1 The necessity for Local Legislation and its Objectives

7.1.1 Introduction

The legal framework proposed at the national level, in Chapter 1 of Book 1-Part 2, establishes legal measures of general application and a set of legally applicable provisions which will determine the different management methods for solid waste management.

Concerning the communes, a proposed law (chapter 1 of Book 2-Part 1, a section entitled "the duties of communes" imposes on them the obligation to organize in their territory, household wastes disposal service. This service also concerns wastes from different sources and takes into consideration their characteristics and the quantity produced and can be taken care of without risks for human beings and the environment, within the same conditions as household wastes.

The law also defines an important principle relating to waste, holders, namely the duties of inhabitants and enterprises to ensure that their wastes are collected and disposed of correctly.

Such duties find their continuity and objective in the elaboration of municipal decrees structured around two fundamental notions which are largely linked to the role attributed to each actor of the commune.

In fact, it is the duty of the commune's inhabitants to behave as responsible citizens respecting the municipal regulations which are implemented for waste collection and disposal. Consequently, the commune should implement the necessary means of waste collection and disposal which also allows the user to dispose of waste in conformity with the law.

7.2 Municipal Decrees

This legal purview is structured around the communes' prerogatives and laws, as well as the duties of each user (inhabitants and establishments).

It is emphasized that the regulations which are listed below are given for information only. We will raise questions which needs to be given particular attention, the solutions, which can be proposed varying according to the basic options which will be retained.

7.2.1 The prerogatives of the communes

It is important to emphasize here that the commune must in the first place take all necessary measures for SWM, while respecting the environment and protecting public health. This principle being established, a series of measures can be elaborated in

order to reach this objective.

1) Definition of municipal wastes related to the services of the commune

It is necessary first of all for the communes to define at the local level, according to the possibilities and problems which should be faced, wastes which are the object of collection and disposal. We can therefore limit ourselves concerning the law to define household wastes which are part of communal wastes, and invite the communes to complete the list; i.e market wastes, non dangerous hospital wastes, and non-hazardous industrial wastes.

We can also list by municipal decree the wastes to be excluded from the above list; namely; explosive, inflammable, anatomic or infectious products, and those which can alter the containers or hurt waste collectors.

2) Definition of waste collection territory limits of the commune

The zone in which the communal service is engaged to ensure waste collection should be defined at the local level. This duty being carried out in respect of the obligation of municipality for waste collection, should adapt the capacity of the municipal service to the local conditions and also influence people's behaviour.

3) Aspects of municipal waste collection and treatment

This includes the display of wastes for collection, that is the obligation to utilize dustbins (which should have certain characteristics; leakproof, soundproof with covers, having a seating table etc.), and to display wastes in the public thoroughfare, or to put them in an area designed to receive them in conformity with the pertinent municipal decree.

The frequency of collection, display time for the collection service, and return of dustbins to home, and the conditions of reception in disposal sites installations, are aspects of collection.

Even if the conditions of exploitation of disposal sites are defined at the national level, it is part of the commune's duty to determine the opening hours of wastes disposal site and to fix the quantity and quality of waste that can be allowed according to the potential of the disposal site.

4) Financial contribution

This issue is a delicate question because of the character of the public fiscal system and the relation established within the public opinion between the cleansing tax (taxe d'édilité) and communal wastes. It is nevertheless desirable to have a system which involves financial contribution from everybody according to the service provided. This could be approximated by imposition of a specific tax for households waste disposal service and a user charge for other wastes.

5) **Illegal dumping sites or "black points"**

Although the development and improvement of communal services of SWM will reduce illegal disposal sites, because households, craftsmen and traders will have at their disposal means of waste collection and disposal areas for their wastes, they may nevertheless be reluctant to abandon them.

It is up to the commune to take decisions to prohibit waste discharge outside the areas provided with waste collection service. Such measures should include formal notices addressed to those responsible for "black point", and to ensure that disposal is done at the financial expense of those responsible.

6) **Penalties**

The regime of penalties is complex because of the interrelationships between punitive, administrative and civil sanctions in their national and local dimension. The Moroccan law does not give the executive power the right to anticipate infringements and enforce penalties. Therefore, the particular purview which will be implemented concerning hazardous wastes and disposal sites will authorize administrative measures whose application can be entrusted to the local authorities. It will be important for the commune to determine compensation for damage caused.

7.2.2 **Duties of citizens**

The obligations of users can only be conceived at the local level, because of its connection with the organization of SWM. The citizen has therefore the duty to:

- ensure the cleanliness of the surroundings of his habitation,
- refrain from throwing waste anywhere or in public thoroughfare or any other open space in the territory of the commune,
- use adequate dustbins for the discharge of wastes,
- put these dustbins in places provided for by the waste collection service ,
- make efforts for waste sorting for the purpose of recycling,
- pay for the public waste disposal service of which he is beneficiary,
- co-operate with actions that the commune undertakes for the improvement of SWM.

7.2.3 **Obligations of establishments**

All establishments are concerned; government agencies, hospitals, and private commercial establishments, and more generally any local entity which obtains waste disposal services from the commune.

Although at the national level some rules have been established, it is necessary to complete them by rules which take the local context into account, namely:

- the duty of information concerning the nature and the quantities of produced wastes,
- the duty to sort out wastes and to discharge them in different kinds of containers

- according to their type (in particular concerning hospital wastes),
- the duty to ensure the respect of the environment in all actions linked to SWM.

7.2.3 Conclusion

This chapter will not be complete without making reference to the actual legal provisions undertaken for SWM in certain Moroccan communes. In fact, the study report which has been done from the questionnaires distributed to 22 communes, shows the existence of documents relative to municipal regulations concerning household waste collection.

"The draft of a permanent municipal decision, which decides the establishment of hygiene system in the urban commune of Tangier ", is exemplary because it tackles in detail the cleanliness of the public thoroughfares and household waste collection. Although this document does not cover all aspects of SWM at the local level, it will nevertheless be interesting to take it as a source of inspiration and complete it along with the evolution of municipal regulation.

CHAPTER 8 PUBLIC EDUCATION

8.1 The Need for Public Education

8.1.1 Role of Education in SWM Improvement

Public education is a set of activities which are needed for improving SWM in Morocco. There are several complementary levels of public education that can be distinguished:

- Regular actions for cleansing neighborhood sites through cooperation between people and the commune. Such actions, like eradication of "black points", are already taken but should be continuous and improved as regards to the participation of the public.
- Permanent action for the improvement of communication between residents and the commune and information about SWM. This action can be led by the Urban Community.
- Establishment of environmental education activities at school, taking benefit of the know-how of teachers, coordinators of the Delegation of National Education, and municipal actors in the field of SWM.
- Isolated and well targeted actions to accompany the other measures of SWM improvement. It is at this level that the awareness measures support the technical measures of SWM improvement as, for instance, getting the public understanding and acceptance about SWM objectives or by accepting innovative measures in the collection system, or more simply getting cooperation of the people against street littering. The commune is the first one concerned with this type of action.

The objective of information and communication cannot be achieved by the sole means of awareness campaigns. Institutionalization of these activities is necessary at the level of the Urban Community in the first instance. Some measures for education of children at schools are also necessary.

On the other hand, the awareness campaigns are well adapted to the target actions. The communes should develop their capacity of planning and organizing these actions by starting from the know-how and the existing networks of provincial delegations.

8.1.2 Role of Education in Solid Waste Collection

The quality of the waste collection service is largely determined by the level of cooperation between the people and the waste workers, and the time schedule of the collection trucks. Due to the lack of environmental awareness and citizens participation, management of solid waste loses efficiency and still represents a source of nuisance and risk in some places.

Problems that could be expected to be solved, if there is participation of the people are as follows:

- to take care of waste bins until the arrival of collection trucks;
- to take care of the cleanliness of waste bin deposit areas;
- to avoid deposits of waste in public places (black spots);
- to sort out waste materials.

It is however increasingly important to think about public education as a necessary procedure for the smooth and efficient implementation of engineering improvements for the waste collection service. In that concern, public education is the necessary condition for success of the successive improvements.

The following public education priorities are defined according to selected specific management objectives:

- education of the workers in the SWM sector; priority objective is to replace the sorting out activity of waste materials, as it is presently done by these workers, by better salaries. Long term priority will be the improvement of their social image and recognition of their role.
- education of the inhabitants; people must be educated to accept that collection service could be reduced to 3 times a week, or to accept more use of public containers, for example. No education would result into negative reactions like an increased number of black spots for example.
- education of scavengers; several management objectives are related to this education priority. In the short term, it is the successful use of public containers which is the important issue. Long term aspects are described in 8.4.2.

8.1.3 Role of Education in Solid Waste Disposal

Main aspects of public education pertaining to solid waste disposal are:

- To inform the people in general, and those living around waste disposal sites in particular, about health and environmental risks associated with improper management of waste. People's participation in the planning of a new waste disposal site must be encouraged and supported.
- To make municipal actors in the field of SWM and municipal councilors aware of the need for environmentally sound management of the waste disposal sites on the one hand, and on the need of education in view of better public acceptance of such disposal sites, on the other hand.

8.2 Establishment of Awareness Campaigns

8.2.1 Basic Principles for Starting Awareness Campaigns

The following set of principles is to determine the pertinence of the public awareness program to be developed. Such principles need improvement and more analysis on the part of the authority in charge of developing awareness activities.

1) Best Use of Competencies and Resources

The lack of budget or educational tools for the public awareness purpose is a limiting factor when organizing awareness campaigns. This factor should be taken into account in a positive way for the selection of education actions and means. Taking this factor into account will make easier the implementation of important aspects of education, namely the interactivity between the educator and the target population, the multi-target oriented approach, and the continuity of actions. The following should be taken into account:

- efficient use of the existing local human resources for involvement of the public, planing, conception and creation of materials;
- using existing educational materials and equipment already existing and made available by the concerned agencies, like the Ministry of Environment for example;
- exchanging information between regions, nationwide or internationally;
- involving as many citizens as possible in the activities.

The provincial delegations and the citizens associations are valuable resources for their competencies and their know-how. Developing an awareness strategy from the part of the communes should start based upon these institutions. The organization of a follow-up section by the Urban Community is an opportunity to develop these local capacities and exercise a training effect of the communes. It will serve at short-term to maintain communication between the agencies concerned and to define the objectives and the projects. However, at long-term, it is very desirable that the technical staff, which takes in charge the necessary measures to reach the objectives of awareness, and is still lacking, should be developed.

2) Improvement of Communication

To be successful, the act of making recommendations to the citizens about waste handling (e.g. do not throw waste in the street) already presupposes a high level of awareness of the general interest and civic duties. In fact, this concerns the change of mentality and attitude which can be possible only from the moment when the duty of collective responsibility has the upper hand. Such awareness becomes possible only within the framework of the relation between the resident and the authorities through a dialogue and advanced communication.

The idea of an awareness campaign is then to begin the development of better conditions for such dialogue. This approach must be continued, and will be useful in view to get better effects and higher efficiency of the behavior oriented messages, like within the scope of promoting a new waste collection system, for example.

Developing a policy for social communication between residents and the commune in the field of SWM is an important objective, which depends both on the communal initiative and on the capacity and will of people to participate in the finding of solutions.

Environmental education in the field of SWM should be considered as an important aspect of improving communication, in accordance with the following ideas:

- Communication should be done in an interactive way, from the commune to the residents, and vice-versa. This simple requirement is generally not applied. Communal authorities typically organize cleansing campaigns without providing information to the people about the results. Moreover, evaluation of such results is rarely performed. Such evaluation is however necessary and should reflect the people's views.
- Physical presence of a person dedicated to communication at the commune or urban community level is necessary. In best cases, this person could act as a coordinator in order to start dialogue with the public. Such person should be associated with the operation of solid waste technical services in order to fulfill this role effectively.

3) Coordination with Environmental Objectives

There is a need to integrate awareness activities within the scope of more global actions to improve SWM. This point has been one conclusion of the ONEP (Ministry of Public Works) experience in the field of water resources management. Awareness should be part of the various actions which are taken all together in order to reach the defined objectives of SWM improvement.

The education objectives must be coordinated with the basic goals set out in the environmental strategy as it concerns solid waste, namely: reducing waste quantity (recycling being included), sanitary land filling, and sustainable development. Reducing waste quantity implies the adoption of new attitudes and the cooperation of the people. Better disposal of waste for avoiding nuisances requires the participation of neighboring communities in decision-making and with the higher awareness of environmental risks.

4) Personalizing the Campaign

It is important that the means of the awareness campaign are well adapted to the needs and to the objectives which have been defined. The use of local competencies and resources is one way to personalize messages and educational materials, which provides good conditions for maximizing the effects upon the public.

5) Continuity and Evaluation of the Engaged Actions

Continuity and evaluation of the engaged actions is an aspect that is explained in detail in the report of the study of Safi, within the scope of the pilot study. It is enough to say that continuity and evaluation are basic principles for the realization of awareness objectives. Then, the measures that are needed to make possible continuity and to evaluate the results of the actions taken must be seriously planned all together with the awareness actions themselves.

8.2.2 Communication Target Groups

Population targets of launched awareness campaigns are composed of persons who are the object of awareness and of the intermediate persons who are in a social position to educate or to transmit the messages. These intermediate targets include teachers, children, shopkeepers, municipal councilors, and mosque imams, for example. General public, school pupils, and workers in the SWM sector are in general the main targets. Main target groups are classified below.

1) Commune Target Groups

Communal actors constitute the first group of priority targets within the scope of the public awareness for SWM improvement. They are as follows:

- municipal councilors and often the presidents of communes, who are not enough aware of the existing environmental issues and might under-estimate the importance of awareness and education for improving SWM;
- municipal technicians and engineers of the SWM services;
- doctors of the Office of Municipal Hygiene, who have already the experience of public awareness and education, within the scope of improving hygiene.

2) Intermediate Target Groups

The intermediate target groups include the persons being in a position to transmit the messages toward the final targets. They are:

- coordinators who belong to the provincial delegations of public health, and who have already a strong experience of sanitary problems;
- youth cultural centers and their coordinators, who are already active and successful during awareness campaigns. They are important means of reaching the teenager population. Youth can have a positive response and later become leaders within education programs;
- registered centers managed by the delegation of mutual aid and their coordinators;
- citizens associations, which are rarely involved in environmental issues in a specific manner, but are ready to be active in such issues and can appear as very efficient intermediaries and as full interlocutors of the communes;
- mosque imams, who can influence the public and could eventually teach the people about the importance of cleanliness and hygiene;
- children, who are important vectors for the transmission of messages within the family unit.

3) Final Target Groups

Final target groups are variable according to the awareness objectives. However, the following target groups can generally be considered as being the final target groups:

- the general public, who are at the final step within the process of public awareness. Their participation within efforts made to improve SWM is the ultimate purpose of public education.
- women, who are the most aware of environmental hygiene and are the most concerned with waste management in the household unit;
- children, who should be the target of various actions for awareness heightening and education;
- workers in the SWM sector, who are not sufficiently aware of health risks and security at the work place. Education of these people must also aim at improving the image of the SWM workers within society. This target group should be increasingly involved in public education activities, together with upgrading of SWM objectives, including separation of waste materials at source.

4) School Target Group

The school target group, which is composed of teachers, coordinators, and pupils, needs special consideration. School teachers can include specific education objectives within the current courses or promote activities in school clubs or school cooperatives.

The specificity of education within this group can be summarized as follows:

- Basically, its purpose is a long term one, namely the development of eco-citizenship; however, short term objectives are also important, specially to provide access of awareness messages toward each member of the households;
- It covers a wide range of micro-targets, which are the different classes of children. Awareness messages and pedagogic materials must be evaluated and prepared by taking into account factors like education levels and age;
- It is determined by nationwide educational directives together with local initiatives taken by the delegation of national education, and is implemented as part of local awareness campaigns or outside the scope of such campaigns;
- It should be considered as a set of permanent and long term actions, including both education and awareness campaigns.

8.2.3 Awareness Messages

People are well aware of body hygiene, for which they feel responsible, and environmental hygiene, for which they expect municipal services to take full charge. Present messages in waste related education are mainly focusing on environmental hygiene. There is a need to broaden the messages to cover environmental quality and SWM, which encompasses the hygiene aspect. Environmental messages have been described in 7.1.3.

Following are examples of awareness messages toward various target groups:

- the effects of the unsanitary disposal of solid waste on health and environment;
- the increasing quantity of solid waste in general and the risks induced;
- the cost and benefit of proper waste management;
- the risks to which people employed in the SWM sector are exposed to;
- the advantages of a clean neighborhood in increasing the potential of amenities.

Messages pertaining to people's behavior have been largely used by municipalities in Morocco. Examples are:

- to put waste bins for collection not long before arrival of trucks;
- taking care to close the waste bins when possible;
- taking care of the cleanliness of waste deposit sites;
- storing the waste at home if not collected;
- placing waste in plastic bags if possible;
- good handling of waste by the municipality and the people together for maintaining good salubrity conditions.

8.2.4 Selection of Awareness Tools

Awareness tools have been presented in the Ministry of Environment report on the strategy for awareness heightening. The selection of these tools is determined by the objectives and the target groups, and also by application of the basic principles for launching public education (cited in 8.2.1).

The principle that the best use as possible should be made of available competencies and resources means that a minimum number of tools should reach a large number of target groups.

Awareness tools like round tables and regular meetings with the public have a big advantage, which is direct contact with the people and exchange of views. Regularity of information delivered to the people is an essential aspect for development of communication and continuity. Accordingly, the following communication tools must be given priority in the short term:

- information letters;
- information meetings;
- round tables;
- evaluation studies;
- practical awareness guidebooks or leaflets, with basic information on waste and recommendations given to the people.

8.3 Planning and Information Activities

Main activities and information needs which are linked to the implementation of an awareness campaign are those of the planning stages, preparation of educational materials, execution, and evaluation. Information is at the same time a process for planning and organizing activities, as well as a tool of awareness heightening. Examples of activities which are related to planning and information needs for the development of public education within the scope of SWM are summarized below.

8.3.1 Examples of Activities Pertaining to Planning

Planning of awareness campaigns is the duty of the municipality or the urban community and should involve several target groups. Examples of activities are:

- establishing a committee for planning actions, with regular meetings with concerned technical services (SWM, health and hygiene, communication);
- visiting places where education and awareness campaigns have been set up; organizing visits to treatment units or exhibitions
- defining the possible contribution of citizens associations and promoting their role in the activities; providing suitable and regular information to these citizens associations; designation of a person in charge of relations with associations; invitation of associations to public meetings organized for follow-up; financial and technical support for the authority in cases where the citizens association takes initiatives in accordance with the project objectives;
- establishing direct contacts between the commune and the school teachers or coordinators; participation of SWM workers in public meetings together with inhabitants; in-house meetings of SWM workers with operators;

8.3.2 Examples of Activities Pertaining to Information

1) Information for planning

- press articles through interviews;
- information on precedent campaigns / opinion surveys;
- information on the communication program;
- information on technical aspects with citizens associations (expected benefits, expected behavior);
- information on social aspects;
- pedagogic information delivered to SWM workers on the usefulness and conduct of SWM projects;
- information on the incidence of projects on working conditions in the solid waste sector;
- studies and investigations about people's views about the problem;
- information for people about projects and their benefits;
- information for people about waste in general;
- councilors or mayor's letters to inhabitants;
- door-to-door delivery of the "guide" for the inhabitants.

2) Information for evaluation

- synthetic documentation regularly sent to councilors and to provincial commissions;
- regular information on waste issue and results of awareness operations;
- information to improve the actions of associations, and need to encourage their action through media coverage;
- regular information sheet provided to workers in the SWM sector;
- investigation of public opinion about actions, and media coverage of the results;
- regular information letters addressed to the people;

- press articles;
- adjustment of messages according to new information;
- comparative information on similar examples;
- presentation of technical results to the people;
- regular information for teachers about results.

8.4 Execution Activities

8.4.1 Implementation Steps

1) Short Term

Basically, the short term purpose of awareness campaigns is to increase the awareness of the people and communes about the SWM issues and needs, and to get the good participation of citizens awareness activities like for instance the public meetings. Priority objectives are as follows:

- increasing public awareness about SWM problems;
- increasing public awareness about responsibilities and citizen behavior, to contribute to SWM improvement;
- increasing the awareness of municipal actors and municipal councilors about the usefulness of education within the scope of improving SWM.

The expected participation from the residents is that they participate in public meetings, round tables or seminars that can be organized by the communes as part of the campaigns activities. Accordingly, the following actions should be taken into account:

- to provide information about waste issues to the people;
- to increase the role of and support to citizens associations;
- to establish opportunities for discussion or consultation with the public.

Informing people about waste issues could be based on concrete experiences like:

- the waste management activities taken by the communes to improve SWM;
- the regional monographs about environment when available;
- the results of awareness or cleansing campaigns which have been done, when such results have been evaluated.

In the short term, the following objectives should be considered as essential:

- to reconsider the delivery of information to the people about waste issues including current SWM activities, results of awareness campaigns, and projects;
- to involve NGOs in the establishment of education activities from the planning stage to implementation and evaluation;
- to start awareness heightening of teachers and coordinators at school;
- to create the necessary conditions for ensuring continuity of educational activities;

- to define a feasible education program based on the set of explained principles, specially focusing on the requirement of inter-active and multi-target oriented education;
- to start the exchange of information with other communes (information delivery, video presentation);
- to set up responsibilities and objectives for establishing a permanent education dynamics;

In the short term, planning of education activities should be set up by a committee specially established, or eventually by the general secretary of the commune, for preparation of the campaign.

2) Medium Term

The medium term objective is to send messages about behavioral change to the people, as far as it concerns solid waste. In the short term, behavior related messages are useful but they must be well adapted to specific objectives and targets if efficient effects on the people's attitude are expected. The use of such messages should aim at completing other messages launched as background awareness for a better communication. In the medium term, more importance can be given to such messages. There are activities that suit with the objectives at medium term, like for example:

- to establish an environmental education program at school;
- to start the exchange of information at the international level;
- to provide regular information to involved parties: technical information, popular information;
- to establish an education and communication policy;
- to make a regular evaluation of the public opinion;
- to create pedagogic materials for pupils and teachers.

3) Long term

The long term objective is to achieve solid cooperation between municipalities and people in order to adjust smoothly to any change in policy objectives for SWM or environmental protection. At this stage, the local NGOs are recognized bodies for the definition of objectives, for planning, and for implementation. Planning activities should be undertaken by a communication and public relations unit for the most important communes, or by the SWM service itself for small communes. Objectives are:

- to get full participation of residents and find partnership with NGOs;
- to involve the SWM workers or managers in the awareness and education process, between the municipality and the citizens, specially at the stage of developing a policy of sorting out waste materials at source. This aspect is explained below.

8.4.2 Recycling from the Point of View of Education

Sorting out waste materials at source is considered here from the education standpoint besides the short term and long term SWM objectives. The short term objective is the improvement of waste collection efficiency, since separation of waste materials at source will eliminate nuisances due to scavenging. This objective is a substitute for the solution of synchronization between the deposit of waste in front of houses and collection by municipal trucks. The long term objective is to achieve organized recycling for waste minimization and resource savings, as required by the national environment strategy. It is assumed that sorting out of materials would be operated by people using public containers.

From the education point of view, the objective of separation of waste materials at source provides clear messages. Environmental messages are resource savings and waste minimization. Civic messages are cooperation of the people to put the waste into specific containers. There are also social and economic messages like direct benefits for the scavengers, and in the longer term organizing the recycling sector.

The application of the waste minimization policy will be possible only through an integrated and consistent education program. But at the same time, it can be an innovation factor for environmental education in Morocco. Actually, inhabitants perceive SWM as a collection service for cleansing livelihoods and maintaining acceptable hygiene. There is certainly a need to broaden this perception of SWM. The objective of sorting out waste materials is a totally new objective, involving several important issues to which people might be receptive. It is a challenging objective for education in the field of solid waste.

8.4.3 Sharing of Responsibilities

1) Awareness Plans

Public awareness heightening plans that are large enough in scope should be issued by a committee composed of representatives of the communes and urban community, of provincial delegations, and of citizens associations. The president of the urban community would be responsible for approval and execution of the plan. Public awareness heightening plans that are more narrow in scope could be managed by the communes, but by taking benefit of agencies that have already got experience in the field of awareness heightening. The role of citizens associations in planning and executing is also essential for success. Coordination with the Ministry of Environment is recommended.

2) Communication

Urban communities and major municipalities should have a public relations service in charge of communication and education related activities. Before such institutional improvement is realized, the SWM related services must take responsibility for improving communication.

Communication could as well be required by the municipality as a contractual condition in case of privatization of the waste management services. However, even in this case, environmental education, and more specifically awareness in the field of solid waste, must be developed at the urban community level.

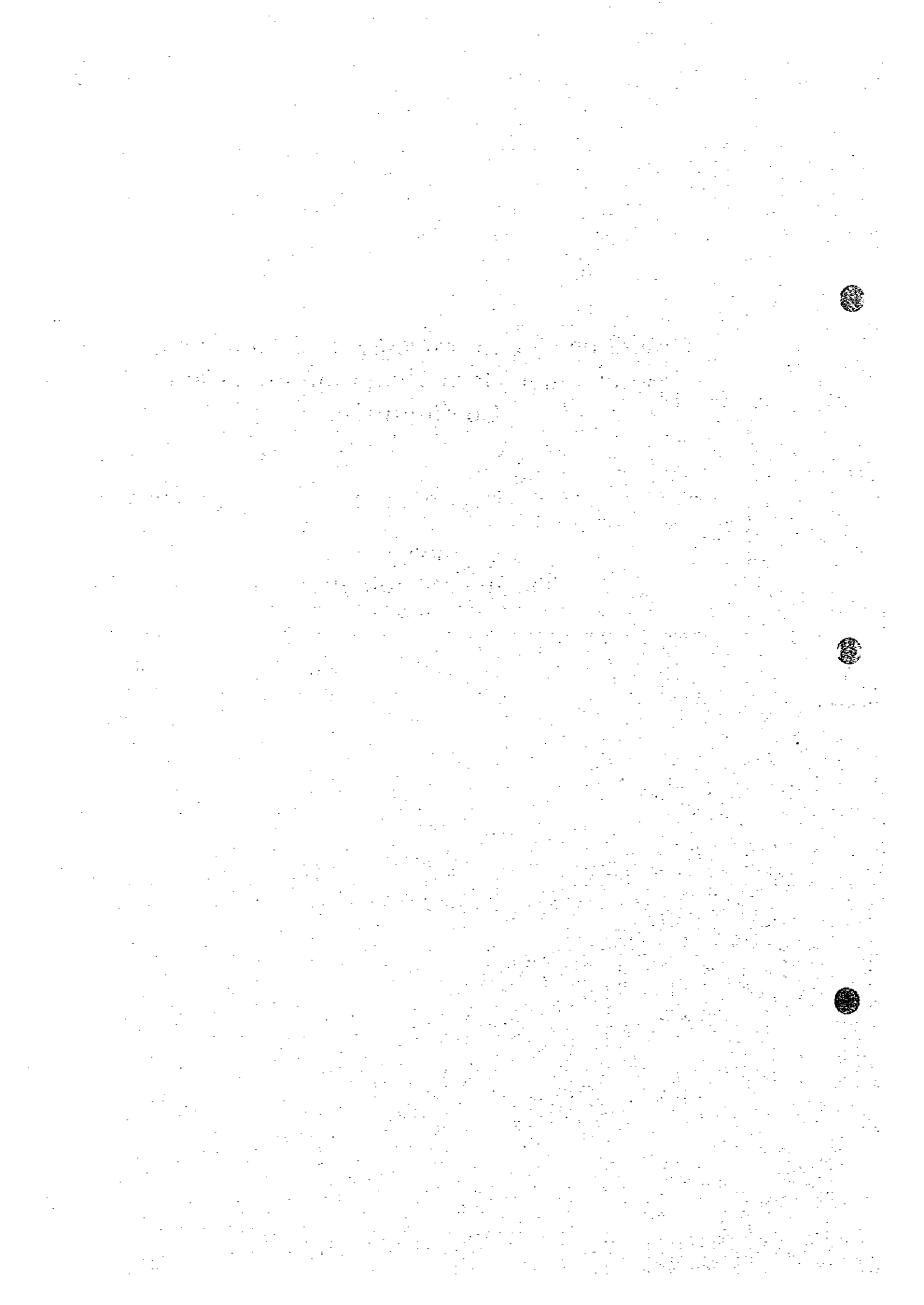
8.4.4 Ensuring Continuity of Activities

Continuity of participation of the people needs special attention and must be encouraged through measures like those indicated below:

- by sustaining interest and motivation of the actors involved;
- by motivating measures like social recognition of NGOs' actions, through the press for instance;
- by permanent adjustment of messages and communication to the situation as it is shown by the results and by people's reactions;
- by comparing the local situation with the national and international context;
- by considering the target group as a real interlocutor;
- by diffusing regular information to the people and to the municipal actors, about problems, policy objectives, actions, and evaluation of programs which have involved the people;
- by organizing public meetings to follow up the actions.

**Guidelines for Improvement of Solid Waste
Management for Urban Communes and
Communities**

**Part 2
Technical Guidelines**



Final Report

Contents

Current Book and Part are marked with “*”.

Book 1 **Guidelines for National Level Policies and Actions
for Solid Waste Management**

Part 1 National Strategy

Part 2 Laws, Institutions, and Finance

Part 3 Industrial and Hazardous Waste

Part 4 Infectious Waste

***Book 2** **Guidelines for Improvement of Solid Waste
Management for Urban Communes and
Communities**

Part 1 Management and Institutions

*Part 2 Technical Guidelines

Book 3 **National Action Programs for Solid Waste
Management**

Book 4 **Solid Waste Management Plans for Safi and El
Jadida**

Part 1 Solid Waste Management Plan for Safi

Part 2 Waste Disposal Plan for El Jadida

Book 5 **Summary**

Book 6 **Supporting Report
Current Conditions of Solid Waste Management in
Morocco**

Book 7 **Data Book
Appendices to Solid Waste Management Plan for Safi**

Book 8 **Japanese Summary**

[The text in this section is extremely faint and illegible. It appears to be a list or a series of entries, possibly a table of contents or a list of items, but the specific details cannot be discerned.]



Table of Contents

Book 2 - Part 2: Technical Guidelines

	PAGE
INTRODUCTION	1
OUTLINE of THE GUIDELINES	5
PART A	MUNICIPAL WASTE COLLECTION AND TRANSPORT
CHAPTER 1	CONTENTS OF THE WASTE COLLECTION AND TRANSPORT PLAN
1.1	General 9
1.2	Collection Improvement Plan 9
1.3	Action Program 10
1.4	Operation Plan 10
CHAPTER 2	DIAGNOSIS ON CURRENT SITUATION OF THE COLLECTION AND TRANSPORT SYSTEM
2.1	Need for the Diagnosis 13
2.2	Data Collection for Diagnosis Study 13
2.3	Identification of General Waste Collection and Transport Issues in Morocco 13
CHAPTER 3	WASTE COLLECTION AND TRANSPORT SERVICE OBJECTIVES
3.1	Plotting the Course 19
3.2	Objectives and Targets 19
CHAPTER 4	SOLID WASTE AMOUNTS AND COMPOSITION
4.1	Need to Know Waste Amount and Composition 21
4.2	Preparation of Data Base 21
4.3	Solid Waste Amount Surveys 22
4.4	Composition of Solid Waste 24
4.5	Forecasts of Waste Amount and Composition 25
CHAPTER 5	IMPROVEMENT PLAN FOR COLLECTION SERVICE COVERAGE
5.1	Citizens' Right to receive the Service 29
5.2	Countermeasures for Non-served Areas 29
CHAPTER 6	SELECTION OF SUITABLE COLLECTION AND
6.1	General 33
6.2	Primary Collection 34
6.3	Discharge and Collection 36
6.4	Collection & Transport System 39
6.5	Transfer Station 45

CHAPTER 7	WASTE COLLECTION AND TRANSPORT OPERATION PLAN AND TECHNICAL OPERATION CONTROL	53
7.1	Operation Plan Formulation	53
7.2	Implementation	55
7.3	Operation Monitoring & Control	55
7.4	Operation Modification	61
7.5	Feedback to Action Program	61
CHAPTER 8	WORKSHOP AND MAINTENANCE	63
8.1	Prevention is Better than Cure	63
8.2	Driver Responsibility	64
8.3	Public and Private Workshop	65
CHAPTER 9	RECYCLING	67
9.1	Understanding Recycling	67
9.2	Identification and Reuse of Recoverable Materials	68
9.3	Collection and Processing of Recoverable Materials	70
9.4	Adoption of Recycling by the Urban Commune	71
CHAPTER 10	COST ESTIMATION	73
10.1	Importance of Maintaining Accurate Costs	73
10.2	Collection and Transport Service Costs	73
PART B MUNICIPAL WASTE DISPOSAL		77
CHAPTER 1	PLAN FOR WASTE FINAL DISPOSAL	77
1.1	Formulation of a Final Disposal Plan	77
1.2	Basic Items Required in the Final Disposal Plan	79
CHAPTER 2	SELECTION OF NEW DISPOSAL SITE	81
2.1	General	81
2.2	Site Selection Method and Procedure	82
2.3	Criteria for Site Selection	85
CHAPTER 3	WASTE DISPOSAL SYSTEMS	93
3.1	General	93
3.2	Levels for Waste Disposal Systems	93
3.3	Outline of Disposal Site Design	106
3.4	Improvement Plan for Existing Dumping Sites	106
CHAPTER 4	OPERATION AND CONTROL PLAN	111
4.1	Basic Concept of Landfill Operation	111
4.2	Landfill Method and Cover Soil	111
4.3	Truck Scale	117
4.4	Landfill Equipment	119
4.5	Environmental Monitoring	121

CHAPTER 5	ULTIMATE LAND-USE AND SITE CLOSURE	123
5.1	Ultimate Land-use	123
5.2	Site Closure	127
CHAPTER 6	ENVIRONMENTAL IMPACT STUDY FOR SOLID WASTE DISPOSAL	129
6.1	Introduction	129
6.2	Initial Environmental Examination (IEE)	129
6.3	Environmental Impact Assessment (EIA)	135
CHAPTER 7	COST ESTIMATION	141
7.1	General	141
7.2	Cost Estimation methods and Assumptions	143
CHAPTER 8	INTERMEDIATE TREATMENT PLAN	149
8.1	Introduction	149
8.2	Purposes of Intermediate Treatment	149
8.3	Selection of Intermediate Treatment Systems in Morocco	149
8.4	Examination of the feasibility of Incineration and Composting in Morocco	150
8.5	Intermediate Treatment Systems in General	155



List of Tables

Book 2-Part 2

PART A		
Table A.1.1-1	Contents of the Waste Collection and Transport Plan	11
Table A.2.2-1	Data Collection for Diagnostic Study	14
Table A.2.3-1	Identification of General Waste Collection and Transport Issues	16
Table A.2.3-2	Analysis of the Waste Collection and Transport Issues	17
Table A.3.2-1	Objectives and Targets of Waste Collection and Transport Plan	20
Table A.4.2-1	Urban Commune Data Base	22
Table A.4.5-1	Estimation of the Waste Amount of One Commune (Example)	26
Table A.6.2-1	Collection stations where Primary Collection is Unnecessary	34
Table A.6.4-1	General Applicability of the Transport Systems	40
Table A.6.4-2	Equipment Cost Comparison	40
Table A.6.4-3	Unit Cost Comparison for HCS and SCS	43
Table A.6.4-4	Truck Selection Criteria (other than costs)	44
Table A.6.4-5	Truck and Manpower Requirements Estimation	45
Table A.7.3-1	Developing Operation Indices and Monitoring System	56
Table A.8.1-1	Daily and Periodic Inspection List	63
Table A.8.1-2	General Periodic Inspection List	64
Table A.9.2-1	Recoverable Materials from Municipal Solid Waste	69
Table A.9.2-2	Potential Reuse of Recovered Materials	69
Table A.10.2-1	General Conditions for Unit Cost Estimation	74
PART B		
Table B.2.3-1(1/2)	Evaluation Sheet for Final Disposal Candidate Sites	87
Table B.2.3-1(2/2)	Evaluation Sheet for Final Disposal Candidate Sites	88
Table B.2.3-2	Score Sheet for Selection of Final Disposal Site (sample)	89
Table B.2.3-3	Evaluation of Final Disposal Candidate Sites In El Jadida	90
Table B.2.3-4(1/2)	Score Sheet for Evaluation of Final Disposal Candidate Sites in El Jadida	91
Table B.2.3-4(2/2)	Score Sheet for Evaluation of Final Disposal Candidate Sites in El Jadida	92
Table B.3.2-1	Environmental Counter-measures in Each Level	94
Table B.3.2-2	Levels for Waste Disposal Systems	95
Table B.3.2-3	Disposal Levels and Rainfalls	194
Table B.4.2-1	Cover Soil Classification	112
Table B.4.3-1	Input Data of Truck Scale (example)	118
Table B.4.4-1	Landfilling Works and Equipment	119
Table B.4.5-1	Environmental Monitoring at Final Disposal Site	121
Table B.5.1-1	Levels of Ultimate Land-use	124
Table B.6.2-1	Format for Screening	130
Table B.6.2-2	Checklist for Scoping	133
Table B.6.2-3	Explanation of Item	134
Table B.6.3-1	EIA Items for Forecasting and Evaluation of Final Disposal Site	136

Table B.6.3-2	Counter-measures for Environmental Impact	140
Table B.7.1-1	Annualized Project Cost for Controlled Landfill: Level-2	141
Table B.7.1-2	Annualized Project Cost for Controlled Landfill: Level-3	142
Table B.7.1-3 (1)	Surmised Project cost for Controlled Landfill-2: Level-2	145
Table B.7.1-3 (2)	Surmised Project Cost for Controlled Landfill-2: Level-2	146
Table B.7.1-4 (3)	Surmised Project Cost for Controlled Landfill-3: Level-3	147
Table B.7.1-4 (4)	Surmised Project Cost for Controlled Landfill-3: Level-3	148
Table B.8.4-1	Unit Costs Comparison of Incineration and Controlled Landfill	152
Table B.8.4-2	Advantages and Disadvantages of Incineration	153
Table B.8.4-3	Advantages and Disadvantages of Composting	155

List of Figures

Book 2-Part 2

PART A		
Figure A.6.2-1	Collection and Transport Operation Flow	33
Figure A.6.2-2	Primary Collection with Handcarts	35
Figure A.6.3-1	Stationary Container System (SCS) and Haul Container System (HCS)	39
Figure A.6.4-1	Unit Cost Comparison of Collection Systems	41
Figure A.6.5-1	Transfer Station Necessity Evaluation	47
Figure A.7.1-1	Operation Plan and Implementation Cycle	53
PART B		
Figure B.1.1-1	Formulation of Final Disposal Plan	78
Figure B.2.2-1	Flow Chart for Procedure of final Disposal Site	83
Figure B.3.2-1	Conceptual Drawing of Controlled Landfill (Level-2)	101
Figure B.3.2-2	Conceptual Drawing of Controlled Landfill (Level-3)	101
Figure B.3.2-3	Conceptual Drawing of Controlled Landfill (Level-4)	102
Figure B.3.2-4	Leachate Recirculation System (w/Aeration Lagoon)	102
Figure B.3.2-5	Rainfall Map in Morocco	105
Figure B.4.2-1	Conceptual Drawing of Landfill Operation (Cell Method)	113
Figure B.4.2-2	Landfill Operation Procedures (1/3)	114
Figure B.4.2-2	Landfill Operation Procedures (2/3)	115
Figure B.4.2-2	Landfill Operation Procedures (3/3)	116
Figure B.4.3-1	Structure of Truck Scale	118
Figure B.4.4-1	Typical Drawing of Landfill Equipment	120
Figure B.5.1-1	Required Area for Facilities of Ultimate Land-use	125
Figure B.5.1-2	Ultimate Land-use Plan (Sample)	126
Figure B.6.3-1	Flow Chart for the Process of Environmental Impact Assessment (EIA)	130
Figure B.6.3-1	Flow Chart for the Process of Environmental Impact Assessment (EIA)	137
Figure B.8.4-1	Schematic Flow Diagram of Incineration Plant	151
Figure B.8.5-1	Classification of Intermediate Treatment Systems	157

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for ensuring the integrity and reliability of financial data. This section also outlines the various methods and tools used to collect and analyze data, highlighting the need for consistency and precision in all reporting.

2. The second part of the document focuses on the role of internal controls in preventing fraud and errors. It details the various checks and balances that should be implemented within an organization to ensure that all activities are conducted in accordance with established policies and procedures. This section also discusses the importance of regular audits and the role of the internal audit function in identifying and addressing any weaknesses in the control system.

3. The third part of the document addresses the issue of transparency and accountability. It stresses the need for organizations to provide clear and concise information to their stakeholders, including investors, regulators, and the public. This section also discusses the importance of maintaining accurate and up-to-date financial statements and the role of external auditors in providing an independent opinion on the reliability of these statements.

4. The fourth part of the document discusses the importance of risk management in ensuring the long-term success of an organization. It outlines the various risks that organizations face, including financial, operational, and reputational risks, and discusses the various strategies and tools used to identify, assess, and mitigate these risks. This section also emphasizes the need for a proactive approach to risk management and the importance of regular risk assessments.

5. The fifth part of the document discusses the importance of ethical behavior in all business transactions. It outlines the various ethical principles and standards that should be followed by all employees and management, and discusses the various consequences of unethical behavior. This section also emphasizes the need for a strong ethical culture within an organization and the role of leadership in promoting and enforcing ethical behavior.



THE STUDY ON THE NATIONAL GUIDELINES FOR SOLID WASTE MANAGEMENT FOR THE KINGDOM OF MOROCCO

INTRODUCTION

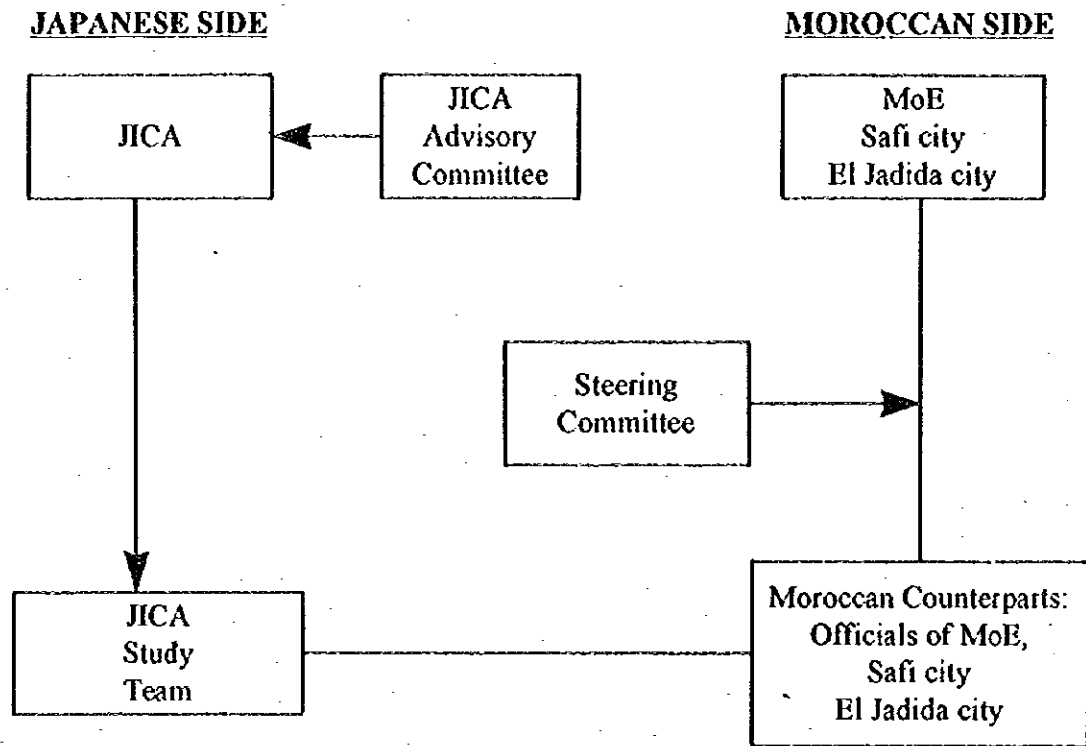
1. Objectives of the Study

The objective of the Study is to strengthen the capacity of solid waste management at both national and local levels. This study has been executed by Japan International Cooperation Agency (JICA) based on the request from the Government of Morocco. JICA commissioned the study to a joint venture comprising EX Corporation and Yachiyo Engineering Co., Ltd. The joint venture has organized a study team comprising of 11 specialists. The Study has been conducted jointly by Japanese consultants and their Moroccan counterparts.

The study period was about 18 months from January 1996 to July 1997. The Study is divided into two phases, the first phase being from the beginning up to September 1996, and the second phase being from October 1996 till the end. The objective of the first phase study is to formulate the guidelines and action plan for solid waste management at both national and local levels. The objective of the second phase is to apply the guidelines formulated and check their applicability. Two cities, i.e. Safi and El Jadida were selected for the second phase. The Study team in collaboration with the counterparts in Safi city have formulated a plan for improvement of solid waste management. In addition, we have implemented a public education campaign (demonstration project) aiming at strengthening citizens' understanding and cooperation concerning city cleansing. We have also formulated a plan for improvement of disposal of solid waste for El Jadida. It is expected that the plans will serve as a model for other local authorities in Morocco.

2. Study Organization

The study organization is shown in the figure below. This study has been conducted jointly by the Study Team led by Mr. Ohno and the Moroccan counterparts, i.e. officials of Ministry of Environment, Safi city and El Jadida city. A key counterpart agency on the Moroccan side is the Ministry of Environment. For the smooth execution of the study, the Moroccan side formed a steering committee comprising of representatives of the Ministry of Environment, Ministry of Interior, Ministry of Health, Ministry of Public Works, and Ministry of Commerce and Industry. Mrs. Layachi, Director, Department of Observation, Study and Coordination, Ministry of Environment served as chairman of the steering committee. On the Japanese side, an advisory committee was formed for the study. Dr. Masaru Tanaka, Director, Department of Waste Management Engineering, the National Institute of Health, served as chairman of the Advisory Committee.



MoE: Ministry of Environment

3. Reports

This study has produced the following reports:

1. Inception report
2. Progress report (1)
3. Interim report
4. Progress report (2)
5. Draft final report
6. Final report

The final report consists of the following Books:

- Book 1** Guidelines for National Level Policies and Actions for Solid Waste Management
 - Part 1 National Strategy
 - Part 2 Laws, Institutions, and Finance
 - Part 3 Industrial and Hazardous Waste
 - Part 4 Infectious Waste

- Book 2** Guidelines for Improvement of Solid Waste Management for Urban Communes and Communities
 - Part 1 Management and Institutions
 - Part 2 Technical Guidelines

- Book 3** National Action Programs for Solid Waste Management

- Book 4** Solid Waste Management Plans for Safi and El Jadida
 - Part 1 Solid Waste Management Plan for Safi
 - Part 2 Waste Disposal Plan for El Jadida

- Book 5** Summary

- Book 6** Supporting Report :
Current Conditions of Solid Waste Management in Morocco

- Book 7** Data Book:
Appendices to Solid Waste Management Plan for Safi

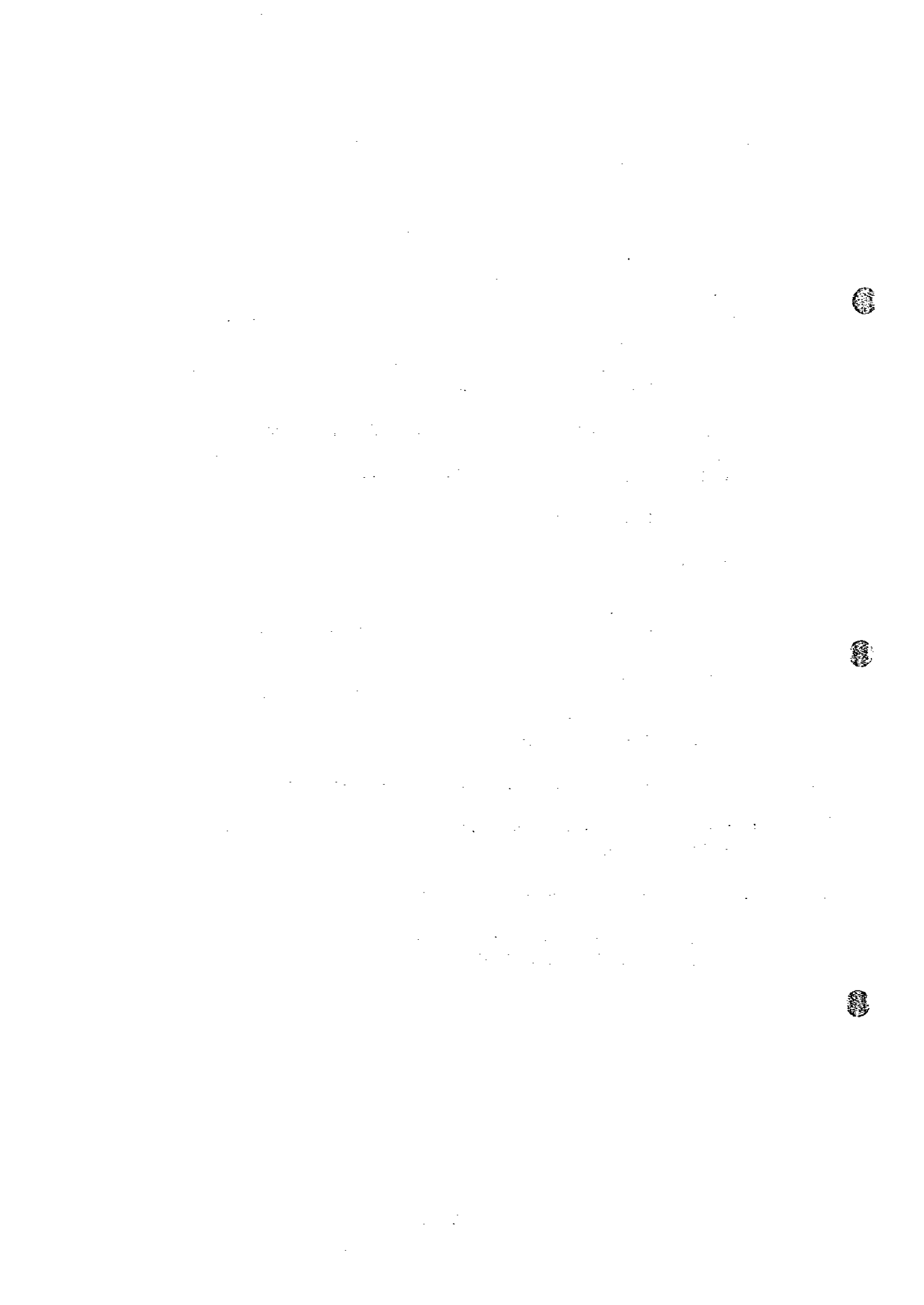
- Book 8** Japanese Summary

All the Book except for Book 8 has been prepared in English and French.

4. Guidelines for Improvement of Solid Waste Management for Urban Communes and Communities (Book 2)

The Guidelines consists of the following four parts:

- Part 1 Management and Institutions
- Part 2 Technical Guidelines



OUTLINE OF THE TECHNICAL GUIDELINES

1. The Need for the Technical Guidelines

The operation of solid waste management is a costly, difficult and continuous job. A few days disruption of the collection and transport service can create very unscenic and unhealthy conditions. Many of us have seen how a city waking up from three or four days of holidays or strikes, etc. looks like with the uncollected waste piled up on the streets. No wonder that city administrators, SWM operators and citizens are extremely interested in quickly removing the waste from their collective sights!

Solid wastes generated in urban areas must be promptly collected and transported from such areas before they can become a threat to the public health. This must be done in an efficient manner in order to be able to serve all the urban area with the available, sometimes limited equipment and manpower resources. The transported solid wastes should be disposed of by controlled landfill at a carefully selected site to provide protection for the environment in general, and public health in particular.

In Moroccan cities the sometimes limited resources are thrown into collecting and transporting the waste to open dump sites just outside the city limits with no evaluation or planning. The Urban Communes and Communities officials either do not have the time, or do not understand the need for making operation plans based on data collection and technical evaluation of operation. One wonders whether the already immense efforts put into the service can not be improved by such measures as;

- increasing trips made by collection trucks by reducing the unnecessary long time spent on collection routes because of excessive door-to-door service and separation of recoverable materials by collection workers
- using small trucks more efficiently by providing small transfer stations near to the particularly low accessibility areas they serve
- applying preventive maintenance measures for the trucks such as keeping daily check sheets and washing the trucks in order to increase their effective lives
- keeping records of collection trucks accessing the disposal site to monitor truck operation and prevent illegal dumping in open spaces outside the city
- improving the extremely poor conditions at the dump sites by preliminary and low cost efforts such as site enclosure, periodic application of soil cover, controlling access, etc.
- encouraging citizens to separate recoverable waste materials before discharging waste
- etc.

The technical guidelines set forth in this report may assist the SWM operators to provide more cost effective and higher standard of service.

2. The Diagnostic Study

There may be a number of communes or communities that resemble each other in certain natural or urban characteristics, or having similar problems. However no two communes are identical. Therefore each urban commune must closely examine its particular conditions and develop or adopt solutions accordingly.

The municipal engineers are requested to make diagnostic studies of SWM technical aspects in their respective communes as described in the following chapters. Although some elements of the diagnostic study, such as surveys and collection of data, may be considered additional burdens by the operators the importance of preparing an accurate diagnosis of the situation cannot be overemphasized.

These diagnostics studies should be based on accurate data collection. Such a sound data base can only be prepared if the urban community and commune are committed to the task. Therefore they have the major roles to play in this activity, although the support of the central authorities in providing technical know-how or financial assistance is always welcome.

This report introduces chapters that reflect the data necessary for collection, the analysis procedures and the likely issues that shall be identified. Book 4-Part 1 shows the results of the diagnostic study for the city of Safi which may be used as reference.

3. Contents of Book 2-Part 2

This part is divided into two parts;

1. Part A: Collection and Transport
2. Part B: Disposal

The contents of both are briefly outlined hereafter.

3.1 Part A - Collection and Transport

All urban communes implement SWM collection and transport with various degrees of efficiency. This part was prepared after forming an understanding of the collection and transport activity in a number of communes during the first study phase (and reported in Book 6) and implementing a number of surveys and developing a collection and transport improvement plan for Safi city (Book 4-Part 1). The Study Team was therefore in a position to recommend a specific planning process as described in Chapter 1, and diagnostic issues and analysis considerations, in Chapter 2.

Chapter 3 sets out the procedure for setting service objectives. The importance of knowing solid waste amount and composition generated in the urban commune and the methods for doing that are discussed in Chapter 4. Chapter 5 addresses areas where the service coverage upgrading should start with.

The technical systems related to collection and transport are described in Chapter 6. This chapter should assist the municipal engineer in selecting the suitable equipment and evaluating the needs for related activities as primary collection and transfer stations. Chapter 7 attempts to convince the municipal engineer of the importance of the operation plan, its contents, and the possible monitoring programs the engineer can resort to, to evaluate and adjust the work. Chapter 8 is an introduction to the preventive maintenance works necessary to keep the collection trucks on the road.

While the subject of recycling comes towards the end of Part A, in Chapter 9, this is not an attempt to downplay its importance. Chapter 10 may assist the municipal engineer in preparing and maintaining actual operation costs and estimates, which is not done properly at this time in most of the communes.

3.2 Part B - Disposal

Unlike collection and transport, disposal activity has the disadvantage of starting from the scratch. Open dumping of solid waste at sites located outside the urban conglomerate and "operated" with no, or minimal environmental considerations is the norm. Therefore there is much to comment upon, and much guidance is needed. At this time more emphasis was given to covering all the main points, which sometimes may have resulted in scratching of the surface without going too deeply into details. The urban commune and community municipal engineers should read these guidelines in combination with more detailed technical references on the subject.

Chapter 1 outlines the process for preparing the disposal plan and basic considerations. Chapter 2 details the procedure for selecting new disposal sites under which these sites may be indeed considered environmental supporting projects and not environmental damaging projects. The turnaround from open dumping to controlled landfill is not anticipated to take place in one step. Chapter 3 discusses the various intermediate levels of controlled landfill to upgrade disposal at a realistic pace. The operation of the disposal site along with the necessary facilities and heavy equipment are described in Chapter 4.

The disposal site, no matter how long it is utilized, is a temporary facility, and potential usage and monitoring system for after site closure are outlined in Chapter 5. The initial environmental examination (IEE) and environmental impact assessment (EIA) studies necessary for the disposal site in its stages of planning, construction, landfill operation and after site closure are given in Chapter 6. The cost estimation for constructing and operating a disposal site (for various levels) is described in Chapter 7.

Disposal of SWM is not only confined to controlled landfill but also includes intermediate treatment facilities. Chapter 8 introduces the types of intermediate treatment facilities and examines the applicability of a number of these facilities to the Moroccan SWM.

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