5.3 Educational and Enlightenment Plan for Public Awareness

5.3.1 Concept of Educational and Enlightenment Plan

The educational and enlightenment plan on solid waste management of the Maser Plan is meant to let the public know all about the production and management of refuse. This is achieved by providing them information about the origins, linkages and consequences of the problems on solid waste, with the objective of enlightening the minds of the public and, eventually, gaining their cooperation and support.

According to this concept, the educational plan would be aimed basically at the children and young population and the enlightenment plan aimed to the population in general, with emphasis in the community groups more concerned and/or liable for the solid waste problem. A brief explanation of the purposes, targets and methodologies to accomplish these plans follows.

5.3.2 Educational Plan

The educational plan shall have as target, basically, the students of elementary and secondary schools. The tools developed for these courses can however be also used to enhance the awareness of the employees involved in solid waste management and be also used for other audiences, such as in the proposed Recycling Centers, Barangay meetings and other community gatherings. The solid waste management employees include collection crew, street sweeping personnel and disposal site workers. It should be reminded that, in addition to the activities performed at the Educational Plan, they should also attend capability building sessions, including on hygiene (refer to section 5.1 Social Consideration)

The following will be undertaken to strengthen and develop the education of elementary and secondary students:

(a) expand the regular curriculum relevant to solid waste management;
(b) train school teachers;
(c) develop extra-curricular activities and;
(d) develop an educational tool.

A brief explanation of the above is given below:

Expanding of regular curriculum: In the present structure of the Philippine Educational System, there is not a subject that is specifically related to solid waste management. However, the Health Education course of the standard curriculum gives the opportunity to convey the basics of solid waste management to the students.

It is recommended to organize a Solid Waste Education Tour that will be conducted by DENR and MMDA. This tour will involve going to different elementary and secondary schools to give a talk, supported by a slide show and other audio-visual aides, about waste reduction and recycling. The tour group will comprise an educator, audio-visual operator and assistant.

Planning and scheduling the visits shall be made through the educational authorities at each LGU, which means, the local Superintendent of the Department of Education, Culture and Sports. When dealing with private schools, the contact shall be made individually.

Training of school teachers: As a matter of fact, the educational plan shall have an emphasis on educating the teachers on the most important facts on solid waste management and providing them with educational materials to support their teachings.

After a period of testing and evaluating the methods and materials produced by MMDA with DENR, the Educational Plan shall focus therefore in training teachers, and providing them with the educational audio visual kits. This shall be done in order to expand the coverage of the Educational Plan in Metro Manila. Being such a large area, the Educational Plan will only reach large audiences if a "multiplication" strategy is used.

Development of extra-curriculum: It is not enough that students are provided with written materials for classroom instruction. Going on field trips and going through a live experience is one very effective approach for education, especially when dealing with solid waste management.

It can be recommended that students go on field and observe activities and facilities related to solid waste management, such as waste collection, scattering waste on the roads and rivers, and disposal sites. These visits should be done after they receive some instruction on the subjects or using also the Educational Plan Kit. This way, the students can have a better understanding of the appropriate manner of behavior relative to solid waste management.

The field trip programs can be organized for elementary and secondary school students based on a planning schedule made also through the DECS. MMDA and LGUs are expected to support and conduct the field strip, providing guidance and transportation to the students.

Development of educational tool: The production of materials for the educational plan, i.e., pamphlets, booklets, video tapes, slide show, etc., shall be shouldered by the MMDA in connection with the DENR section devoted to the production and dissemination of educational materials.

Although DENR has already one section producing some of these materials, they address the entire country and therefore their effort is not sufficient to reach effectively the large audience represented by the population of Metro Manila. The experience of DENR in this field however is deemed very important and should be acknowledged, but the materials produced by MMDA shall have a characteristic of aiming at the citizens of Metro Manila.

Planning, conception and basic layout of these audio-visual materials shall be provided by MMDA, yet the actual making of it shall be contracted out with specialized firms.

Human resources development for specialists: Government officers who engage in solid waste management require high level education opportunities. Scholars for solid waste management of institute and academic also should be raised for securing and development of solid waste management technology. Therefore, human resources development as

specialists and scholars should be enhanced at tertiary education level, such as college and university.

5.3.3 Enlightenment Plan

The enlightenment plan shall complement the educational plan. It shall target community groups, specially those active in the Barangays and LGUs, and also the private sector, mainly those involved in industrial and commercial activities leading to the production of refuse, the packaging and the bottling sectors, etc.

In order to reach the broadest audience, the enlightenment activities shall seek partnership with service clubs, such as Rotary Club, Lions Club, etc., with commercial and industrial associations and with the other organizations already active in the solid waste problem in Metro Manila, such as Linis Ganda, Clean and Green Foundation, etc.

The Private Sector is a very important player for waste management. Government enlightens the Private Sector, which should understand their responsibility as follows:

- decreasing waste generation;
- appropriate waste discharge;
- expanding and increasing recyclable material use;
- promotion for increasing recyclable products;
- development of recycling technology; and
- participation in events and campaigns regarding waste management.

A strategy for environmental protection is the 'repeat and incite to crisis' method, wherein several tools are used for the same topic, and are then repeated. For general and common information, mass media, such as TV, radio, are effective tools. On the other hand, dialogue and seminar can be used for specific topics and areas dealing with specific matters.

Audio-visual tool, such as video cassette player and movie, is more effective than printed matter for most people. Therefore, the following tools are recommended for solid waste management:

(1) Dialogue

A face-to-face encounter is a very effective approach for specific topics and area specific matters, such as those matters concerned with MMDA and LGUs. The following situations are suitable for using this approach.

- to make people better understand the need for solid waste facilities
- to make people understand the advantages of proper storage of garbage
- to make people comply wit the collection schedules
- to organize a community for segregation and group collection
- to discuss with the people the need for cost recovery schemes

(2) Use of Audio-Visual Tool

Audio-visual tools can have a lot of impact on the general public, particularly the students. The easiness of carrying it around the community by vehicle makes it attractive. It would even be more effective if the audio-visual presentation were supplemented with dialogue afterwards. The audio-visual tool would be developed by MMDA and the Recycling Center, using the Educational Kit as reference.

An effective way to reach broader audiences would be to produce a 35mm film with a duration of about 60 seconds to be shown at the beginning of movie film presentations in the movie theaters of Metro Manila.

This film however has to be of outstanding quality so that the movie theater owners will accept it to be shown free of charge in their theaters and the audiences enjoy it before their preferred movie showing.

(3) Staging of Events and Campaigns

The staging of events and campaigns on solid waste management can focus on the following topics

- waste reduction
- promotion of recycling
- promotion of segregation
- anti-littering campaigns

The events and campaigns may be conducted by any organization, such as DENR, MMDA, LGUs, Barangay Offices, Communities and NGOs. Presently, some of these events and campaigns are already ongoing, especially some contests on "The Cleanest and Greenest Barangay" or on " The Cleanest and Greenest LGU".

In this case, MMDA should first identify these efforts, trying to coordinate and support them, before developing their own initiatives.

Another role to MMDA on this situation would be to seek sponsorship in the media and in the service clubs, such as Lion's or Rotary Club and in the business community for these events.

CHAPTER 6 **MANAGEMENT AND INSTITUTIONS**

CHAPTER 6 MANAGEMENT AND INSTITUTIONS

6.1 New Institutional Arrangement for SWM

In order to improve the current institution for project implementation, operation and management of SWM, the StudyTeam preliminary considered the following four options in mentioned in Chapter 2:

Option 1: Strengthening of Mandatory Functions of MMDA
- As the main responsible agency, MMDA shall be further strengthened in its institutional and financial powers for SWM.

Option 2: Partial devolution of functions of MMDA to DENR
- DENR is the main responsible agency for operation and management of transfer facilities and sanitary landfills.

Option 3: Separation of responsibilities of transfer facilities and sanitary landfills
- MMDA shall own, manage, implement and operate the transfer stations, while DENR shall own, manage, implement and operate the sanitary landfills.

Option 4: Formation of management cooperatives with LGU groups
- Transfer facilities and sanitary landfills shall be operated and managed by newly formed LGU associations

Of the above institutional options considered, two main models emerged as the most viable among the different options evaluated, namely, Option 1 and Option 4. Option 2 and Option 3 both have a critical weakness of conflict between the regulatory functions of DENR and its implementing responsibilities.

Between Option 1 and Option 4, it is recommended that Option 4–that of LGU associations handling the transfer stations and the sanitary landfills–be chosen by the Government in the future. The rationale behind this selection is that Option 4 could overcome the primary cause of the current SWM crisis in Metro Manila, i.e., the fragmentation of responsibility among concerned agencies. LGUs also have closer contact with inhabitants in its jurisdiction rather than MMDA and the position is more advantageous to organize public participation, which is vital to implement an advanced SWM under limited financial resources. Although individual LGU operation of SWM may have weaknesses in terms of cost efficiency and economy of scale, these problems could be resolved if they form cooperative-type associations in order to construct, operate and manage their joint projects. Furthermore, SWM is in principle a mandate of the LGUs authorized by the Local Government Code, 1991, so that the direction to expand their coverage is a lawful way of rearrangement.

6.1.1 Proposed Demarcation between MMDA and LGUs in the Transition Period

LGUs, however, have no experience in organizing cooperatives for SWM in Metro Manila. In addition, at present, many LGUs do not possess sufficient manpower, financial resources and technical expertise to handle SWM in its entirety–from collection to final disposal. The capital requirements needed to set up an efficient and effective disposal system is too costly for any municipality or city to afford.

On the other hand, MMDA has a wide experience in large-scale treatment at final disposal sites and transfer station. Waste volume at the place of treatment increases as the waste comes down from generation point to final disposal site, and this necessitates a large-scale treatment for efficient operation. MMDA is an area-wide or metropolitan organization, which could in principle achieve efficient operation and economy of scale, providing services that require inter-city/municipal cooperation and coordination such as solid waste disposal. Moreover, solid waste management has been and still is the main function of MMDA.

For these reasons, it is recommended that, in the transition period (until the end of the target year of this Master Plan), MMDA continue to serve as the main institution responsible for the operation and management of final disposal sites and related facilities. Although MMDA may also continue to handle its existing tasks, such as river waste removal, etc., these tasks should be transferred to LGUs in the future.

The proposed delineation of tasks between LGUs and MMDA during the transition period for SWM in Metro Manila, shown in Figure 6.1.1, is as follows:

(a)	Collection and Sweeping	:	LGU
(b)	Transfer Station/Recycle Plant	:	LGU or LGU Cooperative
(c)	Sanitary Landfill/Incineration/Compost	:	MMDA

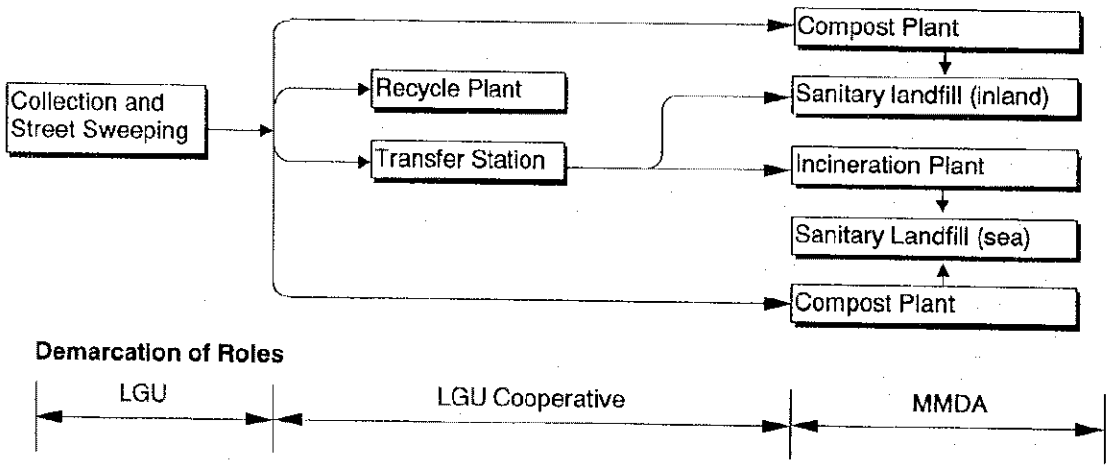


Figure 6.1.1 Proposed Delineation of Management Body

This demarcation assumes that an incineration plant is constructed at a sea landfill. If the plant is established at a transfer station, an LGU or LGU cooperative should be the main responsible body.

6.1.2 Review of Local Resolutions Related to SWM

In this new system, the major roles of MMDA for SWM include the following: 1) operation of sanitary landfill/incineration/compost; 2) provision of technical support to LGUs; and 3) promotion of coordination and cooperation among LGUs, and between LGUs and concerned national agencies. The underlying idea of this proposal is that MMDA should concentrate on matters common to the whole Metro Manila area and/or those requiring close coordination and cooperation among LGUs. To this end, some realignment of responsibility and budgetary sources for SWM is required between MMDA and LGUs.

In this context, it is proposed that MMDA Reg. 96-009 should be modified as follows:

(a) Delete most of the provisions that stipulate operational matters, such as prohibited acts, penalties, etc.;
(b) Provide additional clause to stipulate coordination and assistance to individual LGU or group of LGUs; and
(c) Provide explicit clause for river cleansing that defines the demarcation of responsibility between MMDA and LGUs concerned.

It is also recommended that LGUs take the initiative to adopt an ordinance related to SWM, following the more detailed stipulations by MMDA on SWM which are more suitable to LGUs. LGUs are also recommended to undertake road sweeping in their respective jurisdictions.

With respect to budgetary sources for SWM, both LGUs and MMDA have to provide budgetary allocations for the construction and operation of their respective facilities. MMDA should secure budgetary sources for the construction of landfills, incineration and compost plants through subsidies from the central government and, if necessary, external financial resources such as ODA's soft loan. The repayment of the soft loan should be done by collecting user fees from LGUs after the completion of the facilities.

Relative to the above financial issue, it is recommended that mandatory contribution from the 17 LGUs to MMDA be reexamined. Based on the Local Government Code 1991, 5% of the total annual gross revenue less IRA of component LGUs are to be remitted to MMDA as mandatory contributions. However, it is not clear for what purpose the contributions is and has been used, or how much MMDA plans to use from the contribution for SWM or some aspects of SWM. This ambiguity of the use of LGU contributions may be the major cause of inefficient collection of Mandatory Contribution from LGUs. User fees should be collected based on the provision of clear calculation criteria for specific purpose.

Table 6.1.1 Comparison of Present Waste Regulations in Metro Manila

EXTRACT OF PROVISIONS DOUBLY ENACTED	MMDA	Caloocan	Las Pinas	Makati	Malabon	Mandaluyong	Manila	Marikina	Muntinlupa	Navotas	Parañaque	Pasay	Pasig	Pateros	Quezon City	San Juan	Tagig	Valenzuela	Number of LGUs
General Cleanliness and Sanitary Conditions																			
Requirement to maintain cleanliness of frontage and immediate surroundings	◉		●	●		●					●	●			●	●		●	8
Prohibition of urination, defecation and spitting in public places	◉												●		●				2
Waste Handling and Disposal																			
Prohibition of littering and dumping of waste etc. in public places, waterways etc. and immediate surroundings	◉		●	●	●	●	●	●	●			●	●	●	●	●	●		13
Prohibition to bring out garbage etc. before arrival of authorized garbage trucks	◉					●						●					●		3
Waste Receptacles																			
Requirement to provide receptacles for waste	◉			●	●		●		●			●	●	●	●	●	●		10
Waste Collection																			
Prohibition of all forms of scavenging.	◉											●						●	2
Cleanliness and Waste Disposal on Public Utility																			
Requirement to provide sufficient number of waste receptacles in the vehicles	◉					●	●			●				●					4
Implementation and Supervision of the Regulation																			
Calls for creation of a separate environmental task group, under MMDA, to carry out regular inspections of strategic areas of Metro Manila	◉					●	●											●	3
Calls for the help of Barangay officials in the implementation and enforcement of the regulation	◉					●		●				●				●			4
Penalties																			
Issuance of a environmental citation ticket to violators of the ordinance	◉		●	●							●						●		4
Violators of the regulation are imposed fines of 500.00 to 1000.00 Pesos, and/or render either one to three days community service or three to seven days imprisonment	◉	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	17
In case of failure to pay the fine, the violator might risk a fine of 2000.00 Pesos or from seven days to one months imprisonment	◉			●													●		2
Penalties may be imposed outright against the violator without the need to file a case in the court, if the apprehending officer is from MMDA	◉		●								●								2
Disposition of Fines																			
Specifies that collected fines should be distributed to the LGU where the violation was committed in case the apprehending officer is an LGU employee	◉					●		●											2

◉ Provision in MMDA Regulation
● Provision in LGU Ordinance corresponding to provision in MMDA Regulation

6.1.3 Required Functions of Relevant Bodies

The proposed demarcation of tasks between MMDA and LGUs allows them to expand into new fields, but which they are as yet unfamiliar with. For this target, it is expected that all the aspects of practical waste treatment will be undertaken by individual LGUs or LGU groups. However, it is still practical for MMDA and the LGUs to share these new tasks.

In the execution of present waste treatment, private contractors are commonly involved and contribute to a large extent. This situation will still be continued for the conventional treatment and be expanded to cover newly introduced fields as well. Furthermore, it is expected to involve private investors in cases where the facility is commercially viable, like a compost plant. Thus the requested function in the transitional period will be executed with the participation of various concerned bodies as follows:

Concerned Bodies with regard to MMDA's Task

- Sanitary landfill : MMDA, DPWH, Private firm (design, construction, operation)
- Compost plant : MMDA, Private firm (investment, design, construct operation)
- Incineration plant : MMDA, Private firm (design, construction, operation)

Concerned Bodies with regard to LGU Task

- Collection & sweeping : LGU, Private firm (investment, operation)
- Transfer station & haulage : LGU, DPWH, Private firm (design, construction, operation)
- Recycle plant : LGU, Private firm (design, construction, operation)

Table 6.1.2 Form of Execution of MMDA's Task in Master Plan

Field / Task	Investor	Design	Construction	Operation & Maintenance	Note
Existing Sanitary	MMDA	DPWH	DPWH - MMDA - Contractor	MMDA - Contractor	
Landfill	MMDA - Soft Loan	MMDA - Contractor	MMDA - Contractor	MMDA - Contractor	Improve-ment
New Sanitary Landfill	MMDA - Soft Loan	DPWH - Contractor	DPWH - Contractor	MMDA - Contractor	
Compost Plant	Private	Private	Private	MMDA - Investor	BOT or BOO
Incineration Plant	MMDA - Soft Loan	MMDA - Contractor	MMDA - Contractor	MMDA - Contractor	

Table 6.1.3 Supposed Form of Execution of LGU's Task in Master Plan

Task \ Field	Investor	Design	Construction	Operation & Maintenance
Collection & Sweeping	LGU / Private	---	---	LGU - Investor
				LGU
Transfer Station & Haulage	LGU - Soft Loan	DPWH - Contractor	DPWH - Contractor	LGU - Contractor
Recycle Plant	LGU - Soft Loan	DPWH - Contractor	DPWH - Contractor	LGU - Junk Shop

6.2 Strengthening of Institutional and Financial Capacity of MMDA

Considering the present poor operation of final disposal sites, MMDA should strengthen its institutional and financial power to a great extent in order to carry out its tasks effectively. In this respect, MMDA should take a number of measures.

6.2.1 Rationalization of SWM Section

MMDA has a huge number of permanent employees, as shown the Figure 6.2.1. For example, most of those assigned to the SWM section have been from the era of pre-MMC (Metro Manila Commission). While some SWM functions like waste collection and street sweeping have been devolved to LGUs, together with the major budget for the service, those employees responsible for these tasks have not been reassigned to other positions. Providing remuneration for these devolved tasks can be an obstacle for MMDA in case it submits a request for proper allocation of budget to the Department of Budget and Management (DBM).

A possible solution to this problem is to shift the former metro-aids to other possible positions or transfer them to a newly established enterprise after undergoing the necessary vocational training. At the same time, the SWM section should be reorganized functionally in order to comply with the urgent demand. In this way, MMDA can take a key role in SWM, which is rapidly growing to be a critical issue in Metro Manila.

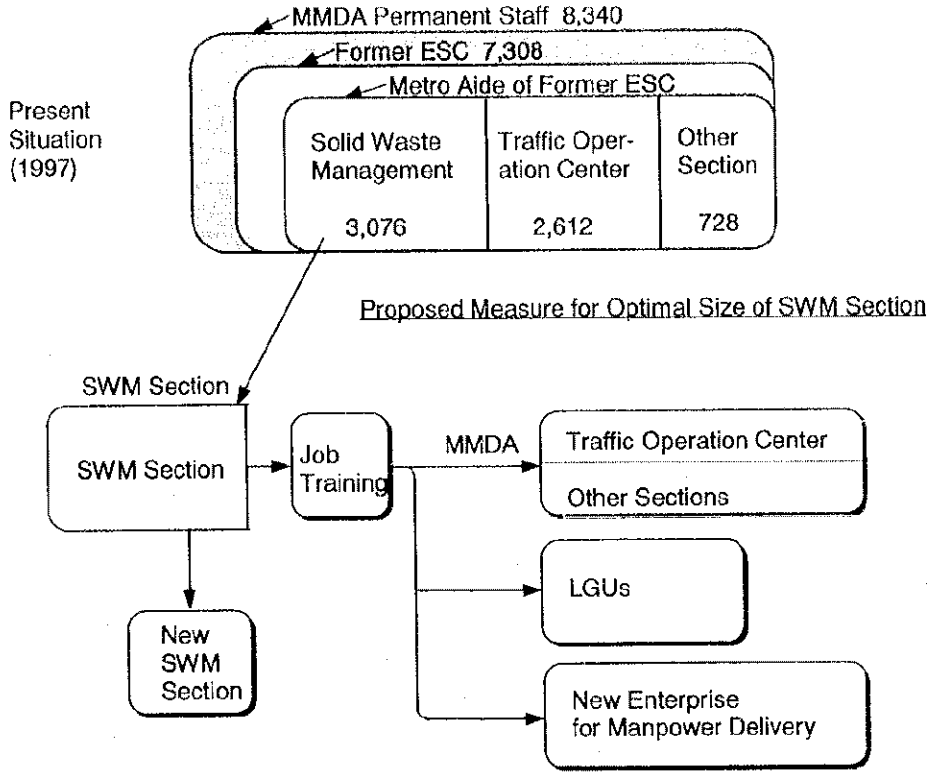


Figure 6.2.1 Proposed Rationalization of SWM Section

6.2.2 Establishing a Solid Financial Base and Independent Budgetary and Accounting Structure for Operation and Management of Sanitary Landfills and Related Facilities

One of the causes of today's SWM crisis in Metro Manila is the unstable financial base of MMDA, a major implementing agency. MMDA does not have a stable financial base to guarantee sustained and efficient delivery of metropolitan services, such as solid waste management and the operation of the proposed transfer stations and sanitary landfill facilities. Remittances by member local governments have been irregular, delayed or even withheld. This system considerably impairs MMDA's capability to deliver regular services on a sustained and efficient level. It is also very difficult for MMDA to commit to long-term projects such as the Master Plan proposed by the Study Team. The financial requirements for the establishment, management and operation of sanitary landfills are considerable and far beyond the present financial resources of MMDA. Unless MMDA is provided with a stable, sufficient and continuing source of income, it will have limited capability to embark on long-term projects requiring huge capital outlays.

A related problem is the scarcity of budgetary information on SWM at MMDA. An accurate data analysis on the cost-efficiency in SWM is necessary to seek financial improvement. However, the accounting system of MMDA does not break down the solid waste management expenditure due to its accounting system. MMDA should be concerned more with the cost-efficiency of its operation. In this situation, the establishment of a separate and transparent costing structure is the first step to improve

MMDA's financial management problem and to allow the recovery of all costs of services provided by the facilities.

6.2.3 Introduction of Inter-Agency Mechanism in MMDA

(1) Involvement of State Representatives for Political Adjustment

Coordination between MMDA and relevant agencies is poor due to lack of inter-agency mechanism in MMDA. In the Metro Manila Council, which is the governing board and policy making body of the MMDA, several national agencies attend the meeting of the council as non-voting members, such as heads or authorized representatives of the Department of Budget and Management (DBM), Department of Tourism (DOT), Department of Transportation and Communications (DOTC), Department of Public Works and Highways (DPWH), Housing and Urban Development Coordinating Council (HUDCC), and Philippine National Police (PNP). However, DENR, DOH and other relevant agencies for SWM do not participate in the meeting even as non-voting members.

In this situation, an inter-agency mechanism in the MMDA shall be institutionalized for overall strategic planning, service delivery and operations planning, and implementation supervision, coordination and monitoring. All agencies involved in various aspects of solid waste management in Metro Manila shall be part of the inter-agency body.

(2) Active Involvement of All Stakeholders

The operation at the sanitary landfills in San Mateo and Carmona has already posed serious problems for MMDA. This is partly due to the requirement that the disposal sites of Metro Manila be located outside the boundaries of the metropolitan area, and MMDA has difficulties in controlling local situations outside its jurisdiction. A solution to this problem is to include LGUs where final disposal sites are located to the regular management procedure of MMDA. At present, Metro Manila Council is composed of the mayors of the eight cities and nine municipalities, the president of the Metro Manila Vice Mayors League and the president of the Metro Manila Councilors League. However, there is no representative from either San Mateo or Carmona.

It should be stressed that the outcome of MMDA's efforts ultimately depends on the support and cooperation of those groups affected. Therefore, it is necessary to realize some degree of representation of all stakeholders, including representatives from the private sector and the NGOs, in the form of advisory board or consultative committee in the decision making process.

6.2.4 Introduction of Effective Internal Monitoring System

In order to solve the current SWM crisis, it is imperative to improve the credibility of MMDA as a partner to citizens in Metro Manila. When MMDA fails to provide adequate basic services to citizens, they respond by failing to provide the necessary cooperation in terms of garbage collection and user fees on which the successful implementation, operation and management of the proposed Master Plan is based.

The concept of accountability is the key to the improvement of SWM by MMDA. Accountability refers to the impetus for citizens or key broad-based elite to make public officials responsible for government behavior and responsive to the needs of citizens. Accountability also means establishing criteria to measure the performance of public officials, as well as oversight mechanisms to ensure that standards are met. Lack of accountability tends to reduce an organization's credibility as a social and economic partner, which makes the organization difficult to sustain the confidence that leads to long-term cooperative activities from LGUs, barangays and local communities. In order to enhance accountability, any public institution needs to internalize mechanisms to evaluate their economic and financial performance.

Improvements in auditing and accounting procedures are the first line of reforms that MMDA must undertake to ensure responsible performance of management tasks. Improved financial accountability often requires improved accounting and auditing practices, compliance with financial management standards, and financial accountability assessments. Audits are fundamental to accountability and are a necessary component of public sector performance. An independent audit system strengthens expenditure control by monitoring and evaluating public expenditure programs for effectiveness and performance.

From this perspective, an independent audit division should be established under the Metro Manila Council.

6.2.5 Decentralization of MMDA Organization

For the successful implementation and maintenance of development programs/projects, actual implementing sections need to possess sufficient authority to plan and manage programs/projects with sufficient funds. At MMDA, this means increasing the autonomy of the SWM section in terms of management and financial capability by decentralizing authority in appropriate areas. It also means ensuring a balance between service expenditures and financial resources so that functions assigned to the SWM section can be carried out effectively.

Decentralization should be complemented by the strengthening of MMDA's technical, financial and planning capabilities. For the moment, the situation is highly unsatisfactory as regards to accountability. SWM officials cannot be held accountable either technically or financially as they are given little room to maneuver within MMDA. Delegating technical and budgetary power would substantially increase accountability within the SWM section.

Appointment of SWM Head

From this perspective, it is recommended that the SWM section at MMDA be strengthened by appointing a SWM head who should hold a suitable degree in Engineering and have considerable practical experience in the field of SWM. He shall be responsible for all SWM planning, operations and monitoring tasks, especially the technical aspects of SWM, such as development of proposed sanitary landfills and related facilities.

Establishment of Project Management Unit

A Project Management Unit is recommended to be set up under the proposed head of the SWM section. The interim organization for the management and operation of the Pintong Bocaue sanitary landfill, the sea landfill, incineration and compost plants, including the Project Preparation Team must be integrated into one Program Management Unit. The rationale behind this set up is to improve the present system for planning and management of projects and to enable the immediate recruitment and capability building of key management and technical staff prior to implementation of the priority projects proposed in the Master Plan. The SWM staff can be exposed to actual detailed planning, management, and operations of the facilities and transfer of technology is effected by expatriate advisers/consultants who will be engaged in the project. This kind of interim organization is important because it will form the nucleus of the proposed SWM offices at different levels of government.

6.2.6 Introduction of New Incentive Systems for MMDA Staff

MMDA has already encountered serious problems in operating the existing final disposal sites, and one of the major causes of its operational deficiencies is the lack of qualified personnel. MMDA must acquire and keep capable engineers, managers, financial administrators, environmental specialists and researchers in order to implement its own projects effectively and in an environmentally sound way. This is an urgent issue that MMDA needs to raise because the technical alternative proposed by the Team demands MMDA staff to possess much more sophisticated technology and management capacities.

A major obstacle to solve the lack of human resources is that pay scales at MMDA are not at par with market rates for scarce personnel. For example, trained mechanics, which are at a premium in Metro Manila, are poorly paid in relation to other more plentiful manpower. With low salary scales, MMDA will not be able to attract technical and management manpower to adequately pursue its SWM program. Thus it is imperative to introduce a wage structure whereby employees at MMDA can get a pay commensurate to their ability, thereby retaining qualified managers and highly trained technical staff.

In addition to adequate compensation, clear career paths are vital to improve the productivity of the civil service in general. Efficiency at lower levels requires mechanisms to evaluate performance so that promotion is based on achievement. Such incentive systems are key to improving staff productivity. Performance improves when compensation is explicitly linked to successful administration of programs. Incentives should also include linking the possibility to upgrade skills with successful program implementation.

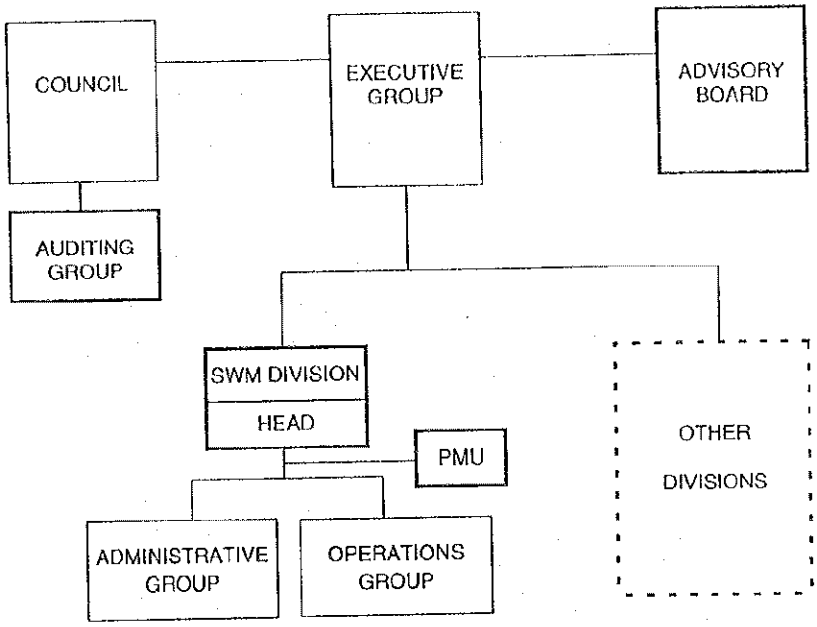


Figure 6.2.2 Proposed MMDA Organization Chart

6.3 Capability Building of Relevant Organizations

6.3.1 Development of Internal Resources

SWM of MMDA and LGUs suffers from severe operation deficiencies, i.e., poor operational performance and environmentally unacceptable disposal practices. Some of the main causes of these problems are lack of qualified personnel, lack of appropriate technology and inadequate regulatory measures at MMDA and LGUs. However, little technical advice and guidelines have been extended to them by the national government, although they are mandated by law to prepare and implement solid waste management programs.

The lack of expertise in the different aspects of solid waste management is one of the most serious problems in Metro Manila. The development of landfill disposal sites requires specialized engineering design and construction technology. Although there should be further training in this area in order to avoid costly errors in construction, there are no continuing training programs on SWM. Training program should include not only the engineering aspects of operations but also pollution control, waste minimization, recycling, and resource recovery. In addition to engineers, SWM requires managers, financial administrators, environmental specialists and researchers.

The lack of safeguards to prevent or minimize health and environmental risks posed by garbage collection and disposal systems has also contributed to the current SWM crisis in Metro Manila. Efforts to minimize these risks in a systematic way are necessary to prevent the outbreak of diseases and epidemics. At this moment, there is always the possibility of ground water contamination from open dumpsites. Nevertheless, it has not been closely monitored because of lack of either technical capability of MMDA and the

local government unit concerned or awareness of the risk of contamination posed by the dumpsites on the underlying aquifer.

It should be stressed that the recommended technical alternative further requires MMDA and LGUs to make more ambitious efforts to introduce new and complicated technologies without previous experience. This may cause serious difficulties to both entities in the course of introduction, from procurement to operation. Therefore, it is necessary to support MMDA and LGUs in the entire process from technical and managerial points of view. In addition to improving technical support system from the national government, dispatching some capable experts from a developed country seems vital to support officials in charge. In the initial stages of the Master Plan implementation, it is essential to introduce professional assistance with adequate experience in the technologies involved.

Technical Assistance to MMDA and LGUs

Capability-building is necessary for creation of a technically appropriate system for SWM, overcoming lack of sufficient resources and manpower in MMDA and LGUs. Therefore, it is proposed to provide technical assistance to strengthen MMDA and LGUs in the first 5 years. The transition period for technical assistance program will focus on the following tasks:

- Assist in the detailed planning, acquisition, design and execution of the proposed transfer stations, sanitary landfills, and other facilities;
- Assist in the planning, design and execution of the proposed new collection and transport routines;
- Assist in preparing appropriate internal budgeting and accounting procedures;
- Undertake such duties in connection with solid waste management assigned to MMDA and LGUs;
- Assist in the establishment of an Environmental Pollution Control Sector at MMDA; and
- Assist in the establishment of an Environmental Analysis Center under MMDA.

For the assistance at the initial stage of the project, namely, planning, selection of design firm and then the supplier, it is better to apply bilateral aid because of the neutral nature of the experts dispatched. From a practical point of view, intermediate treatment requires such experts as mechanical engineers and chemical engineers. To remedy this need, the hiring of experts on contract basis should also be considered.

Joint Venture Arrangements

Considering that expertise in the operation of transfer stations and sanitary landfills is not adequately available locally, it is advisable that experienced international firms be invited to bid for the operation of the facilities. Thus, joint venture arrangements should be promoted among the international firms, local private firms and LGUs. This will ensure a transfer of technology between the foreign firms and the local firms.

6.3.2 Review and Promotion of Use of the Private Sector

There are several advantages in privatizing government enterprises, facilities and services. First, privatization provides a means of raising funds for much needed infrastructure,

facilities and services which governments are hard pressed to provide. Second, the use of the private sector is likely to improve the management, operations and financial viability of existing infrastructure, facilities and services because of its greater flexibility in management and decision making and of its maintenance of low operating costs for maximizing profits in the competitive environment.

However, privatizing the delivery of SWM services does not release the government from its responsibility for SWM. A necessary condition for effective privatization is the presence of a strong government agency or organization with a professional staff capable of developing, negotiating, monitoring and enforcing a contract agreement with the private sector. In the absence of a competent oversight government entity, the private sector cannot be expected to deliver services with a high degree of efficiency and at low cost.

Privatization can be undertaken in several ways: BOT, BOO, service contract, management contract, franchise, lease, and joint ventures between government agencies and the private sector. The decision to adopt privatization schemes is based on the services or functions being contracted out. Functions that can be provided through a service contract include legal services, human resource development, public information and education, building and facilities maintenance and security, waste treatment, planning and design. Functions better handled by a single management contract include operations management and supervision, transfer and hauling operations, equipment and management and maintenance, administrative and financial management. Lease agreements can be used for recovery and recycling operations whereby the private contractor or lessee is allowed to sort, collect and sell recyclable materials and recover other resources, such as gas from the landfills at a fixed cost to be paid by the lessee to the SWM office.

The operation of the proposed transfer stations may be privatized on a management contract basis including the maintenance of the transfer trucks. If a management contract is not feasible, at least the operation and maintenance of the transfer trucks be contracted out on a service contract basis. This is because of proven inefficiencies in government equipment operation and maintenance caused by restrictive regulations governing procurement. The operation of sanitary landfills/sea landfills and incineration plant may be either operated by MMDA or privatized on a management contract basis. The proposed compost plant can be privatized on a BOO arrangement if acceptable private sector participation can be arranged on a competitive basis.

The construction of all facilities except for those that will be built under a BOT/BOO scheme will be managed by agencies that will have jurisdiction over them. Thus, in order to implement proposed Master Plan, LGUs shall provide for budgetary allocations to cover the construction cost of transfer stations and the procurement of transfer equipment. MMDA has to allocate a budget for the construction and maintenance of sanitary landfills, incineration plant and compost plant. This includes cost for site development, landfill equipment and spare parts. Both LGUs and MMDA have to provide budgetary allocations for the operation of their respective facilities in their annual budgets. If full privatization such as BOT/BOO scheme is adopted for the proposed compost plant, MMDA shall supervise the construction of the plant and the procurement of compost equipment.

In any case, the respective agencies shall be responsible for the prequalification, bidding and award of bids to private bidders either for a BOT/BOO contract or a

service/management contract for operation or aspects of operations of their respective facilities.

6.4 Strengthening of Institutional and Financial Capacity of LGUs

6.4.1 Establishment of an Independent Budgetary and Accounting Structure for SWM

Like MMDA, many LGUs may not be concerned with the cost-efficiency of its SWM operation. This reflects on their accounting system in which many LGUs do not break down the SWM expenditure in their total expenditures. As a result, sufficient budgetary information is not available, which prevents them from conducting accurate data analyses in order to seek their financial improvement.

Furthermore, the absence of reliable accounts is a major constraint to efficient public sector management. Financial accountability covers accounting systems for expenditure control, as well as internal and external audits. Improvements in accounting procedures are the first line of reforms that governments must undertake to ensure responsible performance of management tasks.

6.4.2 Formation of LGU Cooperative for SWM

Technical proposals of the JICA Study Team for the future SWM system assume that sustainable cooperation exists among LGUs in Metro Manila. As part of the proposed haulage system, the Fort Bonifacio Transfer Station will be used by Makati, Pateros, Pasay and Muntinlupa; the Marikina Transfer Station, Quezon (E), Pasig, Mandaluyong, San Juan, Marikina and Taguig; the Quzeon Transfer Station, Quezon (W), Navotas, Kalookan, Valenzuela and Malabon; the Las Pinas Transfer Station, Las Pinas and Paranaque. This arrangement requires effective coordination among the LGUs that are grouped together for the management of their common facilities. To this end, the Team proposes that LGUs using a common transfer station form their respective LGU association.

The LGU association should be established under the following principle:

- It is established and managed by the consent of all participating LGUs.
- It has an administrative authority as a quasi-LGU.
- Human resources and revenue depend on the provision of member LGUs.
- Budgetary contribution of member is determined by 1) equal rate for fixed cost, and 2) proportional rate for investment and operation cost which is usually calculated by the share of population.

The rationale for the formation of this kind of LGU association is to manage the issues of trans-city/municipality nature and to attain the scale of economy in such a way that all members can solve their common problems with specific targets and pool their funds to reduce the administrative costs for operation and maintenance.

At present, many LGUs in Metro Manila do not possess sufficient financial resources and technical expertise to handle the proposed transfer stations. The capital requirements

needed to set up efficient and effective facilities are too costly for the municipality and city alone to afford. By establishing a common facility, each LGU is able to reduce costs while achieving the same objective. Furthermore, managing common facilities requires sustainable cooperation among member LGUs. But this is difficult to achieve since each LGU usually has different interests derived from different resources, skills, objectives and procedures. Thus, the sustainability of cooperation depends largely upon the effectiveness of inter-city/municipality coordination. In general, the measures to improve coordination among different units include creating and maintaining open systems of communication and exchange of information, delineating members' responsibilities, standardizing of rules and procedures for implementation, delegating adequate authority to the coordinating agency, direct involvement of concerned political leaders, and the establishment of a coordinating body consisting of representatives of each implementing unit. The creation of LGU association can contribute to realize these factors for sustainable cooperation among LGUs in order to manage their common facilities.

The formation of LGU associations, however, requires a strong commitment from each LGU as well as successful consensus building with respect to structure and functions of the associations, appropriate grouping of member LGUs and basic principles in managing them. Realizing these preconditions is a difficult task because LGUs have no experience in organizing associations for SWM in Metro Manila.

Against this background, the Team conducted a questionnaire survey aimed at determining the needs of LGUs in Metro Manila with respect to the promotion of cooperation among LGUs in the management of solid waste in the future. The result was impressive. Out of the 17 LGUs in Metro Manila, 14 responded. Out of these 14 LGUs, 13 LGUs expressed their desire to cooperate with neighboring LGUs in order to address problems such as lack of manpower, financial resources and technical expertise. The 14th LGU, Marikina, either does not want to cooperate with other LGUs or is not interested in establishing a cooperative type association, since the size of facility, i.e. a transfer station and compost plant, they plan to build (or want to build) is small, and will not require cooperation with other LGUs. And although Pasig is not clear about its desire to establish a cooperative type association, other LGUs (including Pasig) are very interested in establishing some kind of cooperation system with neighboring LGUs as soon as possible. To this end, most of the LGUs feel a need for financial and technical support from MMDA and the Central Government.

In this context, we believe that experiences in Japan can provide a basis for Metro Manila LGUs in order to facilitate cooperation to manage their own common facilities. The system of local authority association is a conventional method in Japan to supplement local finances and personnel resources as well as to overcome the limitation of local authorities' capabilities. In order to apply this system in the Philippines, its specific conditions should be taken into account, with special reference to the appropriateness to the local administrative system as a whole. We have recognized that the concept is being explored in the Philippines in the context of strengthening the local administration, noting an actual need for local authorities to cooperate with their neighboring local authorities in order to efficiently utilize the financial and personnel resources.

From this perspective, the following form of LGU association is proposed which is basically the same organizational structure as that of LGUs in Metro Manila.

Proposed Organizational Structure of LGU Associations for Managing Common Transfer Stations

(1) Objective:

- To deal with a joint project concerning the construction and management of a transfer station across several cities/municipalities.

(2) Member LGUs (Study Team Proposal)

1) Makati, Pateros, Pasay and Muntinlupa
(for the Fort Bonifacio Transfer Station)
2) Quezon (E), Pasig, Mandaluyong, San Juan, Marikina and Taguig
(for the Marikina Transfer Station)
3) Quezon (W), Navotas, Kalookan, Valenzuela and Malabon
(for the Quzeon Transfer Station)
4) Las Pinas and Paranaque
(for the Las Pinas Transfer Station)

(3) Legislative Body

- The Council is the Associations' legislative body which shall be composed of the Presiding Officer and the regular Council Members.

- The number of the Council members equals the number of member LGUs (each member city/municipality has one seat).

- The regular members of the Council are elected from among the members of the Council at each city/municipality. Their terms of office are based on the terms of office of their home Council. If a member of the Council loses his/her seat in his/her home Council, he/she automatically loses his/her seat at the Association's Council.

- The Council shall be presided over by a Chairman who is elected from among the vice mayors of members LGUs. The Chairman's term of office shall be the same as the term of office of the home LGU. In case that the Chairman has an accident or loses his seat, the Vice Chairman takes over the position.

(4) Executive Body

- The Association has one (1) Chief Executive and several Deputy Chief Executives. The Chief Executive shall be elected from among the mayors of member LGUs. Their terms of office are the same as the terms of office of their home city/municipality.

- The Chief Executive shall be assisted by Deputy Chief Executives who shall also be elected from among the mayors of member LGUs.

- Under the Executive Body, a permanent office for the Secretariat shall be established for their daily administrative and operational work.

- A Board of Directors can be formed instead of the Chief Executive in order to perform the functions of the Chief Executive when the Association has a number of member LGUs with a wide range of activities. The Board of Directors is composed of the mayors of member LGUs. In some associations, the members of their board of directors could be appointed by the mayor with the consent of the home Council.

(5) Treasurer

- A Treasurer shall be appointed by the Chief Executive with the consent of the Association Council from among the treasurers of member LGUs.

- The term of office is the same as the term of office of the home LGU.

(6) Secretariat

- The secretariat of the Association shall be headed by a Secretary-General, assisted by other staff members appointed by the Chief Executive.

- Under the Secretary-General, there are two divisions: Administrative Division and Operations Division.

- The staff shall be dispatched by member LGUs and, if necessary, MMDA or the Central Government.

(7) Auditors

- The Chief Executive shall appoint one auditor from experts outside the Association and, if necessary, one from among the members of the Association Council with the consent of the Council.

- With respect to the term of office, the expert shall have a fixed term of office (for example, 4 years), and the legislature shall have the same term of office as that of the home council.

- Auditors shall monitor the performance of the executives and their staff, and for this purpose shall be under the Council of the Association.

(8) Finance

- The costs are financed by the sharing of expenses by member cities/municipalities and other revenues.

- The share of expenses per city/municipality shall be decided by the Council. The budgetary contribution of member LGUs shall be determined by 1) equal rate for fixed cost; and 2) proportional rate for investment and operation cost which is calculated by the share of population

- Part of initial costs shall be subsidized by the Central Government and MMDA, and if necessary by ODA grant/loan. The rest of initial costs shall be provided by member LGUs or through the floatation of bond by the Association.

The involvement of mayors and the legislative body of member LGUs ensure the commitment of LGUs and enhance coordination between and within LGUs. The representation of all member LGUs and the division of power between the Council and Executive Body introduce a mechanism of check and balance within the organization to promote impartiality, and thus contribute to consensus building among all member LGUs. The existence of auditors under the Council may promote the transparency of organization's performance which is the basis for sustainable cooperation. The financial and technical support from MMDA and the Central Government may enhance the capacity-building of LGU association.

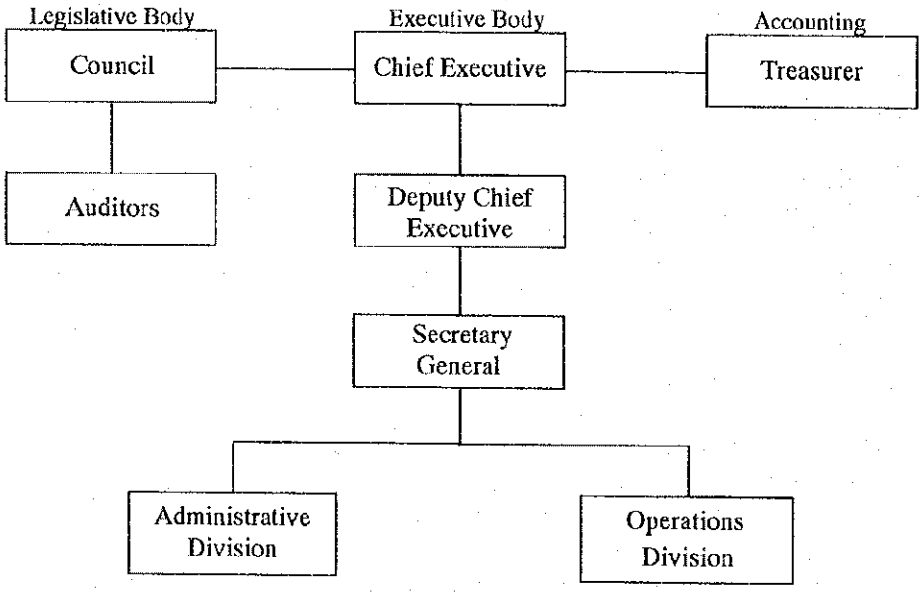


Figure 6.4.1 Proposed Organizational Structure of LGU Association

6.4.3 Participation of Barangays and Local Communities

A major problem confronting the present solid waste administration has been the absence of active participation in the system at the grass-root level, i.e., at the barangay and community level. Community participation is paramount not only for seeking projects and/or programs to be supported by the society as a whole but also for improving the efficiency of the solid waste management system with respect to cleansing its community, garbage collection, resource recycling and waste reduction. This is especially important when we consider the present financial situation of MMDA and LGUs. It should be recognized that formation of SWM strategies will have to take into account the social environment since the public, in general, plays a fundamental role in the production of solid waste and in the solution of the problems caused by it. The problem is how to create an advanced scheme of communal participation in SWM.

The Study Team proposes the establishment of a Community Mobilization and Environmental Education Section (CMEES) at MMDA in order to enhance public awareness in Metro Manila, and to set up a Community Relations Ad Hoc Committee to oversee and guide the process of community involvement and guarantee its transparency during the planning and construction phases of the disposal and transfer plants.

The pilot studies of the Master Plan will conduct a feasibility study in a selected area of Metro Manila to draw conclusions and recommendations on how to provide collection services in the unplanned low-income settlement area in cooperation with existing community base organizations. In addition, a network of recycling centers is proposed to be established at the community, barangay, and Metro Manila level in order to improve the amount of recyclable materials and to ease the work of the waste pickers through the promotion of separate collection in Metro Manila.

Some barangays have already conducted their own activities on garbage collection. Important is how to motivate other barangays and local communities to participate in collection and recycling activities for solving problems in their own area. Experience in many developing countries shows that even poor people use and mobilize their own resources for development projects if they think they are their own projects. To this end, it is necessary that they participate in decision making process of the projects. The proposal for the establishment of barangay and local community councils and project management units at the LGU and barangay levels (refer to section 6.5.2) aims to activate local initiatives for SWM.

In this respect, competition among local authorities and communities is desirable in the sense that a better barangay and community would be able to enjoy more benefits socially and economically. Encouragement of this competitive mind among barangays and communities is thought to be one of the effective instruments to enhance their capabilities. What is importance is to recognize that such competitive power is generated by integrating local resources, and not by any political favors by MMDA or the central government. The centralized decision-making system hardly promotes this local power. Thus, the decentralization of power is required not only from MMDA to LGUs but also from LGUs to barangays and to local communities.

6.5 Integrated Planning and Management System

Although planning is a major element of SWM, it has been neglected in Metro Manila due to the proliferation of agencies involved in waste management and to the lack of coordination during plan preparation and monitoring. As a result, Metro Manila is suffering from this serious oversight in public administration.

In order to promote inter-agency and inter/intra LGU coordination, the capability building of relevant bodies, and the participation of all stakeholders in SWM for Metro Manila, it is recommended that an integrated planning and management system be established.

6.5.1 Preparation of Local Plans

The participation of all stakeholders, especially barangays and local communities, in the decision making process of SWM is very important in order to harness support for projects

and/or programs, as a whole, and to improve the efficiency of SWM system, in particular. Furthermore, the planning consistency between the national and local levels is extremely important to make investment efficient. In this light, local master plans consistent with a long-term national plan and the proposed MMDA Master Plan in a 10-year time framework should be prepared. Thus, the breakdown of master plans relevant to Metro Manila is as follows:

- DENR's Long-term National Plan
- MMDA's Master Plan
- LGUs' Master Plan
- Barangays' Master Plan

6.5.2 Establishment of an Integrated Local Planning and Management System

For preparation of the local plans, an integrated planning system should be established, in which the local authorities themselves prepare the plan based on local needs. In this system, a principal role should be played by the Chairman of MMDA or MMDA administration in rendering inter-LGU coordination of development benefits and presenting the inter-LGU development structure based on a long-term perspective.

A conceptual structure of this proposal is shown in Figure 6.5.1. The basic concept underlying this proposal involve the organization or setting up of committees and councils in barangays and LGUs, as follows

(1) A Program Steering Committee to provide an inter-agency forum for the coordination of implementation and operation of the facilities under the Master Plan: This Committee would be like a Presidential Task Force on Solid Waste Management at the Metro Manila level and chaired by PTFSWM or DENR. The existing members of PTFSWM and MMDA will be the members of this committee. An Advisory Board to this Committee shall be formed comprising representatives from different sectors: LGUs, cooperating national agencies, NGOs, consulting firms/financing institutions, private sector, and technocrats.

If this type of committee would be difficult to establish, the same function could be carried out by the newly-established secretariat under MMC.

(2) At the LGU level, a Barangay Council chaired by the LGU mayor for intra-LGU coordination: All barangay chairpersons are the members of this council.

(3) At the Barangay level, a Local Community Council chaired by the barangay chairman for inter-community coordination: Representatives of communities are the members of this committee.

(4) An Advisory Board for the above committee and councils composed of representatives of various sectors, such as concerned government offices, experts, consultants, NGOs, and so forth.

(5) A Project Management Unit in each LGU and barangay: The functions of the Program Management Unit at the LGU level include the following:

(a) Formulate, coordinate and regulate the implementation of medium and long-term plans and programs for the delivery of services in terms of collection and sweeping, transfer station and haulage, and recycle plant under its jurisdiction;

(b) Prepare, coordinate and regulate the implementation of medium term investment programs for SWM;

(c) Undertake and manage on its own programs and projects for the delivery of specific services under its jurisdiction;

(d) Coordinate and monitor the implementation of such plans, programs and projects in city/municipality; identify bottlenecks and adopt solutions to problems of implementations;

(e) Provide planning guidelines, technical assistance and personnel training to barangays within its jurisdiction;

The functions of the PMU at the barangay level are as follows:

(a) Formulate, coordinate and regulate the implementation of medium plans and programs for the delivery of services in terms of collection, sweeping and recycling;

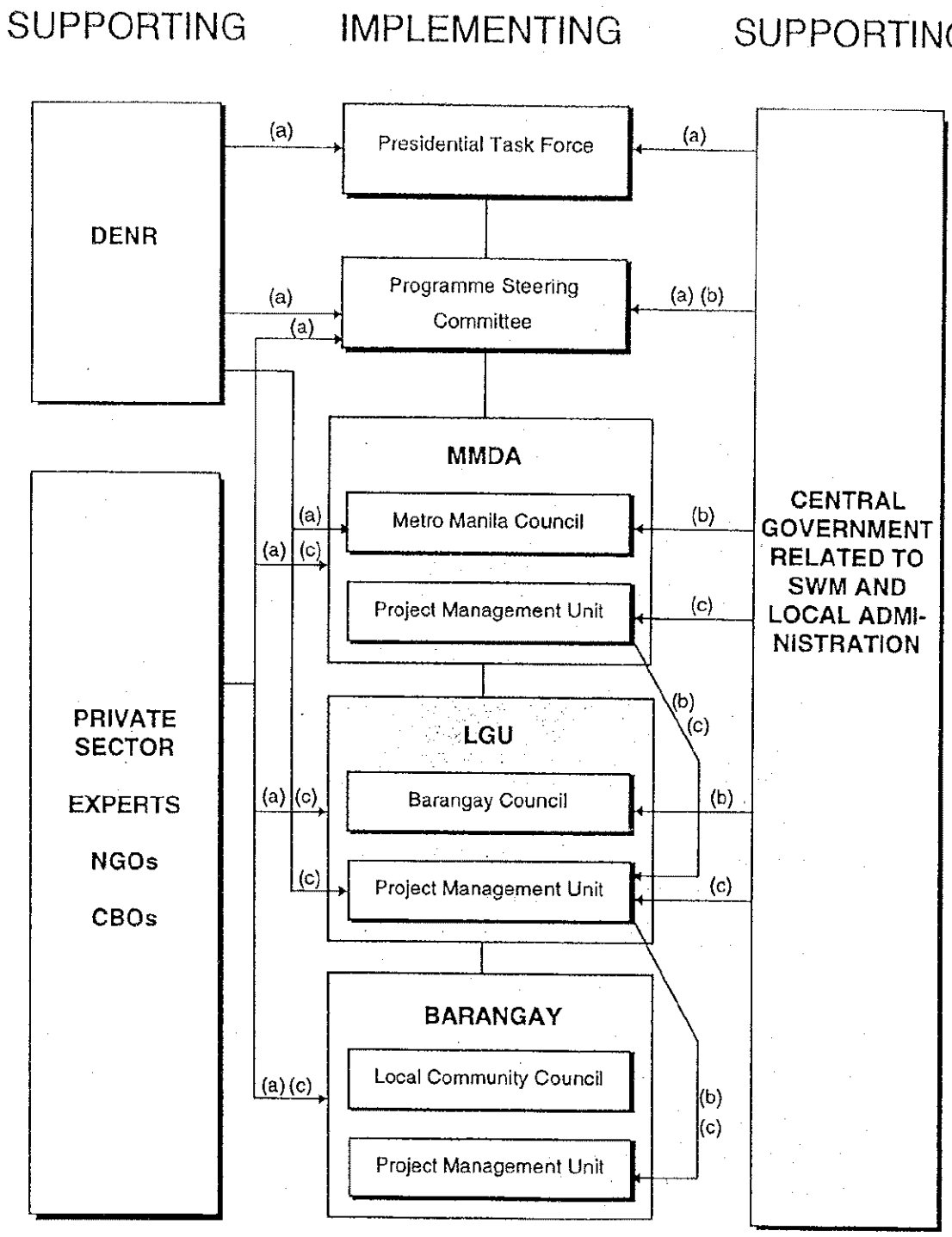
(b) Undertake and manage on its own programs and projects under its jurisdiction;

(c) Coordinate and monitor the implementation of its plans and programs; identify bottlenecks and adopt solutions to problems of implementation;

(d) Provide planning guidelines, technical assistance and personnel training to local communities under its jurisdiction.

(6) For the above main stream of planning and management administration, the central government agencies should function as supporters and/or advisors in three fields:

(a) overall policy direction;
(b) planning and technical assistance; and
(c) personnel training and technical research and development.



(a) Policy and Strategy Recommendation
(b) Planning Guidelines and Technical Assistance
(c) Personal Training and Technical Research & Development

Figure 6.5.1 Conceptual Structure of Integrated Local Planning and Management System

CHAPTER 7 PROJECT IMPLEMENTATION AND FINANCING

CHAPTER 7 PROJECT IMPLEMENTATION AND FINANCING

7.1 Proposed Priority Projects

(1) Prioritization

A number of projects and/or programs have been identified to achieve the planning targets for improvement of the solid waste management system in the medium-term, as discussed in the preceding chapters. Their prioritization, however, should be considered from the following five (5) standpoints:

View 1: First, efforts should be made to make use of the existing resources in improving the solid waste management.
View 2: Special attention should be placed on vital and effective projects to avoid "garbage crisis," which would otherwise take place in the near future.
View 3: Intermediate treatment facilities and technologies for waste reduction should be introduced in order to relieve the enormous pressure for the ceaseless need of final disposal sites.
View 4: Urgent actions should also be taken for preparation of development of additional SLF sites, which can contribute to the medium- and long-term solution.
View 5: Even small-scale projects/programs, if those are likely to strengthen LGUs' capability as well as uplift the people's awareness for solid waste management, should be launched at the earliest stage.

From "View 1," it can be said that the existing San Mateo SLF and Carmona SLF are not being used at their maximum capacity, and are operated in an environmentally improper manner. This has led to inefficiency in invested funds and efforts, even though they can play a vital role to improve SWM in the future.

Similarly, the Las Piñas Transfer Station needs to be improved so that the facility may play a key role to establish an efficient haulage system, providing storage facilities to minimize queueing time of collection vehicles.

Attention should also be paid to the cost- efficiency of existing collection service system being rendered by LGUs. Metro Manila, as a whole, is currently spending the local budget of approximately 2,000 pesos/ton for solid waste management on the average, as discussed in Section 2.11. This level of expenditure is considerably high. The LGUs should exert effort towards a more cost-effective administrative system.

From "View 2", there are few alternative measures to avoid the crisis. One is to set up a new temporary dumpsite, even on a small area; however, such a temporary remedy may easily cause another environmental problem. The best way is to employ the concept of "View 1," that is, to make use of the existing resources such as the San Mateo and Carmona SLF sites in such a way that they will be able to be utilized at their maximum capacity with the environmental improvement. Based

on the engineering examination, this option is thought to be sufficient enough to avoid the crisis.

From "View 3," the intermediate treatment technologies need to be used for resource recovery as well as for waste amount reduction. Composting and recycling should be enhanced for resource recovery activities, and incineration should be properly introduced in the society as an alternative tool for waste reduction. However, it should be noted that before introducing these new technologies, the society itself has to be ready to accept them with minimal conflicts, particularly, incineration. This argument will be presented in Chapter 8 again.

From "View 4," the most critical issue is on how to prepare the land areas for long-life disposal sites under the existence of the NIMBY syndrome. There is no short-cut approach to address this problem. Both the relevant central and local governments and MMDA are requested to make continuous efforts to get the consensus of stakeholders. Looking at the reality, the enemy that we have to fight against is time. The proposed two SLF sites of Pintong Bocaue and Navotas off-shore are recommended to be urgently studied in their technical, engineering and economic/financial feasibility, although both sites inherently hold several difficulties in social acceptance.

From "View 5," a more efficient expansion of collection service areas, concomitant with a more cost-effective administrative system for the solid waste management, should be developed at each LGU level. This cannot be realized until two conditions are met: capability building of LGU personnel, and people's support and cooperation. A trial-and-error process might be necessary to achieve this end. Pilot projects for this purpose are recommended to be carried out to explore an appropriate system.

(2) Proposed Priority Projects

A number of projects are proposed as priority projects for improvement of the solid waste management system in Metro Manila, as shown in Table 7.1.1. In this table, the corresponding viewpoints, as discussed above, are indicated for each of the projects.

Table 7.1.1 Proposed Priority Projects for Solid Waste Management in Metro Manila

	Proposed Priority Projects	Corresponding Views				
		1	2	3	4	5
Collection and Haulage						
1	Improvement of Collection and Haulage System	X				X
2	Development of Transfer Stations at 4 Locations (Marikina, Fort Bonifacio, Manila and Quezon), and Improvement of the Las Piñas Transfer Station	X		X		
3	Improvement of Collection System for Inaccessible Areas & Community Based Recycling	X				X
Intermediate Treatment						
4	Development of Compost Plants (at 2 locations of SLFs)	X		X		X
5	Development of Recycling Centers (as part of functions of Transfer Stations)	X		X		X
6	Development of Incineration Plant (with a 500 ton/day capacity in 2005 and 3,000 ton/day in 2010)			X		X
Final Disposal						
7	San Mateo SLF Improvement Project (Environmental Improvement)	X	X			
8	Development of New Inland SLF (Pintong Bocaue)				X	
9	Development of Offshore SLF (Navotas)				X	
Promotion of People's Awareness						
10	Education and Enlightenment Program					X

7.1.1 Implementation Schedule

The proposed implementation schedule is shown in Figure 7.1.1. The technical system has been designed to meet the demand in 2015, five (5) years from the target year of 2010.

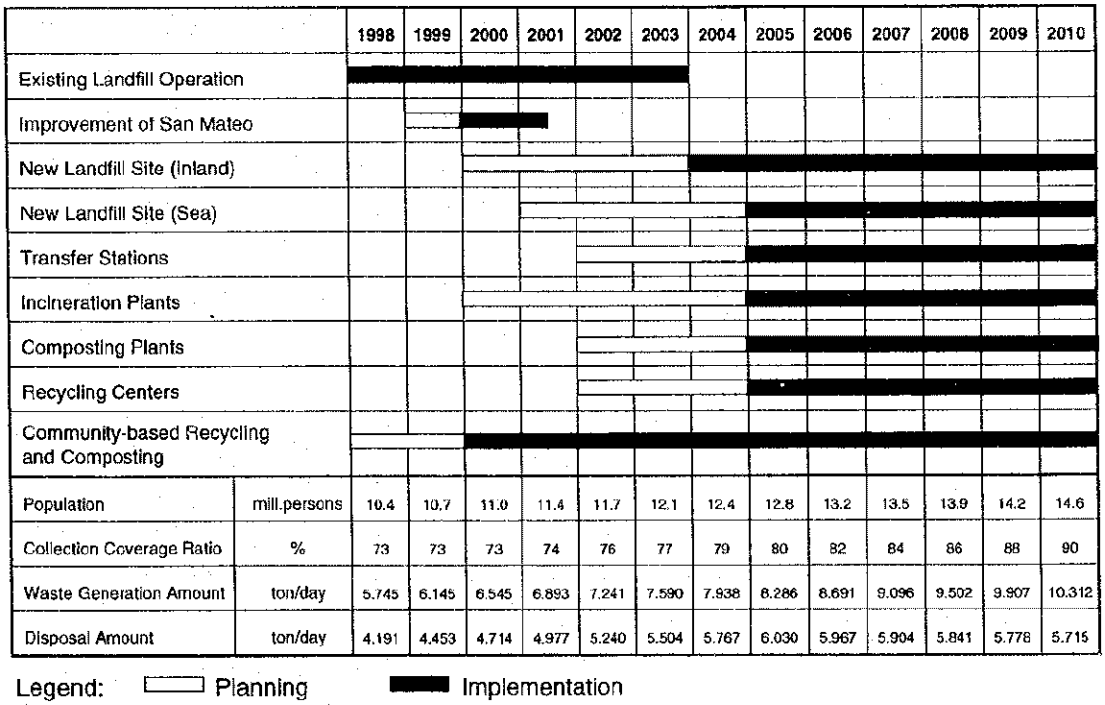


Figure 7.1.1 Implementation Schedule of Technical Alternative E1

7.1.2 Project Cost

An amount of 77,500 million pesos for the selected technical system E1 has been estimated in 1997 prices, as shown in Table 7.1.2. The capital investment shares 77% of the total costs, while the remaining cost shall be allocated for operation and maintenance costs (refer to Table 7.1.3). Besides the costs for technical systems, the costs for the institutional arrangement and the compensation for land acquisition/utilization are estimated at 200 million pesos and 2,300 million pesos (3% of overall costs), respectively. The total costs of the Master Plan during the period from 1998 to the target year of 2010 amount to 80,000 million pesos as shown in Table 7.1.4.

The average SWM cost of the collected waste per ton is calculated at about 2,080 pesos in 1997 prices, which is smaller than the present value of 2,200 pesos by 10%.

Table 7.1.2 Cost Estimate for Technical System (1998 - 2010)

million Pesos

Total cost	Total cost	1998-2000	2001-2005	2006-2010
1) Collection & Haulage	19,100	2,300	9,700	7,100
Capital cost	(4,500)	(0)	(4,500)	(0)
O & M	(14,600)	(2,300)	(5,200)	(7,100)
2) Intermediate Treatment	23,100	100	7,300	15,700
Capital cost	(20,400)	(100)	(7,000)	(13,300)
O & M	(2,700)	(0)	(300)	(2,400)
3) Final Disposal site	35,300	1,800	25,100	8,400
Capital cost	(34,600)	(1,700)	(24,800)	(8,100)
O & M	(700)	(100)	(300)	(300)
4) Tota 1)+2)+3)	77,500	4,200	42,100	31,200
Capital cost	(59,500)	(1,800)	(36,300)	(21,400)
O & M	(18,000)	(2,400)	(5,800)	(9,800)

Table 7.1.3 Share of Component Projects in Technical System (1998 - 2010)

%

Total cost	Total cost	1998-2000	2001-2005	2006-2010
1) Collection & Haulage	24.6%	54.8%	23.0%	22.8%
Capital cost	(23.6%)	(0.0%)	(46.4%)	(0.0%)
O & M	(76.4%)	(100.0%)	(53.6%)	(100.0%)
2) Intermediate Treatment	29.8%	2.4%	17.3%	50.3%
Capital cost	(88.3%)	(100.0%)	(95.9%)	(84.7%)
O & M	(11.7%)	(0.0%)	(4.1%)	(15.3%)
3) Final Disposal site	45.5%	42.9%	59.6%	26.9%
Capital cost	(98.0%)	(94.4%)	(98.8%)	(96.4%)
O & M	(2.0%)	(5.6%)	(1.2%)	(3.6%)
4) Tota 1)+2)+3)	100.0%	100.0%	100.0%	100.0%
Capital cost	(76.8%)	(42.9%)	(86.2%)	(68.6%)
O & M	(23.2%)	(57.1%)	(13.8%)	(31.4%)

Table 7.1.4 Overall Cost Estimates for Selected Technical Alternative E1 (1998 - 2010)

million pesos

	Total Cost	1998-2000	2001-2005	2006-2010
1) Technical System	77,500	4,200	42,100	31,200
2) Institutional Arrangement	200	100	50	50
3) Compensation	2,300	-	2,300	-
Total Cost	80,000	4,300	44,450	31,250

7.2 Formation of Project Implementation

The ideal implementing body of the proposed projects is an LGU or LGU group; however, it is not yet practical to shift the present demarcation in SWM to the ideal formation in the planning period until 2010. An intermediate arrangement for project implementation is proposed in Chapter 6 by component considering the present demarcation and the adaptability of LGUs to the projects, according to the size of investment and technical complexity. Based on the proposed demarcation, the formation of project implementation is proposed hereunder.

7.2.1 Role of Concerned Bodies in Implementation

(1) Improvement of Existing Sanitary Landfill

Conventional civil works, like the construction of sanitary landfill sites, have been practically undertaken by DPWH from the design stage on inter-departmental commission basis. In fact, the present two sanitary landfill sites were initially constructed by DPWH on commission of MMA (later on, MMDA), as proponent, athough the commission was dissolved early in 1997 and has shifted to the single implementing body–MMDA. The proposed formation to implement the improvement of existing sanitary landfill follows the same style as the present formation taking the urgency into account, as shown in Figure 7.2.1

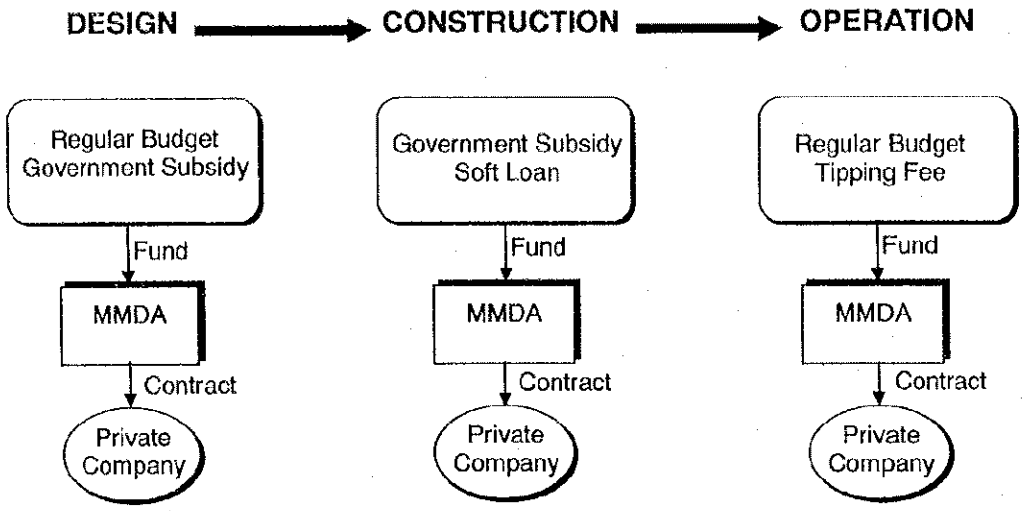


Figure 7.2.1 Project Formation for Improvement of Existing Sanitary Landfill

(2) New Sanitary Landfill

The proposed formation to implement the new sanitary landfill project follows the conventional style of demarcation between the proponent MMDA and DPWH, as shown in Figure 7.2.2. This is applicable not only to inland sanitary landfill but also to sea landfill project.

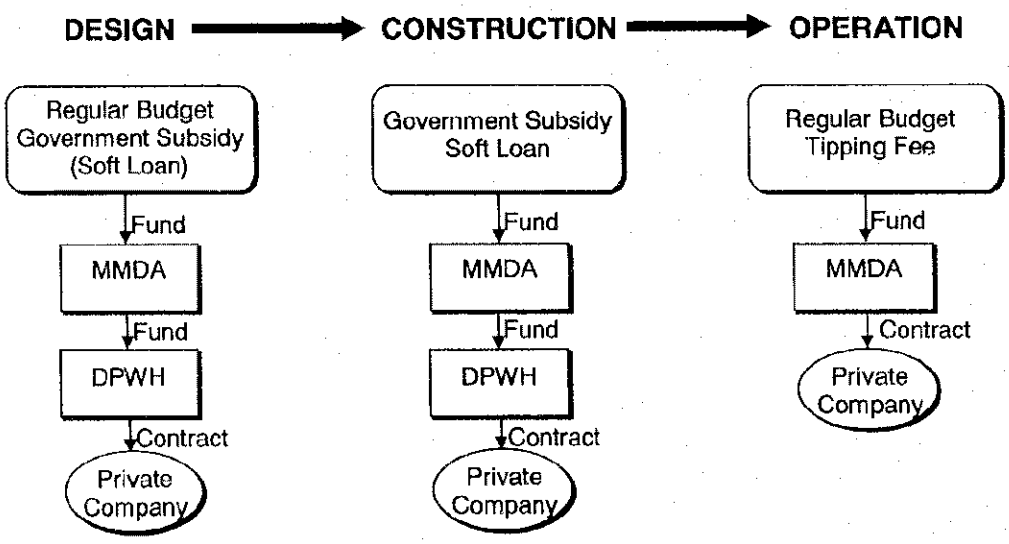


Figure 7.2.2 Project Formation for New Sanitary Landfill Site

(3) Incineration Plant

This project does not suit the conventional formation for civil works as it involves integrated mechanical technologies. This kind of unfamiliar facility requires sophisticated knowledge and skill of operation, and the process of technology transfer usually takes fairly long time even if the implementing body has enough number of talented staff in charge. To receive technical training as part of project implementation, from design stage to construction stage, is a time saving way for the staff to acquire the necessary capability. This "on-the-job-training" will help MMDA maintain proper operation after the construction stage. The formation for this project is therefore proposed to be set up under the initiative of the proponent MMDA (refer to Figure 7.2.1).

(4) Compost Plant

This project has a special nature quite different from the other projects stated above, i.e., the possible commercial value of the plant's product. The market-oriented project can possibly survive under a flexible management body, which is able to adjust itself in accordance with the fluctuation of price and demand. The flexibility of the management body is an inherent nature of a private company, and the opposite nature of a state-owned organization. Therefore, the implementing body of the compost plant is proposed to be a private company in principle; however, it may be necessary to consider some subsidy to the company in case the market of compost becomes stagnant, and cause private investors to become discouraged. The proposed formation for the compost plant is shown below.

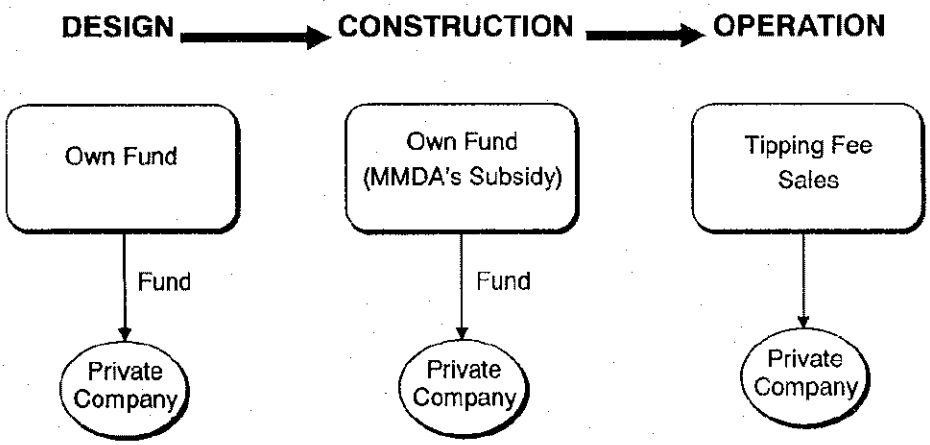


Figure 7.2.3 Project Formation for Compost Plant

(5) Transfer Station

Presently, MMDA operates a transfer station, and is providing garbage transport from the Carmona sanitary landfill site to the neighboring LGUs in NCR. In the proposed priority project, the transfer station is assumed to serve until the target year 2010, although the final disposal site will be shifted from Carmona to San Mateo tentatively. In 2005, the disposal site will be shifted again to a sea landfill site because it seems impossible to use the Carmona site after the expiration of the Tripartite Agreement in March 1998. Las Piñas transfer station needs to be remodeled to reduce waiting time for reloading. After completion of remodeling, it will resume service together with the proposed new transfer stations. An LGU or a group of LGUs is expected to be the management body in place of MMDA, as part of its autonomous activities. The process of facility preparation, including remodeling, will be implemented under the same formation as was adopted when the existing transfer station was established. DPWH is expected to undertake design and construction with the fund supplied by an LGU or LGU group. The LGU or LGU group will operate four transfer stations separately. The formation for the transfer station is proposed as shown below.

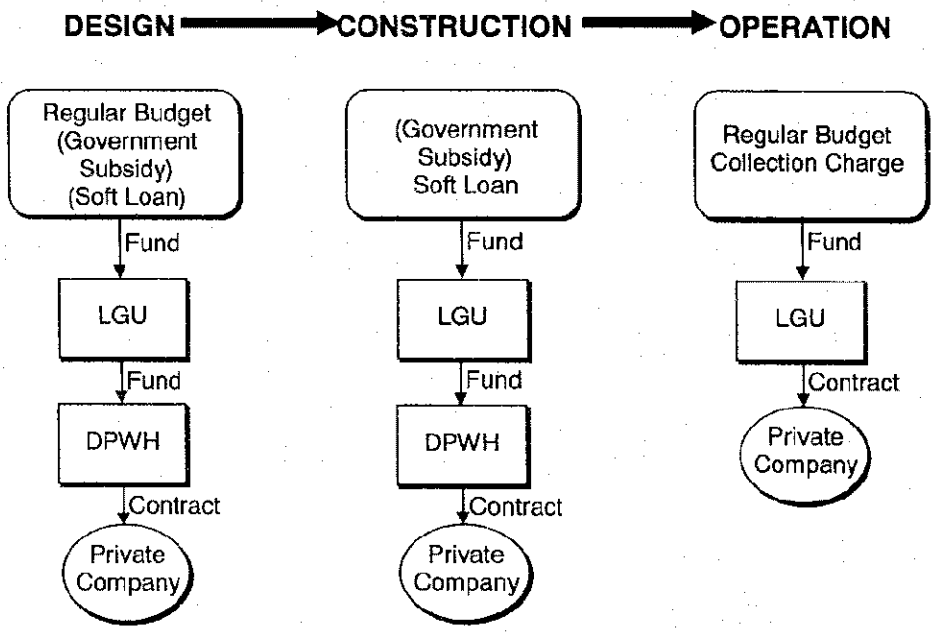


Figure 7.2.4 Project Formation for New Transfer Station

(6) Recycle Plant

Recycle plants are proposed to be established by LGUs in some areas in NCR, and operated by LGU, with the involvement of junk shops, in the daily operation of segregation, packing, storing and other related activities. The structure of the recycling center would be rather simple in architecture and can be constructed

under the technical supervision of DPWH. The proposed formation for the recycle center is shown below.

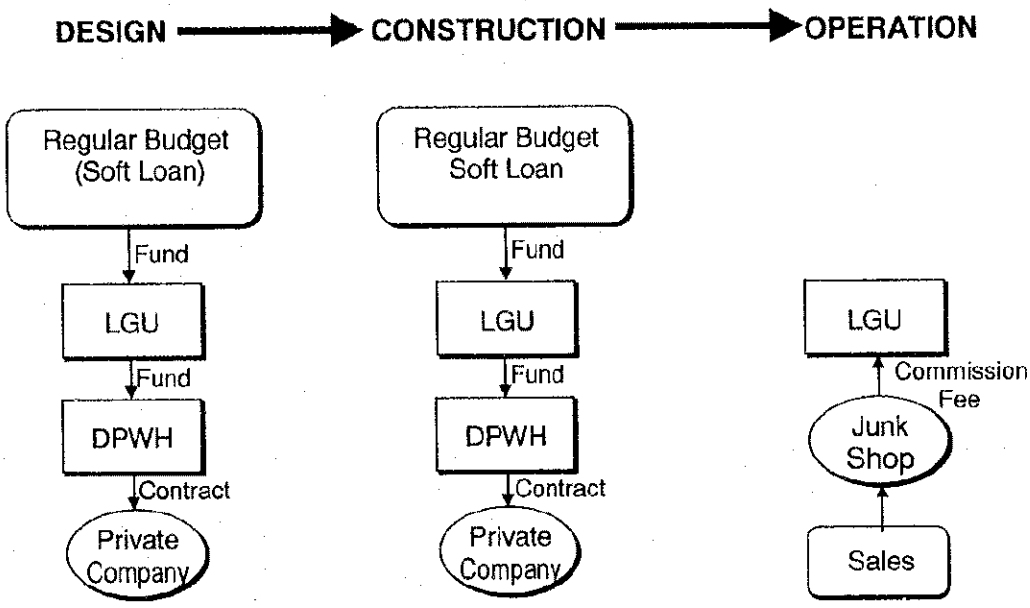


Figure 7.2.5 Project Formulation for Recycle Plant

7.2.2 Initial Allocation of Required Fund

The required fund for the implementation of the priority project is estimated at 77.5 billion pesos, including operation and maintenance (O&M) cost. Of this amount, the investment fund shares 77 %, or 60 billion pesos. The body responsible for treatment activities, as described above, should prepare the investment fund. The initial allocation of required funds is summarized in Table 7.2.1. It combines the O&M cost with the investment fund of the implementing body.

The table shows that MMDA needs to prepare about 56 billion pesos, 70% of the total fund (this amount corresponds to approximately 3 times as much as the annual projected revenue of 1997). On the other hand, LGUs are requested to prepare in total about 20 billion pesos, which is almost the same as the total targeted revenue of the eight cities in NCR. National government and the private sector are expected to contribute to the preparation of the remaining fund of about 4 billion pesos.

Table 7.2.1 Allocation of Investment to Implementing Bodies

million pesos

Use of Fund	Initial Allocation of Required Fund				
	Total	Central Gov't	MMDA	LGU	Private Sector
Collection & Haulage	12,800			12,800	
Transfer Station					
Las Piñas	800			800	
Marikina	2,200			2,200	
Fort Bonifacio	1,600			1,600	
Manila	1,700			1,700	
Compost Plant					
Pintong Bocaue	1,700				1,700
Sea landfill site	1,800				1,800
Recycle Center	600			600	
Incineration Plant	19,000		19,000		
Final disposal					
Pintong Bocaue	15,900		15,900		
Sea landfill site	17,300		17,300		
San Mateo	2,100		2,100		
Institutional Measure	200	80	120		
Compensation	2,300		1,700	600	
Total	80,000	80	56,120	20,300	3,500

7.2.3 Allocation of Cost

Investment fund would need amortizing from the regular budget of implementing bodies within the lifetime of the target facility. In case a loan is adopted as the source of investment fund, users of the facility are considered to be responsible for the amortization of the loan even if the implementing body should pay the installment according to the loan agreement. The recovery of investment fund is usually realized by payment of user charges to the implementing body. Therefore the cost allocation for the project is different from initial allocation. A certain part of investment cost will be transferred to the users, i.e, LGUs should bear the transferred investment cost in the form of user charges paid to MMDA for use of incineration plant and final disposal sites. Assuming that the LGUs share half of the initial fund allocation, allocation of cost for the priority project is summarized in Tables 7.2.2 and 7.2.3.

Table 7.2.2 Proposed Cost Allocation for Priority Projects/Programs (1998 ~ 2010)

Title of Projects/Programs	Implementing Body	Related Bodies	Cost Allocation (1998-2010) Including Operation & Maintenance Costs (million Pesos)					
			Total costs	Central Government	MMDA	LGU	Private Enterprises	Community
1. TECHNICAL SYSTEMS (E1)								
1) Collection and Haulage Systems								
Collection & Haulage:	LGU	Private	12,800			12,800		
Transfer Stations:								
Las Pinas	LGU	DPWH/MMDA	800			800		
Marikina	LGU	DPWH/MMDA	2,200			2,200		
Fort Bonifacio	LGU	DPWH/MMDA	1,600			1,600		
Manila	LGU	DPWH/MMDA	1,700			1,700		
Subtotal			19,100			19,100		
2) Intermediate Treatment								
Compost Plants:								
Pintong Bocaue	MMDA	Private	1,700				1,700	
Sea Landfill	MMDA	Private	1,800				1,800	
Recycling Centers:								
Manila	LGU	NGO	300			300		
Payatas	LGU	NGO	300			300		
Incineration Plants:								
Sea Landfill	MMDA	LGU/DENR/ DPWH/DOTC PPA	19,000		9,500	9,500		
Subtotal			23,100		9,500	10,100	3,500	
3) Final Disposal								
Pintong Bokaue Landfill	MMDA	LGU/DENR/DPWH	15,900		7,950	7,950		
Sea Landfill	MMDA	LGU/DENR/DPWH DOTC/PPA	17,300		8,650	8,650		
San Mateo Landfill (improved)	MMDA	LGU/DENR/DPWH	2,100		1,050	1,050		
Subtotal			35,300		17,650	17,650		
Total of Technical Systems			77,500		27,150	46,850	3,500	
2. INSTITUTIONAL ARRANGEMENTS								
Education and Enlightenment								
- Extra Curriculum	DECS	DENR	80	80				
- Educational & Enlightenment	MMDA	DENR/MMDA	120		120			
Total of Institutional Arrangements			200	80	120			
3. COMPENSATION			2,300		1,700	600		
Total Costs			80,000	80	28,970	47,450	3,500	

LEGEND:
MMDA: Metropolitan Manila Development Authority
LGU: Local Government Unit
DPWH: Department of Public Works and Highways
DENR: Department of Environment and Natural Resources
DOTC: Department of Transportation and Communications
PPA: Philippine Ports Authority
DECS: Department of Education, Culture and Sports

Table 7.2.3 Cost Allocation for Priority Projects

Concerned Body	Initial Allocation of Required Fund		Cost Allocation	
MMDA & LGUs	MMDA 56,120	70%	MMDA 28,970	36%
	LGUs 20,300	25%	LGUs 47,450	59%
Others	3,580	5%	3,580	5%
Total	80,000	100%	80,000	100%

The above tables show that MMDA is requested to pay about 29 billion pesos, or 36 % of the total cost, which is about 50 % higher than the annual estimated revenue of 1997. On the other hand, LGUs are requested to pay in total about 47 billion pesos, which is almost twice as much as the total revenues of the 17 LGUs in NCR. National government and the private sector are expected to pay the remaining cost of about 4 billion pesos.

7.3 Financial Capability of MMDA and LGUs

7.3.1 Economic Growth and Revenues of MMDA and LGUs

Recently, the economy of Metro Manila seems to shift to an acute upward curve. Its current GRDP increased at 2.8 times from 1988 to 1996, while the total revenues of MMDA and the 17 LGUs increased at 5.6 times during the same period. That increased the share of revenue in the GRDP to 2.5% in 1996, from 1.3% in 1988, as shown in Figure 7.3.1. Thus, MMDA and the LGUs have attained a revenue growth rate that is higher than the GRDP growth rate of Metro Manila.

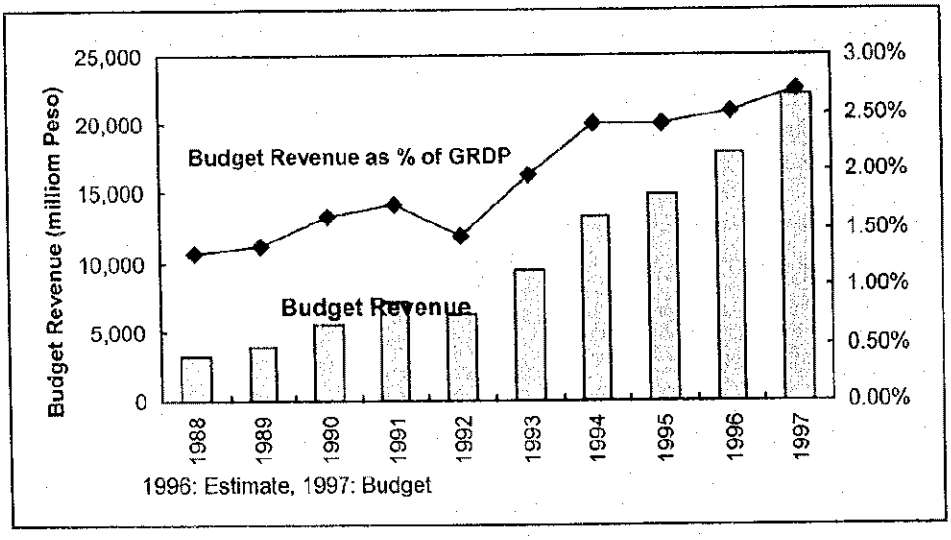


Figure 7.3.1 Revenues of MMDA and LGUs as Percentage of GRDP of Metro Manila

During the last five years from 1992 to 1996, after the implementation of the Local Government Code, the revenue of every LGU increased more than twice or at an average

annual growth rate of higher than 20 %. Some LGUs, such as Makati, Muntinlupa, Pateros and Taguig, increased their revenues at more than five times during the same period.

Although the growth rate of the LGUs is high, the size and level of budget vary. For example, in 1996, Makati City received 3,392 million pesos revenue, which is about 40 times as large as the revenue of Pateros municipality. Per capita revenue is extraordinarily high in Makati City, amounting to 7,008 pesos per person annually. On the contrary, it is very low in Malabon and Navotas; 487 pesos and 456 pesos, respectively.

7.3.2 Future Revenue of MMDA and LGUs

The future revenues of MMDA and the LGUs have been estimated under the assumption that those of the 17 LGUs and of MMDA will correspondingly increase and keep the same share in the GRDP of Metro Manila. The GRDP is calculated based on the socioeconomic framework described in Chapter 3. The future GRDP of Metro Manila and the revenue of MMDA and the 17 LGUs are estimated in Table 7.3.1.

Table 7.3.1 Future GRDP and Revenues of MMDA and LGUs in Metro Manila (1998 - 2010)

million pesos

	1998-2000	2001-2005	2006-2010
1) Projected GRDP in Metro Manila (at constant 1997 prices)	2,789,500	5,909,300	7,908,000
2) Projected Revenue			
- 17 LGUs	69,700	147,700	197,700
- MMDA	5,600	11,800	15,800
	75,300	159,500	213,500

7.4 Financing for Implementation

7.4.1 Potential Budget of MMDA and LGUs for SWM

The required expenditure for SWM amounts to 95,000 million pesos consisting of 80,000 million pesos during the period from 1998 to 2010 for the cost of proposed projects/programs and 15,000 million pesos for the O&M cost from 2011 to 2015. The potential budget for the proposed projects/programs is estimated at 66.5 billion pesos based on the following assumptions:

- the expenditures of LGUs and MMDA will be appropriated to SWM at the same rate as the present, which is 0.3 % of the GRDP of Metro Manila, as a whole; and
- as the selected alternatives are designed to serve from the middle of 2002 to 2015, five years after the target year of 2010, potential budget for the project is provided during the same period.

On the other hand, the proposed projects/programs cost 95,000 million pesos during the period from 1998 to 2015, which will yield an accumulated deficit of 28,500 million pesos, is shown in Table 7.4.1 and Figure 7.4.1.

Under the present budget appropriation for SWM, the proposed projects/programs are considered not to be viable to implement from the financial point of view.

Table 7.4.1 Potential Budget, Required Expenditure and Balance for the Implementation of Projects/Programs, in case 0.3 % of GRDP is Allocated (1998 - 2015)

million Peso

	Total	1998-2000	2001-2005	2006-2010	2010-2015
1) Potential Budget of LGUs/MMDA	66,500		12,900	23,700	29,900
2) Required Expenditure for Projects/Programs	95,000	4,300	44,450	31,250	15,000
3) Balance 1) -2)	-28,500	-4,300	-31,550	-7,550	14,900
4) Cumulated Deficits			-35,850	-43,400	-28,500

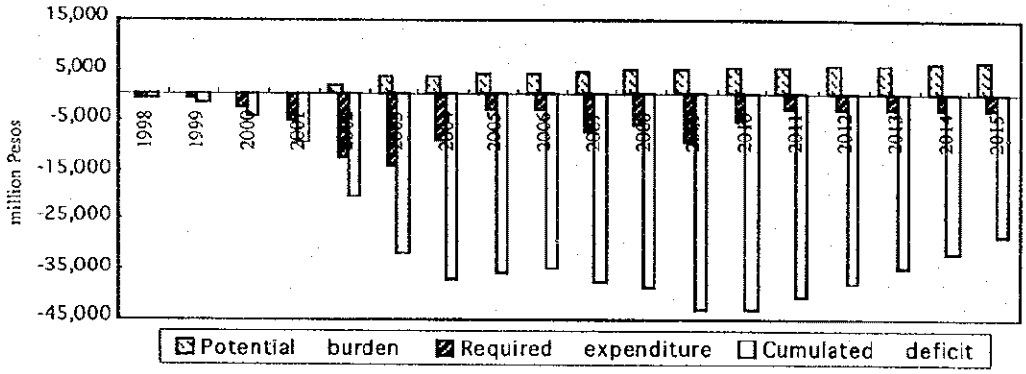


Figure 7.4.1 Cash-flow of Projects/Programs in case 0.3 % of GRDP is Allocated (1998 - 2015)

7.4.2 Required Budget for the Implementation of Projects/Programs

(1) Probable SWM Expenditure Rate to GDP in International Comparison

As described above, the SWM expenditure, currently allocated by MMDA and the 17 LGUs, is estimated at 0.3% of the GRDP, excluding half of ESC expenditure in Metro Manila, and this amount is not sufficient to implement the proposed projects/programs. The Study Team proposes that Metro Manila appropriate additional revenue for the implementation of the proposed projects/programs. The World Bank has estimated the relationship between SWM cost and GDP based on their experiences on solid waste management projects in developing countries; the SWM usually consumes 0.5 – 2.2 %, 0.5 – 1.2%, and 0.3 – 0.5% of GDP in low income, middle-income, and industrialized countries, respectively. It would not be unreasonable to require Metro Manila to consume an additional expenditure for SWM at 0.12% of the GRDP, taking the World Bank report into account.

(2) Required Amount of Budget for Projects/Programs

Table 7.4.2 summarizes the potential budget, required expenditure and the balance up to 2015, when an amount equivalent to 0.42% of the GRDP could be appropriated to the proposed projects/programs. As proven in Table 7.4.2 and Figure 7.4.2, there will be a budget deficit of 30,650 million pesos in 2005 and 28,700 million pesos in 2010. This cumulative deficit will decrease to 1,800 million pesos in 2015. The Financial Internal Rate of Return (FIRR) is calculated at 3.1%, in case MMDA and LGUs will be able to mobilize 0.42% of GRDP of Metro Manila for the proposed projects (refer to Table 7.4.3).

Table 7.4.2 Potential Budget, Required Expenditure and Balance for the Implementation of Projects/Programs, in case 0.42 % of GRDP is Allocated (1998 - 2015)

million Peso

	Total	1998-2000	2001-2005	2006-2010	2010-2015
1) Potential Budget of LGUs/MMDA	93,200		18,100	33,200	41,900
2) Required Expenditure for Projects/Programs	95,000	4,300	44,450	31,250	15,000
3) Balance 1) -2)	-1,800	-4,300	-26,350	1,950	26,900
4) Cumulated Deficits/Surplus			-30,650	-28,700	-1,800

Table 7.4.3 FIRR and NPV of Balance of Budget of the Projects/Programs (1998-2015)

	FIRR	NPV (milliom Peso)	
		(discount rate =5%)	(discount rate =3%)
1) 0.3 % of GRDP for Projects/programs	-	-19,761	-18,689
2) 0.4 % of GRDP for Projects/programs	2.0%	-6,878	-2,795
3) 0.42 % of GRDP for Projects/programs	3.1%	-4,302	384
4) 0.5 % of GRDP for Projects/programs	7.4%	6,005	13,100

Note: The salvage costs for the intermediate treatment are calculated as negative costs in 2015.

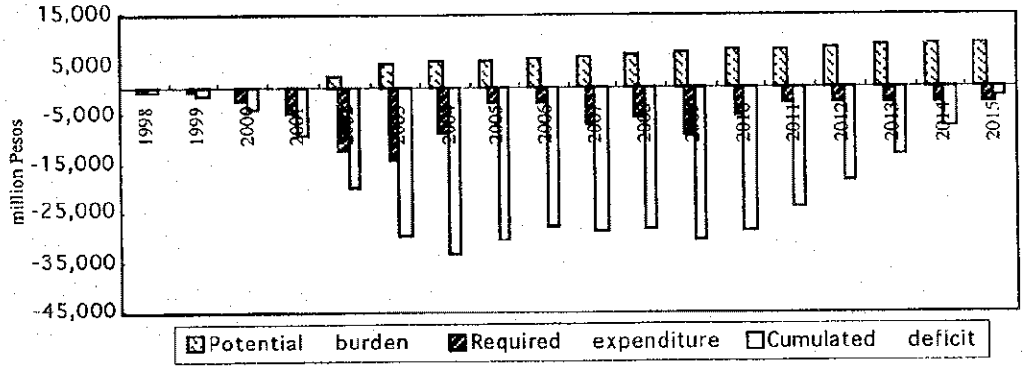


Figure 7.4.2 Cash Flow of Projects/Programs in case of 0.4% of GRDP is Allocated (1998-2015)

7.4.3 Additional Sources of Budget

(1) Two Basic Alternatives for Getting Additional Sources of Budget

It was proven that the budget allocation for the proposed projects/programs with the conventional rate of 0.3% of GRDP was insufficient and another 0.12% of GRDP is required to turn the final balance in black under 3% discounted rate. If the budget for SWM could be increased by 0.12% as a whole, the proposed projects/programs could be implemented as public works, which are then eligible for soft loan application. Whichever governmental body implements the proposed projects/programs, the initial stage requires a huge amount of investment which implies a legitimate reason to introduce external fund sources like ODA to bridge the shortage of domestic official budget. Even if it is possible to borrow money for investment, the security of amortization needs to be clarified in advance. The question is how to get the additional 0.12 % of GRDP for the projects/programs. There are two possible ways to achieve this; namely:

(a) get a grant from the central government to assist MMDA
(b) raise the expense of LGUs for SWM

The excessive amount of budget will be mainly produced in those projects/programs implemented by MMDA, which has been implementing its investment program of sanitary landfill relying on grants from the central government. MMDA cannot mobilize its revenue to investment because of the extremely dependent nature of its revenue structure to the central government. Among two possible alternatives to get additional budget sources, the former is quite a conventional way to invest granted money in such infrastructure as to serve the common need in NCR. It may be possible to get the 0.12% of GRDP from the central government, however, it would injure the autonomy of LGUs in NCR. Therefore the former alternative is not recommendable as the basic solution for additional budget source. It can only be considered as a supplementary financial source to support the efforts of LGUs in critical cases that may occur.

The latter of the two alternatives better complies with the responsibility of LGUs as defined in the Local Government Code and is therefore recommended as the solution. Furthermore, the revenues of LGUs have remarkably increased during the last five years because of the effect of the Local Government Code as well as the considerable economic growth in NCR. This favorable background has contributed to the expansion of LGU financial capability so that it is now considered that the LGUs can afford to bear the additional 0.12% of GRDP.

(2) Practical Proposal for Acquiring Additional Budget

The following three alternative measures are proposed to attain the additional 0.12% of GRDP for the proposed projects/programs. These measures can comply with the quantitative requirement of budget not only individually but also collectively. The results of these measures are summarized in Table 7.4.4 individually. LGUs are requested to choose either of these measures to achieve the goals of the Master Plan:

(a) LGUs appropriate, as a whole, an additional 5% (15% of total revenue for SWM)
(b) LGUs pay tipping fee at the rate of 730 pesos per ton of garbage for final disposal and incineration
(c) LGUs impose collection fee on households at the rate of 40 pesos per month per household

Table 7.4.4 Potential Financial Resources for the Additional Budget of Proposed Projects/Programs

Potential Financial Resources	Estimated amount (million pesos)				as % of GRDP
	Total	1998-2000	2001-2005	2006-2010	
1) Additional 5% expenditure from LGU budget	19,900	3,300	7,100	9,500	0.12
2) Tipping fees for treatment at the rate of P730.00/ton	19,900	3,200	7,000	9,700	0.12
3) User charge from households at the rate of P40.00/month/family	19,000	3,200	6,800	9,000	0.11
4) Projected GRDP in constant 1997 prices	16,606,800	2,789,500	5,909,300	7,908,000	

(3) Further Consideration on Proposed Measure for Additional Budget

Appropriate an Additional 5 % to SWM Expenditure

As previously stated, the budgetary conditions of the 17 LGUs are remarkably different from each other in size and capability. For example, Makati has a budget that is forty (40) times as large as that of Pateros, and the per capita budget revenue of Makati is fifteen (15) times as large as those of Malabon and Navotas. Table 7.4.5 shows per capita revenue in 1996 and rate of illegally dumped waste in 1997.

The LGUs, such as Kalookan, Malabon, Navotas and Taguig, which show a remarkably low level of per capita revenue, to the contrary, present a significantly high level of illegal dumping. This contrast implies that those LGUs in tight budget condition have more tasks to do in order to achieve the master plan goals and consequently will suffer more seriously from shortage of budget. To these LGUs, assistance by comparably rich LGUs and, in extremely difficult cases, subsidies from the central government need to be considered.

Table 7.4.5 Budget Revenue per Person of 17 LGUs in 1996 and Rate of Illegally Dumped Waste in 1997

City/Municipality	Budget Revenue per Persons in 1996 (pesos)	Illegally Dumped Waste in 1997 (%)
Kalookan	762	63
Makati	7,008	2
Manila	1,936	37
Mandaluyong	2,722	3
Muntinlupa	1,457	6
Pasay	1,341	4
Pasig	2,227	4
Quezon	1,506	17
Las Piñas	782	13
Malabon	487	37
Marikina	1,154	49
Navotas	455	60
Parañaque	2,111	32
Pateros	1,433	30
San Juan	2,052	28
Taguig	866	43
Valenzuela	799	22
Average of 17 LGUs	**1,711**	**27**

Source: JICA Study Team

Imposition of User Charge on LGUs by MMDA

Except for Quezon City and the municipality of Malabon, most LGUs in NCR do not have a final disposal site, and are dependent on MMDA. Some LGUs also owe garbage haulage services to MMDA from the Las Piñas transfer station to Carmona sanitary landfill site. This interaction can be a cause of user charge imposition on LGUs concerned; however, no such charge is imposed by MMDA. On the other hand, LGUs are forced to remit a fixed rate contribution of 5% to MMDA, the basis of which is not clearly defined. It is therefore recommended that this practice be reviewed and that user charge on services rendered be imposed by MMDA.

Another issue to be considered is the rate of tipping fee, which is estimated at 730 pesos per ton of treatment, an equivalent of 0.12 % of GRDP as a whole. The practical level of tipping fee should be determined in view of cost recovery for the treatment, such as final disposal, incineration and composting. Apart from composting, the use of common treatment facility is uneven among the LGUs, because incineration service will not be available to all the LGUs even in the target year of 2010. Some LGUs are proposed to use the incineration plant and contribute a lot to reduction of waste volume to be dumped in the final disposal site. But those LGUs cannot benefit individually, in return, on waste reduction, which can give a longer lifetime to a final disposal site. Therefore, it is recommended that the amount of tipping fee should be at an equal rate regardless of the difference in usage of treatment facilities. Thus a partial imposition of tipping fee can be avoided and prevent the reluctance of LGUs to utilize the incineration plant.

User Charge Imposed on Households by LGUs

PPP is a widely recognized concept to recover the cost of SWM; however, it can hardly be realized, not under the present condition of SWM service being provided within the budget expenditure, and with no additional charge imposed. Most of the LGUs now impose collection fee on enterprises. Some barangays or subdivision associations also collect sanitation fee from their residents to undertake garbage collection by themselves.

According to the past studies and reports by concerned organizations, the limits of affordability of household for SWM is estimated at 40 pesos a month. Another household interview survey, conducted by JICA-MMUTIS in 1996, revealed that one third of families have the willingness to pay additional money for environmental improvement, and the amount is about 40 pesos per month per family on average. Though this additional 40 pesos will improve the current budgetary condition of SWM by almost 30%, not all the families can afford to pay it. Furthermore, a series of discussion is needed to get consensus to deviate from present charging system.

User Charge Imposed on LGUs of NCR by LGUs Outside NCR

On the other hand, present demarcation of waste treatment among MMDA, LGUs of NCR and external LGUs on the subject of final disposal facility for NCR may raise another form of PPP: tipping fee and compensation for experiencing negative impacts of implanted disposal facilities. It is necessary to consider various aspects of PPP in accordance with the location of facility and the relation between provider and beneficiary.

The placement and operation of final disposal site is likely to cause negative impacts to neighboring residents, as substitute for NCR residents. Even if a treatment facility is located within NCR, an uneven exposure to negative impact will happen. It is thought reasonable to equalize this one-sided distribution of benefit and burden among the people and local communities by way of paying money as compensation. Municipalities of Carmona and San Mateo decided their own rule of "entrance fee" and are collecting a fee from the garbage vehicles coming to the disposal sites. After all, the fees have been paid by affected residents of NCR through the contract money for the vehicle operation. This system has a reasonable base of compensation, however, it is better to review the nature, process and the amount due by holding public discussion involving all the stakeholders.

Apart from the above mentioned spontaneous compensation measure, the Study Team proposes that one of the following two measures is adopted:

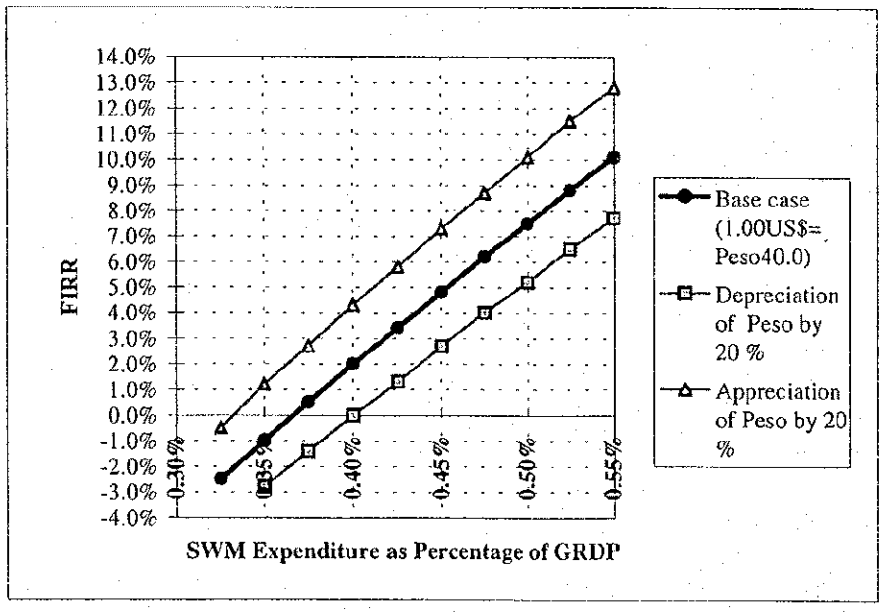
(a) Environmental Guarantee Fund (EGF)
(b) Compensation package deal between beneficiary and donor

The EGF is set up for each component project or for all the projects/programs in a single fund. The fund can be drawn to compensate the adjacent local community for the burden derived from the implementation of the proposed projects/programs. The proposed fund source is tentatively calculated at 3% of overall project cost and is expected to be available by the time of commencement of construction. On the other hand, the 'package deal scheme,' described in Figure 5.1.1 will ensure a more stable intervention between the two poles of stakeholders. Because neither of the two is unacquainted measure for every LGU, it is recommended to involve the legal staff in and outside the LGUs in establishment of the organization for the compensation measure

7.4.4 Sensitivity of Required Budget to Foreign Exchange Rate

The SWM development requires a large share of foreign currency investment, and the change of foreign exchange rate of Peso, accordingly, affects the amount of budget required for the investment of the projects/programs. Figure 7.4.3 shows the relationship between appropriation of the expenditure for the proposed projects/programs as percentage of GRDP of Metro Manila and the estimated FIRRs for the following three cases:

- The value of Peso will be stable at an exchange rate of 40.0 Peso against 1.00 US Dollar (Base case);
- The value of Peso will be depreciated by 20%; and
- The value of Peso will be appreciated by 20%



Appreprіation of GRDP		0.35%	0.40%	0.45%	0.50%	0.55%
FIRR:	Base case (1.00US$= Peso40.0)	-1.0%	2.0%	4.8%	7.5%	10.1%
	Depreciation of Peso by 20 %	-2.8%	0.0%	2.7%	5.2%	7.7%
	Appreciation of Peso by 20 %	1.2%	4.3%	7.3%	10.1%	12.8%

Figure 7.4.3 Sensitivity of FIRR at Different Project/Program Expenditures to changes in Foreign Exchange Rate

For example, the FIRR is estimated at 2,0 % when 0.4 % of GRDP will be appropriated to the projects/programs in the Base Case. Even if the source of finance is available through a soft loan at an annual interest rate of 3 %, more than approximately 0.42 % of GRDP is required to implement the proposed projects/programs.

In the meantime, as a result of the appropriation of 0.4% of GRDP, if the value of Peso is appreciated by 20 %, the FIRR will increase to 4.3 % and in case of depreciation of Peso by 20 %, the FIRR will decrease to zero.