CHAPTER 8 IMPLEMENTATION OF URGENT ACTIONS

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8.1 Improvement of Present Sanitary Landfill

8.1.1 Introduction

In order to undertake the proposed actions necessary to fulfill the targets of the Master Plan, it is crucial to redevelop the present sanitary landfill immediately. The operation of Metro Manila's final disposal sites in San Mateo and Carmona is now handicapped because of the strong protest coming from neighboring residents and their local governments. Particularly in Carmona, the chance of continued operation beyond the time limit of March 1998, when the contract between the town and MMDA expires, seems hopeless. The cause of disputes and ensuing lawsuits need to be addressed and settled if operation is to continue; however, the improvement of the landfill's present sanitary condition is as equally important to verify the environmental effect of sanitary landfill. Only then can an appeal be made to the people concerned.

8.1.2 Urgent Final Disposal Plan (1998 - 2005)

The collected waste in Metro Manila is disposed at the following four disposal sites, San Mateo and Carmona Sanitary Landfill sites which are operated by MMDA and Payatas and Catmon open dump sites operated by the LGU where these sites are located. The present disposal sites should be used until the newly proposed landfill site/s will be opened. Therefore, four cases of final disposal plans are studied based on the future disposal amount estimated in the JICA Study, mentioned in Chapter 3, and capacity being estimated considering the implementation plan for the San Mateo and Carmona landfills prepared by the World Bank.

Case 1 (San Mateo + Carmona + Payatas + Catmon)
All the present sites can be used until new landfill site will be opened.
There is no closure plan for open dump sites.

Case 2 (San Mateo + Payatas + Catmon)
Carmona Sanitary Landfill Site will be closed at the end of March, 1998
Carmona Sanitary Landfill Site can be used until a new landfill site will be opened.
The two open dump sites are assumed to be closed by the end of 2000.

Case 3 (San Mateo + Carmona)
The two open dump sites are assumed to be closed by the end of 2000.
the two sanitary landfill sites can be used until new landfill site will be opened.

Case 4 (San Mateo)
Only San Mateo SLF site can be used.
Carmona Sanitary Landfill Site will be closed at the end of March, 1998
The two open dump sites are assumed to be closed by the end of 2000.

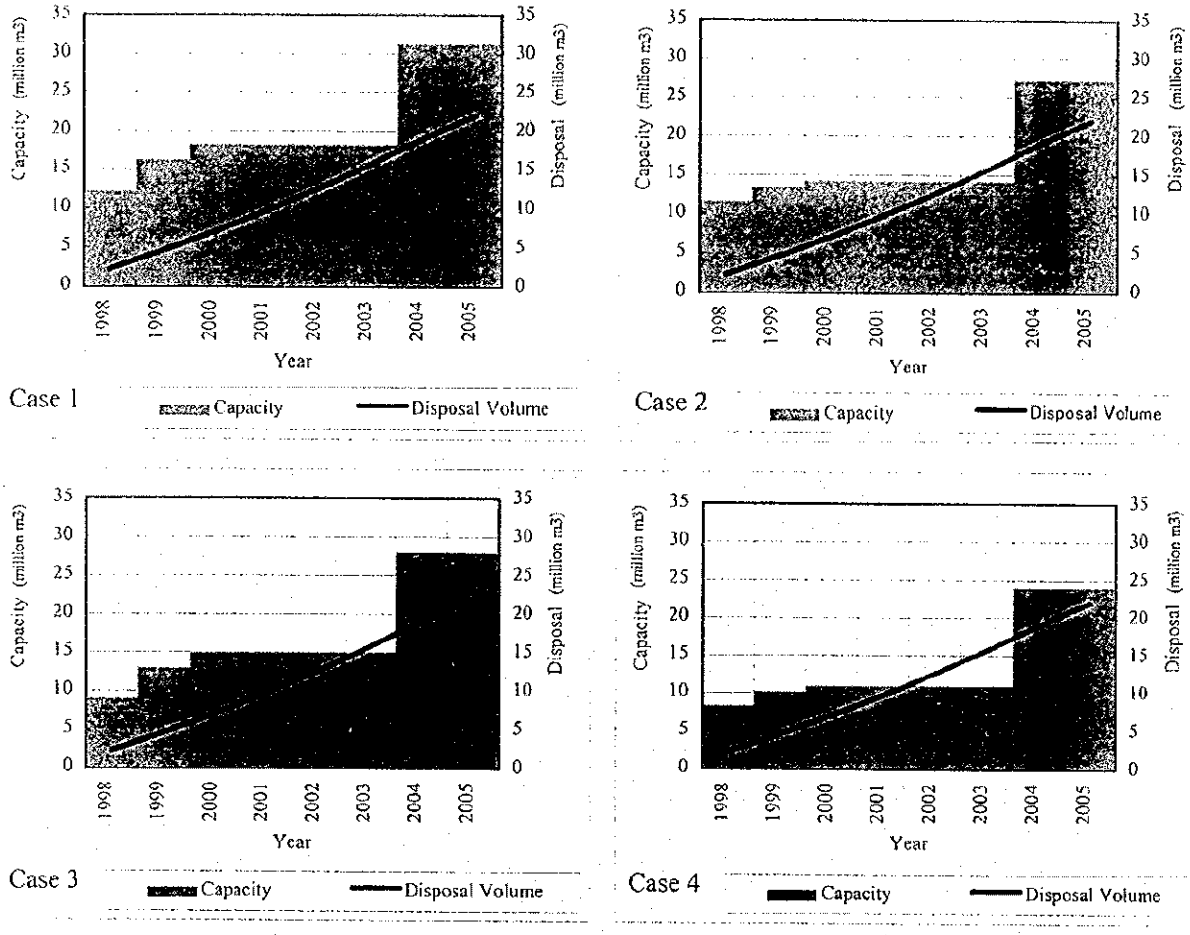


Figure 8.1.1 Disposal Amount and Capacity of Landfill Site

8.1.3 Results of the Alternative Study

The four cases of disposal plans are evaluated as follows.

- Landfill capacity in Case 1 and 3, in which the Carmona Sanitary Landfill Site will be operated continuously after March 1998, is sufficient for waste disposal until the end of 2004 and 2003 respectively. A shortage of landfill capacity by the end of 2003 is estimated at 750,000 m³ which can accommodated in the Carmona landfill site by enhancement of its site planning. From the realization point of view, both Case 1 and 3 are feasible.

- In Case 2 and 4, the disposal amount will exceed landfill capacity in the later half of 2002 assuming that the Carmona Sanitary Landfill Site will be closed at the end of March 1998. However, the 1.5 and 4.7million m³ of the shortage of landfill capacity until 2004, when the new landfill site will be opened, cannot be compensated by the improvement of the existing implementation plan of San Mateo SLF site. According to the above figures the period of landfill absence become 7 months in Case 2, and 18 months in Case 4. Therefore, Case 2 and 4 are impractical alternatives.

- Almost one third of the total collected waste is disposed at the Carmona Sanitary Landfill Site by the trailer vehicles coming from Las Pinas transfer station. If the Carmona landfill site is closed, the existing transportation system should be changed because route alignment of the present access road to Carmona Sanitary Landfill Site is not sufficient for the traffic of trailer vehicles. However, if closure of the Carmona landfill site will take place in the end of March 1998, the alteration of the existing transportation system can not be accomplished.

- Accumulated disposal amount until the end of 2003 at the open dump sites is estimated at 5.5 million m^3. It exceeds the surplus capacity of the Carmona Sanitary Landfill Site. From the urban sanitary preservation point of view, open dumping of such a huge amount of waste without any treatment within Metro Manila should not be allowed as it is. Payatas open dump site is being extended and the present scale seemd to approach the scale of Smoky Mountain. It is inevitable that the Payatas open dump site will be highlighted as a typical social problems considering the situation of the scavenger' s. Therefore, the continuous open dumping should not be allowed for the urgent disposal plan in Metro Manila.

According to the evaluations above, the continuous operation of Carmona landfill site is absolutely necessary for the urgent final disposal plan in Metro Manila. Furthermore the early closure of the two open dump sites is unavoidable for preservation of acceptable urban sanitary conditions. Therefore, Case 3 is recommended as the most suitable scenario.

8.1.4 Improvement of Present landfill

(1) San Mateo Sanitary Landfill Site

The operation of the San Mateo SLF consists of 2 stages. The present operation is being carried out in the Phase 1, which is the final landfill area in Stage 1. To ensure the landfill operation in the coming rainy season, MMDA commenced the construction of Phase 4 and 5 in Stage 2 at the end of 1997, based on the original implementation program approved by the World Bank. These construction activities will be completed by the end of May, 1998. As the developed landfill area including phase 4 and 5, occupies almost 85% of the available landfill area, the capacity enhancement can not be accommodated within the existing designated area.

From the environmental point of view, there are several matters to be improved at the San Mateo landfill site. Especially, mitigation of odor from the leachate treatment facility and traffic accidents and/or noise caused by the waste haulage are urgently required.

For the odor problem, the distance between the leachate ponds and the Sapinit elementary school is less than 500m and the bad smell disturbs the school activities. Therefore, the mitigation measures for the odor should be implemented urgently.

On the other hand, the heavy traffic of the waste haulage puts the people living along the access road in danger of accidents, because the route alignment and structure of the present access road is partially inappropriate for the traffic. Furthermore, haulage vehicles torments the residents with the traffic noise. These problems should be addressed soon.

(2) Carmona Sanitary Landfill site

It can be said that the location of the Carmona landfill site is not ideal because it is developed on a ridge. However, the landfill capacity based on the present plan can be increased. According to the alternative study mentioned above, the existence of Carmona landfill site is so important for the final disposal management in Metro Manila that prolonging of the landfill life must be given a very high priority. The leachate treatment facilities constructed at the site is not sufficient at the moment. Improvement of the present landfill facilities should therefore be considered to get the social acceptance for continued operations at the site.

8.1.5 Existing Open Dump Sites

It is highly desirable that the two open dump sites in Metro Manila, which are located in the vicinity of residential areas, will be closed as early as possible. However, these open dump sites have to be used until the new landfill site will be opened and/or a haulage system for long distance will be established. Therefore, it is assumed that the open dump sites are targeted to be closed the year 2000, and after 2001 the waste that has been disposed at Payatas and Catmon will be conveyed to San Mateo Sanitary Landfill Site.

Closing the open dump sites, there are several problems to be solved. Each LGU where the open dump site is located should be a main body to solve these problems, referring to the experience of the closure of Smokey Mountain. However, there are some effective measures that should be done immediately, such as isolation of the dump site through installation of a fence, which is an effective way to prevent the disordered extension of the dump site and control the scavengers.

8.2 Recurring Effort to Acquire Sites for SWM

The weakest point of solid waste management system in Metro Manila is that the responsible bodies do not have any prospective project sites for management facilities at present. Furthermore, the effort to acquire land for this purpose is not conducted in a systematic manner but, rather, on a personal basis and only when the need arises. Land acquisition is vital to solid waste management because the life span of facilities are comparably shorter than the other urban infrastructures like road, port, railways, water supply and so on. The different characteristics of solid waste management facilities have varying requirements of land; i.e. size, life span and adaptability to the other land uses after they have served their original purpose. The respective actions required for each facility are stated below.

(1) Inland Landfill Site

Land is extremely important to a final disposal site such that it can be likened to a consumable good. This is the reason why the agency responsible for garbage disposal, MMDA in this case, should be ready to acquire more land each time additional facilities are required. Nowadays MMDA has six (6) candidate sites, listed in Table 8.2.1, other than "Parcel B" in San Mateo. However, all the sites still have some problems to be solved before a target site for feasibility study can be identified.

Table 8.2.1 Candidate Sites for Inland Landfill

Name	Area (ha)	Ownership
Napindan, Taguig	80	government
Maragondon, Cavite	82	private
Semirara, Antique, Visaya	18	private
Norsagaray, Bulacan	27	private
Baras, Rizal	45	private
Mabitak, Laguna	1,200	private (consolidated)

Although an inland landfill site located in San Mateo (Parcel B) has already been identified as the target for feasibility study, its status has now come to question because of a lawsuit that has been filed. This situation places a certain restriction in the time of proceeding with research activities for further implementation. Therefore, there is still a need to identify other inland landfill sites to prepare for the feasibility study, even though the availability of "Parcel B" has not yet been determined. MMDA should continue to acquire another prospective site for final disposal.

(2) Sea Landfill Site

A sea landfill site is expected to form another pole of garbage disposal in cooperation with inland landfill sites. Its location suits the traffic condition of Metro Manila because the transport route to the site can avoid crossing congested areas, particularly for LGUs facing Manila Bay. Nobody owns any part of the sea surface, and only the Office of the President, through the Public Estates Authority (PEA), has the power to authorize any reclamation activity in the area. Though the estimated cost is fairly high to develop a pollution-free sea landfill site, it will provide Metro Manila with an adjacent and long lasting final disposal site, which is a very attractive solution for the distressed solid waste management in Metro Manila.

The near-shore area in front of Metro Manila is almost wholly occupied by the preceding 18 proponents; however, there remains a small piece of open area in the north and a possibility to negotiate with the other proponents to form a consortium for sharing any development in the area. Therefore it is also expected for MMDA to initiate an immediate action to create the space for sea landfill site.

(3) New Transfer Station

The proposed responsible body for new transfer stations are LGUs or LGU cooperatives, which are obliged to establish new transfer stations on their account. A transfer station does not require a large site, unlike a final disposal site, however, it will occupy a few hectares of land in an urbanized area with convenient access for vehicular traffic. The price of land may be higher and the disparity of land use with the surrounding area may be bigger than that for a final disposal site. Since land acquisition takes a long time, the process has to be undertaken as soon as an operation group for transfer station is formed on LGU or inter-LGU basis.

The study team proposes four (4) new transfer stations to be constructed by 2005 as shown below:

Table 8.2.2 Proposed Transfer Stations

Tentative Name	LGUs Supposed to Share the Facility
Marikina Transfer Station	Marikina, Taguig, San Juan, Mandaluyong, Pasig, Quezon (east part)
Fort Bonifacio Transfer Station	Makati, Pateros, Pasay, Muntinlupa
Manila Transfer Station	Manila
Quezon Transfer Station	Malabon, Navotas,Valenzuela, Kalookan, Quezon (west part)

The LGUs who are supposed to share the facility are expected to make the effort to acquire a land for their common transfer stations in cooperation with the other member LGUs sharing the facility. The formation of a cooperative is recommended so that the member LGUs can mutually agree on the scope of the introduction of transfer stations somewhere in their jurisdictions.

8.3 Reinforcement of Performance of LGUs in SWM

It is proposed that LGUs become self-sufficient in the management of solid waste (as expected in the Local Government Code) just like other LGUs outside Metro Manila. This self-sufficiency is in terms of fiscal, technical and managerial performance so as to meet their expanded responsibility from conventional garbage collection and road sweeping to the establishment and operation of new transfer stations and recycle centers. First of all, each LGU is expected to review its ordinances that define the responsibility of LGUs in SWM. The derivative review of responsible section for solid waste management should be followed in accordance with the demand of expanded responsibility.

In addition to the above mentioned internal revision of management system, an inter-LGU basis restructuring is also proposed in order to cope with the establishment and operation of new transfer stations and recycle centers and other management activity brought into LGU's coverage. This inter-LGU restructuring is identified as the formation of LGU cooperative that is, in principle, encouraged by the Local Government Code (Section 3, (f): *Local government units may group themselves, consolidate or coordinate their efforts, services, and resources for purposes commonly beneficial to them*). The following should be considered in the process of establishing a new organization:

(a) introduce a guiding principle towards self-sufficiency into the ordinance and related internal administrative rules;
(b) examine the scope of cooperative work;
(c) identify suitable LGU partners;
(d) prepare respective draft of cooperative plan which defines constitutional rules, organization, location of office, competence and responsibility of officers, scope of work, budget and account and other necessary matters;
(e) negotiate altogether over the cooperative plan;

(f) ratify the concluded plan among the relevant LGUs together with budget assignment at the local congress;
(g) request higher office of government for authorization as a juridical body; and
(h) elect the top management staff and assign the other staff.

The above mentioned process apparently takes a long time so that an earlier commencement is desirous. An experience by 27 municipalities in Tokyo which formed a cooperative for sharing a huge inland final disposal site showed that the preparation period of organization alone lasted seven years since the first preliminary meeting of the municipalities.

The proposed implementation schedule of technical alternative indicates that the formation of LGU cooperatives is requested by 2000 at the latest; design work for transfer station is expected to start in 2001. This means that three more years are remaining for the setting up of the cooperatives.

8.4 Reinforcement of Performance of MMDA in SWM

R.A. No.7924 (MMDA Law) states that MMDA should take the role of virtual coordination body in solid waste management. To accomplish this, an urgent revision of institutional strengthening is required for both project oriented tasks and regular coordination among LGUs in NCR.

(1) Reinforcement for Project Oriented Tasks

For the smooth and early commencement of proposed projects supposed to be undertaken by MMDA, the creation of a Project Management Unit (PMU) is expected. The proposed function of PMU is implementation of new projects such as improvement of existing sanitary landfill sites, construction of inland landfill site and sea landfill and incineration plant. These tasks will require PMU staff to adapt to unfamiliar tasks, as listed below:

(a) selection of suitable design firm of target facility;
(b) evaluation of design output;
(c) clearance of restrictions administrated by the other government bodies;
(d) preparation of fund for hiring the design firm;
(e) acquisition of necessary permission like ECC and ICC;
(f) preparation of fund for construction and procurement of facility;
(g) preparation of soft loan arrangement, if necessary;
(h) selection of suitable contractor for construction and procurement;
(i) supervision of contractor's performance and control of the project; and
(j) evaluation of completed facility

At first, it may be necessary for MMDA to train its staff due to the disparity between their present work and future tasks listed above. Difficulty is seen to have them ready by the time of project commencement, at the beginning of 1999, for the improvement of the existing sanitary landfill site. Alternative sources of manpower should be sought from the other government bodies or the private sector.

As for handling of fund from external sources, DPWH has abundant personnel with a lot of experiences. As for technical matter, the private sector is thought to be a possible source to reinforce MMDA staff, including those from abroad.

The PMU of MMDA is expected to work not only for MMDA projects but for LGU's projects as well by giving advice and consultation from time to time.

(2) Reinforcement for Routine Coordination

The Master Plan contains many fundamental changes of legislative and organizational system and it is important that the changes are in place for the implementation of time-constrained projects. Therefore, the establishment of a core organization is required as soon as possible in order to prompt and adjust the concerning bodies in their efforts to restructure

This core organization called Program Steering Committee (PSC) is assumed to be an independent body; however, the lead position should be taken by the representatives of MMDA from among the delegates of relevant departments with similar composition to PTF-WM. The PSC will take care of all aspects of routine coordination and help LGUs in changing their institutional frame for SWM, that includes the assistance for timely preparation of institutional reinforcement by LGUs.

8.5 Institutional Arrangement Prior to Introduction of Incineration Plants

The introduction of incineration plants was proposed in the Master Plan. This proposal was arrived at from the technical and economical reason that the development of the offshore landfill will not be feasible unless the waste amount reduction can be realized. However, this proposal hinges on the following conditions. First, the readiness of the society to accept incineration plants, which is currently still immature; a step-wise introduction is a must with technical feedback based on a monitoring process, i.e., 500 tons/day capacity in 2005 and 3,000 tons/day capacity in 2010. Construction of a large-scale plant from the beginning is very risky in yielding social acceptance as well as ensuring an environmentally safe operation. Second, thoughtful examination should be carried out for the incineration plant project to assure the following four conditions:

(1) Economic/financial feasibility and operational sustainability need to be assured;
(2) Minimal environmental impacts and health safety should be guaranteed;
(3) Legislative/institutional/technical guidelines regarding operation of incineration plants should be prepared; and
(4) Social acceptance and people's support and cooperation for separate waste discharge and collection (into "combustible" and "not-combustible").

Out of the above, conditions (1) and (2) depend greatly upon technical matters, such as technology adopted, plant size and personnel skill in operation, as well as the social and financial system for implementation of the project.
More important is condition of (3), which depends chiefly upon the government sector's efforts. Therefore, prior to introduction of an incineration plant, it is highly recommended

to organize an ad hoc "Technical and Professional Committee" to examine the following:

(1) the environmental standards for incineration plants, including monitoring obligations, applicable for the Philippines in terms of gas emission, soil contamination in the surrounding area and other relevant aspects; and
(2) technical guidelines for design criteria, construction method, necessary equipment to be installed to mitigate negative environmental impacts.

The committee may invite experienced professionals in this field from overseas. And, discussions raised at the committee should be open to the general public to yield an accurate understanding on the system. The examination process will take more or less 2 years.

People's acceptance, or the condition of (4), will be formulated along with the government sector's sober efforts, assuring the transparency of decision-making process and fair dissemination of information. In order to operate the incineration plant economically, waste segregation discharge at household level is indispensable. This should be promoted in conjunction with recycling activities.

8.6 National Framework for Privatization of SWM

Presidential Memorandum Order (MO) No. 202 issued in April 1994 stipulates the privatization policy for SWM, not only the operation of final disposal sites but also of intermediate treatment such as incineration and compost plants. Based on this policy guideline, the Government is now seeking some BOT projects for development of large-scale incineration plants in the post Smokey Mountain area, San Mateo and/or some other areas elsewhere. At the same time, some LGUs are also looking into the BOT projects for incineration plants, with proposals from private sector proponents.

The Master Plan, of course, needs to be in line with such a national policy framework, however, at the same time, the Master Plan should look at the reality on the actual ground for the implementation. As proven by the fact that none of the on-going BOT schemes for SWM have yielded any successful result or favorable progress so far, the privatization policy holds many difficulties in reaching an agreement with both parties of the government and the proponent, under the current social, administrative, budgetary and financial conditions. In other words, the society, as well as the economy, is not yet ready to afford such a commercialized operation for SWM.

Needless to say, the financial aspect is the most critical constraint. As examined in the study, MMDA and the LGUs in Metro Manila are currently spending 2,000 pesos/ton to handle the entire solid waste management from collection and final disposal. Taking up as an example a BOT incineration plant project, it would require $59 per ton as tipping fee to make the project feasible, but the LGUs' burden or the people's burden will double. Eventually, two questions arise: how this financial burden should be shared in the present social system, and whether or not the society could sustainably afford to pay the shared cost. These problems need to be cleared before launching any BOT project.

More importantly, it should be noted that the privatization of SWM does not necessarily

release the government sector from the burden and responsibilities for SWM, rather, it would require more financial and managerial capabilities on their part. The initial investment funds and operational technologies may be brought by the private sector, but the local governments or users should assume the responsibility for paying recurrent costs to assure proper operation and maintenance plus the investment recovery costs. These recurrent costs are relatively great.

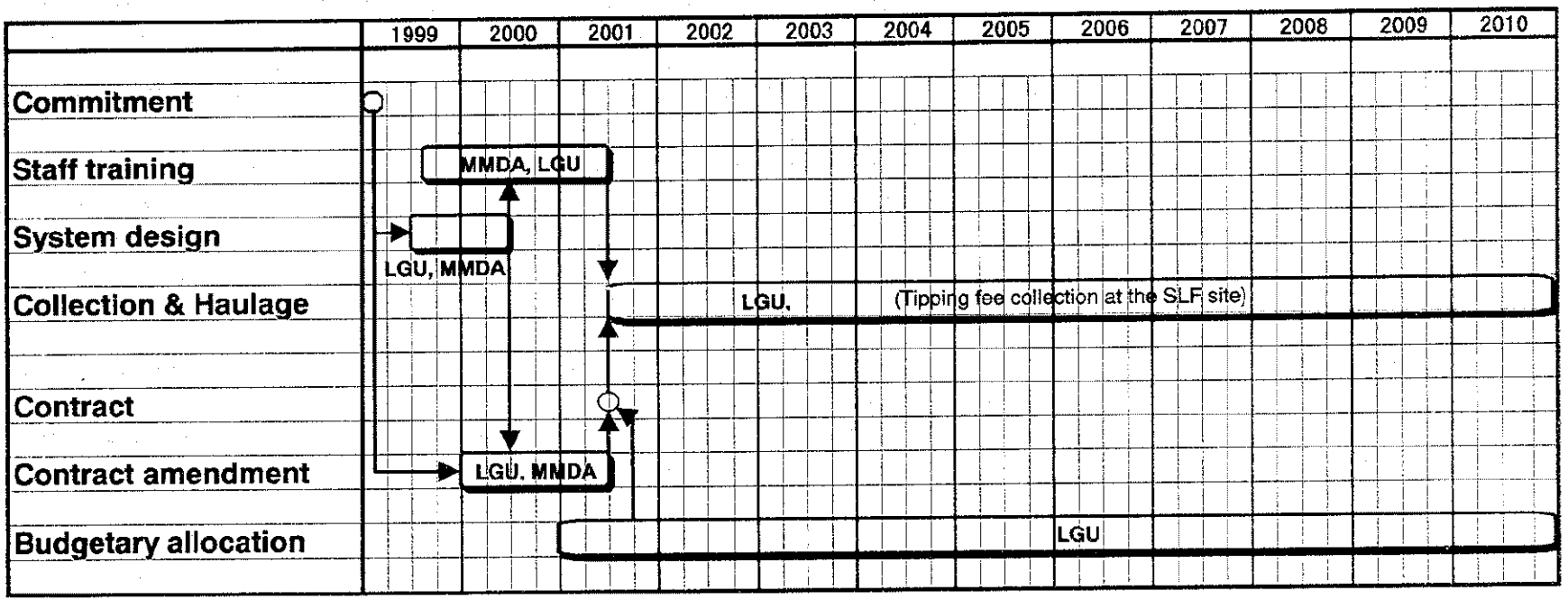
Another privatization for SWM is being performed on a contract basis for collection and haulage services in most LGUs, and the landfill work at the San Mateo and Carmona SLFs under MMDA. As far as proper management/supervision and rational contract systems are assured, these privatization schemes should be facilitated.

The Study Team considers that the privatization policy should be sought in such a way that the public and private sectors can be synchronized in their roles especially for SWM, wherein the public sector becomes more deeply involved, and that BOT projects requiring large capital investments should be further studied in consideration of the socioeconomic readiness and social acceptance of a "User Charge System."

APPENDIX

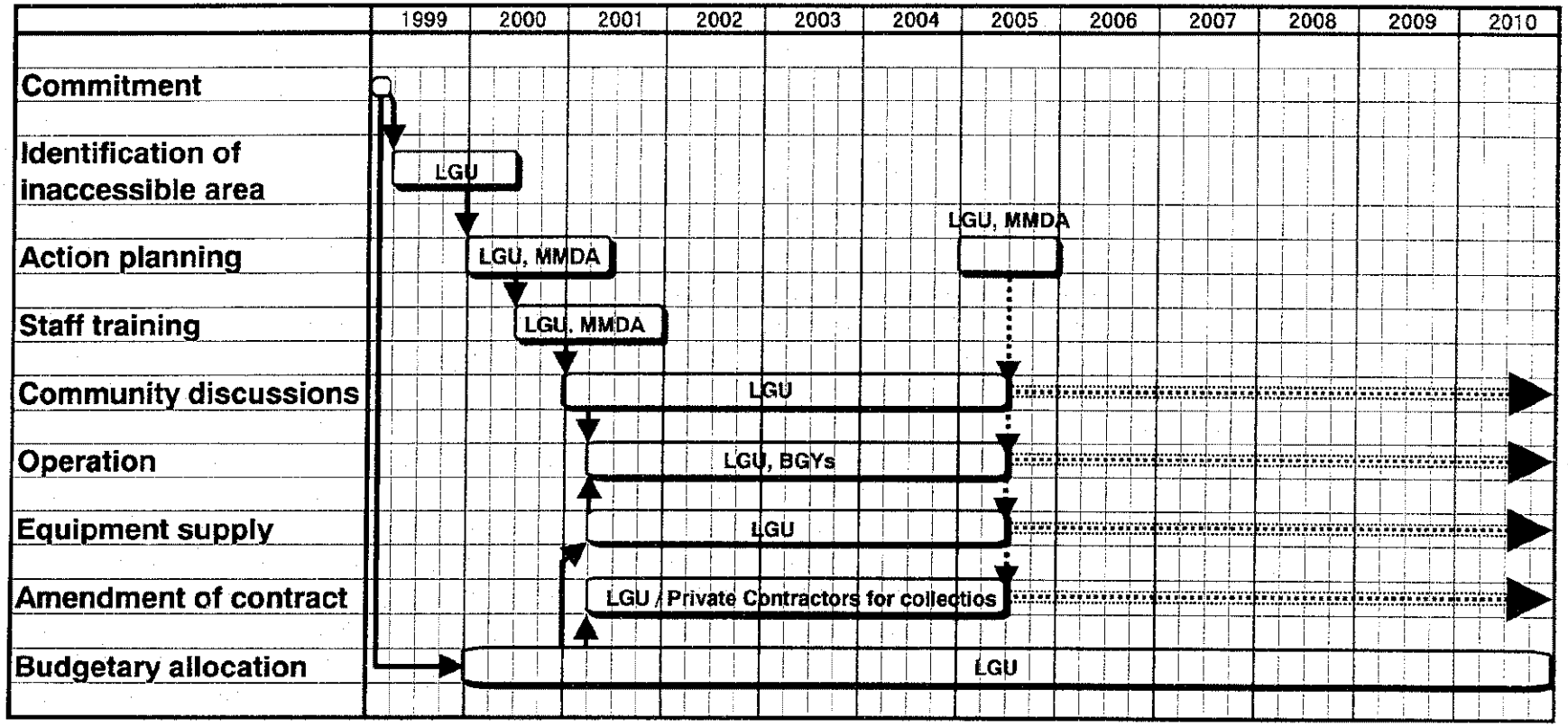
1-1 Improvement of the present collection and haulage system

Establishment of waste measurement system
Improvement of the contract conditions for waste collection



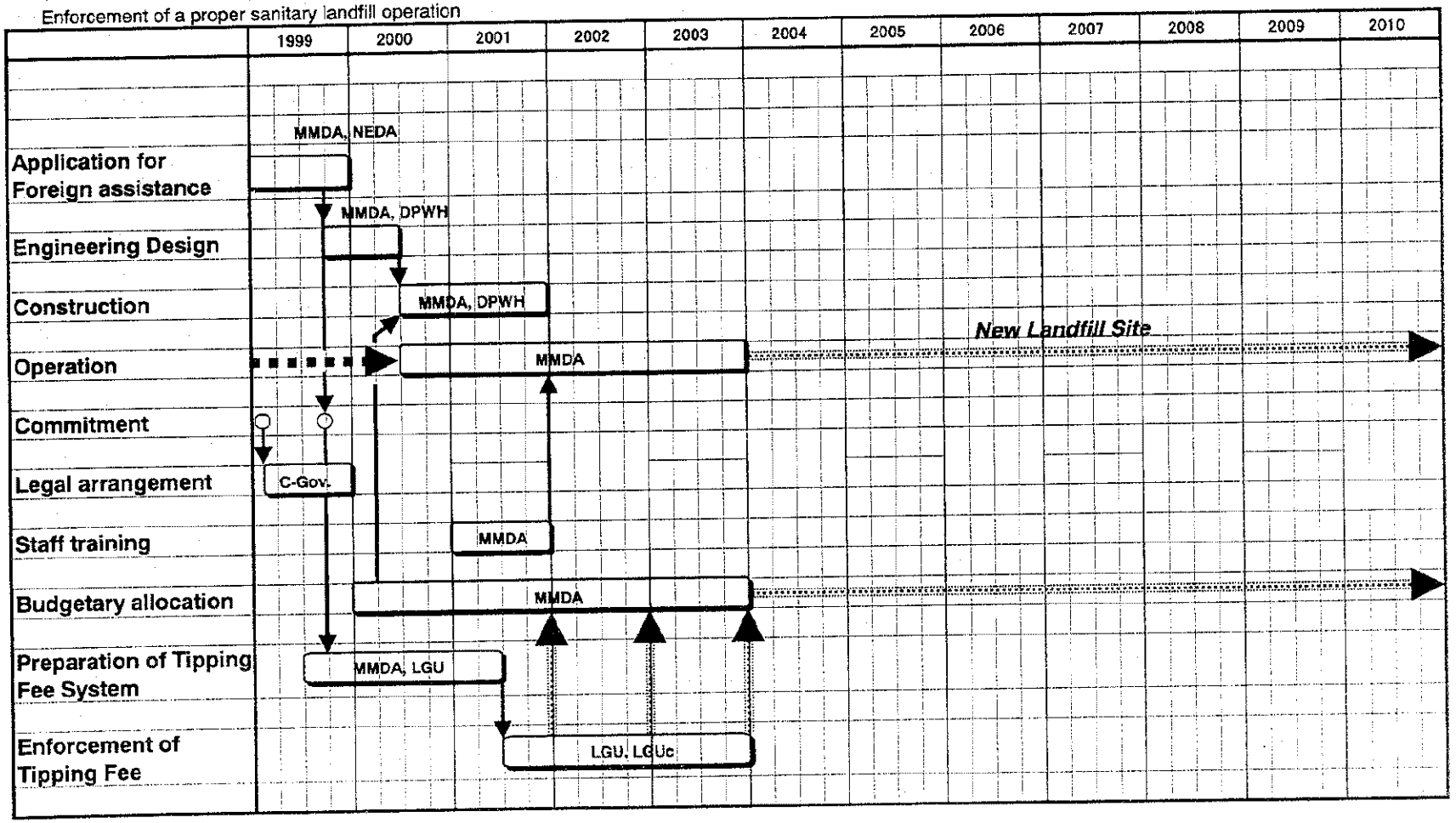
1-2 Improvement of the collection system for inaccessible area

Establishment of collection system based on the collection experiment conducted by JICA SWM Study team
Expansion of the collection system for inaccessible area



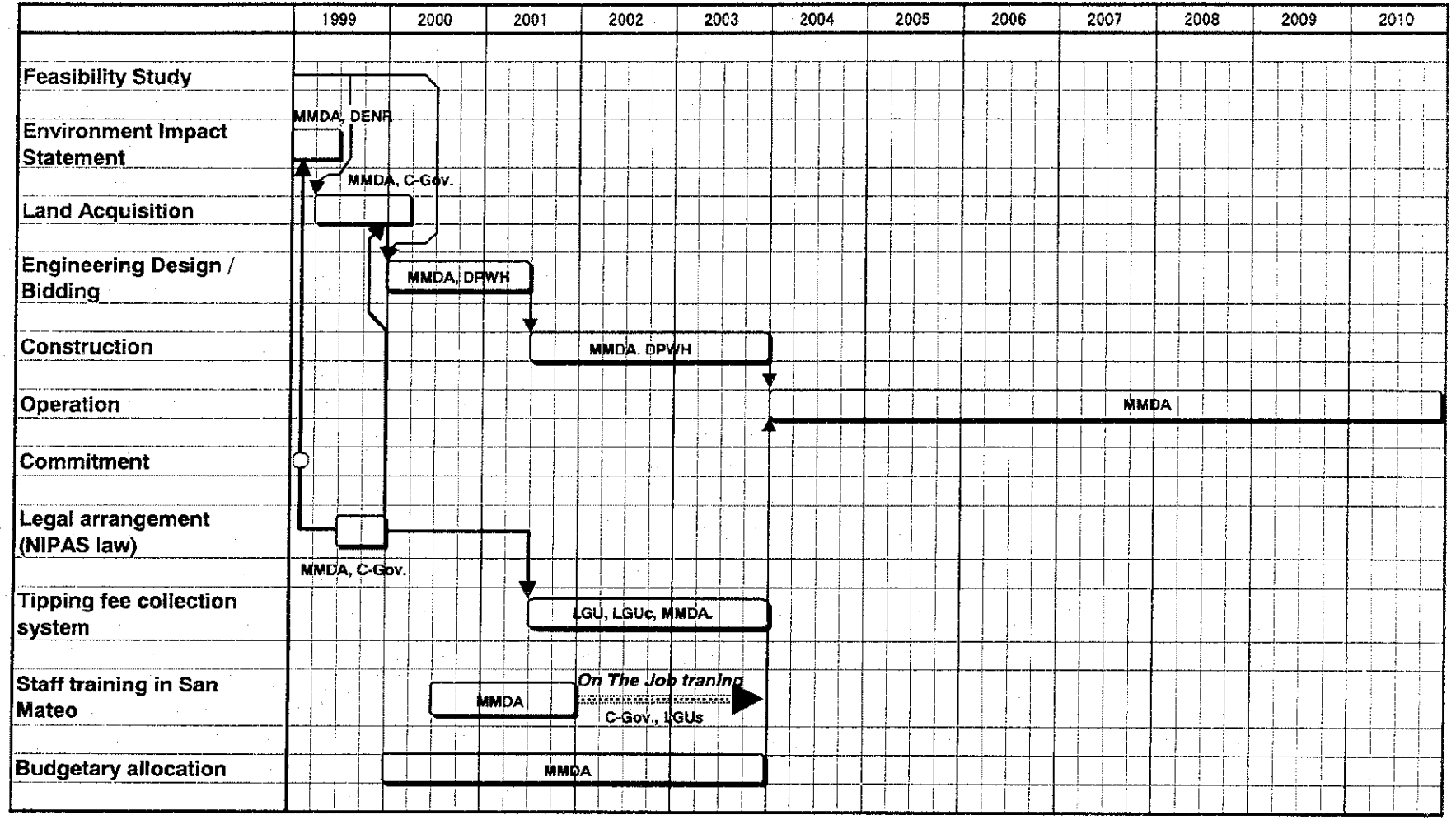
2. Environmental Improvement of the San Mateo SLF site

Construction of transfer stations
Enforcement of a proper sanitary landfill operation



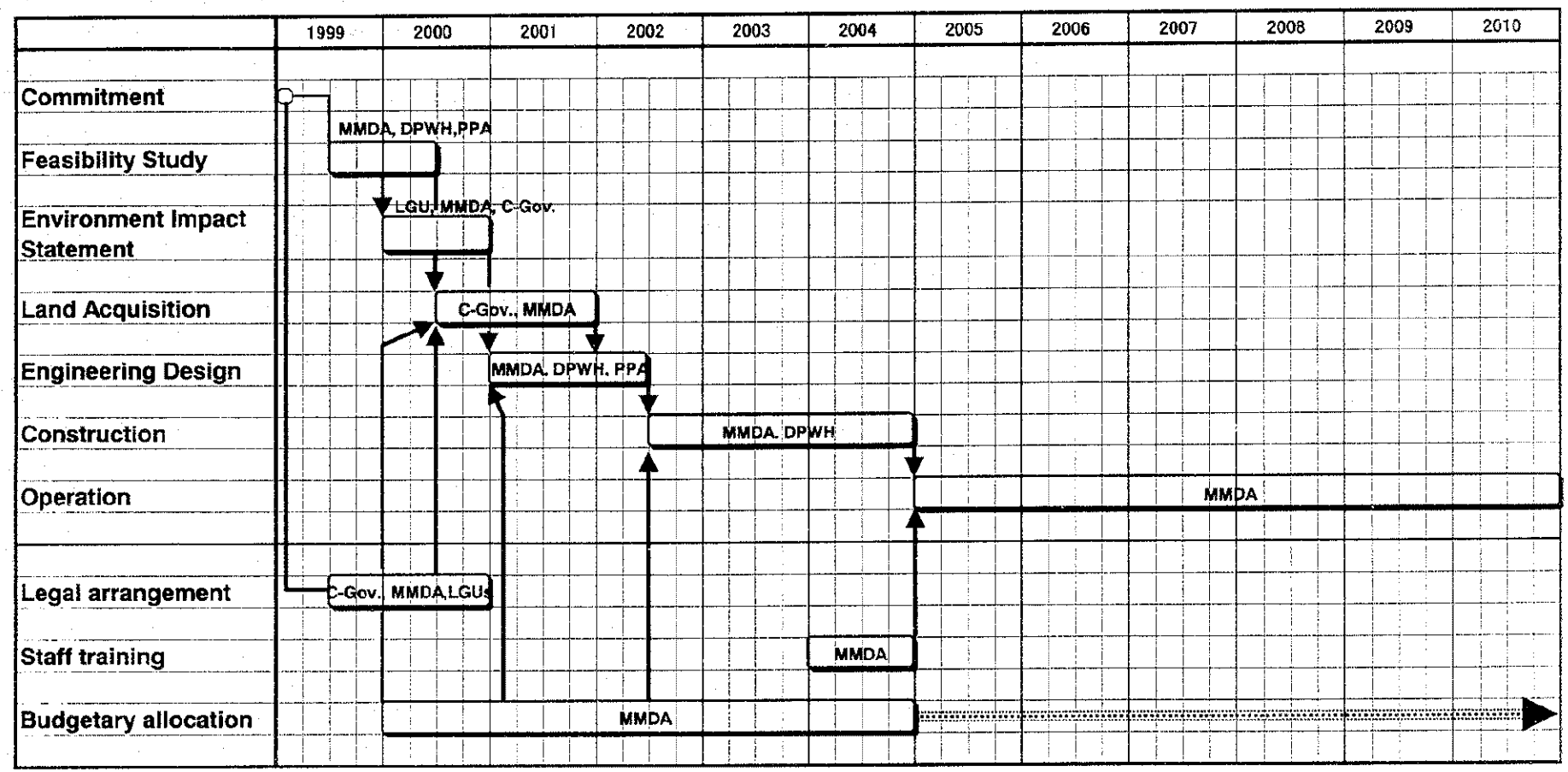
3. Development of the inland type of New sanitary landfill site

Construction of the New Parcel B SLF site



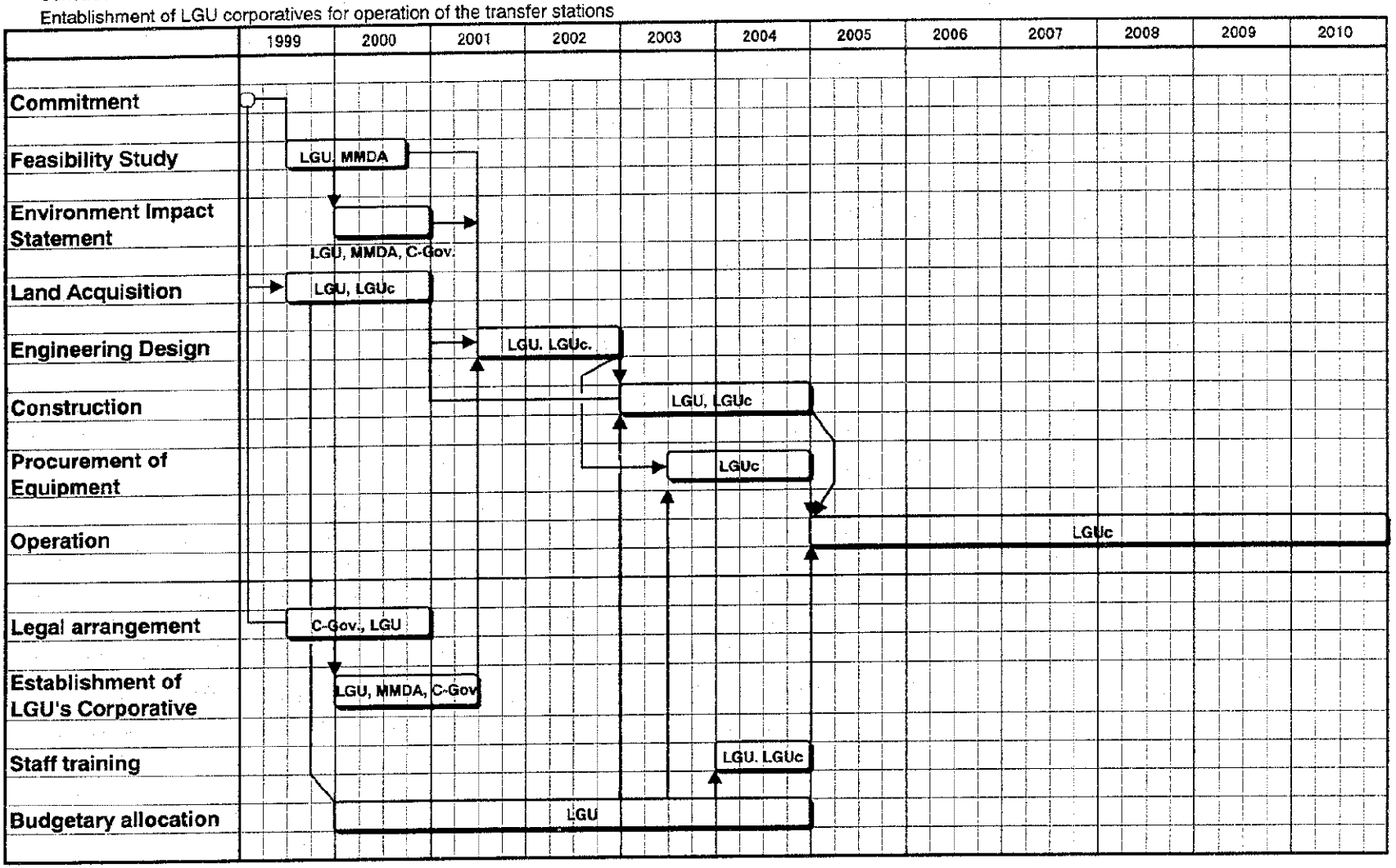
4. Development of Offshore SLF site

Construction of offshore sanitary landfill site



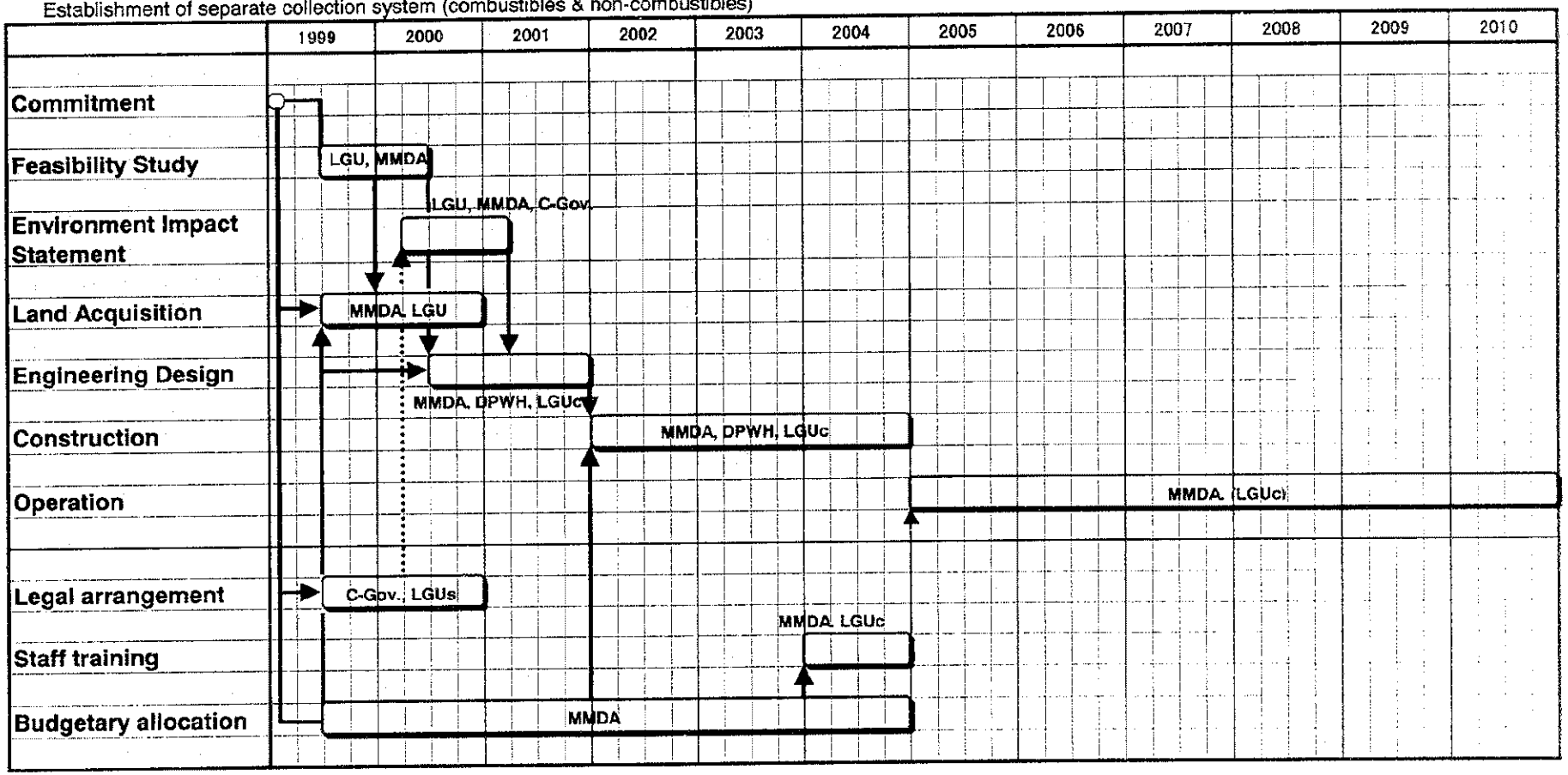
5. Development of Transfer Stations

Construction of transfer stations
Entablishment of LGU corporatives for operation of the transfer stations



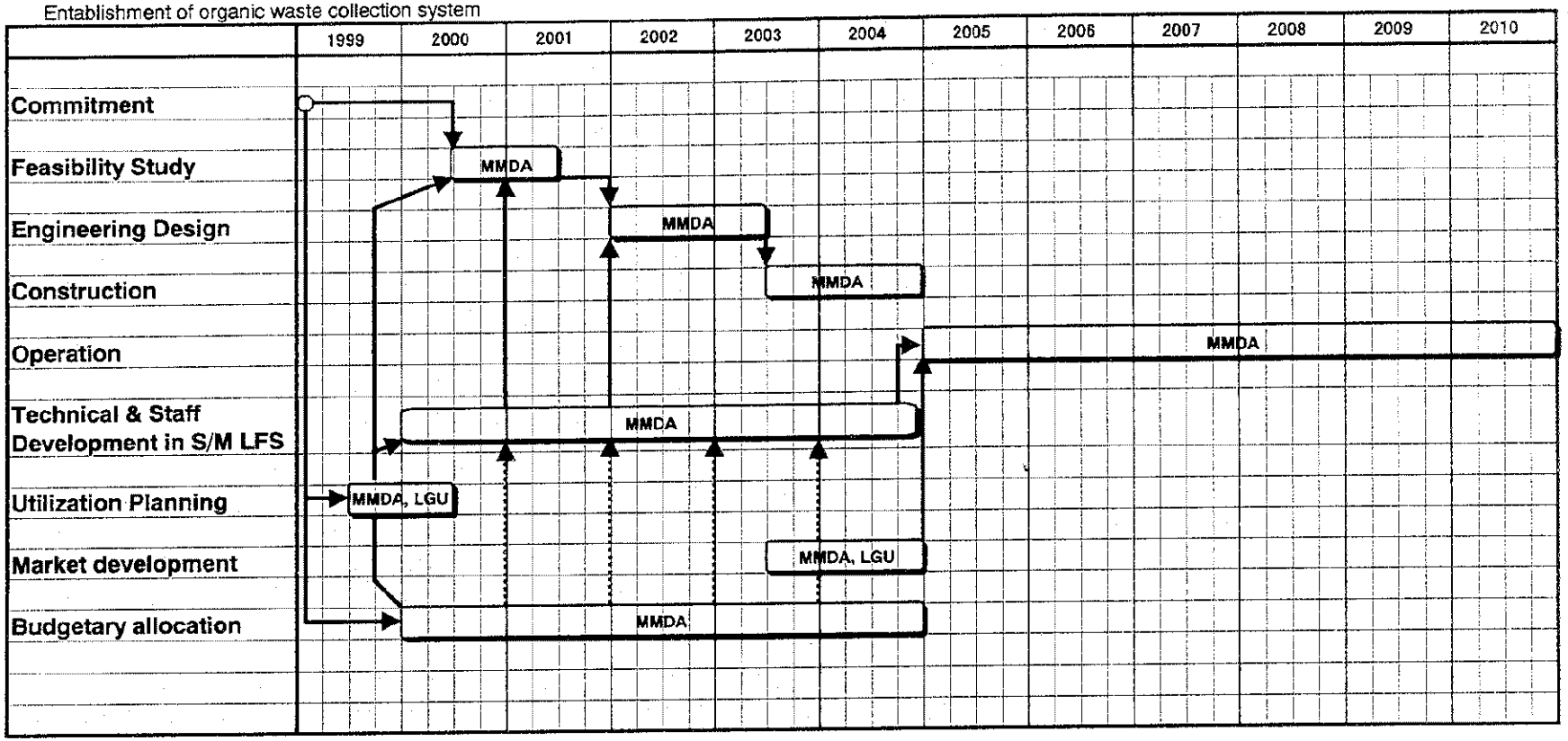
6. Development of Incineration Plant

Construction of the incineration plant
Establishment of separate collection system (combustibles & non-combustibles)



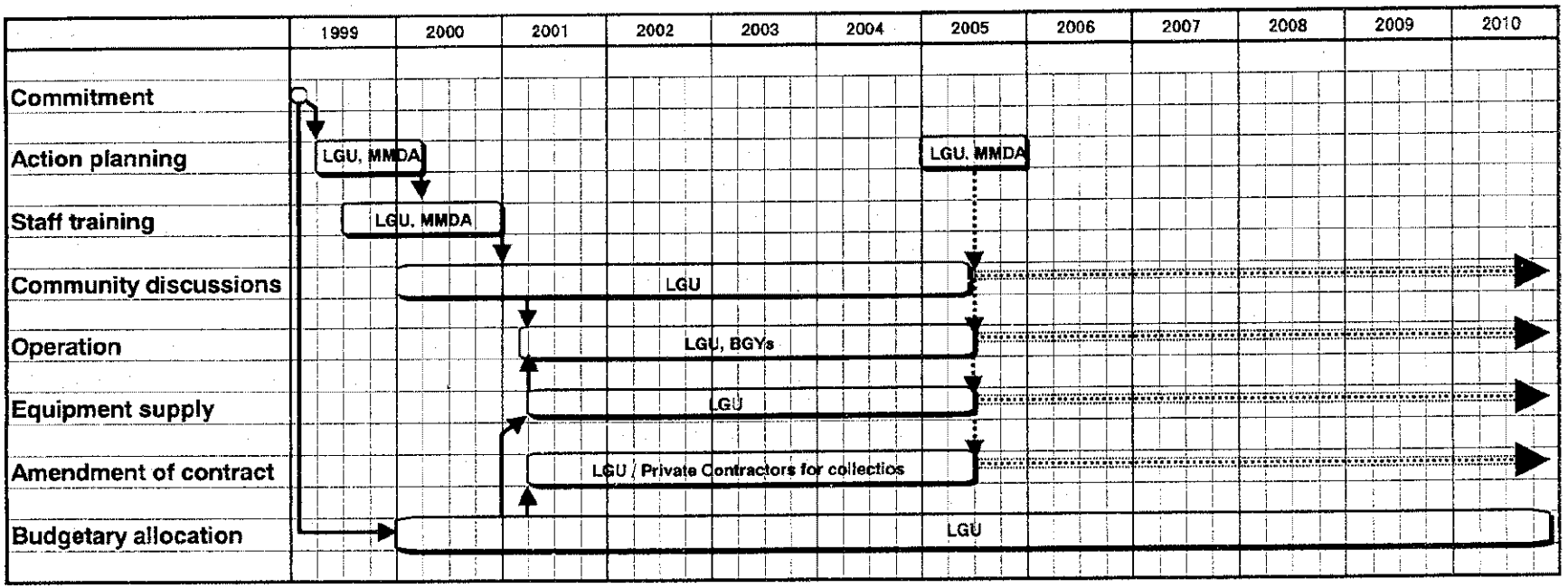
7. Development of Compost Plant

Construction of the the compost plant in the landfill site
Entablishment of organic waste collection system



8-1 Improvement of community based recycling

Organization of community-based recycling system based on the collection experiment conducted by JICA SWM Study team
Expansion of the community-based recycling activities



8-2 Development of Recycling Center

Construction of recyclable material segregation house

Entablishment of separate collection system