

**MINISTRY OF HOUSING AND LOCAL GOVERNMENT
MALAYSIA**

**THE STUDY ON
NATIONAL WASTE MINIMISATION
IN MALAYSIA**

FINAL REPORT

**Volume III
Pilot Projects**

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Final Report

FINAL REPORT COMPOSITION

The Final Report is composed of the following:

1. Summary
2. Volume I – Main Report
3. Volume II – Guidelines
4. **Volume III – Pilot Projects**
5. Supporting Report – 1 Additional Information
6. Supporting Report – 2 Local Action Plans

This Report is “Volume III - Pilot Projects”.

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Appendix 11: Eco Pack in Miri; “3R for a Better Tomorrow”

Abbreviations

AFSB	Alam Flora Sdn Bhd
A/P	Action Plan
CBO	Community Based Organisation
C/P	Counterpart
DB	Dewan Bandaraya (City Hall)
DBKL	Dewan Bandaraya Kuala Lumpur (Kuala Lumpur City Hall)
DBKU	Dewan Bandaraya Kuching Utara (Kuching North City Hall)
DSWM	Division of Solid Waste Management
EPU	Economic Planning Unit
G3RS	Guidelines for Enhancement of 3Rs Activities in School
IEC	Information, Education and Communication
IMS	Information Management System
JICA	Japan International Cooperation Agency
LA	Local Authority
LAP	Local Action Plan
LAP-WM	Local Action Plan on Waste Minimisation
LGD	Local Government Department
MB	Majlis Bandaraya (City Council)
MBJB	Majlis Bandaraya Johor Bahru (Johor Bahru City Council)
MBKS	Majlis Bandaraya Kuching Selatan (Kuching South City Council)
MBM	Majlis Bandaraya Miri (Miri City Council)
MBMB	Majlis Bandaraya Melaka Bersejarah (Melaka City Council)
MD	Majlis Daerah (District Council)
MDK	Majlis Daerah Kerian
MDKS	Majlis Daerah Kinta Selatan (South Kinta District Council)
MHLG	Ministry of Housing and Local Government
MIDA	Malaysian Industrial Development Authority
MITI	Ministry of International Trade and Industry
MOE	Ministry of Education
MONRE	Ministry of Natural Resources and Environment
MP	Majlis Pernadaran (Municipal Council)
M/P	Master Plan
MPK	Majlis Perbandaran Kuantan (Kuantan Municipal Council)
MPPP	Majlis Perbandaran Pulau Pinang (Pulau Pinang Municipal Council)
MPPJ	Majlis Perbandaran Petaling Jaya (Petaling Jaya Municipal Council)
MPSJ	Majlis Perbandaran Subang Jaya (Subang Jaya Municipal Council)
MSW	Municipal Solid Waste
NCP3R	National Children's Programme on 3R
NGO	Non Governmental Organisation
NRD	National Recycling Day
NRP	National Recycling Programme
NSP	National Strategic Plan on Solid Waste Management
OECD	Organisation for Economic Co-operation and Development
OPP3	Third Outline Perspective Plan
PDM	Project Design Matrix
PP	Pilot Project
PR	Public Relations
PWD	Public Works Department
RA	Residents Associations
R&D	Research and Development
RIC	Recycling Information Centre

RM-8	Eighth Malaysian Plan
RM-9	Ninth Malaysian Plan
RNU	Recycling Networking Unit
SND	Stakeholders' Networking Database
SS	Source Separation
SW	Solid Waste
SWM	Solid Waste Management
SWMA	Solid Waste Management Act
SWMD	Solid Waste Management Department
SWMSB	Southern Waste Management Sdn Bhd
TWG	Technical Working Group
WM	Waste Minimisation
WMU	Waste Minimisation Unit
WM-M/P	Waste Minimisation Master Plan
3RAG	3Rs Action Guide

CHAPTER 1

INTRODUCTION

CHAPTER 1 INTRODUCTION

1.1 Background

In August 2005, the government officially approved the *National Strategic Plan for Solid Waste Management*, a document that sets the framework for the overall management of solid waste in Peninsular Malaysia for the next 15 years. To achieve waste minimisation and sustainable development, the National Strategic Plan through its “Action Plan for Implementation” identified a number of tasks that need to be implemented, amongst which include the enhancement of public awareness and participation in waste minimisation, strengthening stakeholders’ partnership in waste reduction, reuse and recycling, capacity development of the government and establishing a national waste database.

Consequent to the recommendations of the National Strategic Plan, JICA initiated a study in 2005 to develop a Waste Minimisation Master Plan and Federal Action Plan and a set of guidelines to promote and sustain waste minimisation at the federal and local authority level.

In conjunction with the Waste Minimisation Master Plan and Action Plan, three pilot projects were conducted over a 6-month period in the second half of 2005 to demonstrate and test key recommendations of the plans; and inversely, to receive feedback on the applicability and appropriateness of these recommendations.

The relationship of the pilot projects with the strategies of the Master Plan and recommendations of the Action Plan (A/P) are shown in Table 1.1.1 and in Figure 1.1.1.

Table 1.1.1 Relationship between Master Plan, Action Plan and Pilot Projects

Master Plan Strategies	Components of the Action Plan	Pilot Project
1. Enhancement of Awareness on Waste Minimisation	Action 1: Enhancement of Awareness Raising Activities under the National Recycling Programme (NRP)	PP-I
	Action 2: Enhancement of 3Rs Activities in Schools	PP-II&III
2. Strengthening of Partnership for 3Rs Activities	Action 3: Formulation of Stakeholders’ Networking and Development of Partnership Activities of NGOs/CBOs	PP-II
3. Enhancement of Institution to Strengthen Government Policies on Waste Minimisation	Action 4: Strengthening of Legal, Regulatory and Financial Mechanism	PP-I&II
	Action 5: Improvement of Information Management	
	Action 6: Provision of Guidance to LAs on LAP-WM	

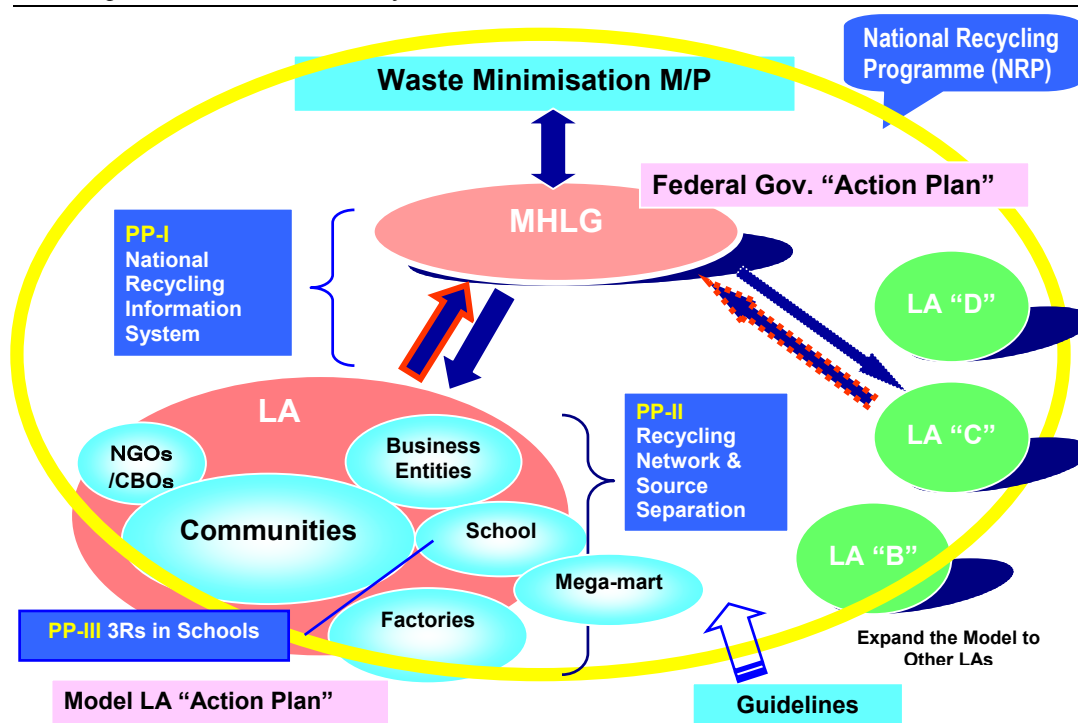


Figure 1.1.1 Conceptual Diagrams of the Action Plan Components and Pilot Projects

1.2 Objectives of Pilot Projects

The first pilot project (PP-I) pertains to the establishment of a National Recycling Information System at the Health and Environment Engineering Division of the Ministry of Housing and Local Government (MHLG). The objective of this pilot project is to set up a recycling networking unit, a data and information management system, and capacity building at the national level.

The second pilot project (PP-II) involves the setting up of a recycling network and intensification of source separation at the local level. The objective is to assist the local government to develop a local waste minimisation unit within its own organisation to manage a waste data and information system, promote 3Rs awareness and waste minimisation activities in areas within its administrative jurisdiction, to set up a network amongst the stakeholders in the waste scene, and to train local personnel.

The third pilot project (PP-III) involves the development of a set of guidelines to enhance 3Rs activities in schools, assist schools to initiate an awareness programme and sustain an active minimisation programme.

The pilot projects, their objectives and target groups are summarised in Table 1.2.1.

Table 1.2.1 Pilot Projects and Target Groups

PP	Project Objective	Target Groups
PP-I	Establishment of National Recycling Information System	MHLG, LAs
PP-II	Local Recycling Networks and Source Separation of MSW	LAs, NGOs, CBOs, RAs, Institutions, Religious Organisations, Schools, etc.
PP-III	Enhancement of School Activities on 3Rs	Primary and secondary students and teachers, Parents, PTAs,

CHAPTER 2

SELECTION OF PILOT PROJECTS

CHAPTER 2 SELECTION OF PILOT PROJECT

To be consistent with the objectives and targets of the A/P, it is imperative that the activities of the pilot projects (PP) include, amongst others, activities related to capacity development, awareness promotions on 3Rs, establishment and enhancement of the networking system, and physical activities towards waste minimisation. It is equally critical that the target groups cover a wide spectrum of stakeholders from the federal to the local level and selected from both the public and private sectors of the community.

At the initial stage of the Study, JICA Study Team (JST) together with MHLG conducted a number of information gathering visits and meetings with some of the stakeholders, i.e., LAs, NGOs, CBOs, associations, organisations and private companies. At these meetings, the stakeholders were requested to submit an outline of their proposal and ideas for the PP that is related to their scope of services or activities. At the same time, JST also prepared some outline concepts for the PP based on lessons and issues learnt during the interviews, and also with experience gained from Japanese 3R activities.

Similar to the selection procedure for the Model LAs, the PP target groups, project components, selection criteria and evaluation methods were presented to participants at the 1st Training Workshop held at INTAN, Kuala Lumpur on December 23rd, 2004. The proposed selection system was discussed and mutually agreed in principle to be adopted for the PP selection process.

The PP target groups, components and selection criteria were also presented to the Technical Working Group (TWG) Meeting that was chaired by MHLG on December 24th, 2004. It was mutually agreed during the meeting to accept, in principle, the proposed components and selection criteria for the PPs.

The selection process is briefly described in the flow diagram as shown in Figure 2.1.1.

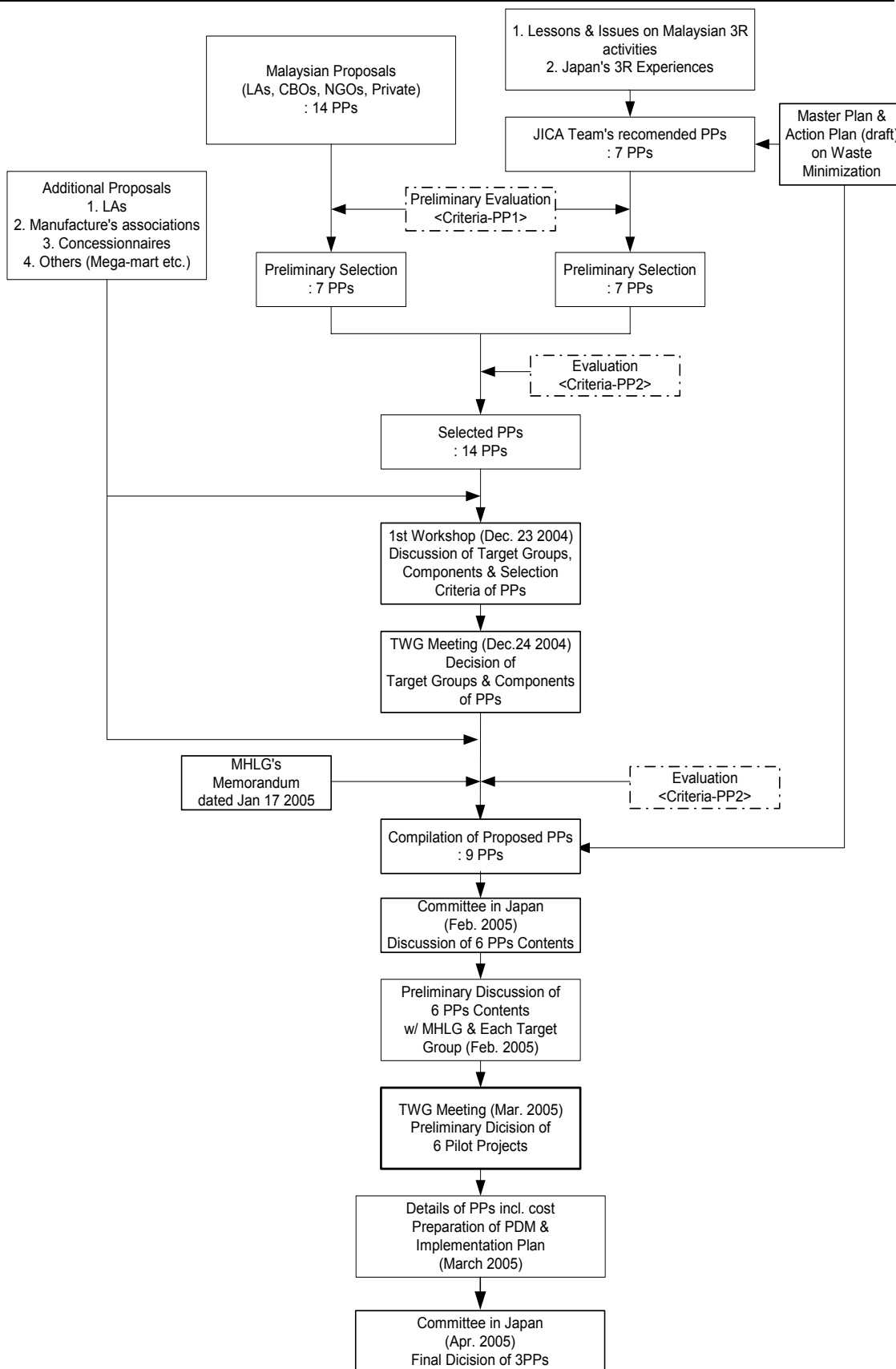


Figure 2.1.1 Flow Diagram of Selection of Pilot Project

2.1 Target Groups and Project Components

Encouraging participation both from institutional players and service users is essential to the success of the *Waste Minimisation Master Plan (WM-M/P)* and *Action Plan (A/P)*. People should be fully involved in issues concerning themselves and the community in which they live. In addition, effectiveness and sustainability depend at least partly on the commitment of all interested parties, (stakeholders), be they powerful or important to the planning process. Thus, broad participation is a central element in achieving the objectives of the WM-M/P and A/P.

Based on consultation with and agreement from MHLG, the target groups selected to participate in the PPs and the specific components of the PPs selected are as follows.

(1) PP for the Federal Government (MHLG)

It was generally agreed with MHLG that the PP at the federal level includes activities that are in-line with the National Recycling Programme, a programme initiated by MHLG and which they intend to intensify in order to strengthen its role in instilling public awareness in waste minimisation, form a stronger partnership with stakeholders and develop the capability of its human resources.

Arising from MHLG's requirements and needs, the components for the PP at the federal level include the setting up a Recycling Networking Unit and an Information Management System within the Health and Environmental Engineering Division of MHLG. The purpose is to set up a stakeholders' networking database, manage data and information from the LAs, conduct 3Rs awareness campaigns and disseminate information.

(2) PP for Model Local Authorities

According to the findings of the National Strategic Plan, more than 80% of the waste disposed at the landfills is household waste. MHLG and JST are fully aware that to achieve sustainable development in the country in the long term, waste minimisation efforts must start from the ground, that is, at the local level. Given the current state of low awareness and participation level of the general public in waste minimisation programme in most LA areas, the study identified a number of key components to be implemented in the PP involving the LAs. These components include:

- a) The setting up of a local networking of stakeholders and data management system to be managed by a unit within the LA.
- b) Introduction or intensification of source separation at households.
- c) Supporting recycling projects conducted by NGOs.
- d) Promotion of awareness programmes on waste minimisation in schools.

(3) PP for SMIs and Retail Establishments

Industries and businesses also produce waste, and these sectors can become significant players in the waste management system, particularly when these establishments must pay directly for their waste service.

The two key components identified to be implemented in the PP involving industrial and retail establishments include:

- a) Supporting and promotion of recycling activities in offices.

- b) Enhancement of waste minimisation in SMIs (Small & Medium Industries) and mega-marts.

2.2 Selection of Pilot Projects

In February 2005, various parties that include MHLG, LAs, JST, NGOs, CBOs and the private sector proposed a total of 24 PPs.

(1) Preliminary Evaluation and Selection

Based on Selection Criteria 1 listed below, a preliminary evaluation exercise was carried out. The initial list of 24 PPs was shortlisted to 14, i.e. 7 from the stakeholders and 7 from the JST. The lists of PPs are tabulated in Table 2.2.1 and Table 2.2.2 respectively.

Selection Criteria 1 for Preliminary Evaluation of Pilot Projects:

- a. The proposed activities are to be in line with the 3R activities and/or JICA Study on Waste Minimisation.*
- b. The target waste types are to be limited to municipal solid waste (MSW) and/or non-hazardous (and non-scheduled) waste.*
- c. Feasibility and timescale of the pilot project.*

(2) Secondary Evaluation and Selection

From the preliminary evaluation, the 14 shortlisted PPs went through a secondary evaluation process based on Selection Criteria 2 to further shortlist to number of potential pilot projects to 9.

Selection Criteria 2 for Preliminary Evaluation of Pilot Projects:

- a. *The target group for the PP is to be one of the following:*
 - *Federal Government (MHLG)*
 - *Model LAs (incl. NGOs/ CBOs, private companies, etc.)*
 - *Industry (Industrial Associations)*
 - *Mega mart*
- b. *The target waste types are to focus on the following recyclable items:*
 - *Paper*
 - *Plastics*
 - *Metals*
 - *Glass*
- c. *The PP activities are to be in line with the National Recycling Programme.*
- d. *The PP activities are to include one or more of the following components:*
 - *Data / information management*
 - *Networking of stakeholders*
 - *The practice of source separation*
 - *Promotions of education and public awareness in recycling*
 - *Support stakeholders in recycling activities (i.e. NGOs, CBOs, RA, etc)*
- e. *The PP activities are to be sustainable, i.e. continued by the stakeholders beyond the PP implementation period.*
- f. *The PP activities are to be replicable, i.e. easily applied and implemented at other LAs and / or by other stakeholders.*
- g. *The willingness of the recommending stakeholder to manage the PP activities, i.e. capacity of the supporting organisation to conduct the PP.*
- h. *Budget of the PP*

Table 2.2.1 Pilot Projects Summary Proposed by the Malaysian Stakeholders

NO.	PILOT PROJECT PROPOSAL	CONTENTS	ORIGINATOR	LEAD AGENCY	CONCESSION AREA	PROJECT TYPE	PARTICIPANTS	TARGET GROUP/BENEFICIARY	OUTPUTS
1	Petaling Jaya Demonstration and Documentation Centre on Waste Minimisation	To extend the existing recycling programme & to set up a Demonstration & Documentation Center (DDC).	MPPJ	LA	Central	PA & PE INFO	MPPJ (& LA21) Residents Assoc. Alam Flora Recyclers Shopowners	Fed G State G MPPJ Alam Flora Public	1. Demonstration & Documentation Centre (can replicate in other LAs) 2. Capacity to convert waste to handicrafts (value-added). 3. Information materials. 4. Increased awareness 5. Reduce waste generation.
2	3R Award For Primary And Secondary Schools In Miri Division	Seminar, workshop for primary & secondary schools, study visit to Recycling Facility in Kuching & prizes.	MP Miri	LA	Sarawak	PA & PE	MMC/LA21 Primary & Secondary Schools	Schools Fed G State G/LA LA21 Public	1. Award programme. 2. Increased Awareness
3	Penang Island Waste Minimisation & Waste Separation at Source Programme	To extend the existing 3Rs awareness programme & E-waste disposal and encourage separation at source.	MPPP	LA	Northern	WSAS PA & PE	MPPP Community SERI Recyclers Public	LA/State G Fed G MPPJ Business Industry Public	1. A LA-led Waste Minimisation Programme (can replicate in other LAs). 2. An improved recyclable collection system. 3. Information materials. 4. Database on recyclable generation & collection 5. Reduce waste generation.
4	Waste Minimisation & Recycling by Community-based Management	To extend existing programme & to promote segregation at source.	BSDRA	CBO	Central	WSAS PA & PE	Residents Assoc (RA) Alam Flora MPPJ Recyclers	Fed G. Alam Flora Recyclers	1. A CBO-based Waste Minimisation Programme (can replicate in other LAs) 2. An improved recyclable collection system. 3. Information materials. 4. Improved database on recyclable generation & collection
5	Promoting Waste Minimisation in Small and Medium-scaled Industries (SMIs)	Survey of 50 SMIs & selection of 5 as Pilot Projects for waste minimisation programme.	SERI	NGO	Northern	WSAS PA & PE	SERI SMIs SMIDEC FMM MPPP MPSP DOE USM?	SMIs Fed G. State G. SERI	1. A Database of waste/recyclable generation. 2. 5 Waste Minimisation Programmes for Selected Industries. 3. Knowledge workers at SMIs. 4. Information & training materials (can replicate in other LAs).
6	National Recycling Information System & Information Centre	To design & set up an information system containing information on recycling for stakeholders. To set up Recycling Network Centre.	JICA Local Study Team	MHLG	NA	WSAS PA & PE	MHLG LAs FMM Ind Assoc. NGOs/ CBOs	Fed G. State G. LAs Other Fed. Agencies CBOs/NGOs Industry	1. A Database of waste/recyclable generation. 2. Establishment of data management unit in MHLG 3. Publication of 3R-related information 4. Information & training materials (can replicate in other LAs).
7	Waste Minimisation in a Shopping Complex/Megamall	To promote waste minimisation among tenants & consumers.	JICA Local Study Team	Megamart	NA	WSAS PA & PE	Megamart Admin. Tenants Shoppers LA/Concessionaire Recyclers Suppliers of "green products"	Commercial Retailers Fed G. State G. LAs Recyclers Consumers	1. A Database of waste/recyclable generation. 2. Reduce waste for landfill 3. Waste Minimisation Programmes for Selected Retailers 4. Wise Buying by Consumers. 5. Information & training materials (can replicate in other shopping areas).

Notes: WSAS: Waste Separation at Source, INFO: Information Mgt., PA&PE : Public Awareness & Education, FACILITY: Facility Establishment

Table 2.2.2 Pilot Projects Summary Proposed by the JST

NO.	PILOT PROJECT PROPOSAL	CONTENTS	ORIGINATOR	LEAD AGENCY	CONCESSION AREA	PROJECT TYPE	PARTICIPANTS	TARGET GROUP/BENEFICIARY	OUTPUTS
1	Source Separation of Municipal Waste	To extend the existing recycling programme & to encourage separation at source into 4 waste groups: general waste (non-resource), household hazardous waste, bulky waste & resource waste.	JICA Study Team	LA	NA	WSAS FACILITY PA & PE INFO	LA Residents Assoc Concessionaire/contractors Recyclers	LA Residents Fed G. State G. Landfill operator Public	1. A LA-led Waste Minimisation Programme (can replicate in other LAs). 2. An improved recyclable collection system. 3. Information materials. 4. Database on recyclable generation & collection 5. Reduce waste generation.
2	Establishment and Implementation of Recycling Network for Local Authorities	To extend an existing recycling programme & to establish a Recycling Network.	JICA Study Team	LA	NA	WSAS FACILITY PA & PE INFO	LA Residents Assoc. Concessionaire/contractors Recyclers	LA Residents Fed G. State G. Landfill operator Public	1. A LA-led Improved Waste Minimisation Programme (can replicate in other LAs). 2. Recycling network 3. Knowledge workers at LA 4. Information materials. 5. Database on recyclable generation & collection 6. Reduce waste generation.
3	Waste Minimisation and Recycling by Community-based Management	To establish a CBO-led recycling programme & to encourage separation at source in a community comprising the 4 main ethnic groups.	JICA Study Team	CBO	NA	WSAS FACILITY PA & PE INFO	CBO LA Residents Assoc. Concessionaire/contractors Recyclers	CBO LA Residents Fed G. State G. Recyclers Landfill operator Public	1. A CBO-based Waste Minimisation Programme (can replicate in other LAs) 2. An improved recyclable collection system. 3. Information materials. 4. Improved database on recyclable generation & collection
4	Implementation of Separating and Collecting Resources in an Industrial Estate	To establish or improve waste minimisation among factories in an Industrial Estate. To examine resource diversion among the factories.	JICA Study Team	Factories	NA	WSAS FACILITY PA & PE INFO	Industries FMM /appropriate association LA DOE	Factories Fed G. State G. Recyclers	1. A Database of waste/recyclable generation & composition. 2. Model 3Rs Programmes for Selected Industries. 3. Knowledge factory workers. 4. Directory of Waste Generators & Takers (Re-processing).
5	Enhancement of Minimisation and Recycling in Megamart	To promote waste minimisation & recycling of packaging.	JICA Study Team	Megamart	NA	WSAS FACILITY PA & PE INFO	Megamart LA Recyclers	Business/Commerce Fed G. State G./LA Public	1. Award programme. 2. Increased Awareness
6	Recycling Activities and Waste Minimisation Education in Schools	To implement recycling activities by pupils and enhance awareness.	JICA Study Team	LA	NA	WSAS PA & PE INFO	Min of Education Primary & Secondary Schools Media LA/Concessionaire	Schools LA/State G. Fed G. Recyclers Public	1. A LA-led Waste Minimisation Programme (can replicate in other LAs). 2. Information materials. 3. Database on recyclable generation & collection 4. Reduce waste generation.
7	Waste Minimisation Campaign at Religious Facilities (mosques, churches & temples)	To promote recycling & segregation at source as part of clean & healthy lifestyle.	JICA Study Team	Religious Facilities	NA	WSAS PA & PE	Religious Facilities Residents Assoc.(RA) LA/Concessionaire Recyclers	Religious Facilities Fed G./State G. LA RA Recyclers	1. A CBO-led Waste Minimisation Programme (can replicate in other communities) 2. An improved recyclable collection system. 3. Information materials.

Notes: WSAS: Waste Separation at Source, INFO: Information Mgt., FACILITY: Facility Establishment

(3) Final Selection of the Pilot Projects

On 17th January 2005, a memorandum was received from MHLG requesting the inclusion of an additional PP for consideration. The proposal was to carry out composting of biodegradable waste from hotels, working in collaboration with a local university that is already conducting the composting study. The recommended PP was received by JST and included for evaluation.

Based on the final evaluation exercise, 9 PPs were short-listed and tabulated as shown in Table 2.2.3. The short-listed PPs were presented to the JICA Advisory Committee in Japan in February 2005 for discussion and approval of the proposed concepts. Based on the results of the discussions and recommendations, it was subsequently decided that amongst the 9 proposed PPs, 6 PPs be recommended for implementation due to technical, time and financial constraints. The two PPs that were omitted (PP-F and PP-I) require the procurement of high-cost and long lead-time machinery, and hence are not feasible under the PP time frame and scope of work.

The 6 PPs that were recommended for implementation are shown in Table 2.2.3.

Table 2.2.3 List of Proposed Pilot Projects

PPs	Title of Pilot Projects	Target Group	Decision
PP-A	National Recycling Information System	MHLG	Selected
PP-B	Establishment of Recycling Network in LAs	4 Model LAs	Selected
PP-C	Source Separation of Municipal Waste	4 Model LAs	Selected
PP-D	Waste Minimisation in Small-Medium Industries	SMI (Penang)	Selected
PP-E	3R Activities in Primary & Secondary Schools	Schools (Miri)	Selected
PP-F	Establishment of Waste Minimisation/Recycling System	SWMSB (J.B.)	Not selected
PP-G	PET, Bottles, Cans & Glass Bottles Recycling	Associations	Not selected
PP-H	Waste Minimisation/ Recycling in Mega-mart	Mega-mart	Selected
PP-I	Composting in Hotel and University	Hotel/ Univ.	Not selected

During the third field study in Malaysia in February 2005, JST presented the merits and implementation plans of the 6 PPs and discussed the individual components and target groups with MHLG.

The methodology used in the evaluation of the 6 PPs and conceptual scope of work was also presented to the Technical Working Group (TWG) meeting on March 9, 2005. It was mutually agreed, in principle, during the meeting to accept the concept of the proposed 6 PPs and the proposed target groups.

After the TWG meeting, JST and MHLG continued to discuss details of the PPs with each target group. At the discussion with the target groups, it was highlighted that the support from the mega-mart in PP-H might not be forthcoming. This feedback was subsequently reported to MHLG and the JICA headquarters. The advice and final decision from both parties was to exclude PP-H as a PP.

Moreover, because of the following reasons, it was finally decided that PP-B and C in MD Kinta Selatan (MDKS) and PP-D will not be implemented in Phase II of the Study.

1) PP-B and C in MDKS

- In case of district council such as MDKS, coordination with nearby city council is necessary in order to establish a sustainable recycling network. Because number of recyclers/end-users in district council is limited.
- In MDKS, coordination with MP Ipoh was considered for the preparation of LA's A/P in the Phase II study.
- As described in Chapter 7, MDKS has selected as one of the model LAs at the latest moment of Phase I study, and preparation of LA's A/P including above two items and pilot project is not preceded yet.
- For Phase II study in MDKS, it is necessary to focus to prepare LA's A/P considering coordination with MP Ipoh.

2) PP-D

JICA carried out a development study on the cleaner production for industries in Malaysia in the year 2000, and this study included the PP-D's component.

Consequently, 4 PPs were selected and PP-B & PP-C were combined as one project. These were re-numbered and as shown in Table 2.2.4.

Table 2.2.4 List of Pilot Projects

Pilot Projects Numbering		Project Name
Former No.	Re-numbered	
PP-A	PP-I	Establishment of National Recycling Information System
PP-B	PP-II	Local Recycling Network and Source Separation of MSW
PP-C		
PP-E	PP- III	Enhancement of School Activities on 3Rs

CHAPTER 3

OUTLINE AND PROJECT DESIGN MATRIX (PDM) OF PILOT PROJECTS

CHAPTER 3 OUTLINE OF THE PILOT PROJECTS

3.1 Outlines of Pilot Projects

The outline of the selected PPs is shown in Table 3.1.1.

Table 3.1.1 Outline of Pilot Projects

PP	PP-I	PP-II	PP-III
Project Name	Establishment of National Recycling Information System	Local Recycling Network and Source Separation of MSW	Enhancement of School Activities on 3Rs
Project Area	Kuala Lumpur	MPPP, MPSJ, MBM	Johor State, MBM
Target Group	MHLG, 10 LAs	3 Model LAs	Primary & Secondary schools
Project Purpose	<ol style="list-style-type: none"> To serve as a base for 3Rs data accumulation and dissemination in Malaysia through the setting up of a Recycling Networking Unit (RNU) in MHLG. To enhance the capacity of MHLG to monitor SWM & 3Rs activities at Federal level. 	<ol style="list-style-type: none"> To encourage sustainable recycling through partnership of stakeholders. To improve the capacity of LAs to monitor recycling activity. To increase the collection amount of recyclable materials separated at source. 	<ol style="list-style-type: none"> To enhance the awareness on 3Rs amongst students and teachers.
Outputs	<ol style="list-style-type: none"> Data management system on solid waste management & 3Rs in national level is established. Recycling Networking Unit (RNU) is established in MHLG (tentative-base). 3Rs related information is published by RNU. Capacity of MHLG C/Ps is developed. 	<p><Recycling Network></p> <ol style="list-style-type: none"> Data management system on SWM & 3Rs in local level is established. Waste Minimisation Unit (WMU) is established in LAs (tentative-base). Recycling is carried out by stakeholders participated in PP. 3Rs related information is published. Capacity of LAs officials and regional 3Rs leaders are developed. <p><Source Separation></p> <ol style="list-style-type: none"> Residents/ communities, etc carry out source separation. Recycling route of recyclables (paper, glass, can and PET) is established. Profit from selling recyclables return to communities/ institutions. Awareness of communities/ residents for waste minimisation is enhanced. 	<ol style="list-style-type: none"> 3Rs education programme/ material in school is prepared. 3Rs activities awards programme in school is implemented. Capacity of school teachers on 3Rs is developed.

3.2 Project Design Matrix (PDM) of the Pilot Projects

In order to conduct the PPs effectively, the Project Design Matrix (PDM) was prepared by the JICA Study Team for each programme in the planning stage of the PPs.

PDM contains the pilot projects' overall goal, project purpose, outputs, activities, and inputs, and shows the logical interrelationship among those components, as well as the important assumptions related to the PP. It also identifies the objectively verifiable indicators (OVIs) to monitor progress of the projects to ensure consistent management throughout the project cycle.

All the PPs undertaken in the Study were implemented based on the PDM. The PDM for each PP are shown in Table 3.2.1, Table 3.2.2, Table 3.2.3 and Table 3.2.4.

Table 3.2.1 PDM for PP-I

Project name: PP-I Establishment of National Recycling Information System
Target groups: MHLG
Project area: Kuala Lumpur

Duration: June to November 2005
Date: March 16 2005

Narrative Summary	Objective Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal 3Rs practices in Malaysia can be clarified by MHLG. Waste minimisation is enhanced nationwide.</p> <p>Project Purpose Recycling Networking Unit (RNU) in MHLG is established to function as a base of 3Rs data accumulation and disbursement in Malaysia. Capacity of MHLG to monitor SWM & 3Rs activities in Federal level is enhanced.</p>	<p>1. Waste minimisation/ recycling ratio (%) in Malaysia</p> <p>Number of LAs (incl. 4 model LAs) and other stakeholders submit the 3Rs format to RNU in MHLG.</p>	<p>1. Record of 3Rs related data/ information collected and analysed by MHLG.</p> <p>Record of number of LAs and other stakeholders submitting the 3Rs format to RNU.</p>	<p>National Recycling Programme (NRP) does not terminate.</p>
<p>Outputs</p> <ol style="list-style-type: none"> 1. Recycling Networking Unit (RNU) is established in MHLG (tentative-base). 2. Data management system on solid waste management & 3Rs at the national level is established. 3. 3Rs related information is published by RNU. 4. Capacity of MHLG C/Ps is developed. 	<ol style="list-style-type: none"> 1. Number of RNU staffs 2. Reporting forms on waste generation amount, 3Rs quantities data and 3Rs activity practices are prepared/ finalised. 3. No. of 3Rs related information brochures, directory booklets and education & awareness leaflets are published. 4. Number of staffs that participated in training workshop. 	<ol style="list-style-type: none"> 1. Organization chart of RNU 2. Reporting forms on waste generation amount, 3Rs quantities data and 3Rs activity practices. 3. Number of information brochures, directory booklets and education & awareness leaflets printed and distributed. 4. Attendance list of training workshop. 	<p>No. of LA pertaining to NRP doesn't decrease rapidly.</p>
<p>Activities</p> <ol style="list-style-type: none"> 1-1 Procurement of equipment 2-1 Review and development of reporting format 2-2 Analysis of existing data 2-3 Develop new reporting procedures and forms 2-4 Establishment of MSW Information Management System 2-5 Explanation of IMS and new reporting format 2-6 Desktop testing / trials of IMS 3-1 Development of networking database 3-2 Update of stakeholders directory 3-3 Publication of 3Rs related information 4-1 Proposal for the future IT system of NRWIC 4-2 Conduct on-the-job training 	<p>Inputs</p> <p>[Japan]</p> <ol style="list-style-type: none"> 1) Personnel 1) JICA team members: 3 responsible for Material flow, Public participation and pilot project 2) JICA local team members: 2 <p>[Malaysia]</p> <ol style="list-style-type: none"> 1) Personnel 1) MHLG <ul style="list-style-type: none"> • C/Ps 2) Local authorities <ul style="list-style-type: none"> • Each model LA task-force • LA officials pertaining to NRP <p>(2) Facilities</p> <ul style="list-style-type: none"> • Space for Recycling Networking Unit in MHLG 	<p>RNU staffs continue to work</p> <p>Preconditions</p> <p>National Recycling Programme (NRP) will continue to be carried out.</p>	

Table 3.2.2 PDM for PP-II-1

Project name: PP-II (1/2) Establishment of Recycling Network in LAs
Project area: Penang, Subang Jaya and Miri

Duration: June to November 2005
Date: March 16 2005

Target groups: 3 Model LAs

Narrative Summary	Objective Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal Waste minimisation in LA is enhanced.</p>	<p>Waste minimisation/ recycling ratio (%) in LAs</p>	<p>Record of 3Rs related data and information collected and analysed by LAs and reported to MHLG.</p>	
<p>Project Purpose Sustainable recycling is carried out by the leadership of LAs. Capacity of LAs to monitor recycling activity is improved.</p>	<p>1. Frequency of reporting 3Rs practices to MHLG 2. No. of players to be monitored</p>	<p>1. Report to MHLG on 3Rs in line with National Recycling Programme (NRP) 2. Directory booklet of stakeholders</p>	<p>Market of recyclables does not rapidly decrease.</p>
<p>Outputs 1. Data management system on SWM & 3Rs at the local level is established. 2. Waste Minimisation Unit (WMU) is established in LAs (tentative-base). 3. Recycling is carried out by stakeholders that participated in PP. 4. 3Rs related information is published. 5. Capacity of LAs officials and regional 3Rs leaders are developed.</p>	<p>1. Waste generation amount, 3Rs quantity data and 3Rs activity practices. 2. Number of WMU staffs. 3. Type and amount of recyclables handled by each stakeholder that participated in PP. 4. Number of 3Rs related information brochures, directory booklets etc. that are published. 5. Number of LAs officials/ regional leader that participated in on-the-job training.</p>	<p>1. Reporting data to MHLG. 2. Establishment of WMU. 3. Record of recycling activities of participated stakeholders. 4. Number of information brochures, directory booklets printed/ distributed. 5. Record of Attendance list.</p>	<p>Number and types of 3Rs related stakeholders does not rapidly decreased.</p>
<p>Activities 1-1 Survey on present waste flow 1-2 Establishment of data collection, management and reporting system 1-3 Set up database of Stakeholders & 3Rs activities 1-4 Establishment and application of Recycling Networking System 2-1 Establishment of WMU 3-1 Conducting Stakeholders forum to clarify role of each player 4-1 Development of 3Rs awareness promotions 5-1 On-the-job training is carried out</p>	<p>Inputs [Japan] (1) Personnel 1) JICA team members: 3 members responsible for Material flow, Public participation and Pilot project 2) JICA local team members: 4 (one for each model LAs) (2) Expenditure/ Operation • Local consultant fee (3) Equipment • Computer x1 set, printer x 2 sets • Furniture (desk & chair x2 sets) • Office stationeries</p>	<p>[Malaysia] (1) Personnel 1) MHLG • C/Ps 2) Local authorities • Each model LA task-force (2) Facilities • Space for WMU in LAs</p>	<p>LAs officials continue to work. Players continue to practise recycling. Preconditions Each recycling player (NGO/CBO, recyclers, manufactures etc.) cooperate with this pilot project.</p>

Table 3.2.3 PDM for PP-II-2

Project name: PP-II (2/2) Source Separation of Municipal Waste Project area: Penang, Subang Jaya and Miri		Target groups: 3 Model LAs		Duration: June to November 2005 Date: March 16 2005
Narrative Summary	Objective Verifiable Indicators	Means of Verification	Important Assumption	
Overall Goal Municipal solid waste is reduced and recycled.	1. Waste minimisation/ recycling ratio (%) 2. Record of LAs activities on waste minimisation/ recycling.	Record of 3Rs related data/ information collected and analysed by LAs.		
Project Purpose Collection amount of recyclable materials separated at source increases.	Collection amount of separated waste at source	Record of source separation, discharge, collection, stall and selling.	Market of recyclables doesn't go down rapidly.	
Outputs 1. Source separation is carried out by residents/ communities and business entities. 2. Recycling route of recyclables (paper, glass, can and PET) is established. 3. Profit from selling recyclables return to communities/ institutions. 4. Awareness of communities/ residents for waste minimisation/ recycling is enhanced.	1-1 No. of stakeholders participating in PP 1-2 frequency of source separation for each waste type. 2 Amount of source separated, discharged, collected and sold. 3 Amount of profit from selling recyclables and income of communities from it. 4 Number of residents participating in PR activities	1. Records of source separation. 2. Record of source separation, discharge, collection, stall and selling. 3. Record of recyclables sold and community's income from it. 4-1 Record of attendance list 4-2 No. of flyers/brochures/etc distributed to residents	Number and types of 3Rs related stakeholders do not rapidly decreased.	
Activities 1-1 Selection of target area 1-2 Conducting explanatory meeting 1-3 Distribution of bins/ plastic bags 1-4 Setting up collection stations/ points 1-5 Source separation practice 2-1 Planning of source separation and collection route of collected recyclables 2-2 Conducting Stakeholders workshop 3-1 Planning of selling route of collected recyclables 4-1 PR activities are carried out 4-2 Implementation of questionnaire survey 4-2 On-the-job training	Inputs [Japan] (1) Personnel 1) JICA team members • Public participation expert • Expert on pilot project 2) JICA local team members: 4 personnel (one for each model LA) (2) Expenditure/ Operation • Local consultant fee (3) Equipment • Plastic bags/ bins • Containers • Collection vehicle (rental-base, if nec.)	[Malaysia] (1) Personnel 1) MHLG • C/Ps 2) Local authorities • Each model LA (task-force) (2) Facilities • Space for collection points (if necessary)	Separated recyclables are collected	Preconditions Each player (residents/ communities, NGOs, institutions, collection Co., recyclers etc.) cooperate this pilot project.

Table 3.2.4 PDM for PP-III

Project name: PP-III 3Rs Activities in Primary & Secondary Schools Project area: Miri, Johor		Target groups: Primary & Secondary Schools		Duration: June to November 2005 Date: March 16 2005	
Narrative Summary	Objective Verifiable Indicators	Means of Verification	Important Assumption		
Overall Goal General public awareness on 3Rs is enhanced.	Waste minimisation/ recycling ratio (%)	Record of 3Rs related data/ information collected and analysed by MHLG	MHLG and LAs do not change the policy for 3Rs awareness promotion.		
Project Purpose Awareness on 3Rs for students and teachers is enhanced.	1. Number of schools pertaining to 3Rs education programme 2. 3Rs activities/ awards programme.	1. Record of 3Rs education programme 2. Record of 3Rs activities/ awards programme	MHLG and LAs do not change the policy on environmental education and awareness.		
Outputs 1. 3Rs education programme in school is implemented. 2. 3Rs activities awards programme in school is implemented. 3. Capacity of school teachers on 3Rs is developed.	1. Number of schools that introduce the 3Rs education programme 2. Number of schools that enter the 3R activities/ awards programme 3. Number of teachers that participate in workshop/seminar.	1. Implementation record of 3Rs education programme. 2. Entry record of 3Rs activities/ awards programme 3. Attendance list of workshop/seminar	Curriculum doesn't change drastically.		
Activities 1-1 Development of Guidelines on Enhancement of 3Rs in schools 1-2 Conducting school teacher workshop 1-3 Conducting PP for guidelines 2-1 Development of PP 3Rs awards programme. 2-2 Selection of PP candidate schools. 2-3 Conducting explanatory meeting for participating schools 2-4 Implementation of 3Rs activities 2-5 Monitoring / Evaluation of 3Rs activities 2-6 Conducting Awarding ceremony 3-1 Conduct seminar/workshop	Inputs [Japan] (1) Personnel 1) JICA team members responsible for • Public participation • Pilot project 2) JICA local team members: 2 personnel (2) Expenditure/ Operation • Local consultant fee (3) Equipment • Weighing scales • Trophy, computer and other awards (3 nos.)	[Malaysia] (1) Personnel 1) MHLG • C/Ps 2) Local authorities • Miri, Johor • School teachers & PTA	Students continue to go to school. Trained teachers continue to work in schools. Preconditions Schools cooperate with this pilot project.		

3.3 Evaluation Method of Pilot Projects

Based on the objectively verifiable indicators (OVIs) of the PDMs, the achievement level of project purpose and output of each PP was evaluated. PPs were further evaluated based on the indicators of the PDM, i.e., activities, outputs, project purpose and overall goal, prepared at the beginning of each PP, taking into account the key terms as shown in Table 3.3.1. (Source: Project Cycle Management (PCM) Methods, FACID 2000).

Table 3.3.1 Evaluation Criteria of Pilot Projects

Evaluation Criteria	Main Considerations
Efficiency	How can the amount of "activities" be cut back to produce the same "outputs"? Are the inputs being utilised properly to produce "outputs"?
Effectiveness	To what extent has the "project purpose" been achieved? Can the "project purpose" be achieved by the end of the cooperation period? Are there any "outputs" that need boosting to achieve the "project purpose"? Conversely, can any "outputs" be cut back without jeopardizing the achievement of the "project purpose"?
Impact	Is the project producing any negative effects? If so, how can they be minimised?
Relevance	Are "project purpose" and "overall goal" still compatible with the needs of the beneficiaries, priorities of the recipient country and the local social environment? If there are discrepancies, can any changes be made to the project to rectify them?
Sustainability	Are the implementing organisation, key implementation personnel and others on the recipient-country side developing technical expertise, operation/management skills and financial capability to carry on the project activities independently after the expiry of the cooperation period? To ensure self-reliance after the withdrawal of cooperation, what aspects of the project need to be strengthened in the remaining cooperation period and to what extent?

It must be clarified that the evaluation of the PPs focuses mainly on the effects the PPs have on the stakeholders, rather than how the projects were implemented - the objective being to ascertain the impacts and achievements of the PPs, make recommendations on the future course of the activities and options for other activities.

The relative importance of the evaluation criteria listed above differs for all indicators of PDM as shown in Table 3.3.2. For example, "Efficiency" is mainly evaluated based on outputs and activities, while "Effectiveness" focuses on project purpose and outputs. Sustainability is evaluated from overall goal to activities.

Table 3.3.2 Relationship between Evaluation Criteria and OVIs

Evaluation Criteria	Efficiency	Effectiveness	Impact	Relevance	Sustainability
Overall goal			What positive and negative effects, either direct or indirect, has the implementation of the pilot project had?	Are the "project purpose" and "overall goal" still meaningful as objectives at the time of evaluation?	To what extent will the recipient country's organisations be able to retain the positive effects of the pilot project after the withdrawal of cooperation?
Project Purpose		Whether the "project purpose" has been achieved, and how much contribution did "outputs" make?			
Outputs	To what extent have "inputs" been converted to "outputs"?				
Activities					

CHAPTER 4

IMPLEMENTATION FRAMEWORK OF PILOT PROJECTS

CHAPTER 4 IMPLEMENTATION FRAMEWORK OF PILOT PROJECTS

4.1 Basic Implementation Framework of the Pilot Projects

The PPs were carried out in collaboration with the taskforces and counterparts of MHLG, model local authorities, local consultants, JST and target groups including residents, NGOs, CBOs, schools, concessionaires, recyclers etc.

In all the pilot projects, the taskforces and counterparts from the Malaysian side were requested to take the lead, whilst local consultants and the JICA study team provided technical support. The know-how and technologies were transferred to the counterparts via the local consultants through the planning and implementation process for each pilot project.

The conceptual diagram of the implementation framework of the pilot projects is shown in Figure 4.1.1.

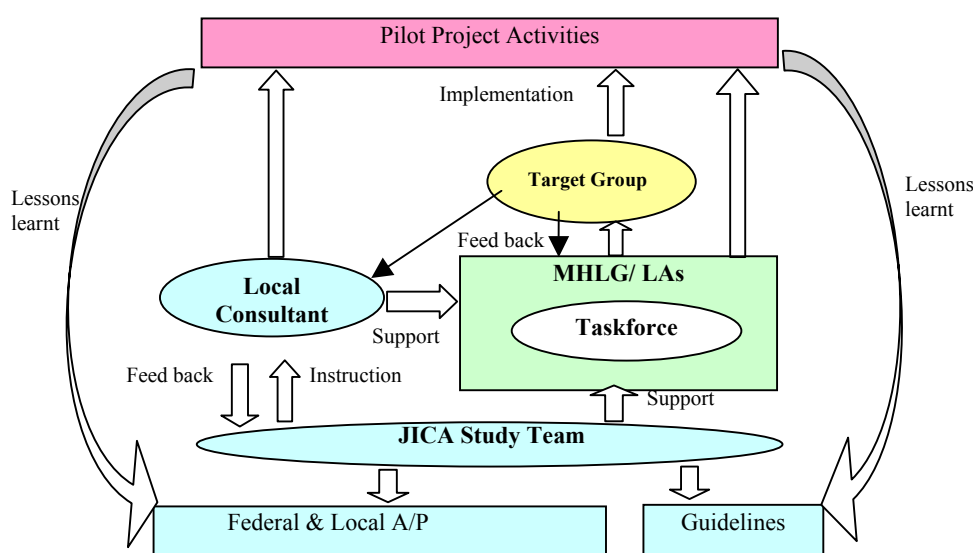


Figure 4.1.1 Implementation Framework of Pilot Projects I, II, III

4.2 Selected Local Consultants

In order to support the counterparts in implementation of the Pilot Projects, local consultants were selected as shown in Table 4.2.1.

Table 4.2.1 List of Local Consultants for the Pilot Projects

Pilot Projects	Target Group ¹	Selected Local Consultants	Activities Supported
PP-I	MHLG	MB Technology (M) Sdn Bhd	<ul style="list-style-type: none"> • Assistance to counterparts • Liaison with corresponding parties • Data input, analysis and compilation • Coordination for meetings with LAs • Preparation of new information management system
PP-II	MPPP	SERI	<ul style="list-style-type: none"> • Assistance to counterparts • Liaison with corresponding parties • Coordination and implementation of waste flow survey, briefings, stakeholder workshops, 3Rs campaigns • Coordination for formulation of networking • Coordination and implementation of source separation
	MPSJ	PE Research	
	MBM	Eco Ideal	
PP-III	MBM	Eco Ideal	<ul style="list-style-type: none"> • Assistance to counterparts • Liaison with corresponding parties • Coordination and implementation of school 3Rs activities and award programme • Support for adopting the guidelines for enhancement of 3Rs activities in schools
	MOE, Johor State Education Department	(JICA Study Team)	

Note 1: Ministry of Housing and Local Government (MHLG)
 Ministry of Education (MOE)
 Majlis Perbandaran Pulau Pinang (MPPP)
 Majlis Perbandaran Subang Jaya (MPSJ)
 Majlis Bandaraya Miri (MBM)

CHAPTER 5

PILOT PROJECT I: ESTABLISHMENT OF NATIONAL RECYCLING INFORMATION SYSTEM

CHAPTER 5 PP-I: ESTABLISHMENT OF NATIONAL RECYCLING INFORMATION SYSTEM

5.1 Background

To be in line with the objectives of the National Recycling Programme (NRP), a programme initiated by MHLG to capture the recycling data and activities of the local authorities (LAs), the data and information available within MHLG needs to be systematically organised so that the data can be used to assess the state of the recycling programme within the country. Additional information such as stakeholders' contact details and related activities are also helpful in the setting up of the stakeholders' directory so that others may refer and network amongst themselves. Currently, the Recycling Unit under the Health and Environment Division of MHLG manages these data and information.

In the preliminary assessment of the NRP conducted by the JICA Study Team (JST) in June 2005, it was noted that systematic data and information management was lacking, and generally, information was not updated. Inadequate manpower and appropriate training of existing staff within the Recycling Unit could be one of the reasons for the absence of proper documentation of reports received from the LAs and database of LA and other stakeholder details. Arising from the preliminary assessment, JST proposed and implemented the Pilot Project for the "Establishment of National Recycling Information System" for MHLG. Codenamed PP-I, the project spanned a period of 5 months from July – November 2005, and involved the cooperation and collaboration of the Recycling Unit of MHLG and 10 LAs selected specifically for the project.

5.2 Outline of PP-I

5.2.1 Project Purpose

The primary purpose of PP-I is to set up a Recycling Networking Unit (RNU) in MHLG to serve as a national base for the accumulation, management and dissemination of data and information pertaining to stakeholders and 3Rs programmes and activities undertaken at the local level. The project's secondary purpose is to strengthen the human resource capacity and capability within MHLG to monitor SWM and 3Rs activities at the federal level.

5.2.2 Outputs

The Study Team worked in close collaboration and consultation with officers from the Recycling Unit of MHLG with the aim of producing the outputs outlined in Table 5.2.1.

Table 5.2.1 Output of PP-I

Output 1	An integrated data management system on solid waste management & 3Rs at the national level
Output 2	A Recycling Networking Unit (RNU) within MHLG
Output 3	Establishment of Information Management System
Output 4	Development of capacity and capability of staff in MHLG

5.2.3 Activities

A number of activities were undertaken to achieve the outputs identified in Table 5.2.1. These activities are summarised in Table 5.2.2 below.

Table 5.2.2 Summary of Activities Undertaken

Output	Activities
Output 1: Integrated Data Management System	Activity 1.1: Review of Existing Reporting Format of 3Rs Activities Activity 1.2: Analysis of Existing Data Activity 1.3: Development of New Reporting Format Activity 1.4: Conducting of Desktop Test/trials
Output 2: A Recycling Networking Unit	Activity 2.1: Collection and management of data from LA Activity 2.2: Establishment and maintenance of stakeholders directory Activity 2.3: Liaison with LAs, stakeholders and public
Output 3: Information Management System	Activity 3.1: Establishment of Local Authorities Information Database Activity 3.2: Establishment of Stakeholders' Networking Database
Output 4: Capacity Development of MHLG Staff	Activity 4.1: Preparation of Manual of Database Management Activity 4.2: Conduct On-the-Job Training

5.2.4 Implementation Schedule

To achieve the 4 outputs, the activities outlined in Table 5.2.2 were undertaken in sequentially over a 6-month period as shown in Table 5.2.3.

Table 5.2.3 Implementation Schedule of PP-I

	Activities	Jun	Jul	Aug	Sep	Oct	Nov
1	Est. of Recycling Networking Unit (RNU)						
2	Est. of Data Management Systems on SWM						
2-1	Review of existing reporting format	[Bar]					
2-2	Analysis of existing data		[Bar]				
2-3	Development of new reporting forms			[Bar]			
2-4	Desktop testing of new reporting system				[Bar]		
3	Est. of Information Management System						
3-1	Development of LA information database		[Bar]	[Bar]	[Bar]	[Bar]	[Bar]
3-2	Dev. of stakeholders' networking database		[Bar]	[Bar]	[Bar]	[Bar]	[Bar]
4	Capacity Development of MHLG						
4-1	Prep. of manual of info. management system						[Bar]
4-2	Conduction of on-the-job training (OJT)	←----->					

Briefly, the project commenced with a review of the existing reporting format for waste flow and 3Rs activities as well as the reports sent to MHLG by some LAs between January 2003 and May 2005. This stage of the project was undertaken between July and

mid-August 2005. The aim was to appreciate the issues and problems of data collection (and their accuracy) faced at the federal and local level, evaluate whether or not the existing reporting format used by the LAs are adequate and user-friendly, to develop a new format that is more streamlined, uniform and usable by all LAs, and to develop the preliminary structure for an Integrated Data Management System.

Following the review, a series of discussions and workshops were held between mid-August to mid-September 2005 to present the revised reporting format to the LAs. At this stage of the project, representatives from the LAs were briefed on the usability of the new format, and more importantly, the need for LAs to cooperate and provide constant feedback on a monthly basis to MHLG on the state of recycling activities within the area of their jurisdiction.

The activity conducted between mid-September to end November 2005 involved trying out the new reporting format by the 10 LAs selected for the project. Reports submitted by the some of the 10 LAs on their “Recycling Programme” and “Recyclables Collection Data” using the new reporting format were analysed, reviewed and evaluated to ascertain the applicability of the new format, as well as to further finetune the LAs Information Database and the Information Management System.

In tandem with the new reporting format involving the 10 LAs, a questionnaire survey was also conducted of 104 LAs to gather baseline information about the LAs and their 3Rs activities, if any, with the aim of setting up the basic structure for the Stakeholders’ Networking Database.

The last activity of the project involved capacity development of MHLG staff. In November 2005, on-the-job training was conducted for staff of the Recycling Unit. The staff were shown the outputs of the project, how to analyse, update and maintain the Information Management System.

Details of the activities are described further in Section 5.3. The flow sequence of activities is diagrammatically illustrated in Figure 5.2.1. Figure 5.2.1 shows the flow diagram for the review of the existing reporting format and the drafting of the new format for waste flow and 3Rs activities to be used by the LAs.

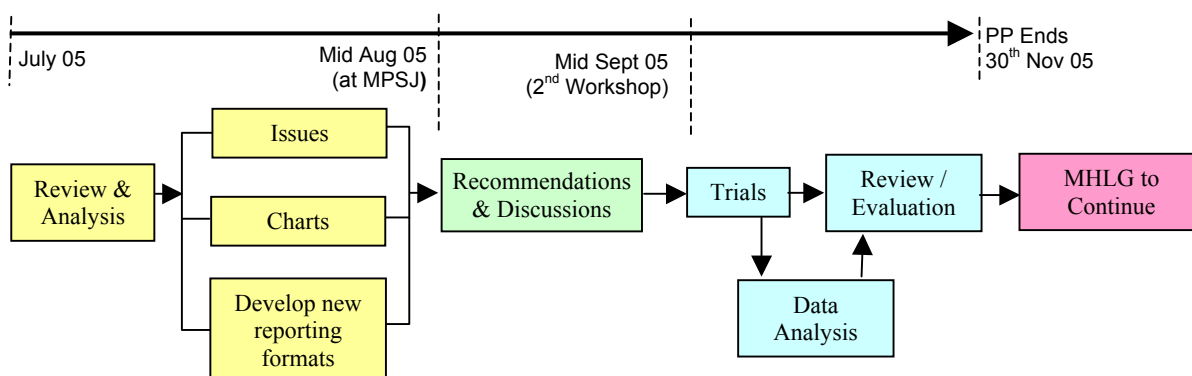


Figure 5.2.1 Flow Diagram for the Review and Drafting of New Reporting Format for Waste Flow & 3Rs Activities

5.2.5 Inputs

In addition to technical advice and consultants stationed at MHLG, JICA provided the computer hardware and software needed to develop the outputs. MHLG allocated the space within the ministry to set up the Recycling Networking Unit as well as personnel to establish and coordinate liaison with the 10 LAs selected for the project. Details of the inputs are listed in Table 5.2.4.

Table 5.2.4 Inputs for PP-I

Japan	Malaysia
(1) Personnel <ul style="list-style-type: none"> • JICA Study team members: • JICA local team members • Local consultants (2) Equipments <ul style="list-style-type: none"> • Computer (Hp Compaq DX2000) • Printer (DeskJet 1280, HP LaserJet 1020) • Software (Microsoft Office, Access etc) 	(1) Personnel <ul style="list-style-type: none"> • MHLG • Officers from 10 LAs: (MB Miri, MP Subang Jaya, MP Pulau Pinang, MD Kinta Selatan, DB Kuala Lumpur, DB Kota Kinabalu, MB Johor Bahru, MB Kuching Selatan, MB Shah Alam, MP Kuantan) (2) Facilities <ul style="list-style-type: none"> • Space for Recycling Networking Unit in MHLG (“Bilik Kitar Semula”)

5.3 Results of Activities

5.3.1 Establishment of Data Management System

(1) Existing Reporting Format for Waste Flow and 3Rs Activities

The existing reporting procedure under the National Recycling Programme (NRP) requires the cooperation of all LAs to prepare and submit monthly reports on their recycling activities to MHLG. The report was to be divided into 2 main sections: first, “Report on Recycling Programme” and second, “Recyclables Collection Data”.

The Report on Recycling Programme is a written report on what the LAs have been doing and planned to do with respect to recycling, what the achievements are, who their partners are, etc. This report is supposed to be submitted to MHLG on a monthly basis to enable MHLG to develop and maintain a database on the state of waste minimisation programme and activities within the various LA areas.

Examples of some of the existing reports submitted to the MHLG are shown in Plate 5.3.1.



Plate 5.3.1 Example of Report on Recycling

The Recyclables Collection Data report is in a table format following the predefined format provided by MHLG. Data and statistics of recyclable collection quantities, type of recyclables, collection locations, and the like, are supposed to be entered in the form and forwarded to MHLG on a monthly basis.

(2) Collecting and Collation of Reports and Information

The initial task of the review exercise was to collect and collate all available reports and information from MHLG. For the purpose of this project, only information and data officially submitted by the LAs to MHLG were reviewed.

The first task of the review process was to separate the large volume of reports (in hardcopy) according to LAs and their respective States. The reports were further arranged in chronological order with the most current reports at the top. These were then filed in the respective “State” files as shown in Plate 5.3.2.



Plate 5.3.2 Recyclables Collection Data Report by States

Since the launch of the NRP, reports were received intermittently from the LAs. The majority of the reports received by MHLG were submitted between January 2003 and May 2005.

According to records of MHLG, a total of 104 LAs registered their interest in participating in the NRP. However, after collating the available reports, it was found that only 38 LAs have submitted a least one official report to MHLG during that period. This accounts for only about 37% of the total participating LAs. No reports were received from the LAs in Perlis, Terengganu and Kelantan.

The majority of the reports received were tabulation of recyclables collection data. Comparatively few reports on the recycling programme were submitted over the period of January 2003 and December 2004 and no reports received between January and August 2005.

The list of 38 LAs that submitted their reports is shown in Table 5.3.1. The 4 LAs, highlighted in yellow were selected by JST as model LAs for the preparation of the LAP-WM and for Pilot Projects II and III. They were MB Miri, MP Subang Jaya, MP Pulau Pinang and MD Kinta Selatan.

Table 5.3.1 Shortlist of LAs that have submitted their Recyclables Collection Data Reports (from Jan. 2003 to May 2005)

Item	States / LA	2003	2004	2005	Item	States / LA	2003	2004	2005
1	Majlis Bandaraya Kuching Selatan	5	12	5	20	UPKT - Majlis Perbandaran Nilai	0	0	2
2	Majlis Perbandaran Seremban	5	10	5	21	Majlis Daerah Bertong	12	9	1
3	Majlis Daerah Lipis	0	9	5	22	Majlis Perbandaran Taiping	10	8	1
4	Majlis Perbandaran Temerloh	0	5	5	23	Majlis Perbandaran Pulau Pinang	1 Rpt	0	0
5	Majlis Daerah Sri Aman	0	3	5	24	Majlis Perbandaran Ampang Jaya	0	1 Rpt	0
6	Majlis Daerah Jasin	0	1	5	25	Majlis Perbandaran Batu Pahat	0	1 Rpt	0
7	Majlis Daerah Kinta Selatan	4	12	4	26	Majlis Daerah Segamat	7	9	0
8	Dewan Bandaraya Kuala Lumpur	5	12	4	27	Majlis Bandaraya Shah Alam	0	6	0
9	Majlis Perbandaran Manjung	12	0	4	28	Majlis Perbandaran Kuantan	0	5	0
10	UPKT - Majlis Perbandaran Seremban	0	0	4	29	Majlis Daerah Cameron Highlands	1 Rpt	3	0
11	UPKT - Majlis Perbandaran Port Dickson	0	0	4	30	Majlis Daerah Jempol	0	2	0
12	Majlis Daerah Kerian	0	12	3	31	Majlis Daerah Pekan	4	2	0
13	Majlis Daerah Raub	6	12	4	32	Majlis Perbandaran Padawan	2	2	0
14	Majlis Bandaraya Johor Bahru	8	12	3	33	Majlis Bandaraya Melaka Bersejarah	1 Rpt	1	0
15	Majlis Bandaraya Miri	0	12	3	34	Majlis Perbandaran Sungai Petani	2	0	0
16	Majlis Bandaraya Ipoh	8	10	3	35	Majlis Perbandaran Subang Jaya	1 Rpt	1 Rpt	0
17	Majlis Perbandaran Sibul	4	3	3	36	Majlis Perbandaran Kajang	1 Rpt	0	0
18	Majlis Perbandaran Teluk Intan	4	11	2	37	Majlis Perbandaran Klang	1 Rpt	0	0
19	Dewan Bandaraya Kuching Utara	4	9	2	38	Majlis Daerah Kota Belud	1 Rpt	0	0

The summary list of 104 LAs participating in the NRP and the number of reports submitted is shown in Table 5.3.2. The rows highlighted in grey indicate the LAs that did not submit any reports. Those highlighted in yellow are the 4 model LAs.

(3) Preliminary Findings

Due to time constraint, it was not practical to review all the existing reports; hence, only general reviews of the most current reports (from January to May 2005) were carried out. Arising from the review, 10 LAs were identified and selected as model LAs for the project.

Basically, the preliminary review identified the types of information submitted and the usefulness and relevance of these information evaluated. Positive and negative salient points were also identified so that future measures and counter-measures could be developed and implemented.

The preliminary findings of the review of existing reports submitted by the LAs are as follows:

- a) **Absence of Data Management System within MHLG**
A coordinated system within the Recycling Unit to systematically manage and maintain information and data received from the LAs on recycling-related organisational structure and functions, names and contact details of personnel involved in recycling, number and location of collection centres/bins, networking and existing infrastructure, etc, was absent.
- b) **Status of Reporting from LAs**
Almost all the reports submitted by the LAs provided recyclables collection data and quantities in table form. The "Report on Recycling Programme" were not submitted. The few available "Recycling Programme Reports" were mostly submitted in 2003, and thus, the information and data provided were outdated.
- c) **Quality of Data Reports from LAs**
The majority of the recyclables collection data reports only indicated activities and collection data carried out by the LAs or by their contractors/SWM concessionaire companies. There was relatively scant information on the activities of private recyclers and other stakeholders. Most of the collection data on recyclables pertain to collection of old newspapers collected by schools. Other recyclables collected were reported on an ad-hoc basis and these only represented an insignificant amount of total recyclables collected.

(4) Analysis of Data Reported from LAs

Since it was not practical to review all the available data, it was decided that up-to-date data submitted by 10 to 12 of the most regular LAs would be reviewed. Amongst these include the 4 model LAs, namely, MP Pulau Pinang, MP Subang Jaya, MB Miri and MD Kinta Selatan.

From the preliminary review, about 13 LAs were identified for having submitted their collection data regularly. These LAs were DB Kuala Lumpur, DB Kuching Utara, MB Johor Bahru, MB Ipoh, MB Kuching Selatan, MB Miri, MP Subang Jaya, MP Pulau Pinang, MP Taiping, MP Temerloh, MD Kinta Selatan, MD Lipis and MD Raub. In addition, reports from MP Kuantan for April and May 2004 were also reviewed because their method of reporting was different from the others and considered to be a method that is worth analysing.

The most recent recyclables collection data, from January to May 2005, received from the above 14 LAs were analysed. The main purpose is to appreciate the LA's recycling activities, their results and to try to identify any trends, irregularities and shortcomings. From these, countermeasures and solutions could be developed and introduced to enhance or resolve the issues.

To understand the significance of the collection data, the data were presented in the "bar-chart" format showing the quantities collected for the particular period. From these charts, the trends were deduced and a comparison was made between the type and quantity of recyclables collected by the different LAs.

The data analysis exercise was carried out in July and August 2005. During that time no data reports were received from MP Subang Jaya and MP Pulau Pinang. However, both LAs later submitted their reports in September and October 2005. Since these two LAs were selected as the model LAs, their reports were also included in the analysis exercise.

A summary of the recyclables collection data for the selected LAs for the corresponding months are tabulated and plotted on the bar chart shown in Figure 5.3.1. Figure 5.3.1 shows that the collection activities for the northern region are generally better than for the other regions. It also shows that paper and cartons are the preferred recyclable items collected. However, it must be appreciated that the charts were plotted with data submitted by the respective LAs. They do not necessarily represent the "real" recycling collection activities of the LAs. Nevertheless, these charts indicate and reflect that the overall response of certain LAs to recycling are generally lacking, hence the low figures reported.

Some of the more obvious trends and conditions deduced from the analysis exercise and from the charts are as follows:

- a) With the exception of MP Subang Jaya, most of the LAs in the central and southern regions depend exclusively on their concessionaire companies to manage the recycling activities and to perform recyclables collection. The data submitted are mainly collection activities and data from the concessionaire, and does not include recycling activities of the other players in the private sector. Hence, the low collection quantities in these areas might not reflect the actual situation.
- b) Most LAs concentrate mainly on promotional and awareness events, targeting the schools and at selected housing areas. The quantities collected at such events are small and generally on a "once-off" collection basis.
- c) Due to market forces and local demand, only paper and cartons are collected in large quantities. A fair amount of aluminium cans are also collected. Generally such items are targeted as they are easier to collect and transport.

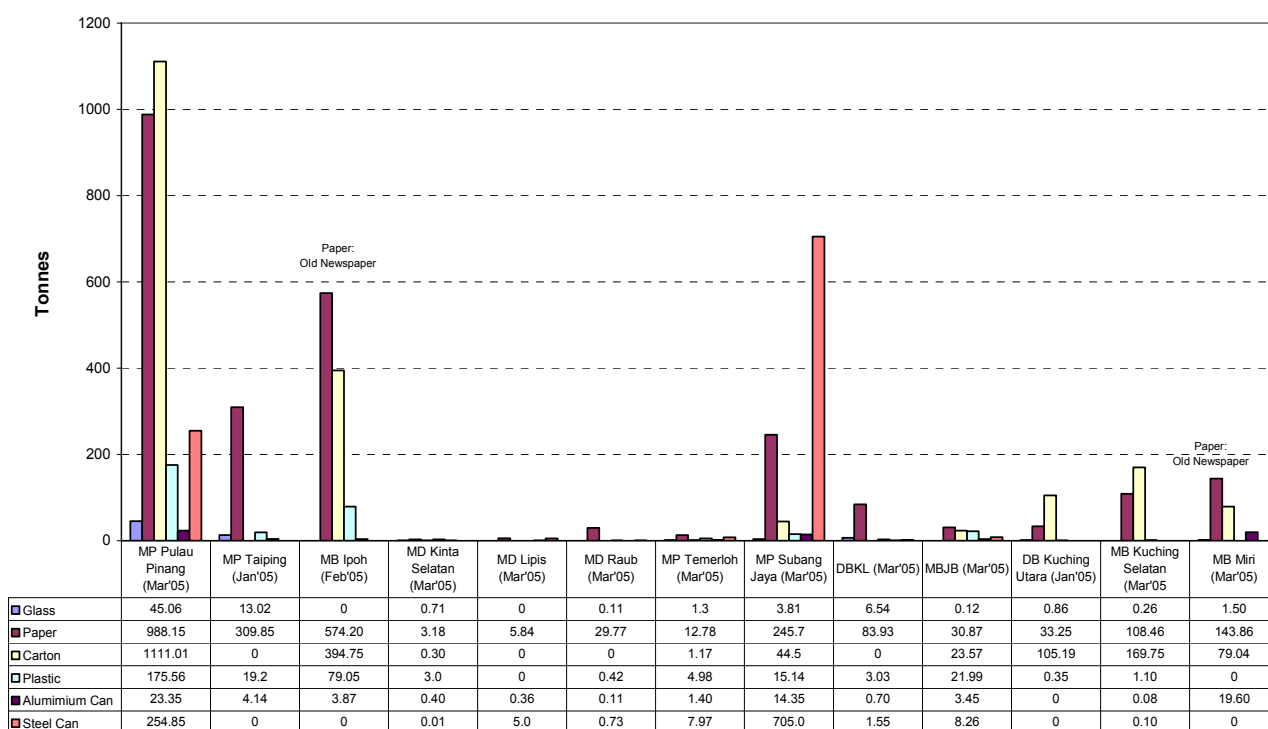


Figure 5.3.1 Recyclable Collection Data by LAs

(5) Development of New Reporting Format

Based on the above analysis and issues identified, it was concluded that the existing reporting format could be further enhanced to capture as much as possible the recyclables collection data and information from the actual collectors themselves, i.e., from the private collectors, contractors and traders.

In discussions with MHLG, it was decided that a new recyclables collection data reporting method and format should be developed and tested with the assistance of a number of LAs.

In order to appreciate the steps necessary to formulate the new recyclables collection data reporting methods and format, there is the need to identify and understand the waste/recyclables flow, i.e. which sector to target, who are the players / stakeholders, and what type of recyclables to target.

During the development stage of the new reporting format, various discussions with MHLG were held together with two separate presentation and discussions meetings, and attended by representatives from MHLG, the JICA Study Team members, and other representatives from the selected LAs. The first PP-I Meeting on “Presentation of Review of Present Reporting Format” was held on 11th July 2005 at MHLG’s 4th Floor Meeting Room. The second was held on 11th August 2005 at the Meeting Room 1, Majlis Perbandaran Subang Jaya.

The Minutes of Meeting for both the meeting are attached in Appendix 1.

1) Target Sector

Based on the understanding of the present waste/recyclables collection and transfer activities, the recyclables flow can generally be depicted in the waste (recyclables) flow diagram as shown in Figure 5.3.2. There are the generators, i.e. the households, businesses entities, industrial sectors, etc. Some of the wastes generated from non-process activities are included. From the generators, the recyclables goes to the collectors and then to the traders and users. Some will eventually end up at disposal sites, but even at landfills, scavenging activities may also return some recyclables items to the collectors. These activities are all mutually interdependent.

The general flow pattern can further be summarised to show the levels of flow as shown in Figure 5.3.3, the waste (recyclables) flow pyramid. This pyramid was discussed during the 1st PP-I Meeting on 11th July 2005, and was agreed and accepted by MHLG for use during the PP-I trials.

The waste (recyclables) flow pyramid shows the main four (4) levels of recycling activities, i.e. from the Generators (Level D) to the Collectors (Level C), and then to the Receivers/Traders (Level B), and finally, to the Recyclers/End Users (Level A). Recyclables would be transferred from the Generators (Level D) all the way upward towards Level A. No doubt, there will be some horizontal transferring between stakeholders on the same level but the ultimate flow will be from Level D to Level A.

To appreciate the full picture of the recycling activities, all the Levels should be targeted. However, it may not be viable or practical to deal with the larger groups such as the Generators (Level D) and Collectors (Level C). There are just too many Generators to monitor and from whom to gather information. Similarly, the Collectors (Level C) comprise of groups of individuals or companies that collect the recyclables. Not all are registered or report their activities to any related authorities. It may be difficult to track down such players and even more difficult to obtain their cooperation to divulge collection statistics and information.

As the flow stream narrows, i.e. passed on from the Collectors to the Receivers (Level B). This group could be regarded as representing the final collection point for the items prior to recycling or re-processing. Receivers and Traders (Level B) can be considered as the more suitable level to be targeted and from whom to obtain the data and information. The majority of the public drop-off / buy back centres are owned by the LAs and generally operated by concessionaire companies, NGO or LA-appointed contractors; hence, it should be relatively easier to obtain data from these players. For the private receivers, the LAs would have to identify these players, encourage them to cooperate and report their data to the LAs. In the future, the LAs should implement some sort of registration mechanism to monitor these players.

Recyclers/Users (Level A) consist of the actual processors of the recyclable items. Such activities may include cutting/chipping, re-processing to make raw materials, etc. The final product would either be used internally by the recycler or be sold to other end-users. Ideally, the recycling activities of Level A should also be targeted but since the majority of these players are from the private sector, it may be difficult to obtain the cooperation of these players and to gather their confidential data and information. Similarly, the LAs should also implement some sort of registration mechanism to maintain directories of such players and perhaps request some of these players to voluntarily submit their activities reports to the LAs.

In conclusion, it was decided that for the purpose of obtaining more meaningful and relevant recyclables collection data and information, the Receivers and Traders (Level B) should be targeted.

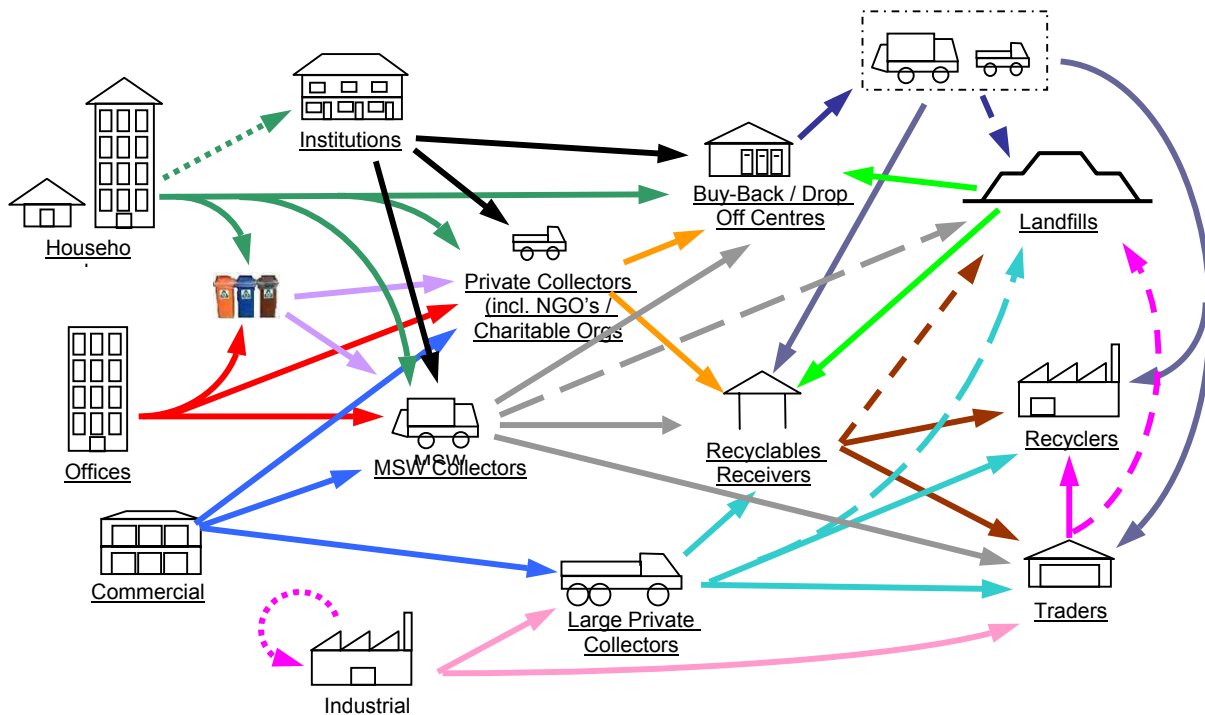


Figure 5.3.2 Waste (Recyclables) Flow Diagram

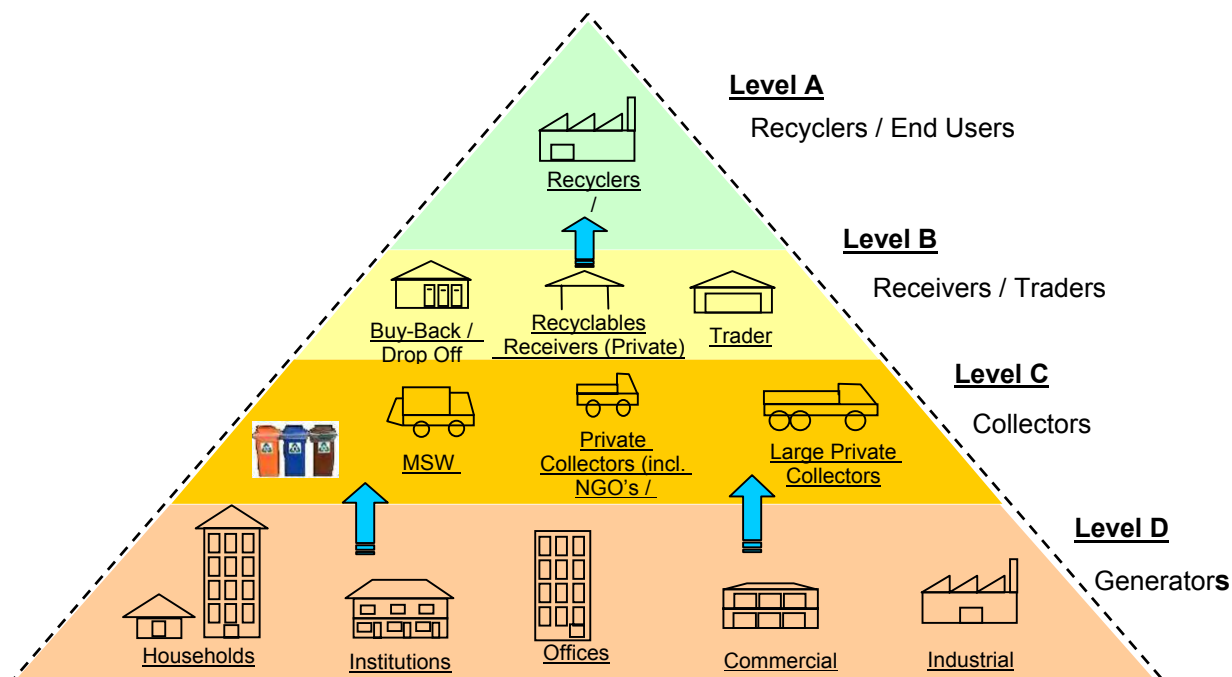


Figure 5.3.3 "Waste (Recyclables) Flow Pyramid"

2) Target Recyclables

Generally in Malaysia, the preferred MSW recyclables collection items are the paper products, plastics, glass containers and aluminium and ferrous items. Generally, these have been lumped together as just paper, glass, plastics and metals.

The present reporting format just requires the collection data to be reported under these 4 categories and no further breakdown was necessary. During the data review period, it was decided that some further breakdown of the categories should be made and this will then provide a clearer picture of the trends of recyclables collections in the country.

The Target Recyclables for the new Recyclables Collection Data Reporting format are shown in Table 5.3.3.

Table 5.3.3 List of Target Recyclables

	Main Category	Sub Categories
(i)	Paper (<i>Kertas</i>)	<ul style="list-style-type: none"> • Newspaper (<i>Surat Khabar</i>) • Magazines & Books (<i>Majalah / Buku</i>) • Cardboard & Carton (<i>Karton</i>) • Used White Paper (Office) (<i>Kertas Putih (Pejabat)</i>) • Mixed Paper (<i>Kertas Campur</i>) • Others (<i>Lain Lain</i>)
(ii)	Glass (Bottle) (<i>Bekas Kaca</i>)	<ul style="list-style-type: none"> • Clear (Flint) (<i>Jernih</i>) • Coloured (Amber/Green) (<i>Berwarna</i>) • Mixed Glass (<i>Kaca Campur</i>)
(iii)	Plastic (<i>Plastik</i>)	<ul style="list-style-type: none"> • PET Bottles (<i>Botol PET</i>) • Other Plastic Containers (<i>Bekas Plastik Lain</i>) • Plastic Sheets (bags, straps) (<i>Kepingan Plastik</i>) • Foamed Plastics/Styrofoam (<i>Fom Plastik</i>) • Other Plastics (<i>Lain Lain Plastik</i>)
(iv)	Metals (<i>Logam</i>)	<ul style="list-style-type: none"> • Aluminium Cans (<i>Tin Aluminum</i>) • Ferrous (<i>Besi / Keluli</i>) • Non-Ferrous Metals (<i>Bahan Bukan Besi</i>)
(v)	Clothing/ Textiles (<i>Kain</i>)	<ul style="list-style-type: none"> • Mixed Fabrics (<i>Fabrik Campur</i>)
(vi)	Rubber (<i>Getah</i>)	<ul style="list-style-type: none"> • Tyres (<i>Tayar</i>) • Other Rubber Materials (<i>Lain Lain</i>)
(vii)	Others (<i>Lain Lain</i>)	<ul style="list-style-type: none"> • (To Specify) (<i>Sila Nyatakan</i>)

Items (i) to (iv) are the four most common and preferred recyclable items. Item (v), clothing/ textiles have been included because these items are being collected in large quantities, as second-hand items and also as scraps for fibre recovery. The statistics on the collection of such items should be documented if available. Similarly with item (vi), rubber, there are large numbers of old used vehicle tyres and rubber products that are being disposed off. Currently very little information and data of their collection have been documented; hence it is necessary to collect such information, if available. The above target recyclables items have been presented and discussed during the 1st PP-I Meeting and was agreed and accepted by MHLG for use during the PP-I trials.

3) New “Recyclables Collection Data Form”

The new recyclables collection data form is shown in Table 5.3.4 below. The new form has included all the target recyclables categories, and also their sub-categories. For the purpose of the Pilot Project, two versions were prepared: one in the English language and the other in the Bahasa Malaysia language. For the purpose of official reporting by

the LAs, the Bahasa Malaysia language version shall be used. A copy of the form is attached in Appendix 4, together with a brief description on how to fill in the form.

The new format is prepared using in the Microsoft Excel worksheet format. All LAs are to fill in the form electronically, and email to MHLG.

Table 5.3.4 Example of Recyclables Collection Data Form

RECYCLABLES COLLECTION DATA FORM							
Name of Local Authority							
Month		Year		Total MSW Collected			tonnes/mth
	COLLECTION LOCATIONS						Total (kg)
No	RECYCLABLES (kg)						
1.0	Paper						
1.1	Newspaper						
1.2	Magazines & Books						
1.3	Cardboard & Carton						
1.4	Used White Paper (Office)						
1.5	Mixed Paper						
1.6	Others						
	SUB-TOTAL (1)						
2.0	Glass						
2.1	Clear (Flint)						
2.2	Coloured (Amber / Green)						
2.3	Mixed Glass						
	SUB-TOTAL (2)						
3.0	Plastic						
3.1	PET Bottles						
3.2	Other Plastic Containers						
3.3	Plastic Sheets (bags, straps)						
3.4	Foamed Plastics / Styrofoam						
3.5	Other Plastics						
	SUB-TOTAL (3)						
4.0	Metals						
4.1	Aluminium Cans						
4.2	Ferrous						
4.3	Non-Ferrous Metals						
	SUB-TOTAL (4)						
5.0	Clothing/Textiles						
5.1	Mixed Fabrics						
	SUB-TOTAL (5)						
6.0	Rubber						
6.1	Tyres						
6.2	Other Rubber Materials						
	SUB-TOTAL (6)						
7.0	Others (Please Specify)						
7.1							
7.2							
7.3							
	SUB-TOTAL (7)						
	GRAND TOTAL (1+2+3+4+5+6+7)						

(6) Conducting of desktop test/trials

1) Selection of LAs for PP-I Trial

For the purpose of PP-I, it was decided by MHLG and the JST that only 10 LAs would be selected to participate in PP-I reporting trials. These 10 LAs for PP-I would be requested to submit their collection data reports based on the new proposed reporting format as proposed above

The selection of the 10 LAs as pilot project candidates was based on the following selection criteria.

Basic Selection Criteria

- i. The 4 model LAs are automatically selected as PP-I trials candidates*
- ii. Other remaining 6 LAs must be active in 3Rs and have submit their monthly reports regularly*
- iii. Preference for the larger LAs, i.e. DB, MB, MP, followed by MD*
- iv. The LAs are to be selected based on their geographical location, i.e. at least one LA selected from the Northern, Central, Southern and Eastern Regions of the Peninsula, and one from Sabah and Sarawak*
- v. Final selection is subject to MHLG's approval*

Based on the above selection criteria (i), the first 4 candidates were automatically determined. Based on recommendations as identified by the review process and discussions with MHLG, the final LAs for PP-I were identified and invited to participate in the presentation and discussion meeting on 11th August 2005 at MPSJ. The list of candidates is tabulated in Table 5.3.5.

Table 5.3.5 List of LAs for PP-I Trial

No.	LAs	States
1	MB Miri	Sarawak
2	MP Subang Jaya	Selangor
3	MP Pulau Pinang	Pulau Pinang
4	MD Kinta Selatan	Perak
5	DB Kuala Lumpur	Wilayah Persekutuan
6	DB Kota Kinabalu	Sabah
7	MB Johor Bahru	Johor
8	MB Kuching Selatan	Sarawak
9	MB Shah Alam	Selangor
10	MP Kuantan	Pahang

2) Reporting Trials for New “Recyclables Collection Data”

As mentioned earlier, part of the scope of PP-I requires the new proposed reporting method to be tried and tested by the selected 10 LAs. The candidates would be required to implement the new system on a trial basis for a period of 3 months, i.e. August, September and October 2005.

Prior to the launch of the trials at the JICA Study’s 2nd Training Workshop on 13 September 2005 at Hotel Vistana in Kuala Lumpur, two separate presentation and discussions were held and attended by representatives from MHLG, JST members and representatives from the LAs.

The 3 basic requirements for the trials are as follows;

- a) LAs are to collect the recyclables collection data from the Receivers and Traders (Level B). The LAs would have to identify the players in this group and obtain their cooperation and gather the relevant data. LAs should also register these players and create a database of their business details and information on their recycling activities.
- b) LAs are required to tabulate the data in the new recyclables collection data form, and they are encouraged to breakdown the sub-categories as much as possible

according to their own purpose. Softcopies of the template of the new reporting format were issued to the representatives of the participating LAs' during the JICA Study 2nd Technical Workshop.

- c) LAs are to send the data files to the PP-I office, temporarily based on the first level of MHLG via email to kitarsemula@kpkt.gov.my, on a monthly basis. Even after the trial period, LAs are to continue to submit their monthly reports to MHLG.

In return, the PP-I team would review and analyse the data and present the statistics in charts and graphical form. The brief description on how to fill in the forms is explained in Appendix 2, together with basic procedures on how to present the data in graphical format for further analysis by MHLG. The brief description on how to process and analyse the data is explained in Appendix 3.

3) Submission of Recyclables Collection Data Report in New Format

At the meeting of 11th August 2005 at MPSJ with the 10 LAs and chaired by MHLG, no objections or withdrawals were offered by representatives of the LAs; hence, it was assumed the LAs have registered their interest to participate in the trials of the new reporting format. However, based on the number of submissions to date, it was noted that the response were slow and only 4 out of 10 LAs submitted their report as requested. The LAs include MB Miri, MP Pulau Pinang, MD Kinta Selatan and MB Kuching Selatan.

A summary of the reporting status of participating LAs are tabulated in Table 5.3.6.

Table 5.3.6 Reporting Status of Participating LAs

No.	LAs	Status (reports submitted as of 20 Nov 2005)
1	MB Miri	Sep & Oct (not following new format)
2	MB Kuching Selatan	Sep and Oct (in new reporting format)
3	MP Pulau Pinang	Aug, Sep and Oct (incomplete and not following new format).
4	MD Kinta Selatan	Aug, Sep and Oct (in new reporting format)
5	DB Kuala Lumpur	No report
6	DB Kota Kinabalu	No report
7	MB Subang Jaya	No report
8	MB Johor Bahru	No report
9	MP Kuantan	No report
10	MB Shah Alam	No report
11	Perbadanan Putrajaya	Withdrew

Note: During the trial period, various reminders by telephone were made to remind and encourage the LAs to submit their data. General responses to the telephone reminders indicated that the LAs would try their best to prepare their reports but are experiencing difficulties and setbacks due to lack of manpower resources and time. Brief discussions were also held with MHLG to request their assistance to encourage the LAs to cooperate.

5.3.2 Establishment of Recycling Networking Unit (RNU)

The RNU set up under PP-I is a temporary workstation comprising a desktop computer with the necessary peripherals and supporting software shown in Plate 5.3.3. The temporary PP-I workstation is located in "Bilik Kitar Semula" at MHLG.



Plate 5.3.3 RNU Workstation for PP-I

5.3.3 Establishment of Information Management System (Basic Structure)

The purpose of establishing the Information Management System (IMS) is to set up a basic structure for MHLG to manage and maintain their database resources digitally. Once the various databases have been established, they could be accessed easily. In the future, the database could be published on MHLG's website for public access.

As part of the continuous training and capacity building programme, various on-the-job briefing sessions were conducted with the counterparts from MHLG. This also included 2 presentations and discussions sessions on 11th July and 11 August 2005, together with JST's 3rd Technical Workshop Session on 13th September 2005. In addition, two more training sessions were conducted on 26th and 27th October 2005, with the counterparts from MHLG on the usage of the IMS.

(1) Information Management System (IMS) – Basic Structure

The main purpose of the IMS is to create a database of the recyclables collection data and key information that have been submitted by the LAs, in electronic format. With the system, key data could easily be accessed, searched, tabulated and presented in charts form for easier review, analysis and presentations.

For the purpose of PP-I, the IMS was structured in 2 formats, i.e. Microsoft Excel Datasheets and Charts format for the Recyclables Collection Data, and Microsoft Access Database format for the LAs Information Database.

For the Recyclables Collection Data system, the data should be submitted in the electronic format, i.e. in Microsoft Excel Spreadsheet format. Once the data is received by the RNU, the data is rationalised before being entered into the database. Human interface is required to analyse and tabulate the data in a more structured manner. Once the data table has been set, bar charts have to be generated to present the data in more visual and understandable form. Such graphical manipulation could only be carried manually with the aide of Microsoft Excel Graph functions.

Basic Structure of the IMS is shown as Figure 5.3.4.

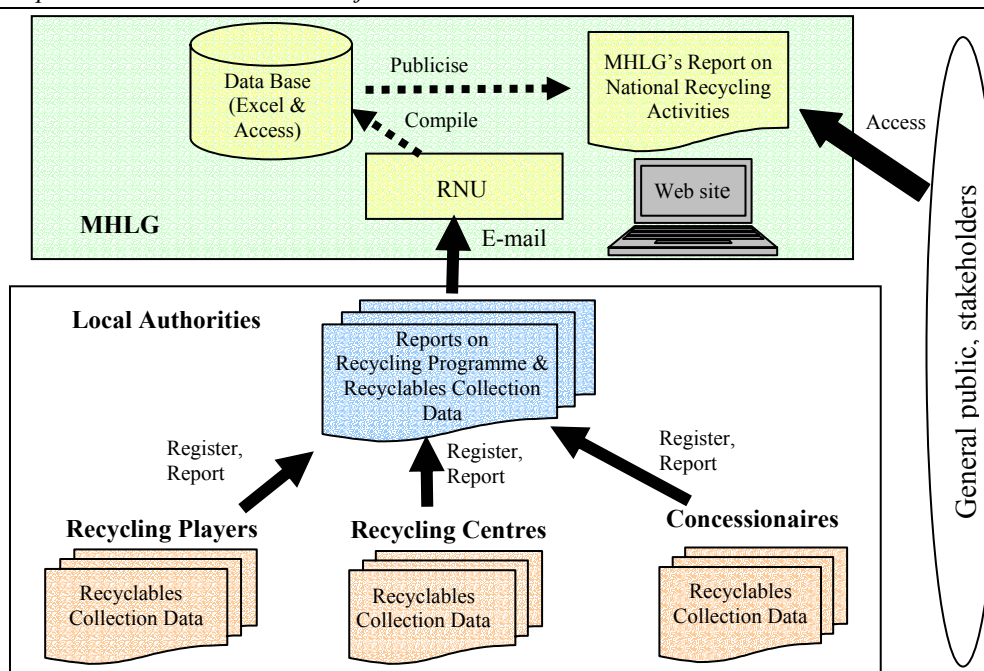


Figure 5.3.4 Basic Structure of the IMS

1) Local Authorities Information Database

In the review of data and information available at MHLG, it was noted that there was no specific database of the 104 LAs that are participating in the National Recycling Programme (NRP). No proper documentation were kept of the LAs contact details, the division and personnel, location of recycling bins and centres, etc.

To create the database of LA's recycling related information system, an entirely new set of information would have to be collected. In discussions with MHLG, it was decided that a postal questionnaire survey exercise be conducted where questionnaire forms would be re-sent to all the 104 LAs. The purpose was to obtain as much information as possible on the LA recycling activities so that an updated database could be created and maintained regularly based on their subsequent feedback through their monthly reports on recyclables collected.

The questionnaire was structured into 4 main topics, as follows;

1. LA's general information, i.e. their address, contact details, email and website addresses.
2. Information on recycling activities, i.e. locations of collection centres and bins, collectors or contractors, types of recyclables collected, etc.
3. Information of LA's Recycling Unit / Division, i.e. address, contacts details, and personnel involved, etc.
4. LA's stakeholder information, i.e. directory of stakeholders, collectors, interest groups, associations, etc.

The 3-page questionnaire form was produced and on the request of MHLG, it was written in the Bahasa Malaysia language, and entitled "BORANG MAKLUMAT PROGRAM KITAR SEMULA". With the assistance of MHLG, the questionnaire was sent to the LAs on 27th September 2005. As of 22 November 2005, a total of 59 of the

104 LAs have submitted back their replies. This accounts for about 56% of the total. A summary list of the LAs that have submitted their replies is tabulated in Table 5.3.7.

The completed replies were faxed to the “Bilik Urusetia Kitar Semula” at MHLG. Initially, the questionnaire fields and information in the forms were manually entered to create the master data file in Microsoft Excel Worksheet format. Example of the Excel data sheet is shown in Table 5.3.8.

Table 5.3.7 List of LAs that Have Submitted their Survey Replies

Questionnaire Survey - MAKLUMAT PROGRAM KITAR SEMULA			
No.	Kedah Darul Aman	No.	Terengganu Darul Iman
1	Majlis Perbandaran Kulim	29	Majlis Perbandaran Kuala Terengganu
			Majlis Perbandaran Kemaman
	Pulau Pinang		
2	Majlis Perbandaran Pulau Pinang	30	Pahang Darul Makmur
3	Majlis Perbandaran Seberang Perai	31	Majlis Perbandaran Bentong
		32	Majlis Perbandaran Kuantan
	Perak Darul Ridzuan	33	Majlis Perbandaran Temerloh
4	Majlis Perbandaran Teluk Intan	34	Majlis Daerah Lipis
5	Majlis Perbandaran Manjung	35	Majlis Daerah Cameron Highlands
6	Majlis Perbandaran Taiping	36	Majlis Daerah Maran
7	Majlis Daerah Kinta Selatan		
8	Majlis Daerah Kerian		Johor Darul Takzim
9	Majlis Daerah Selama	37	Majlis Daerah Segamat
10	Majlis Daerah Gerik	38	Majlis Daerah Yong Peng
11	Majlis Daerah Tapah	39	Majlis Perbandaran Johor Bahru Tengah
12	Majlis Daerah Pengkalan Hulu	40	Majlis Daerah Kota Tinggi
13	Majlis Perbandaran Kuala Kangsar	41	Majlis Daerah Simpang Renggam
	Selangor Darul Ehsan		Sarawak
14	Majlis Perbandaran Subang Jaya	42	Majlis Perbandaran Sibul
15	Majlis Perbandaran Klang	43	Majlis Bandaraya Miri
16	Majlis Bandaraya Shah Alam	44	Majlis Bandaraya Kuching Selatan
17	Majlis Perbandaran Petaling Jaya	45	Dewan Bandaraya Kuching Utara
18	Majlis Perbandaran Selayang	46	Majlis Daerah Sri Aman
19	Majlis Daerah Kuala Langat	47	Majlis Perbandaran Padawan
20	Majlis Daerah Sabak Bernam	48	Majlis Daerah Lawas
21	Majlis Perbandaran Ampang Jaya	49	Majlis Daerah Limbang
		50	Majlis Daerah Lubuk Antu
	Wilayah Persekutuan	51	Majlis Daerah Marudi
22	Dewan Bandaraya Kuala Lumpur	52	Majlis Daerah Sarikei
23	Perbadanan Putrajaya	53	Majlis Daerah Serian
	Perbadanan Labuan	54	Majlis Daerah Maradong & Julau
		55	Majlis Daerah Saratok
24	Negeri Sembilan Darul Khusus		
25	Majlis Daerah Jempol		Sabah
26	Majlis Perbandaran Seremban	56	Majlis Daerah Kota Belud
	Majlis Perbandaran Port Dickson	57	Dewan Bandaraya Kota Kinabalu
		58	Majlis Daerah Kota Marudu / Pitas
27	Kelantan Darul Naim	59	Majlis Daerah Penampang
28	Majlis Perbandaran Kota Bharu		

The Excel database was then converted to Microsoft Access Database and tabulated in the “Form” format for ease of reference and searching. The database was given the file name “Maklumat_PBT” (LA’s Information). PBT = Pihak Berkuasa Tempatan”

The data and information were separated into 4 groups as follows:

1. “A_PBT_Info” - this holds all the general information about the LAs, including the council address, email and website address, the key personnel and their contacts details, etc. An example page is shown in Figure 5.3.5.
2. “B_lokasi_tong” - this holds information about the location of the LA’s collection centres, collection bins and the operators, i.e. either by LAs or by LAs appointed contractors. An example page is shown in Figure 5.3.6.
3. “C_kutipan” - this holds information on the type of recyclables the LA or collectors would collect from. An example page is shown in Figure 5.3.7.
4. “D_stakeholder” - this holds information of the stakeholders’ directory as submitted by the LAs. An example page is shown in Figure 5.3.8. Those marked “TIADA” indicates that the LAs did not keep any of their own stakeholders list or directory.

All the above data and information could be viewed, edited, searched and printed. New information could easily be entered into the ready made “FORMS” and would be instantly updated to the master database. Simple searches or “Filtering” could be performed by searching for key words or specific fields, e.g. by the LA’s name, etc.

Table 5.3.8 Example of "LAs Information Database" in Excel Worksheet Format

PBT	ALAMAT	POSKOD BANDAR	NEGERI	TELEFON A	TELEFON B	FAKS	E-MAIL	LAMAN WEB
Majlis Daerah Kota Tinggi	Jalan Padang	81900 Kota Tinggi	Johor	07-8831004		07-8834015	MDKT@johor.gov.my	
Majlis Daerah Segamat	No.1, Jalan Abdullah	85000 Segamat	Johor	07-9314455		07-9312712	mdsai@johor.gov.my	www.johordt.gov.my/mds
Majlis Daerah Simpang Renggam	No.1, jalan Pejabat	86200 Simpang Renggam	Johor	07-7551300	07-7551303	07-7551302		
Majlis Perbandaran Johor Bahru Tengah	Pejabat Majlis Perbandaran Johor Bahru Tengah	81300 Skudai	Johor	07-5561005		07-5568007		www.johordt.gov.my/rmjptbt
Majlis Daerah Yong Peng	Bt.1, Jalan Labis Yong Peng	83700 Yong Peng	Johor	07-4671276		07-4671712		
Majlis Perbandaran Kulim	104-120, Lorong Kota Kenari 5/1, Taman Kota Kenar	09000 Kulim	Kedah	04-4906522		04-4901443	Ruzaim@mpkk.gov.my	http://www.mpkk.gov.my
Majlis Perbandaran Kota Bharu Bandar Raya Islam	Jalan Hospital	15000 Kota Bharu	Kelantan	09-7463344		09-7439258		http://www.mpkb.gov.my
Majlis Perbandaran Port Dickson	No. 21, Tkt Atas, Pusat Perniagaan Cahaya Suria	71000 Port Dickson	Negeri Sembilan	06-6517251		06-6515416		
Majlis Perbandaran Seremban	Wisma MPS, Jalan Yam Tuan	70990 Seremban	Negeri Sembilan	06-7623381		06-7637449		www.mpsns.gov.my
Majlis Daerah Jempol	Pejabat Majlis Daerah Jempol,	72120 Sri Jempol	Negeri Sembilan	06-4581233		06-4566800	mlj@trn.net.my	www.mojl.gov.my
Majlis Perbandaran Bentong	Majlis Perbandaran Bentong, Jalan Keltari	28700 Bentong	Pahang	09-2221148		09-2223729	mbentong@pahang.gov.my	www.pahang.gov.my/mbentong
Majlis Daerah Lipis	Aras 4, Bangunan Lipis Centrepoint	27200 Kuala Lipis	Pahang	09-3121253		09-3123963	MLipis@hotmail.com	
Majlis Perbandaran Kuantan	Jalan Tanah Putih	25100 Kuantan	Pahang	09-5136177		09-5144452	KBPPK@MPK.GOV.MY	WWW.MPK.GOV.MY
Majlis Daerah Maran	Majlis Daerah Maran	26500 Maran	Pahang	09-4771411		09-4771511		
Majlis Daerah Cameron Highlands	Pejabat Majlis Daerah Cameron Highlands, Peti Sur	39007 Tanah Rata	Pahang	05-4911465	05-4912097	05-4911728	Majlis_cameron@yahoo.com	
Majlis Perbandaran Temerloh	Kompleks Pej Plaza Temerloh, Jln Ahmad Shah	28000 Temerloh	Pahang	09-2901477		09-2901664	MP@pahang.gov.my	www.pbg.gov.my/MPTemerloh
Majlis Daerah Gerik	Jalan Haji Meor Yahya	33300 Gerik	Perak	05-7912305		05-7912288	mdgerik@streamyx.com	
Majlis Daerah Kinta Selatan, Kampar	Kompleks Pentaabiran Majlis Daerah Kinta Selatan,	31900 Kampar	Perak	05-4671020		05-4671040	mdks-kpt@trn.net.my	http://mail.netrayne.com
Majlis Perbandaran Kuala Kangsar	Jalan Raja Chulan	33000 Kuala Kangsar	Perak	05-7763199		05-7761004	www.mpkkk.gov.my	
Majlis Daerah Kerian	No.1, Wisma MDK, Jalan Padang	34200 Parit Buntar	Perak	05-7161228		05-7169288	mlkerian@trn.net.my	http://mdkerian.perak.gov.my
Majlis Daerah Pengkalan Hulu	Majlis Daerah Pengkalan Hulu	33100 Pengkalan Hulu	Perak	04-4778148		04-4778735		
Majlis Daerah Selama	Majlis Daerah Selama	34100 Selama	Perak	05-8394201		03-8394377	mdspsk@jo.iaring	www.epbt.gov.my/perak/mds
Majlis Perbandaran Manjung	Jalan Pinang Raja	32040 Seri Manjung	Perak	05-6871363		05-6882102	ydpmpm@trn.net.my	www.pmp.gov.my
Majlis Perbandaran Taiping	Wisma Perbandaran Taiping, Jln Taming Sari	34000 Taiping	Perak	05-8080777		05-8068967	www.mptaijing.gov.my	
Majlis Daerah Tapah	Jalan Stesyen	36000 Tapah	Perak	05-4011326		05-4012288	mdtaah@streamyx.com	www.molnaah@pk.gov.my
Majlis Perbandaran Teluk Intan	Yang Dipertua, Majlis Perbandaran Teluk Intan, Jalar	36000 Teluk Intan	Perak	05-6221299		05-6212446	mdtrai@trn.net.my	www.mpti.gov.my
Majlis Perbandaran Seberang Perai	Jalan Dato' Haji Ahmad Said	12000 Butterworth	Pulau Pinang	04-3105555	04-3105556	04-3262223	www.mpsp.gov.my	
Majlis Perbandaran Pulau Pinang	Jabatan Perkhidmatan Perbandaran, MPPP, Dewan	10200 Pulau Pinang	Pulau Pinang	04-2633000		04-2633036	Zulkfli@mppp.gov.my	
Majlis Daerah Kota Belud	Majlis Daerah Kota Belud, Peti Surat 8	89157 Kota Belud	Sabah	088-976529		088-976627	md.kb@sabah.gov.my	www.epbt.gov.my/sabah/mkbb
Dewan Bandaraya Kota Kinabalu	No. 1, Jalan Bandaran	88675 Kota Kinabalu	Sabah	088-521800	088-244000	088-268764	rober@dbkk.sabah.gov.my	
Majlis Daerah Kota Marudu Pitas	Peti Surat 129	89108 Kota Marudu	Sabah	088-661163		088-661323	arang kitar semula. Mungkin disebabkan Kota Marudu jauh da	
Majlis Daerah Penampang	Peti Surat 80	89507 Penampang	Sabah	088-711711		088-712588	www.sabah.gov.my/md.pgg	
Majlis Daerah Marudi	P.O. Box 374, Marudi	96050 Baram	Sarawak	065-755755		065-755336	marudic@trn.net.my	www.marudic.sarawak.gov.my
Majlis Daerah Marabong dan Julau	Jln Malakmah, Peti Surat 4	96507 Bintangor	Sarawak	084-893232		084-893973	tak nampak	
Majlis Daerah Lubok Artu	Jalan Penghulu Imong Arak Awan	95800 Engkilili	Sarawak	083-563015		083-563144	mdla-sec@trn.net.my	www.lubokartudc.sarawak.gov

Microsoft Access - [frm_A_PBT_Info]

File Edit View Insert Format Records Tools Window Help

MS Sans Serif 8 B I U

Type a question for help

PBT	Majlis Perbandaran Bentong	PENYERTAAN (NRP)	
ALAMAT	Majlis Perbandaran Bentong, Jalan Ketari	LAMAN WEB JABATAN	
POSKOD	28700		
BANDAR	Bentong		
NEGERI	Pahang		
TELEFON A	09-2221148	UNIT KITAR SEMULA	Tiada
TELEFON B		NAMA JABATAN	Bahagian Khidmat Masyarakat Dan Perbandaran
FAKS	09-2223729	ALAMAT JABATAN	Majlis Perbandaran Bentong, Jalan Ketari
E-MEL	mdbentong@pahang.gov.my	TELEFON JABATAN	09-2221148
LAMAN WEB	www.pahang.gov.my/mdbentong	FAKS JABATAN	09-2223729
		E-MEL JABATAN	

KAKITANGAN 1	Roslani b. Md. Yusof	KAKITANGAN 2	Hamzah b. Ahmad	KAKITANGAN 3	
JAWATAN 1	PPKP	JAWATAN 2	Pembantu Kesihatan Awam	JAWATAN 3	
TELEFON 1	09-2221148	TELEFON 2	09-2221148	TELEFON 3	
E-MEL 1	imy@pahang.gov.my	E-MEL 2		E-MEL 3	

Record: 11 of 58
Form View

Figure 5.3.5 Example of “Frm A_PBT_Info” showing the LA’s Details and Key Personnel

Microsoft Access - [frm_B_lokasi_tong]

File Edit View Insert Format Records Tools Window Help

MS Sans Serif 8 B I U

Type a question for help

PBT	Majlis Perbandaran Petaling Jaya	NEGERI	Selangor
ALAMAT LOKASI TONG/PUSAT KITAR SEMULA	KENDALIAN	PENGENDALI	
Pusat Kitar Semula, Jalan 10/7, off Jalan Gasing, Taman Jaya, 46000 P.J	Treat Every Environment Special (T.E.E.S)		
TELEFON	JENIS PUSAT		
	aktif		

Record: 1360 of 1636
Form View

Figure 5.3.6 Example of “Frm_B_lokasi_tong” showing the Location of the Collection Centres

The screenshot shows a Microsoft Access form titled 'frm_C_kutipan'. The form contains the following fields and values:

Field Name	Value
ID	
PBT	Majlis Daerah Kota Tinggi
NEGERI	Johor
PENGENDALI	Southern Waste Management Sdn Bhd
BAHAN DIKUTIP	Kertas, Plastik & Kaca

The status bar at the bottom indicates 'Record: 14 of 392' and 'Form View'.

Figure 5.3.7 Example of “Frm C kutipan” showing the Operator and What are Collected

The screenshot shows a Microsoft Access form titled 'frm_E_stakeholder'. The form contains the following fields and values:

Field Name	Value
ID	
PBT	Majlis Daerah Jempol
NEGERI	Negeri Sembilan
STAKEHOLDER	Syarikat Southern Waste Management Sdn Bhd
ALAMAT	No.37A, Tingkat Atas, Jalan Ria, 72100 Bahau, Negeri Sembilan
TELEFON 1	06-4540640
TELEFON 2	
FAKS	06-4540896
PEGAWAI	
JENIS BARANGAN	

The status bar at the bottom indicates 'Record: 12 of 286' and 'Form View'. The Windows taskbar at the bottom shows several open applications, including 'Draft Final.doc - Mic...', 'Maklumat_PBT (Data...', 'frm_B_lokasi_tong', and 'frm_E_stakeholder'.

Figure 5.3.8 Example of “Frm_D_stakeholder” showing the Stakeholders Attached to the LA

2) Stakeholders' Networking Database

(a) MHLG's Original Stakeholders' Networking Database

Prior to PP-I, MHLG had a Stakeholders' Networking Database that is basically a directory of information pertaining to the players involved in recycling activities. The information was accumulated over a number of years and its directory file documented in Microsoft Words format. For the purpose of PP-I, a softcopy of the directory file was obtained from MHLG for review and re-organisation into Microsoft Excel and Access format.

In the review, it was noted that the MHLG's directory had listings of about 1,623 names and addresses covering the LAs, NGOs, CBO, schools, shopping centres, private organisations, and the like. Further examination showed that the majority of the listings include about 151 shopping/commercial centres, 152 governmental agencies and 986 schools and education institutions.

Although these information and listings are good for general reference, they were generally not structured in a user-friendly manner; in addition, the list was not particularly useful as some of the details were incomplete and outdated. A number of players have moved or have changed their telephone contact numbers, and such changes were neither reflected nor updated in MHLG's directory. However, it must also be appreciated that it is impractical for MHLG to maintain, update and monitor the stakeholders given the large volume of information and parties to deal with. It should be up to the discretion of individual stakeholder to inform MHLG of any change in their organisation. Perhaps, in future MHLG might consider implementing a web-based directory system whereby the stakeholders would be able to log onto to the directory portal and update their information by themselves.

(b) Development of a Master Database for the Networking Directory

In order to expand the reach of the stakeholders' participation in the National Recycling Programme, MHLG posted a series of nationwide newspaper advertisements in mid-2005, entitled "Notice to Parties Involved in Recycling Activities". The advertisements invited interested parties to register their organisations with the Ministry and to be included in the new directory.

On examination of the responses received from the recyclers, it was noted that the request to register with MHLG was not particularly well received. Approximately 200 replies were received by facsimile, post and via email.

Since the initiation of PP-I, two sets of stakeholder data are available at MHLG – the first set pertains to the original stakeholders' directory (1,600 entries) in Microsoft Words Document format, and the second refers to the stakeholders' directory (195 entries) that is the result of information received in the August 2005 exercise requesting recyclers to register with MHLG.

It was decided not to combine the two directories into one main directory database, the main reason being that the information in the larger stakeholders' directory was much older and not updated. The registration directory developed as a result of the August 2005 exercise is relatively recent; hence, information and details provided by the players themselves are more useful and relevant. Notwithstanding the 2 different databases, both directories would be maintained under one master database.

The Master Database for the Networking Directory is in Microsoft Access Database with the given filename “Networking_Directory”. From there, the database was further converted to the “FORM” format for easier viewing and manipulation. The stakeholders’ directory is in the “frm_STAKEHOLDERS_DIR” database folder and the registration database is in the “frm_NEW_PLAYERS-REGISTRATION” folder. An example page of the registration directory is shown in Figure 5.3.9. The Master Database for the Networking Directory is attached as Appendix 4.

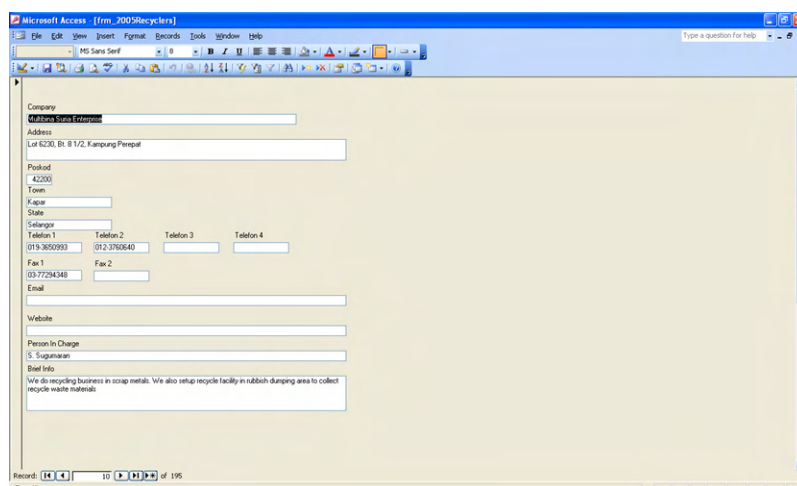


Figure 5.3.9 Example of Registration Page of Players

5.3.4 Capacity Development of MHLG

(1) Preparation of Manual of Data Management System

A summary instruction manual on “How to “View”, “Search” and “Add New” data / information into the database” is attached in Appendix 5.

(2) Conducting of On-the-Job Training

Various on-the-job briefing sessions were conducted with the counterparts from MHLG at the presentation and discussion sessions held on 11th July and 11 August 2005 and at JST’s 3rd Technical Workshop Session on 13th September 2005. In addition, two more training sessions were conducted on 26th and 27th October 2005, with the counterparts from MHLG on the usage of the IMS.

5.4 Evaluation of PP-I

5.4.1 Achievement Level

Based on the objectively verifiable indicators (OVIs) of the PDMs, the extent to which the Project Purpose and Outputs of PP-I have been achieved were evaluated as shown in Table 5.4.1. Whilst it can be considered that most of the Outputs were achieved, the Project Purpose, on the other hand, was partially achieved.

Table 5.4.1 Achievement Level of Pilot Project I

Project Purpose/ Outputs	OVIs	Achievement Level
<p>Project Purpose</p> <ul style="list-style-type: none"> • To establish a Recycling Networking Unit (RNU) in MHLG to serve as a base for 3Rs data accumulation and dissemination in the country. • To enhance the capacity of MHLG to monitor SWM & 3Rs activities at federal level. 	<ul style="list-style-type: none"> • Number of LAs and other stakeholders submit the 3Rs format to RNU in MHLG • Number of LAs that responded to MHLG's questionnaire survey in its attempt to set up a LA Information Database. • Organisation of MHLG's existing information into a master database and "Networking Directory" • Number of trained staff assigned to the RNU 	<p>The Project purpose was partially achieved. Under the PP-I, the RNU was established in MHLG, and a new reporting format for the LAs was formulated to improve data collection and systematise the information forwarded by the LAs and at the same time, to enable MHLG to manage the data more effectively. However, only 4 of the 10 participating LAs submitted their reports during the trial period.</p> <p>A questionnaire requesting for general information about the LA, its recycling programme and list of stakeholders was sent to 104 LAs under PP-I; only 57 LAs responded.</p> <p>A Master Database was created under RNU to organise existing information available at MHLG on 3Rs activities of LAs and stakeholders. To date, 195 sets of information submitted by stakeholders are kept in the database.</p> <p>At least 3 staff from the Recycling Unit was assigned to the RNU. They were briefed and trained to operate, maintain and update the Database.</p>
<p>Output 1:</p> <ul style="list-style-type: none"> • To establish the data management system on solid waste management & 3Rs at national level. 	<ul style="list-style-type: none"> • Reporting forms on waste generation amount, 3Rs quantities data and 3Rs activity practices are prepared/ finalised. 	<p>New reporting procedures and forms to be used by the LAs were developed based on the survey on waste flow in Phase 1. The new reporting format from LAs, and examples of Japan, were reviewed at a number of workshops with MHLG, the 4 model LAs, Alam Flora, and Southern Waste, and approved at the meeting with the 10 LAs that participated in PP-I.</p>
<p>Output 2:</p> <ul style="list-style-type: none"> • Recycling Networking Unit (RNU) is established in MHLG 	<p>No. of RNU staff</p>	<p>A temporary PP-I workstation for the RNU was set up in the Bilik Kitar Semula at MHLG. Officers from the Recycling Unit of MHLG attended and participated in meetings and discussions with consultants and LAs. Briefing and training in the operation of the IMS and updating the Master Database was provided also by JST. Further, an officer was sent to Japan under the aegis of this project for training in December 2005.</p>

Project Purpose/ Outputs	OVI	Achievement Level
<p>Output 3:</p> <ul style="list-style-type: none"> • 3Rs related information is published by RNU. 	<ul style="list-style-type: none"> • No. of 3Rs related information brochures, directory booklets and education & awareness leaflets are published. 	<p>Information on 3Rs activities in LAs were compiled into Microsoft Access Database and published. A Stakeholders' Directory was also prepared and kept in the master database.</p>
<p>Output 4:</p> <ul style="list-style-type: none"> • Capacity of MHLG C/Ps is developed. 	<ul style="list-style-type: none"> • Number of staff participated in training workshop. 	<p>The Counterpart leader and his assistants had conducted "on-the-job briefing sessions" at two (2) presentations and discussions held on 11th July and 11 August 2005, and JST's 3rd Technical Workshop Session on 13th September 2005.</p> <p>Two more training sessions were conducted on 26th and 27th October 2005 for them on the usage of the IMS.</p>

5.4.2 Evaluation by OVIs

Table 5.4.2 Evaluation of PP-I

Criteria	Evaluation
Relevance	<p>The overall goal and project purpose of PP-I is relevant to MHG's policies to promote waste minimisation.</p> <p>The Information Management System attempts to document, as much as possible, all the recycling activities from the various stakeholders. Since recycling activities covers a broad spectrum of interrelated activities from collection to transfer, processes and disposal, any information collated from these activities would be relevant to MHLG and other interested parties.</p> <p>The newly created Local Authorities Information Database was set up to enable MHLG to maintain, monitor and update details of waste minimisation efforts at LA level. This supports MHLG's policy towards better information and control over waste minimisation in the country.</p>
Efficiency	<p>The main objective of PP-I is to increase the efficiency of data collection and data analysis so that accurate information can be used to determine the "recycling efficiency" of the whole country.</p> <p>Under the activities of PP-I, two major components were introduced:</p> <ol style="list-style-type: none"> 1. A system to collect recyclable data more effectively and efficiently by requesting the LAs to collect and collate data from the receivers and traders. The data would be presented in digital format and emailed to MHLG for analysis, thus reducing the need for manual data entry. 2. A system to increase the participation of the public and other players through registration with MHLG and be included in the stakeholders networking database. The stakeholders' information has now been documented in digital format for ease of reference. This has made the networking procedure more efficient, whereby MHLG is able to access the information much easier, and thus reduce the time needed to conduct paper searches.

	<p>With the data and information in digital format, in future MHLG could post them onto their website for others to access, thus widening the access and increasing participation. This also becomes a more efficient way of publicising and promoting recycling.</p>
Effectiveness	<p>Project purpose to set up a Recycling Networking Unit (RNU) in MHLG to function as a base of 3Rs data accumulation and dissemination point in Malaysia and Capacity Building of MHLG Staff to monitor SWM and 3Rs activities in Federal level is partially achieved.</p> <p>Under the PP-I, the RNU was established in MHLG, and the new recyclable collection method was developed to improve data management more effectively. The Master Dtabase was also created under the RNU to collate and disseminate information on 3Rs activities of LAs and stakeholders.</p> <p>However, the responses from the LAs on the new reporting format were not encouraging. Only 4 of the 10 participating LAs submitted their reports during the trial of new reporting format. The others cited lack of manpower resources and time as their main reasons for submitting their report. This result indicates that urgent need for capacity development of officers in LAs as well as the improvement of national system.</p> <p>The systems established under PP-I were handed over to the counterpart from MHLG, and they had acquired sufficient skills to maintain the system through various on-the-job training. It can be evaluated that capacity of MHLG to monitor SWM & 3Rs activities in Federal level is enhanced.</p>
Impact	<p>Judging from the feedback from counterparts, it can be concluded that this pilot project gave following positive impact on relevant party, especially MHLG.</p> <p>Positive Impacts:</p> <ul style="list-style-type: none"> a. More structured system to track status of 3Rs activities in the country. b. More convenient and user-friendly system to collate and disseminate information was established. <p>a. More structured system to track status of 3Rs activities in the country.</p> <p>At present, little is known of the recycling activities of the various stakeholders. If information and data can be collected from these groups and analysed, it will have a great impact on our understanding of the status or recycling and its achievements in the country.</p> <ul style="list-style-type: none"> b. More convenient and user-friendly system to collate and disseminate information was established. <p>As PP-I attempt to establish better data collation and dissemination methods, it will provide greater and easier access to information. The general public and stakeholders will be wiser and well informed and thus will increase their participation in recycling activities. This will have a great impact on the increased collection activities and reduced waste being disposed at landfills.</p> <p>However, it was noted that the present impact was more on MHLG and the LAs realisation that more work will have to be done in order to satisfy the PP-I's reporting requirements. MHLG and the LAs should realise the importance of collecting more related information and data, even though it may be more work for them.</p>
Sustainability	<p>The information management system, as its name suggest, is to manage information. The database must be constantly monitored and updated.</p>

	<p>However the sustainability of such human-machine interface is highly dependant of whether there is the well to continue or are there adequate personnel or experts to manage the system.</p> <p>However, history has shown that Governmental bodies tend to loose interest in maintaining such systems, generally due to lack of commitment, dedication and constant staff rotation and changes. Nevertheless, MHLG should examine their priorities and assign suitable personnel to maintain the systems. This also applies to LAs and other stakeholders.</p>
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5.4.3 Lessons Learnt and Recommendation

(1) Lessons Learnt

1) Data Collection Method

The key issues with the present data collection and reporting methods of MHLG is the lack of a structured procedure. Generally, data and information from stakeholders were collected in ad-hoc manner from a few collection centres and from a small pool of players such as schools and residents associations. The involvement of the key players such as the private collectors and traders were not realised and included.

There was also the tendency of LAs to rely mainly on their sub-contracted solid waste concessionaires for information, rather than extend their networking to include other players within their area. As such, vital and useful data were not captured. This probably resulted in presenting a scenario where recycling activities is relatively inactive and lacklustre. It was found that, in actual a fact, the recycling activities in Malaysia are much more healthier than is portrayed to be, although the level of recycling activity and number of players is not known due to lack of information and knowledge of their activities.

2) Uniformity and Streamlining of Reporting Format

The analysis of the reports received during the new reporting system trial indicated that the new format used for reporting collection is workable. Indeed, useful information and new insights into the recycling activity and players at the local level were revealed from the feedback. The results also showed significant improvement and rise in the quantities of recyclables collected. It also increased the LAs networking amongst the local recyclers and other agencies. The trials should be continued further so that more data can be gathered and analysed. Perhaps the trials could also be extended to other willing LAs for adoption and tested.

3) Manpower, Capacity and Training

This trial also showed that only 4 out of 10 LAs managed to submit their reports. This could be an indication of the problem faced in the LAs – namely, manpower and/or capacity of officers. It is recommended that MHLG ensure the LAs are being motivated and to encourage the LAs to be more proactive and to adopt the new reporting format and to try to collect as much relevant data from the stakeholders. In return, MHLG should assign fulltime-dedicated officers to continue with the monitoring and management of the various established systems, and to continue to analyse the data and present the statistics for others to reference.

(2) Recommendations

1) Updating of Database

The databases are only useful if they are constantly monitored and updated. Such tasks should be carried out periodically and MHLG should ensure that the LAs and the other stakeholders submit new information of changes and updates regularly.

It may not be practical for MHLG to contact all LAs and stakeholders through the telephone, however MHLG should establish a updating reminder system to remind LAs to provide their updated information on a twice-yearly basis. Such could be done via email or letter reminders, or via newspaper advertisements for the other stakeholders.

2) Continuation of Pilot Project Work

Since the Pilot Project, PP-I, was only scheduled for a short period of just three (3) months, not much data and information were received. Although some analyses were carried out on the few available data, the data were not sufficient to draw any conclusion to the progress and status of the PP-I activities. These activities should be developed further and be monitored and updated continuously.

The proposed actions to be developed and continued are as follows.

(a) Continuation of “New Reporting Format” Trials.

Due to time constraints and lukewarm response to the new reporting format, only 4 of the 10 trials candidate LAs submitted their recyclables collection data in the new format.

It was noted that in order to fill in the data according to the new format, a lot of additional data collection work will have to be carried out by the LAs. It was also noted that some LAs do not have the personnel and taskforce to carry out such work. However such shortcomings could be overcome if the LAs are more committed to the recycling programme. The LAs should start planning for the future and should establish new recycling units within the LAs and allocate sufficient personnel for the tasks.

It is suggested that MHLG should also encourage the LAs to be more active in the recycling programme, and participate in the “trials”, and eventually encourage other LAs to follow suit. Since the data and information will be collected and analysed by MHLG, it has the ultimate responsibility to ensure that the LA continues with the submission of the regular reports. On receiving the reports, MHLG should also continue with the databasing and analysis of the data and present the statistics for others to reference and appreciate.

(b) Continuation of “LAs Information Database”

The PP-I has set up the LAs Information Database containing valuable information of the LAs and their recycling related activities. Although not complete, i.e. only 56% of the total of 104 LAs have submitted their details, nevertheless what information that was received were extremely useful and relevant. MHLG should encourage the remaining LAs to submit their information soonest.

It must be appreciated that the database is as useful as long as the information in it are

constantly updated. MHLG should ensure that the LAs should submit new information of changes and updates regularly. MHLG should, at least twice a year, send reminders to the LAs to update their information. Alternatively, MHLG could consider upgrading the data gathering system to use the Internet web-based technology to manage the information. Such system will require the set up of a web-ready system with the aide of an information management software, to be published in MHLG's official website so that LAs could access to the database and do the updates online. Furthermore, the management software can be set to send reminders to LAs that have not responded, and also send out new surveys and invite others to response. With this web-based information system, others can also have access to the information by just logging on to the MHLG's website.

(c) Continuation of “Stakeholders Networking Database”

The stakeholders networking database has been created but it is only useful if the information in it are updated and accessible by others. At present, the directory of players is relatively small and further steps should be taken to increase the participation by approaching the LAs, the players and their related associations.

It was noted that the response to MHLG's invitation to the players to register their interest with MHLG was rather disappointing with only 195 submissions. This was due to lack of publicity and notification. Although the advertisements were published in various daily newspapers of different languages, they were hidden in the back pages of the newspapers. Not enough exposure was given to this campaign.

It is suggested that MHLG should re-launch this campaign and make use of the multimedia technology to present and advertise the programme. MHLG should consider upgrading the “paper” registration from and replaced with “electronic forms”, and publish in the official website. All that is needed later is to inform the public to log-onto the website to access the forms and submit them electronically via the website or Internet. By doing so, MHLG will reduce a fair amount of paperwork and minimise the need to do manual data entry. With this system, MHLG can also monitor the players and issue reminders for them to update their details. Furthermore, this will also reduce the need for issuing large volumes of postal messages or letters. In the future, all correspondences, reminders or invitations should be conducted via the Internet.

(d) Proposal for Extension to PP-I Scope for Continuation

Under the present scope of PP-I, due to time and budget constraints, it was not possible to implement the full Information Management System that will encompass all the relevant functions such as setting up the web-based programme, data management, updating of MHLG's official website, liaison and dialogues with the LAs and the players, publicity and campaigns, etc.

However, with the prospects of additional project funded by MHLG or else, some of the activities could be implemented together with MHLG. As such, it is proposed that the information management should be expanded further to include management of recycling activities presently managed by MHLG. This included the operations and management of the “recycling centre” at MHLG.

3) Proposed Web-Based Data Management System

As previously explained, the key success of good data management system lies in its ability to be able to gather and manage vast resources of data efficiently and effectively.

The 2 main problems of data management are

- i) Inability to gather or collect information and data efficiently, i.e. difficulty in tracking the source, ensure data has been submitted, monitor reviews and updates.
- ii) Lack of manpower and automation resulting in data received not processed or analysed. Furthermore, most data are generally received in hardcopy format and required additional resources for manual data entry.

There is the need to address these 2 main problems so that the data collection function can be streamlined and to rely more on new IT technology, software control and the flexibility of the Internet and the world-wide-web (www).

The main purpose of having the web-based system is to make use of the conveniently available widespread networking facilities of the “www”. Once the dedicated website has been published and launched onto the “www” with the appropriate IMS application system, it can be accessed almost anywhere by approved personnel that is equipped with an Internet ready PC system.

With this system, special password controlled access privileges can be issued to participating parties so that they can access to the questionnaires and forms. With such tracking capabilities, all information received will be monitored and maintained in the master database storage system.

At MHLG’s side, as the administrator, MHLG is then able to access the database electronically and analyse them instantly without the need to do any additional paperwork.

The basic system is still subject to further study and investigation so that the actual system and applications can be determined in greater details. A system requirements study may be necessary to ascertain the hardware, software, web hosting, Internet security and personnel allocations to undertake the task.

The proposed basic structure of the web-based data management system is shown in Figure 5.4.1 and Figure 5.4.2.

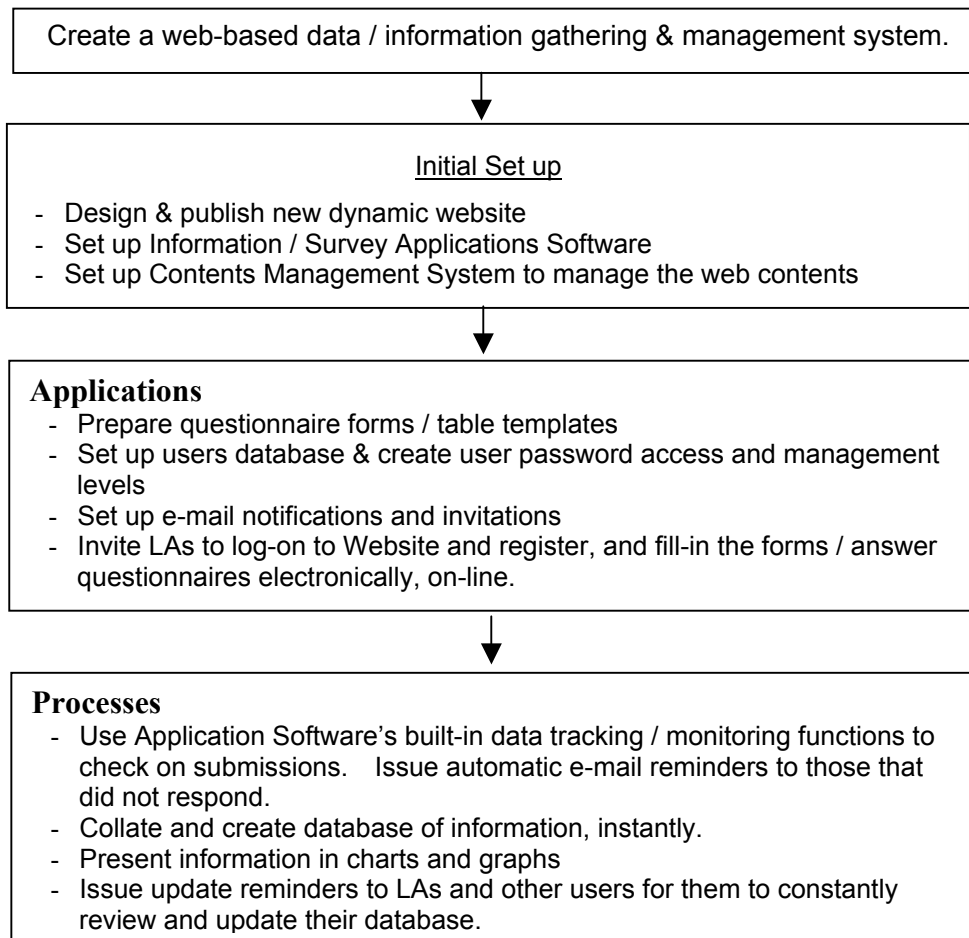


Figure 5.4.1 Basic Structure of Web-based Data Management System

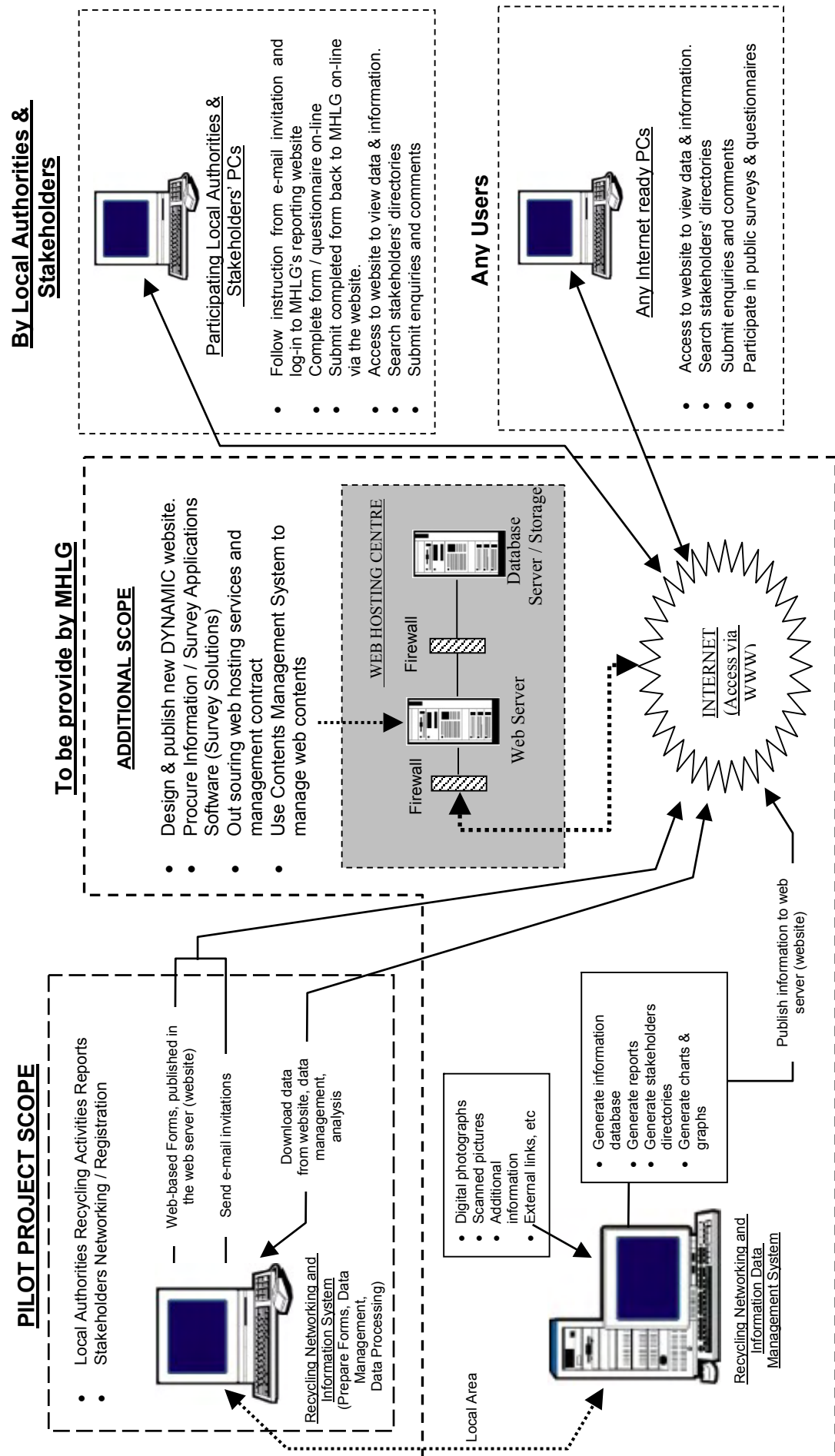


Figure 5.4.2 Proposal for Upgrading the National Recycling Information System (with Dynamic Website & Database)