

DEC/ NCDC, Papua New Guinea
MECDM/ HCC/ GTC, Solomon
DEPC/ PVM/ LM/ Lenakel, Vanuatu

The Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management in Pacific Island Countries (J-PRISM)

(Solid Waste Management A, E)

Project Completion Report

March 2016

Japan International Cooperation Agency (JICA)

Yachiyo Engineering Co., Ltd.

GE
JR
16 - 023

DEC/ NCDC, Papua New Guinea

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In this report the following exchange rates are applied (as of March, 2016)

Exchange rate

PGK 1 = JPY 38.362 (March, 2016)

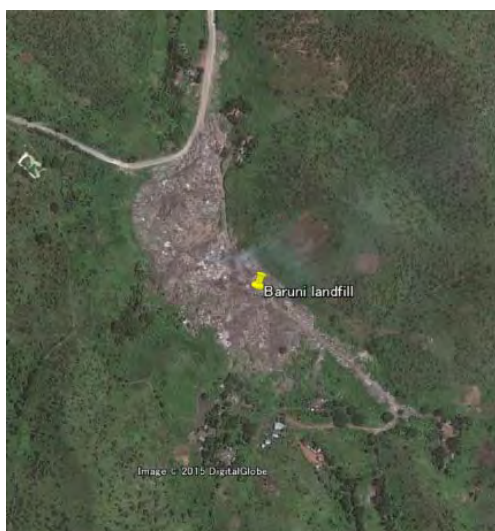
SBD 1 = JPY 14.250 (March, 2016)

VUV 1 = JPY 1.056 (March, 2016)

Pictures of Activities in Papua New Guinea No. 1



Baruni Landfill (June, 2015)



Baruni Landfill (Google Image)
(Left: January, 2011, Right: September, 2015)



Leachate Treatment Pond, Liner Facility, Fence
(December, 2015)



Leachate Collection Pipes
(December, 2015)

Pictures of Activities in Papua New Guinea No. 2



Workshop on Sanitary Landfill Operation
(December, 2015)



Community Meeting for Collection Improvement
(August, 2015)



Selection of Collection Stations for Collection
Improvement (August, 2015)



Awareness Raising Activities at Market
(September, 2015)



Stakeholder Meeting of Solid Waste Management Plan in Port Moresby
(December, 2015)

Pictures of Activities in Papua New Guinea No. 3	
	
Site Visit at Landfill for 3R HEART Program (March, 2015)	3R HEART Program (March, 2015)
	
3R HEART Program (November, 2015)	Best Counterpart Team Award for 2015 (December, 2015)
	
4 th JCC Meeting (February, 2015)	5 th JCC Meeting (November, 2015)

Pictures of Activities in Solomon Islands No. 1



House-to-house Visit for Awareness Raising of Waste Segregation Pilot Project (June, 14)



Community Meeting for Introduction of Community Composting (February, 2015)



Introduction of Community Composting (June, 2015)



School Visit for Eco School Program (July, 2015)



Final Awarding Ceremony for Eco School Program (November, 2015)



Bus Tour at Ranadi Landfill (November, 2015)

Pictures of Activities in Solomon Islands No. 2



Construction of Administration and Training Center at Ranadi landfill (February, 2015)



Cooperation for Ranadill Rehabilitation with Reginal Landfill Expert from Vanuatu (September, 2015)



Completion of Administration and Training Center and Fence at Ranadi landfill (May, 2015)



Ranadi Landfill (After Rehabilitation)
(November, 2015)

Pictures of Activities in Solomon Islands No. 3



Awareness Raising Activities
for Waste Management (July, 2014)



Handover Ceremony for a Tractor Attachment
(November, 2014)



Time and Motion Study
(July, 2015)



Waste Characterization Study
(August, 2015)



Installation of Fence
(August, 2015)



Reporting Meeting of Study Visit at Tonga
(February, 2015)

Pictures of Activities in Vanuatu No. 1



**Baseline Survey for Can Separation Pilot Project
(September, 2014)**



**Launcing Ceremony for Can Separation Pilot Project
(November, 2014)**



**Monitoring of Can Separation Pilot Project
(March, 2015)**



**Evaluation Questionnaire Survey for Can Separation Pilot Project
(July, 2015)**



**Market Waste Composting at Central Market
(July, 2015)**



**MOU of Market Waste Composting
(December, 2015)**

Pictures of Activities in Vanuatu No. 2



Waste Characterization Study (Luganville)
(August, 2014)



Waste Characterization Study (Lenakel)
(August, 2014)



Training for Lenakel Counterparts on Time &
Motion Study, Port Vila (March, 2015)



Site visit and exchanging opinions among
counterparts from Port Vila and Luganville,
Luganville (Jul7, 2015)



Workshop for Provincial Officers
on Solid Waste Management Plan (July, 2015)



Site Visit by Participants of
Workshop for Provincial Officers
on Solid Waste Management Plan (July, 2015)

Pictures of Activities in Vanuatu No. 3	
	
Recording of incoming vehicles at Bouffa landfill (June, 2014)	Expansion Work of Bouffa Landfill (July, 2015)
	
Buffa Landfill (Expansion Area) (September, 2015)	
	
Post disaster waste management project (cutting of fallen trees) (March, 2015)	4 th JCC Meeting (March, 2015)

Project Target Area

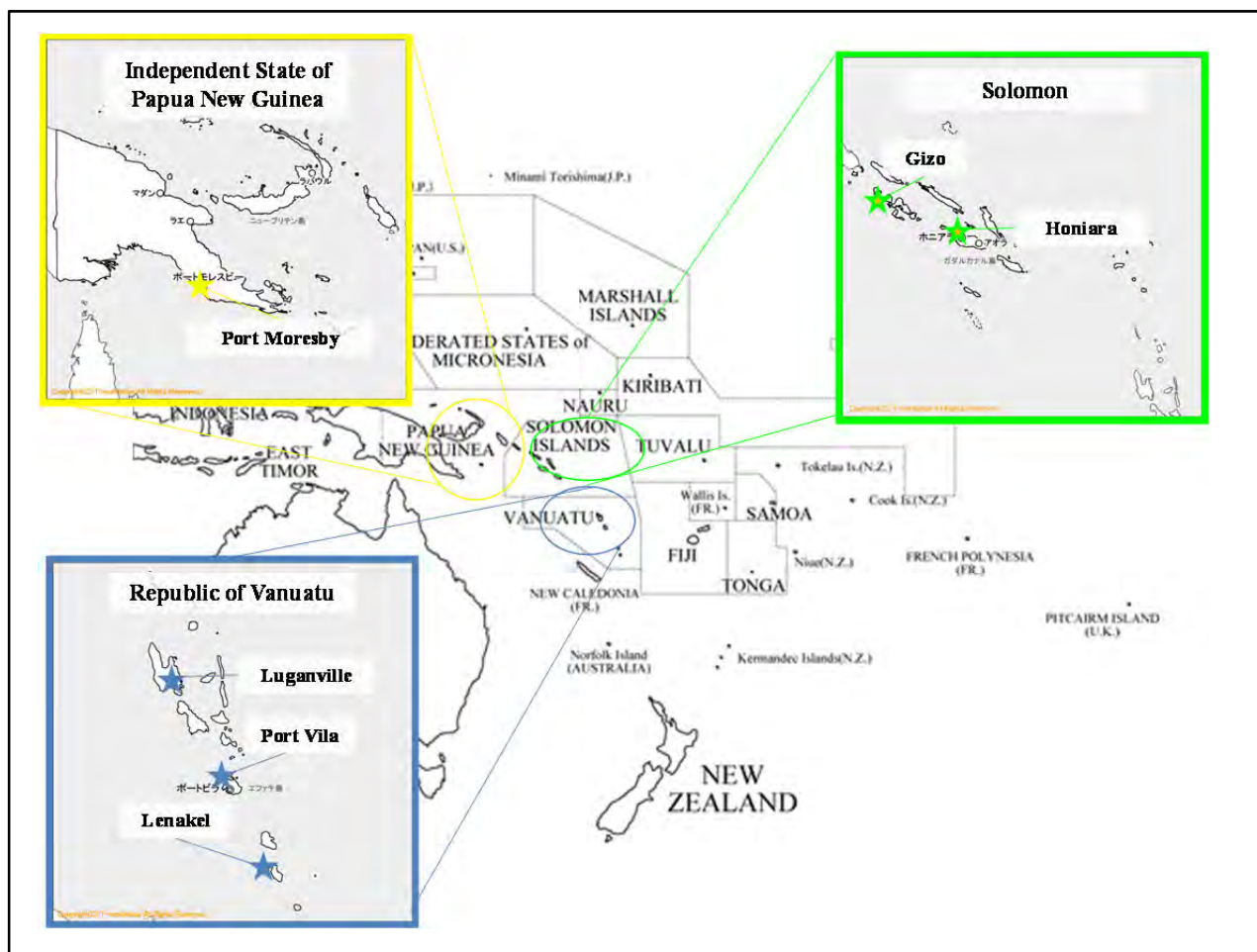


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List of Abbreviations

Abbreviations	English
3Rs	Reduce, Re-use and Recycle
3Rs HEART	Pilot project in Port Moresby of 3Rs for improvement of H ealth, E nvironment, A ttitude, R esource efficiency and T houghts
BOQ	Bill of Quantities
C/P	Counterpart
cap.	capita
CDL	Container Deposit Legislation
DEC	Department of Environment and Conservation, PNG
DEPC	Department of Environmental Protection and Conservation, Ministry of Climate Change, Vanuatu
DNPM	Department of National Planning and Monitoring, PNG
EIA	Environmental Impact Assessment
FS	Feasibility Study
GTC	Gizo Town Council, Solomon
HCC	Honiara City Council, Solomon
JCC	Joint Coordinating Committee
JET	JICA Expert Team (refers to the team formed by Yachiyo Engineering Co., Ltd to implement this assignment under contract with JICA)
JFY	Japanese Fiscal Year
JICA	Japan International Cooperation Agency
JOCV	Japan Overseas Cooperation Volunteers
J-PRISM	Japanese Technical Cooperation Project for P romotion of R egional I nitiative on Solid Waste M anagement in Pacific Island Countries
LM	Luganville Municipality
LMC	Luganville Municipal Council
MECDM	Ministry of Environment, Climate Change, Disaster Management and Meteorology, Solomon
MHMS	Ministry of Health and Medical Services, Solomon
M/P	Master Plan
MNRE	Ministry of Natural Resources and Environment, Samoa
MoH	Ministry of Health, Vanuatu
MoLENR	Ministry of Lands, Environment and Natural Resources, Vanuatu
MOU	Memorandum of Understanding
MTR	Mid-term Review (implemented by JICA to evaluate the project progress)

Abbreviations	English
MTRT	Mid-term Review Team
MWCPP	Market Waste Compost Pilot Project, implemented in Port Vila, Vanuatu
NCDC	National Capital District Commission
NGO	Non-Government Organization
NSWMS	National Solid Waste Minimization Strategy, Vanuatu
NWMS	National Waste Management Strategy, Vanuatu
NZAID	New Zealand Agency for International Development
NZ-VSA	Volunteer Services Abroad, New Zealand
O&M	Operation and Maintenance
PA	Project Assistant
PALM	Pacific Islands Leaders Meeting
PDM	Project Design Matrix
PGK	Kina (Papua New Guinea currency)
PIC	Pacific Island Countries
PMU	Project Management Unit, PNG
PNG	Papua New Guinea
PO	Plan of Operation
POM	Port Moresby, Papua New Guinea
PPP	Public Private Partnership
PVM	Port Vila Municipality
PVMC	Port Vila Municipal Council
RS2010	Pacific Regional Solid Waste Management Strategy (2010 - 2015)
SBD	Solomon Dollar (Solomon currency)
SPREP	Secretariat of the Pacific Regional Environmental Programme
SWM	Solid Waste Management
T&M	Time and Motion survey
t/d	ton per day
VCCI	Vanuatu Chamber of Commerce and Industry
VT, VUV	Vatu (Vanuatu currency)
WMD	Waste Management Division, PNG
WPG	Western Provincial Government, Solomon
WSB	Won Smol Bag, NGO, Vanuatu

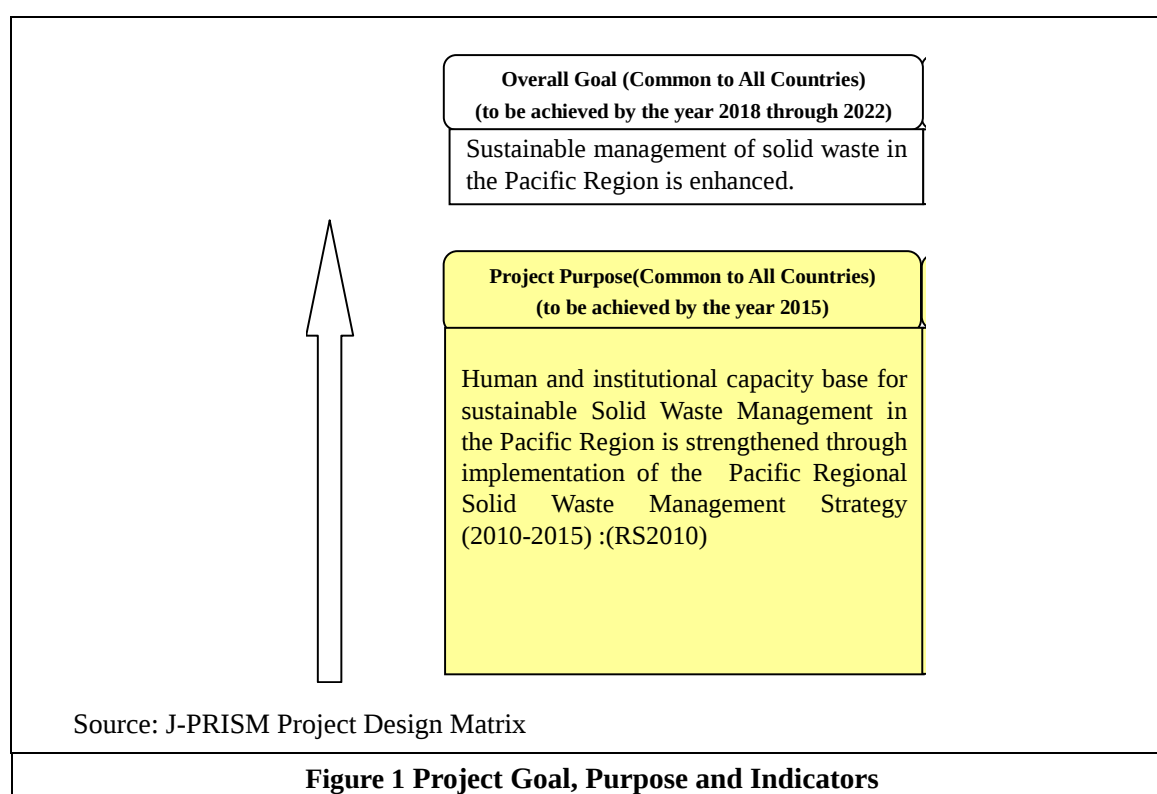
Preface - Background of the Assignment

1. Introduction

The Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management in Pacific Island Countries (hereinafter referred to as “J-PRISM”) was inaugurated in February, 2011 and ended in February, 2016.

2. J-PRISM Regional Level Description and Objectives

The Overall Goal of J-PRISM is to enhance the sustainable management of solid waste in the Pacific Islands Countries (hereinafter referred to as PICs), as shown in Figure 1.



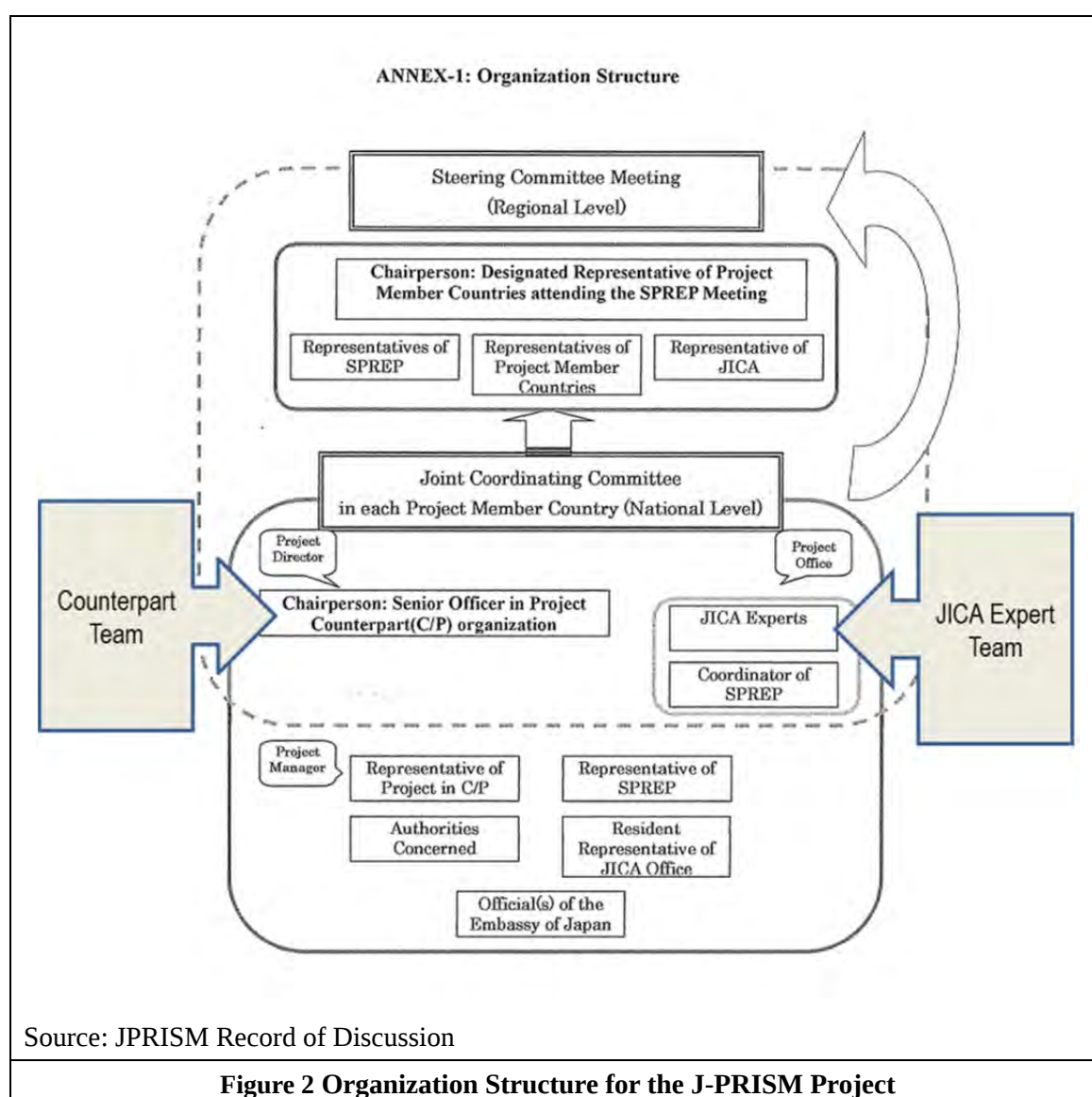
3. This JICA Expert Team

The JICA Chief Advisor for this project is stationed in Tokyo and is supported by a regional expert serving as Assistant Chief Advisor and three JICA project coordinators dispatched from Japan, and stationed in Samoa. Short term experts A and E are assigned responsibilities for PNG, Solomon and Vanuatu.

4. Project Organization

The organization structure for the Project is reproduced in Figure 2. A Steering Committee has been set up comprising members of each of the 11 PICs and meets once a year. The project activities at the country level are implemented by the Joint Coordinating Committee (JCC), the Counterparts and the JICA experts.

JCC is responsible to formulate the annual work plan of the Project, review the Project progress and exchange opinions on major issues that arise during the project implementation. The JICA Expert Team provides technical support and guidance for the counterparts in each of the three countries, under the directions of the National Project Director and Project Office respectively.



5. Assignment Reports

During the course of this assignment the JICA Expert Team (JET) attached to the three countries of PNG, Solomon and Vanuatu, compiled and submitted the following reports to JICA and the counterparts in the respective countries.

(1) Work Plans

Three reports were prepared for each of PNG, Solomon and Vanuatu. Each report contained the project background description, JET team assignment schedule, proposed methodology to implement the assignment tasks, JET's appreciation of the Project status in the respective countries and confirmation of the counterpart teams' compositions.

The work plan was submitted to the Counterparts in each of the three countries, the JICA representative and branch offices, and the Project Office during the period of June – July, 2014. The report served as a base to reach a common appreciation of the status of the project activities as well as to re-confirm the counterparts assigned to the Project.

(2) Interim Reports 1, 2 and 3

Interim Reports 1, 2 and 3 were prepared for each of the three countries in December 2014, June 2015 and December 2015. The reports were submitted to the relevant agencies of the counterparts, the JICA representative and branch offices, and the Project Office. Each Interim Report outlined the project activities implemented during the respective assignment period, as well as general recommendations. Attachments were included in each report. The attachments contained brief reports, presentations, workshop memos, and survey results and analysis prepared basically by the counterparts during this assignment period as part of the Project activities and under the guidance and support of JET.

(3) Project Completion Report

The Interim Reports were compiled into this report which has been produced both in English and Japanese. This final report was submitted to JICA in March 2016. The report also contains details of the expenses incurred by JET during their assignments in the respective countries.

6. Melanesian SWM Workshop

The first Melanesian SWM Workshop was held in Honiara during the period of 5th to 7th August, 2015. Counterparts from the three J-PRISM member countries of Solomon Islands, Vanuatu and Papua New Guinea participated.

Over three days the participants participated in five sessions:

SESSION A - SWM Good Practices Introduction

SESSION B - Reflections on J-PRISM

SESSION C - Field Visits

SESSION D - Issues and Resolutions Discussions

SESSION E - Input into Potential JPRISM Extension Project

The counterparts made presentation, engaged in group discussions and visited SWM activities and sites in Honiara.

The report of the workshop is included in **Attachment A-1**.

7. Local expenses incurred by JICA Expert Team

The estimated local expenses covered by JET for the three countries are shown in the table below.

Table 1 Local Expenses by JICA Expert Team

Item		Local Expenses (JPY)
Employment of Local Staff	Survey assistant	1,244,000
	Local assistant	1,653,000
Rent of Vehicles	Vehicle	5,081,000
	Truck	206,000
	Bus hire	86,000
	Heavy equipment	59,000
Rent of Meeting Space	Meeting space	990,000
Consumable Goods	Purchase of documents	2,000
	Safety gears	35,000
	Chain saw	79,000
	Drum (including paint)	16,000
	Workshop	29,000
	Disaster waste management	47,000
Travel Fare	Accommodation/ Perdiem	2,081,000
	Air fare	3,455,000
	Airport tax	2,000
	Boat	8,000
	Taxi	45,000
Communication	Telephone	210,000
	Internet	223,000
Document Preparation	Photocopy	45,000
	Newsletter	0
Miscellaneous Expenditure	3R pilot project	913,000
	Waste bins	32,000
	Water quality test	364,000
	Fence	838,000
	Workshop, JCC meeting etc.	2,115,000
	Overseas travel insurance (local staff)	5,000
Total		19,863,000

A. PNG

A. Papua New Guinea

A-1 Assignment Implementation Brief

1.1 Project Members and Assignment Period

The JICA Expert Team is composed of three members as shown in Table 2.

Table 2 JICA Expert Team

Name		
1	Mahmoud RIAD	Team Leader/ SWM Expert E (PNG, Vanuatu)
2	Akihiro OSADA	SWM Expert A1/E2 (Solomon, Vanuatu)
3	Hiroshi ABE	SWM Expert A2 (Solomon)/ Landfill Improvement (PNG, Solomon)

The officials and counterparts who directly participated in the Project activities are listed in Table 3.

Table 3 List of Counterparts - PNG

Name	Organization	Title	Comment
Gunther Juko	CEPA	Managing Director	Project Director
Michael Wau	CEPA	Director, EPW	
Veari Kula	CEPA	Executive Manager	
Gregory Lenga	CEPA	Principal Scientist	
Leslie Alu	NCDC	City Manager	Officiated some meetings
Honk Kiap	NCDC	Deputy City Manager	Officiated some meetings
Joshua Sam	WMD, NCDC	Manager	Project Manager
Janet Haua	WMD, NCDC	Senior Waste Management Officer	Project Coordinator
Simeon Terina	WMD, NCDC	Senior Waste Management Officer	Output 1 Manager
Ronnie Ranu	WMD, NCDC	Senior Waste Management Officer	Output 3 Manager
Vivianne Morofa	WMD, NCDC	Acting Senior Waste Management Officer	Output 2 Manager
Paul Wisi	WMD, NCDC	Waste Management Officer	Outputs 2 and 3
Nanai Raja	WMD, NCDC	Waste Management Officer	Outputs 2 and 3

Name	Organization	Title	Comment
Walter Aukleya	WMD, NCDC	Waste Management Officer	Output 1
Racheal Inamuka	WMD, NCDC	Waste Management Officer	Outputs 2 and 3
Diana Wapyer	WMD, NCDC	Waste Management Officer	Output 3
Sneka Pokani	WMD, NCDC	Supervisor	Output 2 and 3
Joshua Jr.	WMD, NCDC	Supervisor	Output 1
Koita	WMD, NCDC	Supervisor	Output 1
Joseph Kaupa	WMD, NCDC	Supervisor	Output 1
Louisa	WMD, NCDC	Supervisor	Output 3 (Market compost)
James Ricky	NCDC	Engineering Department	Project Engineer, Output 1

This Completion Report covers the period of May 31st, 2014 to December 12th, 2015. Mr. Mahmoud RIAD and Mr. Hiroshi ABE were assigned to PNG during that period as indicated in Table 4.

Table 4 JET Assignments in PNG

Name	Title	2014							
		May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Mahmoud RIAD	SWM-E		(14)	(31)		(29)			(20)
Hiroshi ABE	SWM-A2/E2		(12)			(4)	(12)		
Name	Title	2015							
		Jan	Feb	Mar	Apr	May	June		
Mahmoud RIAD	SWM-E		(16)	(18)			(32)		
Hiroshi ABE	SWM-A2/E2					(16)			
Name	Title	2015							
		July	Aug	Sept	Oct	Nov	Dec		
Mahmoud RIAD	SWM-E	(2)		(35)			(36)		
Hiroshi ABE	SWM-A2/E2				(16)				
Note: Figures in parenthesis are numbers of days									

Together both experts had a combined assignment period of 293 days. A record of the daily activities of both experts is provided in **Attachment A-2**.

The Project Office staff also spent some time in PNG as follows:

- Mr. Amano, Chief Advisor visited PNG in February and June 2014 for a total of seven days, and in November 2015 for 3 days.
- Mr. Faafetai, Assistant Chief Advisor and Mr. Makoto Tsukiji, Project Coordinator both visited PNG in August 2014 for a combined stay of 13 days.

1.2 Project Management Activities and Issues

1.2.1 Accident at Baruni Disposal Site

On September 15th, 2014 two children belonging to the waste pickers were playing at the foot of the waste slope at the waste disposal area. The bulldozer operator, hired by the Contractor's sub-contractor was pushing the waste down the slope. The children were playing under a makeshift cardboard paper roof and the operator did not notice them. The children were suffocated under the waste and died instantly.

As a consequence of this accident the Counterparts initiated a number of countermeasures to improve safety at the site. Upgrade works were suspended for one week.

1.2.2 Issues related to Baruni disposal site rehabilitation and operations contractor

NCDC directly appointed the contractor that had been operating the site for both the rehabilitation and operation works. Although the contract, signed between NCDC and the contractor in April 2014, separated the rehabilitation works from the operation works at the start of the contract implementation the contractor shifted personnel and equipment between operations and rehabilitation works, and did not provide enough resources to cover both areas of works independently.

The work took off in earnest only in June 2014. And with this takeoff the JPRISM project team has been struggling with a number of issues on each of operations and rehabilitation, as described in Table 5.

Table 5 Baruni landfill operational and rehabilitation issues

Operational Issues	Rehabilitation Issues
The contractor <u>lacked experience</u> in operation of a landfill	The Contractor did not study and discuss <u>the design drawings</u> sufficiently
It was <u>difficult to control all the waste pickers</u> at the site and open fires and security issues continued for some time	The Contractor <u>delayed the submission of the construction schedule</u> and did not follow it after submission
There were <u>safety concerns and a tragic accident occurred</u> due to the contractor's difficulty to control the site and take adequate site safety measures	The Contractor was obliged by the contract to appoint a project engineer and site supervisor for the rehabilitation works. Appointment of the <u>Project Engineer</u> was done about 6 months after signing the contract, and the appointed engineer was terminated in August 2015. The Contractor appointed the <u>site supervisor</u> in November 2014.
Although the contractor was contractually obliged to provide two units of heavy equipment (bulldozer and excavator) and a site supervisor on operation works, often the <u>equipment was transferred to the rehabilitation works and there was only one site supervisor overseeing both rehabilitation and operations.</u>	The Contractor sub-contracted survey works, and as a result there were always delays due to <u>the surveyors not being present at the site</u> , as well as poor control of excavation and fill related works.
Most of the <u>site communications between the contractor and NCDC were verbal</u> and there were no written records on instructions, etc.	The Contractor <u>lacked funds</u> to progress with the works in many instances
The equipment <u>operators often acquiesced to the waste pickers requests</u> to mine the waste for scrap metal and shift recyclable materials around the site	The <u>Contractor did not maintain written records</u> of the works
There was <u>insufficient waste compaction, waste slopes were too steep and cover materials were hardly applied</u>	The Contractor basically worked without a coherent plan and <u>did not follow the Counterparts instructions</u>
<u>Insufficient control at the waste disposal face</u>	Most of the <u>site communications between the contractor and NCDC were verbal</u> and there were hardly any written records on instructions, etc.
<u>Contractual documents were not being submitted</u>	

The Counterparts introduced a number of initiatives to resolve the operational and rehabilitation works issues at the site, and received mixed compliance from the Contractor. Some of these countermeasures were as follows:

- (1) Holding weekly meetings with the Contractor at the site to discuss the progress both on the operations and on rehabilitation
- (2) Having the Contractor issue its Site-specific Safety Plan and erect signage at the site

- (3) Members of the waste pickers community have been employed on the Project by the Contractor (16 persons) and by NCDC (8 persons).
- (4) The Baruni Landfill Safety Committee (BLSC) has been formed and meets almost weekly. Its members include waste pickers, both elders and youth
- (5) The Counterparts have issued additional design drawings and held technical meetings with the Contractor to explain the design more clearly
- (6) The Counterparts are spending more time at the site
- (7) The Contractor has assigned spotters at the disposal area to guide the equipment operators and direct the trucks to the discharge area
- (8) While rehabilitation works commenced in cells 1 and 2, the waste was disposed at the rear of the site and this provided an opportunity to train the Contractor's operators on waste placing and compaction works before moving to the completed cells.

1.2.3 Working Conditions at Baruni disposal site

Security and communications with the surrounding community at Baruni disposal site improved as evidenced by the elimination of open burning and continued employment of the community members by NCDC and KCL.

However incidents continued to occur at the site which had a delaying effect on the work progress. Some of these incidents are as indicated below:

Table 6 Known Incidents at Baruni Site during first half of 2015

SN	Date	Incident Description	Reported cause
1	6 Feb.	Some drunken community members threatened a driver inside the site with knives and took his pick-up truck. The truck was later found.	The cause was not identified; but probably due to drinking.
2	Jan. – Feb.	KCL stated that some of its operators have been threatened by knives at the disposal area by the waste pickers.	Reportedly due to jealousies amongst community on not all being employed by project
3	8 March	Burning of KCL dump truck	Youth of the community complained that nothing had been done with the petition they submitted to the Governor in December 2014 for jobs.
4	Second week, March	Bodily threats to community members employed by NCDC.	The detention of the police of one person accused of setting the fire to the KCL truck
5	19-23 March	KCL withdrew from the site from 21-23 Mar.	KCL staff payment delays.
6	27 Mar.	Waste was disposed in un-authorized locations at the site. Waste was set on fire near administration area and cell	Members of community became drunk and stopped trucks from coming into the

SN	Date	Incident Description	Reported cause
		1.	disposal area.
7	2 Jun.	Waste in operations area western slope was set on fire. The fire raged for 36 hours before it was extinguished.	Reportedly the community members were tasked to do some clean-up by NCDC/KCL but the payment for their work was delayed.

From April to June, 2015 the Contractor provided transport support to the police to enable them to be at the site for longer hours on a daily base.

1.2.4 JCC Meetings

1.2.4.1 4th JCC Meeting

The 4th JCC Meeting was held on 25th February, 2015 at Holiday Inn. The meeting was chaired by Mr. Michael Wau, Executive Officer of DEC (CEPA), and attended by Mr. Amano, the project's Chief Advisor. Mr. Joshua Sam, the Project Manager commenced the meeting by informing the participants that rehabilitation works had started at Baruni disposal site in earnest from July 2014. The WMD would now like to concentrate on improvement of collection work to reach the target of 70% collection rate. One way to do that would be to extend collection services to the settlements.

At the JCC meeting the proposal for the Objectively Verifiable Indicator for the Overall Goal of the Project was discussed and confirmed as follows;

The importance of waste minimization is understood and more than one waste minimization scheme is practiced in NCDC.

And that the Means of Verification for this OVI would be as follows:

“Implementation report on waste minimization schemes.”

At the end of the meeting some of the participants accompanied the Project team to Baruni landfill to observe the progress of rehabilitation and operation improvement there.

The Minutes of the Meeting (unsigned document) is shown in **Attachment A-3**.

1.2.4.2 5th JCC Meeting

The 5th JCC Meeting was held on 24th November, 2015 at Holiday Inn. The meeting was chaired by Mr. Michael Wau, Executive Officer of CEPA (formerly DEC), Mr. Honk Kiap, Acting City Manager, NCDC, and attended by Mr. Sugiyama, Chief Representative, JICA PNG Office and Mr. Amano, the project's Chief Advisor.

The counterparts explained the progress of the project outputs and the actions taken with respect to the recommendations made by the Terminal Evaluation Team in September 2015. CEPA's Mr. Veari explained CEPA's opinion on the need to roll out the lessons learnt in NCDC under the project to the other provinces.

The participants agreed with the recommendations made by the Terminal Evaluation Team, including the modifications to the Overall Goal.

The Minutes of the Meeting document has been prepared and is being circulated for signing. **Attachment A-4** shows the unsigned document.

1.2.5 Terminal Evaluation Mission

JICA dispatched the Terminal Evaluation Team (TET) to PNG during the period of 17 to 21 August, 2015. The TET collected reports and data on the project, held interviews with the counterparts and experts and made their evaluation of the degree of achievement of the project outputs and conclusions and recommendations.

The Terminal Evaluation Team's analysis and evaluation have been compiled in the Technical Evaluation Report and announced in Apia, at the SPREP annual meeting in September 2015.

Concerning the project activities in PNG, the evaluation result was as follows:

Item	Output Degree of Accomplishment
<u>Output 1</u> : Solid waste disposal facility is improved	Mostly achieved
<u>Output 2</u> : Waste collection in Port Moresby is improved	Mostly achieved
<u>Output 3</u> : Capacity of planning and monitoring of SWM in Port Moresby (NCD) is increased	Mostly achieved
<u>Project Purpose</u> : Human and institutional capacity base for sustainable SWM in the Pacific Region is strengthened through implementation of the Pacific Regional SWM Strategy (2010-2015)	Mostly achieved

The TET recommended that the indicator and means of verification for the Overall Goal be modified as follows:

Indicator: Landfill management, collection services, and waste minimization are implemented according to the action plan of the SWM plan (2016 – 2020) in three years after completion of the Project

Means of Verification: Monitoring report on implementation of the SWM Plan.

1.2.6 Changes in the Counterpart Team

During this assignment period WMD has undergone a number of staff changes. The Senior Environment Health Officer responsible for waste collection, Mr. John Navara left WMD.

Ms. Vivianne Morofa has been appointed as Acting Senior Officer responsible for collection.

Ms. Diana Wapyer, former Project Assistant was appointed as Officer from January 2015. She is supporting the project coordination and 3R HEART and is the officer in charge of composting.

1.2.7 Introduction of Waste Collection to Segani-Ranuguri Settlement

There are approximately 63 settlements in Port Moresby, with most of those settlements not served by waste collection. The Counterparts, under Output 2 of the Project, introduced the communal station discharge and collection system in the settlement of Segani-Ranuguri in 2015. The counterparts met with the settlement residents a number of times, the community formed two SWM committees, for Segani and Ranuguri respectively, and NCDC constructed three communal discharge stations.

The Collection Contractor set a collection schedule for two days per week. The pilot project is ongoing, the Community is very active to bring their wastes to the designated stations and have made some clean-up campaigns. The Counterparts are monitoring the contractor to ensure that the collection time is respected, although there have been lapses by the contractor so far.

1.2.8 Introduction of Green Waste Separation and Composting at Gerehu Market

Gerehu Market is one of some 14 formal markets serving NCD. The market has been rehabilitated by UNWOMEN. The counterparts implemented a market waste survey in 2015 to identify the amounts of waste and portion of green waste generated and the number of vendors at the market. Four public awareness activities were held at the market, and comedians were employed to teach on how to separate green waste from other wastes and the importance of composting. The WMD officers took an active part in the question and answer sessions that were also held.

The Counterparts have also entered into an agreement with the National Agricultural Research Institute (NARI) to bring the green waste to their center in Laloki for composting. NARI will provide technical advice and test the produced compost. The pilot project will continue for three months and start from the first week of February 2016. Both sides have already selected the site

for the composting and NCDC is now preparing the budget to clear the site, erect the fence and hire the casual workers to implement the pilot project.

1.3 Summary of Assignment Results

A brief review of the main assignment results, are chronologically described in Table 7.

Table 7 Chronological description of the main assignment results

Year	Month	Result
2014	July	The <u>Baruni rehabilitation works commenced</u> in earnest <u>Drawings for the implementation</u> showing soil profiles and cross sections of the upgrade works were prepared The <u>Operation and Maintenance Manual (preliminary)</u> was prepared The <u>weekly meetings</u> for the operation and upgrading works were started between the C/Ps and the contractor Under the 3R HEART program, the first <u>workshop for training of teachers on 3R</u> was held
	August	The <u>waste pickers survey</u> was implemented in and around Baruni disposal site
	September	The first <u>workshop on the planning framework of the SWM plan</u> was held
	October	The <u>Operation and Maintenance Manual</u> was revised <u>Eight schools prepared their action plans</u> on SWM under the 3R HEART program and the <u>program was launched</u> on 31 st October, 2014
	November	The <u>first community meeting on SWM in a settlement</u> was held by WMD officer with some support from the project team
2015	Jan. Feb.	The <u>Industrial Waste Audit Survey</u> was implemented The <u>Gerehu Market Waste Survey</u> was implemented
	February	The <u>4th JCC Meeting</u> was held
	Feb- - Jul.	Under the 3R HEART program, <u>workshops for teachers</u> were held at 4 of the 8 participating schools
	March	The <u>second workshop on the SWM plan issues</u> was held
	June	The <u>commissioning of Cell 1 and the Leachate Pond</u> at Baruni was held
	August	The <u>Melanesian SWM Workshop</u> was held on 5 th – 7 th August in Honiara
	October	The <u>Baruni Sanitary Landfill Mini-Workshop</u> was held on 15 th October
	November	The <u>3R-HEART Award Ceremony</u> was held on 12 th November The <u>5th JCC Meeting</u> was held on 24 th November
	December	The seminar to introduce the <u>NCD SWM Plan (Draft)</u> was held on 1 st December The <u>Baruni Landfill Workshop</u> for PNG provincial SWM officers was held on 9 th -10 th December

1.4 Implementation Methodology

- (1) Maintaining the J-PRISM principle of developing C/Ps' capacities through their direct implementation of the Project activities.
- (2) Working in the same office with the C/Ps
- (3) Site visits and meetings with stakeholders were principally conducted together with a C/P
- (4) Regular discussions with the C/Ps on an individual as well as collective basis
- (5) Minimizing interruptions to the C/Ps' daily works while maximizing utilization of the limited assignment periods
- (6) Maintaining personal records of activities and discussions
- (7) Reporting to JICA PNG Office and the Project Office on a regular basis
- (8) Trying to understand the cultural and work environment
- (9) Providing realistic and suitable suggestions, advice and guidance to the C/Ps

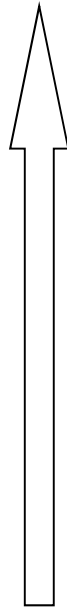
A-2 Details of the Assignment Implementation

2.1 Project Outputs and Activities

2.1.1 Plan of Operation

The Plan of Operation (PO) was amended based on recommendations put forward by the Mid-Term Review Team (MTRT) in September 2013 and accepted by the PNG C/Ps in January 2014. The Objectively Verifiable Indicator for the Overall Goal was agreed in the 4th JCC meeting (Feb. 2015) and subsequently modified once more based on the recommendation of the Terminal Evaluation Team and agreed upon in the 5th JCC meeting (November 2015).

The PO is summarized as follows.

	Overall Goal (Same for all PICs)	Objectively Verifiable Indicator
	Sustainable management of solid waste is enhanced.	Landfill management, collection services, and waste minimization are implemented according to the action plan of the SWM plan (2016-2020) in three years after completion of the Project
	Project Purpose	Objectively Verifiable Indicator
	Human and institutional capacity base for sustainable solid waste management in the Pacific Region is strengthened through implementation of the Pacific Regional Solid Waste Management Strategy (2010 – 2015) (RS2010)	[PNG] 1. Four (4) Experts (Trainers) are listed in the SPREP inventory 2. Landfill management/ collection services are implemented according to the SWM plan

Project Outputs and Associated Activities - PNG

Outputs and Activities	Objectively Verifiable Indicator
OUTPUT 1 Solid waste disposal facility and operation is improved	
1-1 Conduct site investigation into Baruni dumpsite	1-1 Baruni upgrading plan is prepared and implemented
1-2 Develop a work plan for the	1-2 Operation and maintenance manual is

rehabilitation of the Baruni dumpsite 1-3 Undertake Environment Permit application process in order to obtain an Environment Permit 1-4 Undertake upgrading work on the Baruni rehabilitation 1-5 Develop an O&M manual for Baruni dump 1-6 Establish water monitoring system 1-7 Conduct training for operators 1-8 Monitor upgraded landfill operations and evaluate efficiency	prepared and implemented
OUTPUT 2 Waste collection in Port Moresby is improved	
2-1 Develop work plan to carry out time-and-motion study 2-2 Undertake time-and-motion study 2-3 Analyse results and generate study report 2-4 Amendments to the collection contractors contracts 2-5 Conduct training for all contractors 2-6 Monitor and evaluate at scheduled intervals	2-1 Collection coverage is increased to 70% 2-2 Number of complaints are reduced by 30% 2-3 One Time and Motion study conducted by NCDC itself annually
OUTPUT 3 Capacity of planning and monitoring of Solid Waste Management in Port Moresby (National Capital District: NCDC) is increased	
3-1 Promotion of 3Rs for inclusion in the plan 3-2 Develop work plan for the waste characterization exercise 3-3 Undertake waste characterization exercise 3-4 Analyze results and generate report 3-5 Develop Solid Waste Management Plan for Port Moresby 3-6 Adoption of Waste Plan by DEC and NCDC managements	3-1 SWM Plan is developed and adopted 3-2 Solid Waste Management budget is prepared and SWM expenditure is analyzed for FY2015

3-7 Implement and monitor the Waste Management Plan	
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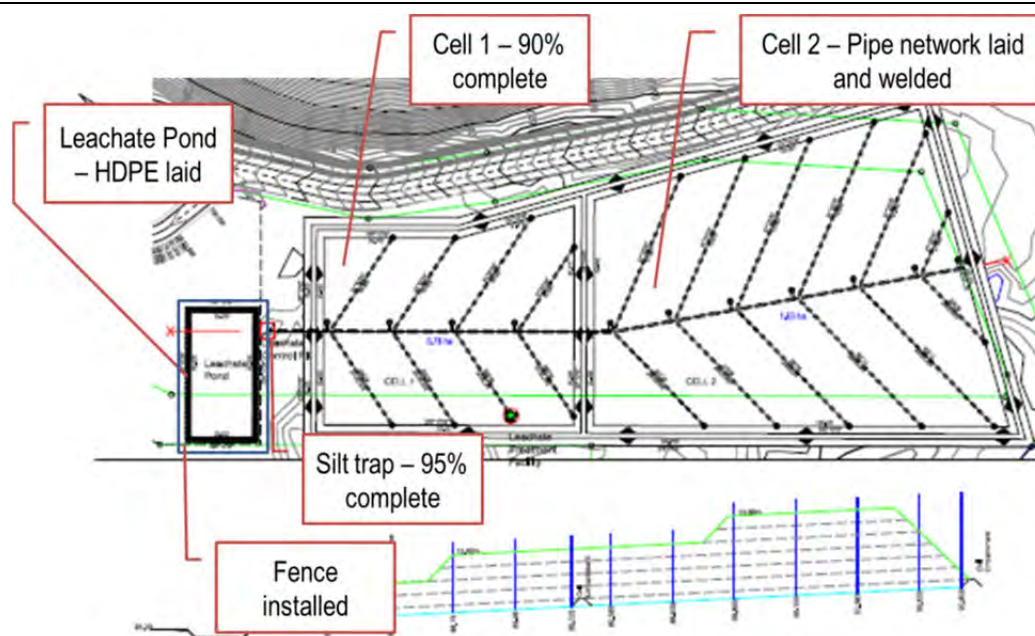
2.1.2 Progress of the Plan of Operations Activities

The status of each of the activities and the progress during this assignment period is described hereafter.

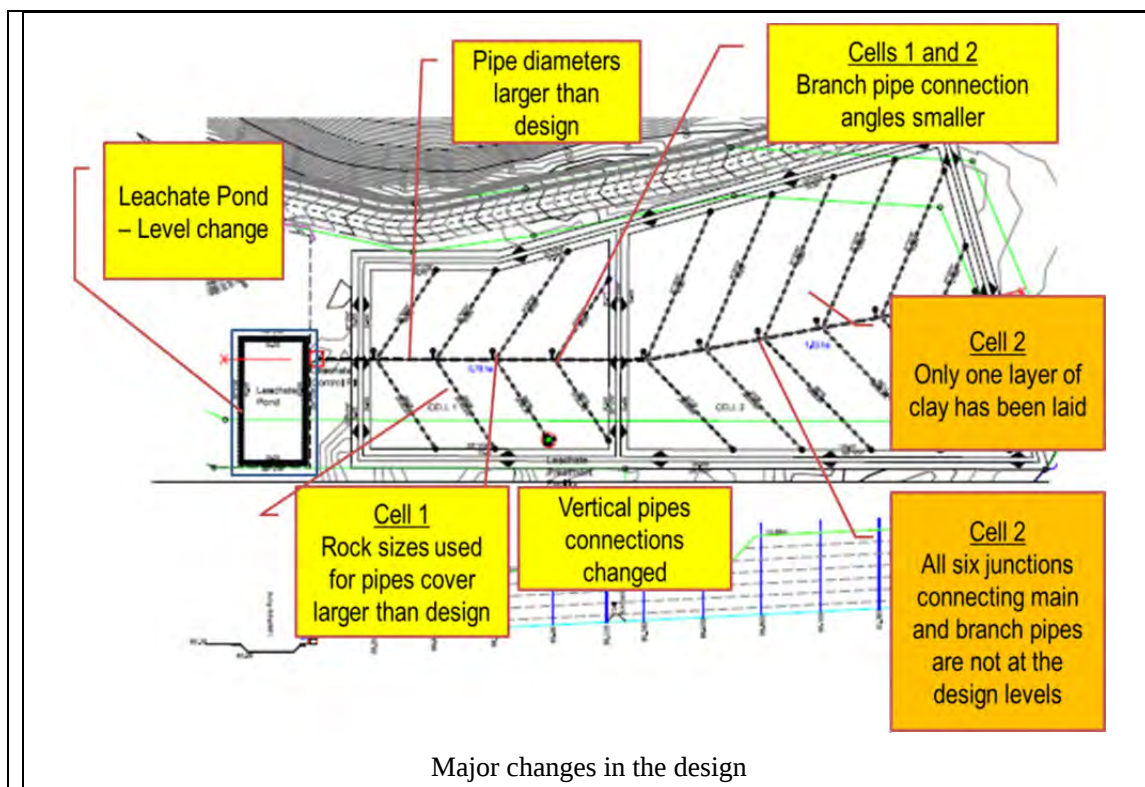
OUTPUT 1 Solid waste disposal facility and operation is improved
1-1 Conduct site investigation into Baruni dumpsite
Site survey composed of topography survey and soil investigation was implemented in 2011
1-2 Develop a work plan for the rehabilitation of the Baruni dumpsite
The work plan was developed in 2011
1-3 Undertake Environment Permit application process in order to obtain an Environment Permit
The environment permit application was submitted to DEC (the name was later changed to CEPA in 2015) by NCDC in February 2013, and the permit was issued in October 2013
1-4 Undertake upgrading work on the Baruni rehabilitation
- Construction works in the leachate pond and cell 1 are almost 90% completed. Remaining works include perforations of the last two branch lines and rock covering, completion of the silt trap and the spillway, and installation of the vertical pipes to a height of 2-3 meters before waste disposal. - Construction works in Cell 2 were not made according to the designs; only one layer of clay was laid (instead of two), main and branch pipes were installed without the trenches, welding at the main and branch lines junctions was completed but the branch pipes are connected upwards to the main pipe instead of downwards resulting in flow obstruction. Discussions were held with the contractor on how to remedy this problem and Counterpart Simeon has proposed to cut the junctions and readjust the branch pipes levels and then construct manholes. This solution has been accepted by the contractor. - The contractor has made some changes in the design during constructions which need to be indicated in the as-build drawings. These include increased diameters of the pipes, sizes of the rocks covering the pipes, angles of the branch pipes connections with the main pipes, connections of the vertical pipes with the main pipes, and design levels at the site. While these changes are not expected to have significant effects on the semi-aerobic system they need to be documented for their effect on project costs and others. - Clay materials for the installed clay liner in cell 1 were excavated from the site and its

surroundings. Welding of the pipes was done by an Australian company.

- Under the Project the fencing material for the leachate pond was purchased and the fence has been erected by the contractor. The pump for the leachate pond was also purchased.
- Issue: Kana continues to complain of cash flows and delays the work without sufficient cause. It is not possible to predict when the disposal work may start in Cell 1.
- Issue: Lack of an engineer at the site. Kana fired its project engineer from the site in July 2015, and his replacement was removed in August. Since then there has been no engineer stationed at the site. NCD Project Engineer and Counterpart, James Ricky has become busy with his department's works and cannot spend enough time at the site as in the earlier stages. The problems in cell 2 may be explained by lack of engineers at the site.
- Issue: Electricity supply to the site is still pending
- Issue: The communication between NCDC and contractor continues to be mainly verbal with a lack of written instructions and drawings.
- Issue: Weekly meetings at the site between NCDC and contractor were discontinued since April 2015. Meetings are now held when the need arises.
- Issue: Weighbridge allocation under the JPRISM project will not be feasible due mainly to delay in construction works at the administration area, and difficulty in obtaining cost estimates for the pile foundations that would be required under the proposed location of the weighbridge. An alternative location has been proposed and agreed upon.



Status of Upgrading Works



Leachate pond with HDPE and fence



Main leachate pipe flowing into silt trap



Pipe network in Cell 2 laid without preparing trenches as per the design



Cell 2: Branch pipes inclined upwards at junctions with main pipes

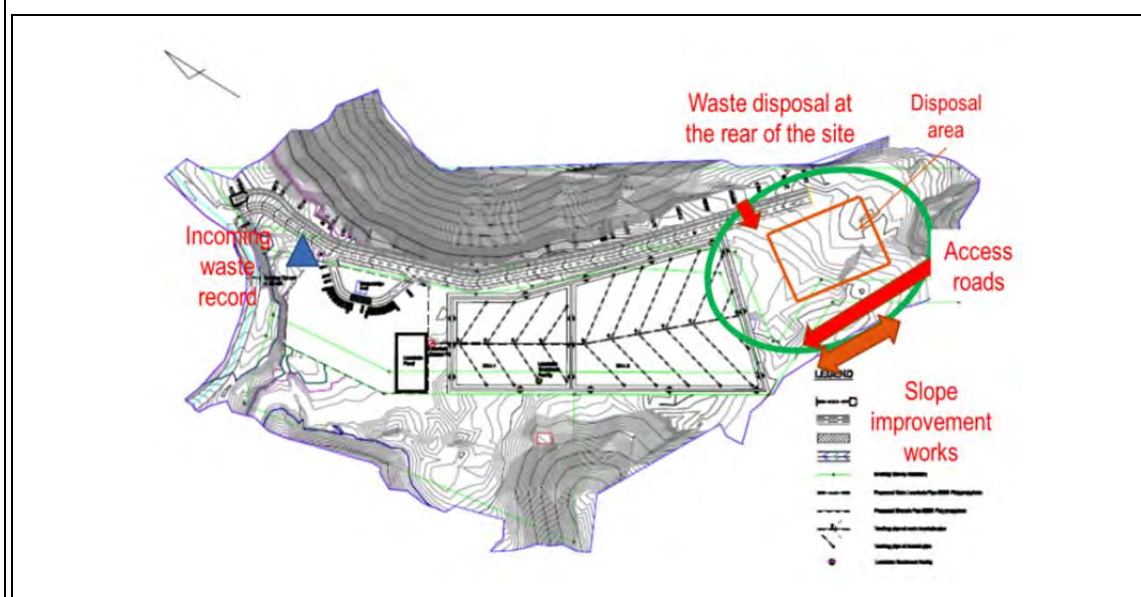
1-5 Develop an O&M manual for Baruni dump

- An O&M Manual has been prepared and submitted to the Contractor in July 2014. The C/Ps

have amended/ modified the manual in October 2014, based on the experience gained from present operations improvement and more safety articles inserted in the wake of the mid-September, 2015 accident (Attachment A-5). ● Additional amendments are being prepared by the C/Ps to describe leachate treatment operations. The modified O&M Manual will be part of the revised contract to be entered into with the contractor in March 2016.
1-6 Establish water monitoring system
● Water samples were taken from three locations downstream the Baruni landfill and analyzed seven times during the project in January, February, July and October in 2014, and in May, August and October 2015. Report of the water quality analysis is shown in Attachment A-6.
1-7 Conduct training for operators
● Since July 2014, operation has been concentrated at the rear, beyond the construction area for cells 1 and 2 ● Although Operator is obligated to provide a bull dozer and an excavator on a daily base, in many instances the heavy equipment is not operated due to lack of fuel or repair issues ● Collection trucks are guided to the disposal area and all trucks are now disposing at the same location ● Waste pickers are given time to salvage materials before the waste is pushed and compacted ● Waste was being covered by old waste excavated from the administration area during cells 1 and 2 excavation, but presently cover materials are obtained from surrounding the site ● From NCDC both counterparts; Simeon and Walter are spending more time at the landfill and instructing operators directly ● In August, 2014, Mr. Faafetai, Assistant Chief Advisor, stationed in Project Office in Samoa, visited PNG to train the Counterparts and Contractor on installation of the vertical vents at the disposal area. The Contractor has since installed a number of vertical vents on his own. ● In the aftermath of the accident of Sept. 15th, 2014 a number of activities related to the safety control at the site were implemented. These included attaching a spotter to each unit of heavy equipment to guide the operator, and positioning of a site supervisor for the operations only. ● The Project team developed a safety monitoring plan to improve safety in the site, after identifying the required safety measures. Two important points were stationing WMD officers at the site during the working hours and beginning to control children working in waste picking. A Baruni Landfill Safety Committee was also initiated with waste pickers as members (both elders and youth). The Plan is shown in Attachment A-7. ● The waste pickers' survey was completed in August 2014. The results are presented in

Attachment A-8.

- In September and October, 2015 there were many incidents of fires, lit by disgruntled community members. It was difficult to extinguish the fires due to lack of cover materials stockpiles and application. From November the operator has started to stockpile materials for use as cover at the disposal area.
- In 2015, the operator continued to complain about cash flow problems, although NCDC was making the monthly payments on schedule. As a result in many instances the heavy equipment were not operating due to fuel shortages. Members of the community, employed by Kana were laid off for many days which also resulted in further aggravation at the site.
- Construction waste and metal waste are disposed of in a separate location along the site's western perimeter and near to the administration area.
- An incoming vehicle waste survey was conducted by the Counterparts in September 2015 for one week.
- A mini-workshop on Baruni sanitary landfill was held by JICA Expert, Mr. Abe, on 15th October (refer to memo in **Attachment A-9**).
- CEPA, NCDC and the Project held a workshop for province officers at Baruni landfill on 9th and 10th December, 2015 (refer to memo in **Attachment A-10**).
- Issue: Slope construction needs to be improved to meet required slopes of 1:3
- Issue: Incoming waste recording started well but lately records are not well maintained
- Issue: Children can still be found at the disposal area in spite of many warnings on the dangers that may happen to them
- Issue: Near suspension of the weekly meetings with the contractor and the Baruni Safety Committee





Simeon Terina, C/P (with back to the camera) talking to the waste pickers (Oct. 2014)



Waste picking



Slope improvement



Fire at the disposal area (August 2015)



Waste picking mainly by women and children
(August 2015)



Children waste picking from medical waste
(September 2015)

1-8 Monitor upgraded landfill operations and evaluate efficiency

- Monitoring forms have been developed for the WMD supervisors to use at the site to record

the Operator's activities.		
WMD Officers (Simeon and Walter) submit monthly reports on the operations at the landfill to the WMD Manager.		
OUTPUT 2 Waste collection in Port Moresby is improved		
2-1 Develop work plan to carry out time-and-motion study		
The work plan was prepared in 2011.		
2-2 Undertake time-and-motion study		
Surveys were implemented as shown below:		
June 2011	Domestic waste	Data has been lost
September 2011	Commercial waste	Draft report prepared
November 2013	Domestic waste	Data analyzed
December 2013	Commercial waste	Data analyzed
2-3 Analyze results and generate study report		
The report of the time and motion study completed in 2011 was drafted, reviewed and finalized. The Counterparts have made enormous efforts to implement the survey, input and analyze the data. The final report was compiled in December 2014.		
2-4 Amendments to the collection contractors contracts		
<u>A. Proposed Modifications to the Contracts</u>		
- In March 2015, the NCDC management instructed WMD to propose amendments to the contracts with the collection companies. - A number of modifications were discussed within the counterpart team and some proposals for modifications were made as shown in Attachment A-11.		
<u>B. Improvement of Settlement Waste Collection</u>		
- Ranuguri settlement, one of about 63 settlements in NCDC was selected by the counterparts to start the waste collection improvement for settlements. - The counterpart team prepared the concept plan for improvement of the waste collection at Ranuguri settlement. With a population of about 2,500 persons, this settlement has reportedly not received any waste collection service for over one year now. - In the first meeting with the community leaders there (June 2015) the concept plan was explained. Thereafter the counterparts implemented a number of community meetings and discussed the communal collection system with the community. The community has set up two SWM committees at each of Segani and Ranuguri.		

- NCDC constructed three communal stations and the Project provided wheel barrows for the SWM committees to use.
- The collection contractor, Waste Co. participated in the community meetings and has indicated that receiving the support of the community and setting up communal stations will make his work easier
- The counterpart team member responsible, Racheal Inamuka, prepared a report on this activity (**Attachment A-12**). This system has been included in the NCD SWM plan, prepared under Output 3 and will be inserted in the revised collection contractors' contracts in mid-March 2016.



Community meeting



Communal stations

2-5 Conduct training for all contractors

- The first waste collection companies' workshop was conducted in February 2014.
- The incoming waste vehicles survey was implemented in September 2015, and the NCDC contractors' truck utilization was analyzed.
- Meetings were held with the two main contractors responsible for domestic, schools and settlement wastes collection and for commercial wastes collection respectively.
- A number of recommendations were reached as follows:
 - (1) Contractors should maintain vehicle log books to record daily repair and maintenance conditions
 - (2) More effort is needed to make two trips a day, through more use of communal stations and getting citizens cooperation to discharge waste on time and in suitable containers
 - (3) The community level SWM committee will help the contractors to communicate better with the community.
 - (4) Changing the present contracts which are made based on waste type with contracts made based on ward may make the work more efficient
 - (5) Contracts need to include more data on required truckloads or waste amounts to be collected
 - (6) To facilitate the monitoring by WMD, the contractors need to be more timely in

submitting any modifications in their collection schedules
2-6 Monitor and evaluate at scheduled intervals
● The Counterparts have provided monitoring sheets to commercial concerns, schools and markets receiving the waste collection services by collection contractors hired by NCDC. ● The Counterparts encouraged the settlements participating in the settlement waste collection pilot project to set up SWM Committees to monitor the collection works ● The Counterparts have proposed to introduce in the NCD SWM Plan a plan to station WMD supervisors in each ward to monitor the services directly together with community groups. This is expected to be implemented starting March 2016.
OUTPUT 3 Capacity of planning and monitoring of Solid Waste Management in Port Moresby (National Capital District: NCDC) is increased
3-1 Promotion of 3Rs for inclusion in the plan
<u>A. 3R HEART Initiative</u> ● Action plans were collected from the 8 schools participating in the initiatives and were summarized into standard sheets for discussion with the respective schools (example of Action Plan shown in Attachment A-13) ● The initiative was launched on 31st October, 2014 with the attendance of the NCDC Governor. ● Six (6) workshops were held at 6 of the 8 participating schools to explain about SWM to the teachers. The explanation materials were prepared by the WMD counterparts. ● Three bins were distributed to each school by NCDC. Originally intended to store the cans and pet bottles, 4 schools have instead used the bins for their general wastes and placed cages for the aluminum cans and pet bottle waste. ● A rooster has been developed since May 2015 for the officers of WMD to visit each school at least twice a month. They should use monitoring formats to evaluate the schools achievement levels of their own action plans. During each visit the following activities were observed and evaluated: ➤ Waste education and awareness ➤ Waste reduction and reuse ➤ Recycling and composting ➤ Partnership working ● Meetings were held with PNG Recycling, a private recycler to collect the aluminum cans on specified dates. As this company's adherence to the set schedule was sometimes insufficient, the counterparts were also talking to a second recycling company to also participate in the project activities.

- The award ceremony for the best three schools was held on 12th November, and Mr. Honk Kiap, Acting City Manager, Mr. Veari Kula, CEPA and Mr. Sugiyama, Chief Representative of JICA PNG Office together handed the awards as follows:
 - 1st Prize: Waigani Primary School
 - 2nd Prize: Hagara Primary School
 - 3rd Prize: Jubilee Secondary School
- WMD has decided to expand the program in 2016 by adding 14 more schools, and has budgeted for the related activities.
- The counterpart coordinating the 3R HEART initiative, Paul Wisi has prepared and submitted his report of the activities in December 2015 (**Attachment A-14**).



NCDC Governor and JICA PNG Chief Representative participating in the launching ceremony (Oct. 2014)



Chief Representative handing Action Plans to School representatives with John Navara, SWMO, WMD (Oct. 2014)



Coronation School Teachers Workshop (Feb. 2015)



Teacher presenting summary of group discussions (Feb. 2015)



Award ceremony held at Jubilee Secondary School	Waigani Primary School receiving the 1 st Prize
B. Market Compost Pilot Project ● The Counterparts selected Gerehu market for the pilot project because this market has recently been rehabilitated and its scale is small. ● In March 2015 the Gerehu market waste survey was implemented and the results showed that the waste composition was 80% green waste, average weekly volume was 12m³, and just over 40% of the vendors there already practiced waste separation for their own purposes. ● The Counterpart team entered into discussion with Pacific Adventist University (PAU) which operates a small farm on the university premises, to partner on the compost pilot project. Initially PAU showed interest but then introduced the counterpart team to National Agricultural Research Institute (NARI) which is more research oriented. ● The counterpart team visited NARI a number of times and NARI agreed to partner for the pilot project. NARI and the team inspected the proposed site and an MOU will be shortly signed between both parties. The site preparations will commence in February 2016 and the delivery of green waste to NARI will start in early March. ● In the meantime the Counterpart team implemented public awareness at Gerehu Market four times during October and November 2015, to educate the vendors and general public there on the segregation of green wastes. Comedians were used to attract the viewers' attention and the WMD officers held a number of Q&A sessions each time to answer the viewers' questions on SWM. ● Counterpart Diana Wapyer prepared a report on the pilot project progress (Attachment A-15).	
	
Comedians explaining SWM with jokes	WMD officers engaging the public
3-2 Develop work plan for the waste characterization exercise	
● The work plan was developed in 2011	
3-3 Undertake waste characterization exercise	

Surveys were implemented as shown below:		
July, 2011	Settlement & Domestic waste	Draft report prepared
August, 2011	Commercial waste	Draft report prepared
July, 2013	Domestic waste	Data analyzed
August, 2013	Commercial waste	Data analyzed
May, 2014	Domestic waste	Data analyzed, Report prepared
June, 2014	Commercial waste	Data analyzed, Report prepared
Jan., 2015	Industrial and Commercial waste survey	Data analyzed, Draft Report prepared
March, 2015	Gerehu Market waste survey	Data analyzed, Report prepared
June 2015	Industrial and Commercial waste supplementary survey (to supplement missing data from the January survey)	Data analyzed
3-4 Analyze results and generate report		
Analysis and reports were prepared as indicated in the preceding activity 3-3.		
3-5 Develop Solid Waste Management Plan for Port Moresby		
The NCD SWM Plan was developed through utilization of the data base constructed during the project, and conducting two stake-holders workshops to exchange opinions on the plan components and proposals. A third meeting was held with the stakeholders on 1st December 2015, in the form of a seminar to introduce the plan draft report.		
<u>First Workshop</u>		
- The first workshop for the SWM Plan which covered the plan framework was held on September 22nd. The first part of the workshop dealt with the launching of the new NCDC waste policy. The Governor and City Manager attended the workshop. - The workshop was held in the afternoon. After PM Joshua Sam gave a detailed presentation of the SWM practices and issues in Port Moresby the participants divided into three groups and had discussions for about one hour each. The discussions were facilitated by WMD officers. - Four topics were addressed in the discussions and some of the comments are briefly shown as follows:		
<u>(1) SWM Issues</u>		<u>(2) Policies & Strategies</u>
Public Awareness is very much required in		Community participation is important but

NCDC ● Source separation cannot be implemented immediately, and should first be done at certain residential areas and after ensuring there are end-users	there must first be public awareness ● The Waste Committee recommended in the Waste Policy may be introduced at a later stage, and serve as an advisory role
<u>(3) Coverage of the Plan</u> ● NCDC should formally cover settlements and villages, and the residents there should pay for these services ● Hazardous wastes should be managed by the generators directly	<u>(4) Budget of the Plan</u> ● Fees for waste services should not be increased. But revenue collection should be improved ● The contracts NCDC has with the private collection companies and disposal need to be done in a more transparent manner ● Private companies contracted by NCDC should not be allowed to sub-contract
<u>Significant results of the Workshop</u> (1) The C/Ps successfully facilitated the group discussions and explained SWM issues to the participants (2) PM Joshua gave a comprehensive presentation of the SWM practices and issues (3) A group of stakeholders that may be consulted throughout the duration of the plan preparation has been formed (4) A link was developed between the waste policy prepared by NCDC and SPREP and the SWM plan under preparation by NCDC and JPRISM (5) Hints were obtained for use to prepare the SWM Plan	
	
Governor hands over waste policy to WMD Manager	Joshua delivering explanation of the present SWM conditions and issues



Group discussions



WMD team

Second Workshop

- The second workshop for the SWM plan which confirmed the issues to be dealt with, the policies to be adopted and introduced technical options, was held on 31st March.
- During the morning sessions, the Project Manager, Joshua made two presentations, the first on issues and policies and the second on technical options, and there were questions and answers sessions. In the afternoon the participants broke into three groups and discussed the following topics:

Issues	Policies	Technical Options
Waste collection coverage Intermediate treatment facilities Public awareness	Waste hierarchy Beneficiaries to pay Best Practical Environmental Option	Collection stations Pre-paid bag Source separation Contracts for SW services entered into by NCDC only Use of compost

		Introduce incineration Two landfills for NCDC
The participants provided much insight into the reactions that may be expected from the public concerning the proposed policies and technical options. The discussions were facilitated by the WMD officers and the workshop gave an opportunity for the officers to form better understanding of the technical options and develop their skills to explain SWM matters.		
		
Morning session – Listening to presentations		
		
Group discussions		
		
Group presentations and summation		
<u>Third Stakeholders Meeting</u> - The third stakeholders meeting for the NCD SWM plan was held on 1st December, as a seminar. - The meeting was attended by around 50 participants from different divisions/departments of		

NCDC, CEPA, academia, private collection companies, industries, commercial concerns and the media.

- The counterpart team presented the plan contents in detail and engaged the participants during the question and answer sessions.
- The main concerns raised by the participants were
 - how and who should be responsible for management of hazardous wastes,
 - how to improve the collection of revenues of the service
 - and, how to improve the quality of the contractors hired by NCDC to provide the service
- Many of the participants have received digital copies of the plan and are preparing their comments which will then be reflected upon by the counterpart team. The counterpart team intends to present the plan to the WMD board early next year for the approval process to begin.
- The NCD SWM Plan Executive Summary (draft) is provided in **Attachment A-16**.



3-6 Adoption of Waste Plan by DEC and NCDC managements

This activity will be implemented by the Counterparts in 2016

3-7 Implement and monitor the Waste Management Plan

This activity will be implemented by the Counterparts in 2016

2.2 Melanesian SWM Workshop

The first Melanesian SWM Workshop was held in Honiara during the period of 5th to 7th August, 2015. Counterparts from the three J-PRISM member countries of Solomon Islands, Vanuatu and Papua New Guinea participated. NCDD dispatched WMD Senior Officers Simeon Terina, Janet Haua and Vivianne Morofa, Officer Racheal Inamuka and Supervisor Sneka Pokani to the workshop.

Over three days the participants participated in five sessions:

- SESSION A - SWM Good Practices Introduction
- SESSION B - Reflections on J-PRISM
- SESSION C - Field Visits
- SESSION D - Issues and Resolutions Discussions
- SESSION E - Input into Potential JPRISM Extension Project

The counterparts made presentation, engaged in group discussions and visited SWM activities and sites in Honiara.

The PNG presented three good practices at the workshop, namely:

Presentation 4 Baruni Operations Improvement – Coordinating with surrounding community and contractor management

Presentation 5 Waste collection improvement – Monitoring & expansion to settlements and villages

Presentation 6 Process to develop the SWM Plan for NCDC

In the overall discussions the PNG counterpart team approaches to prepare the SWM plan and introduction of waste collection to settlements attracted notable interest from the participants. On the other hand many of the participants expressed concerns over the high costs and sophistication of the activities of the rehabilitation works in Baruni landfill.

The PNG counterparts received many questions on the following two activities:

1. Having a dedicated unit for SWM, the Waste Management Division within the municipal organization
2. Experiences in contracting out waste collection and landfill operations and the consequent management of the contracts

Concerning the PNG team opinion for J-PRISM II, the PNG counterparts responded that J-PRISM II was necessary and that their proposals for the J-PRISM II outputs were as follows:

Output 1: Expansion and Improvement of Collection system in NCD

Output 2: Waste minimization mechanisms and educational awareness

Output 3: Expansion and enhancement of Baruni waste disposal facility

Output 4: “PNG plus” Expansion of J-PRISM into two (2) more provinces

2.2 Individual Capacity Assessment

- (1) In July 2013 the senior officers and officers of WMD were asked to evaluate their capabilities for a number of SWM activities.
- (2) In March 2015 the Project Expert team had individual discussions with each senior officer, officer and the WMD manager to mutually evaluate their capabilities.
- (3) In March 2015 the Project Manager was requested to evaluate the efforts made by each of his officers towards the project outputs.
- (4) In March 2015 the officers were requested to provide comments on the institutional aspects of SWM.
- (5) Two WMD officers who provided self-evaluation in 2013 are presently away from WMD. In addition two officers have been recently hired by WMD within the last 6-7 months.

A comparison of the 2013 and 2015 results shows that there has been an improvement for categories of surveys, collection, final disposal and 3Rs. There has not been too much improvement in administration as the counterparts are still weak in terms of financial analysis and fees setting.

The Counterparts were asked about the institutional frame within which they are discharging their duties. The counterparts had a high level of satisfaction for the budget allocated to SWM activities, available office and working facilities and transport means. On the other hand they were not satisfied with existing SWM laws (not enough), public support to SWM and overall staff commitment, especially punctuality.

The results are shown graphically in **Attachment A-17**.

2.3 Regional Training for Trainers

Three members of the Counterpart team; Joshua Sam, Vivianne Morofa and James Ricky participated in the regional training program held in Okinawa during the period of 23rd May to 7th June, 2015.

A-3 Conclusions and Recommendations

3.1 Lessons Learnt

The Project Team, both counterparts and experts identified the importance of many activities as they implemented the Project over three years. While these lessons might have been in practice in other cities, some of them were new to both NCDC and the city residents and needed to be adapted to the conditions of the city and its residents.

These include the following:

- (1) The rehabilitation of Baruni landfill using an external contractor and the responsibilities of NCDC under such an arrangement

There was much debate between all parties of the Project since the project started, on whether NCDC should rehabilitate Baruni landfill by itself or should contract out the rehabilitation works. As this is a capacity development project, it was feared that the second method would defeat the project purpose. Due to many factors the project delays continued and two years into the project there was still no movement on the ground to improve the worsening situation in Baruni. Finally the method adopted by NCDC was to sub-contract the rehabilitation work; while the project developed the design capacity of the counterparts to plan and design the rehabilitation and attempted to develop their supervisory skills to monitor the rehabilitation works. Both design and supervisory works were basically implemented by the Project Engineer, James Ricky who belonged to the Engineering Department. The design work was implemented smoothly however the delays in implementation and general incompetence of the contractor prolonged the rehabilitation works and interfered with James' primary works in his department. Gradually it became more difficult for NCDC to supervise the works.

- (2) The Counterparts responsibility to monitor the private contractors

NCDC contracts out all its SWM services which include waste collection, disposal operations and public areas cleaning. These services were mostly poorly discharged by the contractors and there was much criticism of the contractors by the city residents. The Counterparts have realized the need for them to develop their skills and the tools to monitor the contractors.

The beneficiaries of the waste collection services can also be actively involved in monitoring of the services provided by the collection companies. The counterparts Ronnie Ranu, Vivianne Morofa and Paul Wisi developed monitoring sheets and distributed them to schools in order to obtain the feedback of the schools on the services.

While the NCDC officers are not yet permanently stationed at the Baruni disposal site, the counterparts Simeon Terina and Walter Aukleya now go down there on a daily base to inspect the operations by themselves.

(3) The safety of the people working on waste picking needs to be safeguarded at all times

All concerned in this project have learnt many lessons from the tragic accident that occurred in Baruni disposal site in mid-September, 2014. The Contractor needed to control the site access better and to assign more waste attendants at the disposal area to help the heavy equipment operators and keep children away from the waste disposal operations.

The waste pickers should not expose their children to unnecessary risks by bringing them to the waste disposal areas, while they are picking out valuables from the waste..

And NCDC, needed to make sure that all sides adopt and comply with safety measures.

Accordingly the three parties; Contractor, Waste pickers and NCDC developed a platform to communicate and discuss on site safety, in the form of the Baruni Landfill Safety Committee.

(4) The need for awareness rising on SWM at all levels

There are many decisions on SWM that are presently made at the upper management levels of NCDC or by divisions/departments other than WMD. These include selection of the contractors for the services, and setting of service charges and tipping fees. It is important that WMD officers make more effort to prepare for, and brief the top management of NCDC on the actual conditions of the SWM services provided and issues that need to be tackled and are beyond the powers of WMD. The top management may also consider providing more powers to WMD, especially on contractor selection.

(5) The importance of accurate data collection, analysis and use of analysis results in the daily activities

During discussions with collection contractors, the counterparts used data obtained at the incoming waste survey at Baruni disposal site to point out the low trips production of the collection trucks and the low use of the total truck fleets available. Faced with the data, the

contractor provided more details on the truck conditions and reasons behind the low trip production. Both sides discussed these details and constructive suggestions were made for improvement.

While inputting the data collected in January 2015 by the surveyors hired by the project, under the industrial and commercial waste survey, the Counterpart; Ronnie Ranu realized that the data of some companies was not sufficiently collected. A supplementary survey was conducted in June to collect more reliable data. It is important that the surveyors be trained well and that the filled out survey forms be checked as they are completed in order to ensure that the collected data serves the survey purpose.

(6) The holding of weekly meetings at Baruni disposal site between NCDC and the Contractor

The counterparts used these meetings to sit down with the contractor and other stakeholders as may be necessary and discuss and record progress and issues related to the site operations and rehabilitation works.

(7) The realization of the waste pickers community on the importance to maintain hygienic conditions at Baruni landfill

The improved operations of the Baruni disposal site resulted in the elimination of open fires. The waste pickers are now enjoying a more clean air environment and their concern over their cleanliness has become evident. Once the living environment has been improved the waste pickers began to take care of their own personal hygiene.

(8) The benefit of having all SWM staff have a basic understanding of SWM

For WMD to function more smoothly it is important for its entire staff to understand the department's duties. While the project activities were implemented by the WMD officers, the supervisors and administrative staff became engaged in some of the activities.

During the workshops for the SWM Plan, the WMD administrative staff actively participated in the group discussions. And the PNG delegation to the Melanesian SWM Workshop included one supervisor.

(9) The practical method to extinguish fires at the disposal site

In early June, 2014 a severe fire raged in Baruni disposal site at the area where waste is being disposed. The counterparts Simeon Terina and Walter Aukleya successfully instructed the KCL heavy equipment operators directly at the site on how to extinguish the fire.

(10) The need to carefully design and modify the PDM as necessary

The Terminal Evaluation Team identified a number of errors with respect to the PDM and PO of the project. It is important that the Project team periodically review these documents and advise the Project Office of any need for modifications or clarifications

(11) The effective role CEPA can play in SWM

During the last year of the project, CEPA stepped up its involvement in the Project activities. This involvement made it possible to plan the Baruni landfill workshop for provincial officers and greatly contribute to the discussions with stakeholders leading up to the preparation of the NCD SWM Plan. CEPA can play a significant role to guide the provinces on preparing their SWM plans and support their activities.

(12) The use of comedy and skits as a public awareness tool

PNG is well known as a country with over 800 languages and diverse cultures. To reach out to citizens of NCD, originating from different parts of the country, the Counterpart Team employed a popular comedian group to stage skits at Gerehu Market for public awareness on SWM. The comedians included messages in their skits on green waste separation and general cleansing which attracted the vendors and public at the market. In between the skits, the counterpart team delivered messages on SWM and answered the public's questions.

(13) The importance of site supervision in construction projects

NCDC Engineering Department does not usually engage its engineers in site supervision for the public works projects they contract out. However in the case of Baruni landfill rehabilitation project, NCDC has understood that, as landfill construction is a new field for the PNG contractors, site supervision is indispensable. Also the Counterpart Team's Project Engineer, James Ricky has come to appreciate the importance of safeguarding his design through site supervision of implementation.

(14) The need to address the management of hazardous waste management on the national level

It is clear for the Counterpart Team and Expert Team that management of hazardous wastes requires sophisticated capabilities that are presently unavailable to WMD. The NCD SWM Plan focuses on Municipal Solid Waste Management, and this does not include hazardous wastes. However at the seminar with stakeholders, on 1st December this point was strongly debated by most of the stakeholders, who insisted that hazardous waste management be the responsibility of WMD. It was finally recognized by most of those participating that a

national strategy on SWM that addresses the definition of solid waste and the responsibilities of managing the different waste types is required.

3.2 Recommendations

As the project comes to a close, and it seems almost certain that Phase II will start sometime in the fourth quarter of 2016, the Counterpart team needs to keep up the project activities momentum during the gap period and maintain communications with the Project Office which will continue to operate in Apia. Accordingly the following activities are recommended.

- (1) Commence NCD SWM Plan activities in parallel with the official adoption process. While the process to officially approve the NCD SWM Plan is underway, the Counterpart Team should start implementing some of the plan activities.
- (2) Start the new community-based collection system (Town Area Base Approach; TABA) in the areas where there is political support for community level participation in SWM. At the seminar held on 1st December, 2015, one Councilwoman expressed her support for the new system and the Counterpart Team may start in her Town Area.
- (3) The TABA system requires that the WMD supervisors form a strong and trustworthy connection between the community and the contractor. The Counterpart Team needs to select a good supervisor to make the system work well.
- (4) Allocate space at Baruni landfill for constructing a roof-covered working area. It is difficult to allocate such space within the present borders of Baruni. The Counterparts need to speed up the surrounding sites allocation process in order to be able to construct one facility at Baruni during 2016.
- (5) Construct a roofed facility at Baruni landfill. This facility will house the future Materials Recovery Facility¹ (MRF). The facility will also provide a safer area for mothers to work in waste picking and to remove their children out of harm's way. The Counterparts are recommended to try and use the EOJ grassroots program to purchase and erect a steel structure at Valley 1 or 2 in Baruni for the MRF startup.
- (6) Prepare the Public Awareness Action Plan. At the three stakeholders' meetings held during the last two years there was a universal agreement on the need for public awareness on SWM. The Counterparts have started these activities within the 3R HEART Program,

¹ A recycling facility for separation, processing and storage of recyclable materials from the waste

Segani-Ranuguri settlement waste collection pilot project, and at Gerehu Market. A more detailed and budgeted PA Action Plan should be prepared in 2016 to better explain the need to create a new PA unit in WMD.

- (7) Prepare alternatives for collection companies and landfill operators, to the present contractors. At present there are many issues with the waste collection contractors and landfill operator NCDC has hired. It might be a good idea to assign the two pilot projects at Segani-Ranuguri settlement and transport of green waste from Gerehu market to NARI to other more reliable contractors. And WMD should seriously prepare for taking over the operation of Baruni disposal site through hiring of heavy equipment and managing the equipment by the WMD officers.
- (8) Push the idea with CEPA to develop a national strategy for SWM that includes hazardous waste management. During the Gap period perhaps SPREP may help in this endeavor, or else it might be possible to allocate one output of Phase II for CEPA and include the strategy development in that output.
- (9) Start discussions with NCDC related departments/divisions on the setting of the service charges and tipping fees based on actual costs incurred for providing the services.

B. Solomon

B Solomon Islands

B-1 Assignment Implementation Brief

1.1 Project Members and Assignment Period

The JICA Expert Team is composed of three members as shown in Table 2.

Table 8 JICA Expert Team

Name		
1	Mahmoud RIAD	Team Leader/ SWM Expert E (PNG, Vanuatu)
2	Akihiro OSADA	SWM Expert A1/E2 (Solomon, Vanuatu)
3	Hiroshi ABE	SWM Expert A2 (Solomon)/ Landfill Improvement (PNG, Solomon)

The officials and counterparts who directly participated in the Project activities are listed in Table 3.

Table 9 List of Counterparts - Solomon Islands

SN	Name	Title/ Organization	Comment
1	Ms. Rosemary Apa	Chief Environment Officer, MECDM	Project Manager
2	Ms. Debra Kereseka	Senior Environment Officer, MECDM	
3	Ms. Wendy Beti	Environment Officer, MECDM	Output 1,3
4	Mr. George Titiulu	Chief Environmental Health Inspector, HCC	Output 1,3
5	Mr. John Labu Talu	Works Manager, HCC	Output 2
6	Ms. Ella Rizwold	Principal Environmental Health Inspector, HCC	Output 1
7	Mr. Robert Bara	Senior Works Officer, Honiara City Council, HCC	Output 2
8	Ms. Christina Onahikeni	Senior Environmental Health Inspector, HCC	Output 1
9	Mr. Jerome Enato'o	Environmental Health Inspector, HCC	Output 1
10	Ms. Judith Wate Damilea	Environmental Health Inspector, HCC	Output 1
11	Ms. Mercy Iilu Nunua	Environmental Health Inspector, HCC	Output 1
12	Mr. Joe Kelesi	Landfill supervisor, HCC	Output 2

SN	Name	Title/ Organization	Comment
13	Mr. Francis Fiku	Works Officer, HCC	Output 1
14	Mr. Kelly Oge	Works Officer, HCC	Output 2
15	Mr. Tom Nanau	Director of Health, MHMS	Output 1
16	Mr. Emmanuel Rarumae	Chief Quarantine Officer, MHMS	Output 1
17	Mr. Patterson Bobby	Chief Environmental Health Officer, MHMS	Output 1
18	Mr. Jimmy Hilly	Senior Environmental Health & Management Officer, MHMS	Output 1,3
19	Mr. Fredrick Naphtalai	Chief Environmental Health Inspector, MHMS/WPG	Dismissed in June, 2015
20	Ms. Rendy Solomon	Chief Environmental Health Inspector, MHMS/WPG	Output 1
21	Ms. Margaret Movini	Provincial Planning Officer, WPG	Output 1
22	Mr. Derald Michael	Town Clerk, GTC	Output 2
23	Mr. Dobson Aseri	Accountant, GTC	Output 1
24	Ms. Jully Kalamana	Environmental Officer, WPG	Output 1
MECDM: Ministry of Environment Climate Change Disaster Management & Meteorology HCC: Honiara City Council, MHMS: Ministry of Health & Medical Services, WPG: Western Provincial Government, GTC: Gizo Town Council			

This Completion Report covers the period of May 31st, 2014 to December 12th, 2015. Mr. Mahmoud RIAD, Mr. Hiroshi ABE and Mr. Akihiro OSADA assigned to Solomon Islands during that period as indicated in Table 4.

Table 10 JET Assignments in Solomon Islands

Name	Title	2014						
		May	Jun	Jul	Aug	Sept	Oct	Nov
Akihiro Osada	SWM-A1, E2	(15)	■	■ (27)				(14) ■
Hiroshi Abe	SWM-A2	(15)	■			(12) ■		
Name	Title	2014	2015					
		Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
Mahmoud Riad	SWM-E1			(3) ■				
Akihiro Osada	SWM-A1, E2	■ (5)	(25)	■	(12) ■		(23) ■	■
Hiroshi Abe	SWM-A2						(13) ■	
Name	Title	2015						
		Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
Mahmoud Riad	SWM-E1	(15) ■						
Akihiro Osada	SWM-A1, E2	(41) ■	■			■	(18)	
Hiroshi Abe	SWM-A2				■	(15)		
Note: Figures in parenthesis are numbers of days								

Together three experts had a combined assignment period of 253 days. A record of the daily activities of both experts is provided in **Attachment B-2**.

The Project Office staff also spent some time in Solomon Islands as follows:

- Mr. Amano, Chief Advisor visited Solomon Islands in November, 2015 for 4 days.
- Mr. Makoto Tsukiji, Project Coordinator, visited Solomon Islands in October/November, 2014 for 12 days and in January/February and October, 2015 for a total of 17 days.

1.2 Project Management Activities and Issues

1.2.1 Construction of Ranadi landfill administration and training center

On May 12th, 2015, the handover ceremony of Ranadi landfill administration and training center was held. The center was constructed with financial support through the Japan Grassroots and Human Security Program under the Japanese Embassy. In addition, the New Zealand Aid and Japanese Embassy jointly gave financial support for the construction of fence at the boundary of Ranadi landfill.

The office has been utilized as a training center, as well as an administration office for Honiara City Council staff members. A JOCV, assigned at Honiara City Council, has worked with the

landfill supervisor: for example, they organized several bus tours for school teachers and students, which contributed a lot to awareness raising at school level.

Apart from the office, all the stakeholders have closely collaborated for the Ranadi landfill rehabilitation. It is notable that New Zealand Aid has donated a bulldozer especially for landfill operation in December, 2015.

1.2.2 Waste characterization studies at the provinces

J-PRISM has conducted waste characterization study twice in Honiara and once in Gizo. Based on these experiences, MECDM has taken the initiatives to disseminate the practices of waste characterization study in all the provinces in Solomon Islands, investing human and financial resources. It is substantial to give financial and technical supports to the provinces, due to the limited resources at the provincial level. After compiling all the data collected by the studies, MECDM plans to make a baseline of the country, to utilize it for the waste management planning.

1.2.3 JCC Meetings

1.2.3.1 3rd JCC Meeting

The 3rd JCC meeting was held on 12th June, 2014 in Honiara. Even though it was originally planned in April, 2014, it was postponed due to a large-scale flood happened in Honiara on 3rd-5th April, 2014. After the disaster relief activities, the 3rd JCC meeting was meeting was re-organized. The meeting was chaired by Mr. Melchior Mataka, Permanent Secretary of MECDM/ Project Director of J-PRISM, and attended by Mr. Taiji Usui, Resident Representative of JICA Solomon Islands Office. The C/Ps gave the presentations about the progress in Honiara and Gizo, including the J-HOPE implemented as a post-disaster waste management project. PDM and PO were modified and approved during the JCC meeting. The modified PDM and PO were modified and approved during the meeting. The Minutes of the Meeting is shown in **Attachment B-2**.

1.2.3.2 4th JCC Meeting

The 4th JCC Meeting was held in Honiara on 2nd February, 2015. The meeting was chaired by Mr. Melchior Mataka, Permanent Secretary of MECDM/ Project Director of J-PRISM, and attended by Mr. Taiji Usui, Resident Representative of JICA Solomon Islands Office, and Mr. Makoto Tsukiji, the J-PRISM Project Coordinator. In addition to the presentations by Honiara and Gizo C/Ps, several stakeholders also explained about their own commitment on solid waste

management, such as LEAF, New Zealand and World Bank. PDM and PO were also updated and approved by the participants. The Minutes of the Meeting is shown in **Attachment B-3**.

1.2.3.3 5th JCC Meeting

The 5th JCC Meeting was held in Honiara on 20th November, 2015. The meeting was chaired by Mr. Joe Horokou, Director of MECDM, facilitated by Mr. Jimmy Hilly of MHMS, and attended by Mr. Kyoji Mizutani, Representative of JICA Solomon Islands Office, and Mr. Shiro Amano, J-PRISM Chief Advisor.

The Minutes of the Meeting document has been prepared and is being circulated for signing. **Attachment B-4** shows the unsigned document.

1.2.4 Terminal Evaluation Mission

JICA dispatched the Terminal Evaluation Team (TET) to Solomon Islands during the period of 24 to 28 August, 2015. The TET collected reports and data on the project, held interviews with the counterparts and experts and made their evaluation of the degree of achievement of the project outputs and conclusions and recommendations.

The Terminal Evaluation Team's analysis and evaluation have been compiled in the Technical Evaluation Report and announced in Apia, at the SPREP annual meeting in September 2015.

Concerning the project activities in Solomon Islands, the evaluation result was as follows:

Item	Output Degree of Accomplishment
<u>Output 1</u> : 3R activities are practiced in Honiara and Gizo	Mostly achieved
<u>Output 2</u> : Waste disposal system is improved in Honiara and Gizo.	Mostly achieved
<u>Output 3</u> : Lessons and experiences learnt are disseminated in Solomon Islands	Partly achieved
<u>Project Purpose</u> : Human and institutional capacity base for sustainable SWM in the Pacific Region is strengthened through implementation of the Pacific Regional SWM Strategy (2010-2015)	Mostly achieved

1.2.5 Changes in the Counterpart Team

During this assignment period there have been a number of changes in human resources in Honiara and Gizo.

Environment Officer of MECDM, Mr. Edward Danitofea, and Chief Environmental Health Inspector of HCC, Mr. George Titiulu took study leaves in 2014 and 2015 respectively. Chief Environment Health Officer of MHMS/WPG, Mr. Fred Naphtalai was dismissed in June, 2015, and Ms. Rendy Solomon took over his responsibilities.

1.3 Summary of Assignment Results

A brief review of the main assignment results, are chronologically described in Table 7.

Table 11 Chronological description of the main assignment results

Year	Month	Result
2014	June	- Eco School Program was launched in Honiara in June, 2014. Six (6) schools prepared their action plans. For Clean School Program in Gizo, four (4) schools elaborated their action plans and the activities were monitored. 3rd Joint Coordination Committee meeting was held in June, 2014. PDM, PO and C/P lists were reviewed and modified.
	July	- Community zoning program was launched in Gizo in July, 2014. The census in all the Gizo Town area was conducted. - The waste picker survey was conducted at Ranadi landfill in July, 2014.
	September	The rehabilitation plan for Ranadi landfill was drafted. The budget for the rehabilitation was secured through the cost sharing among the C/P organizations.
	October	Eco bag campaign was launched in October, 2014, and the final report was 500 eco bags were distributed. The evaluation report was prepared.
	November	- The application for grass-roots project was approved and the signing ceremony was done in November, 2014. - Tractor attachment for the Gizo landfill operation was procured by J-PRISM, and started to be utilized on site in November, 2014.
2015	January-February	Gizo C/Ps went to Tonga to exchange opinions about waste collection and disposal.
	February	4th Joint Coordination Committee meeting was held in February, 2015. PDM, PO and C/P lists were reviewed and modified.
	May	The collection station system was introduced in Gizo with the initiative of Gizo counterparts and JOCV, in May, 2015. Awareness activities to disseminate the waste collection information (ex. Collection schedule) are also ongoing.

Year	Month	Result
		- The construction of Ranadi Landfill Training Center including the fence was completed and handed over in May, 2015. Two securities were assigned and stationed on site under the budget of Honiara City Council. - Collection of aluminum cans in Gizo was promoted and the collected cans were shipped out to Honiara through one of the private recyclable collectors.
	June	- Waste characterization survey was conducted in Honiara, in June, 2015. - Nine (9) Action plans of Eco School Program launched in Honiara in June, 2014 were monitored. One of the active school teachers joined the school visits to encourage participation from other schools. For Clean School Program in Gizo, four (4) schools elaborated their action plans and the activities were continuously monitored with the support of JOCV. - The community compost was introduced for the waste segregation pilot project in June, 2015. The questionnaire survey was also done as a part of monitoring in June, 2015. - The contract to construct fence at Gizo dumpsite was concluded in June, 2015, and the construction has been started.
	July	- Time and Motion Study was carried out in Gizo in July, 2015. - The construction of fence was completed in Gizo. - A C/P from HCC and a JOCV joined the regional training to learn Eco School Program in Fiji.
	August	- A regional workshop, Melanesian Solid Waste Management Workshop, was held in Honiara in August 5th – 7th, 2015. - The rehabilitation of Ranadi landfill was commenced in August, 2015. - Waste characterization survey was conducted in Gizo in August, 2015.
	August-September	Middle evaluation of the Eco School Program was conducted in Honiara in August -September, 2015, and the awarding ceremony was organized in September, 2015.
	October	The workshop for National Integrated Waste Management and Pollution Control Strategy (2016-2025) was organized in October, 2015.
	November	- Final evaluation of the Eco School Program was implemented and the awarding ceremony was held in Honiara in November, 2015. The model school was identified and awarded for their outstanding activities. 5th Joint Coordination Committee meeting was held in November 20th, 2015. PDM, PO and C/P lists were reviewed and modified.
	December	New Zealand Aid procured a bulldozer for landfill operation.

1.4 Implementation Methodology

- (1) Maintaining the J-PRISM principle of developing C/Ps' capacities through their direct implementation of the Project activities.
- (2) Working in the same office with the C/Ps
- (3) Site visits and meetings with stakeholders were principally conducted together with a C/P
- (4) Regular discussions with the C/Ps on an individual as well as collective basis
- (5) Minimizing interruptions to the C/Ps' daily works while maximizing utilization of the limited assignment periods
- (6) Maintaining personal records of activities and discussions
- (7) Reporting to JICA Solomon Islands Office and the Project Office on a regular basis
- (8) Trying to understand the cultural and work environment
- (9) Providing realistic and suitable suggestions, advice and guidance to the C/Ps

B-2 Details of the Assignment Implementation

2.1 Project Outputs and Activities

2.1.1 Plan of Operation

The Plan of Operation (PO) was amended based on recommendations put forward by the Mid-Term Review Team (MTRT) in September 2013 and accepted by the Solomon C/Ps in June, 2014. The Objectively Verifiable Indicator for the Overall Goal was agreed in the 4th JCC meeting (Feb. 2015) and subsequently modified once more based on the recommendation of the Terminal Evaluation Team and agreed upon in the 5th JCC meeting (November 2015).

The PO is summarized as follows.

↑	Overall Goal (Same for all PICs)	Objectively Verifiable Indicator
	Sustainable management of solid waste in the Pacific Region is enhanced.	1-1. In 2018, the amount of green waste from the Central market disposed at the Ranadi landfill is decreased by 50%, compared to 2015. 1-2. In 2018, the proportion of aluminum cans exported is increased by 5%, compared to 2015.
	Project Purpose	Objectively Verifiable Indicator
	Human and institutional capacity base for sustainable solid waste management in the Pacific Region is strengthened through implementation of the Pacific Regional Solid Waste Management Strategy (2010 – 2015) (RS2010).	[Solomon] 1. 5 initiatives on waste minimization introduced. 2. Ranadi and Gizo landfill are managed as planned in the Annual Operation Plans.

Project Outputs and Associated Activities – Solomon	
Outputs and Activities	Objectively Verifiable Indicator
OUTPUT 1: 3R activities are practiced in Honiara and Gizo.	
1-1 Develop a work plan for the baseline survey	1-1 Waste management communication strategy for 3R is developed in Honiara and Gizo.
1-2 Conduct the baseline surveys including	1-2 More than 50% of general public in Honiara

environmental condition, public awareness, waste characterization study, etc. 1-3 Develop a communication strategy 1-4 Identify the feasible options for management of recyclable waste/materials 1-5 Review of existing waste collection system 1-6 Develop the implementation plan for 3R pilot project 1-7 Implement the 3R pilot project 1-8 Prepare the draft of policies / strategies / legislation / regulation for 3R activities 1-9 Monitor the progress of pilot project	and Gizo, who are interviewed randomly, can answer what 3Rs mean. 1-3-1 10 schools in Honiara develop 3R action plan 1-3-2 3 schools in Gizo develop 3R action plan 1-4-1 Three 3R pilot projects are implemented in Honiara 1-4-2 Two 3R pilot projects are implemented in Gizo
OUTPUT 2: Waste disposal system is improved in Honiara and Gizo	
2-1 Conduct site investigation of existing dumpsite 2-2 Conduct the EIA study and follow the required procedure 2-3 Prepare the rehabilitation plans for existing dumpsites 2-4 Implement the rehabilitation of dumpsites 2-5 Develop the operation manuals for each site 2-6 Train staff of dump sites on landfill operation	2-1 Different types of waste materials are disposed at appropriate cells 2-2 Annual operation plan is developed 2-3-1 10 officers and operators are trained for landfill operation in Honiara 2-3-2 3 officers and operators are trained for landfill operation in Gizo 2-4 Management of leachate is established 2-5 Waste pickers are registered and managed properly 2-6 Rehabilitation of disposal sites is completed in Honiara and Gizo according to the respective rehabilitation plans 2-7 Operation manual is utilized in Honiara and Gizo
OUTPUT 3: Lessons and experiences learnt are disseminated in Solomon Islands	
3-1 Establish a multi-stakeholder National Committee to help disseminate experience to other areas within the country	3-1 Good practices on 3R and landfill management identified through the project activities are available in all provincial centers

3-2 Preparation of educational materials for disseminating experience to other areas	3-2 Officers from each provincial government learn good practices on 3R and landfill management
3-3 Conduct the workshop to disseminate the lessons and experiences learnt	3-3 National Solid Waste Management Strategy and Action Plan (NSWMS 2009-2014) is reviewed and NSWMS (2015-2019) is developed.

2.1.2 Progress of the Plan of Operations Activities

The status of each of the activities and the progress during this assignment period is described hereafter.

OUTPUT 1: 3R activities are practiced in Honiara and Gizo.	
1-1 Develop a work plan for the baseline survey	
(Honiara/Gizo) <i>Completed.</i>	
1-2 Conduct the baseline surveys including environmental condition, public awareness, waste characterization study, etc.	
(Honiara) Waste characterization survey was conducted in May, 2015 with the initiative of Honiara City Council, including the public awareness survey, and the report was drafted. (Gizo) The waste characterization survey was conducted in August, 2015, including the public awareness survey. The report was prepared.	
1-3 Develop a communication strategy	
(Honiara/Gizo) <i>Completed.</i>	
1-4 Identify the feasible options for management of recyclable waste/materials	
(Honiara) <i>Completed.</i> The visit at recyclable collection companies was done with the C/Ps in July, 2014, and it was discussed if the recyclables collection can be widely introduced in the communities and schools. (Gizo) <i>Completed.</i> One individual recyclable collector was identified in Gizo. She collected the cans and shipped out to Honiara through a private recyclable collection company, Alpha Metal.	
1-5 Review of existing waste collection system	
(Honiara) <i>Completed.</i> (Gizo) <i>Completed.</i> Time and motion study was conducted in July, 2015, in order to analyze	

waste collection system in Gizo.
1-6 Develop the implementation plan for 3R pilot project
(Honiara) Completed. The implementation plans of 1) Eco School Program, 2) Waste segregation pilot project in Panatina Valley Community, 3) Eco bag campaign were developed. (Gizo) Completed. The implementation plans of 1) Clean School Program, 2) Waste collection station system, 3) Aluminum can collection were developed.
1-7 Implement the 3R pilot project
(Honiara) Completed (ongoing). 1) Eco School Program: The launching of Eco School Program was done on June 25, 2014. Six (6) schools prepared their action plans and three (3) schools gave the presentations on their action plans during the launching program. Nine (9) schools for Eco School Program launched in June, 2014 were monitored by the counterparts. One of the counterparts from Honiara City Council visited Fiji with a JOCV, to learn the Clean School Program in Fiji. The report was drafted. 2) Waste segregation pilot project in Panatina Valley Community: The pilot project launched in February, 2014 was monitored. The counterparts kept contact with four (4) community committee members and organized community meetings. The house to house visit was organized for three days (July 19, 20, 26, 2014), and the posters were distributed and pinned up at the kitchens of each household. The report was drafted. 3) Eco bag campaign: The launching was organized on October 1, 2014. 500 eco bags were distributed (10 SBD/bag). Posters were prepared for the awareness raising for the market users. Additional 200 eco bags will be planned to be distributed. The evaluation report of the campaign organized in October, 2014 was prepared. (Gizo) Completed (ongoing). 1) Clean school program: Four (4) schools elaborated their action plans and continued their activities. All the schools were monitored with a monitoring form. The workshop for teachers was held in May 26, 2014. Four (4) schools elaborated their action plans. The follow-up workshops at each school were organized from June 2-5, 2014. 2) Waste collection station system: The launching program was held on July 25, 2014. Eight (8) zones were designed, and zone committees were successfully established for each zone. The census was completed at the whole Gizo town (except the commercial zone), and the census report was prepared. Awareness raising activity was organized at Gizo market on November 28, 2014. The community program launched in July, 2014 is ongoing, and eight waste collection stations were established, followed by the public awareness activities to

disseminate the information on a new collection service.
1-8 Prepare the draft of policies / strategies / legislation / regulation for 3R activities
Completed (ongoing). The workshop for the National Integrated Waste Management and Pollution Control Strategy (2016-2025) was held in November, 2015.
1-9 Monitor the progress of pilot project
(Honiara) Completed (ongoing). 1) Eco School Program: C/Ps implemented the monitoring for all the schools, and the report was prepared. The middle and final evaluation was conducted in September and November, 2015 respectively. One model school was identified and awarded during the final evaluation ceremony. 2) Waste segregation pilot project in Panatina Valley Community: The monitoring sheet was developed, and the monitoring activities were done in June, 2015. The report was prepared based on the monitoring survey results. 3) Eco bag campaign: The evaluation report was prepared. (Gizo) This activity is ongoing. 1) Clean school program: C/Ps implemented the continuous monitoring of action plans. The activity report was prepared. 2) Waste collection station system: The evaluation and revision of the action plans were done in December, 2014. The monitoring is ongoing using the monitoring sheet. The activity report was prepared.
OUTPUT 2: Waste disposal system is improved in Honiara and Gizo
2-1 Conduct site investigation of existing dumpsite
(Honiara/Gizo) <i>Completed.</i>
2-2 Conduct the EIA study and follow the required procedure
(Honiara/Gizo) <i>Completed.</i>
2-3 Prepare the rehabilitation plans for existing dumpsites
(Honiara) <i>Completed.</i> The rehabilitation plan of Ranadi Dumpsite was drafted. The application for Grass Root Grant by Japanese Embassy was approved, and the signing ceremony was held on November 11, 2014. Waste picker survey was conducted for three days (July 18, 19, 21, 2014), whose results can be incorporated into the plan. (Gizo) <i>Completed.</i>
2-4 Implement the rehabilitation of dump sites

(Honiara) <i>Completed</i>. The rehabilitation was completed in February, 2016. The construction of the site office, granted by grass-roots scheme under Japanese Embassy, was also completed in May, 2015. (Gizo) The procurement of a tractor attachment (a front end loader) was completed by J-PRISM, and the landfill operation was improved. One Gizo C/P received the training for the tractor operation with the attachment on October 18, 2014, by the tractor dealer. The guidance to the operator of Gizo landfill was continuously given by the J-PRISM.
2-5 Develop the operation manuals for each site
(Honiara) Landfill operations were instructed by JICA Expert Team; an operation manual is planned to be finalized in 2016. (Gizo) Landfill operations were instructed by JICA Expert Team; an operation manual is planned to be finalized in 2016.
2-6 Train staff of dump sites on landfill operation
(Honiara) JICA Expert Team has given advice to the staff members (especially to the landfill supervisor newly hired in March, 2014) of Public Works Division, Honiara City Council. Three staff of Public Works Division were involved in the waste pickers survey. In September, 2015, a regional landfill expert visited Honiara to give the support on the improvement of landfill rehabilitation and operation. (Gizo) JICA Expert Team has given advice to the C/Ps.
OUTPUT 3: Lessons and experiences learnt are disseminated in Solomon Islands
3-1 Establish a multi-stakeholder National Committee to help disseminate experience to other areas within the country
The workshop to review and develop the national waste management strategy was held in November, 2015, where provincial officers gathered and discussed waste management issues, which will be the base of a multi-stakeholder National Committee.
3-2 Preparation of educational materials for disseminating experience to other areas
Several materials were prepared for awareness raising activities: the posters prepared in Honiara were also shared and utilized in Gizo; composting handbooks elaborated by JOCV were utilized for composting dissemination in Honiara.
3-3 Conduct the workshop to disseminate the lessons and experiences learnt
Under the initiative of MECDM, the knowledge and experiences have been passed to the environmental health officers in other provinces. For example, the waste characterization surveys have been conducted in the provinces with the participation of Honiara C/Ps, which will

continue in 2016. The waste characterization surveys are planned to be completed in all the nine provinces, and all the data will be compiled in 2016.

2.2 Melanesian SWM Workshop

The first Melanesian SWM Workshop was held in Honiara during the period of 5th to 7th August, 2015. Counterparts from the three J-PRISM member countries of Solomon Islands, Vanuatu and Papua New Guinea participated. Approximately 30 participants from Solomon Islands joined the three day workshop. The counterparts made presentation, engaged in group discussions and visited SWM activities and sites in Honiara.

Over three days the participants participated in five sessions:

- SESSION A - SWM Good Practices Introduction
- SESSION B - Reflections on J-PRISM
- SESSION C - Field Visits
- SESSION D - Issues and Resolutions Discussions
- SESSION E - Input into Potential JPRISM Extension Project

The C/Ps from Honiara presented three good practices at the workshop, namely:

- Presentation 1 Stakeholders coordination activities
- Presentation 2 J-HOPE (Post-disaster waste management)
- Presentation 3 Waste audits implementation at provincial level

The C/Ps from Gizo presented three good practices at the workshop, namely:

- Presentation 10 Developing a controlled dump site
- Presentation 11 Introduction of collection station system (community zoning)
- Presentation 12 Establishment of “Return” system of cans

Concerning the J-PRISM II, the Solomon counterparts responded that J-PRISM II was necessary and that their proposals for the J-PRISM II outputs were as follows:

(Honiara)

- (a) Economical instruments
- (b) Legislation review
- (c) Improve waste collection system
- (d) Composting (small, medium and large scale)
- (e) Resource recovery, including the Return concept
- (f) Waste disposal system improvement
- (g) 3R activities in Honiara and also in the provinces
- (h) Lessons and experiences learnt are shared with provinces

(Gizo)

- (a) 3R activities are practiced in Gizo, Noro, Munda and Seghe
- (b) Waste collection service is improved further
- (c) The dump site in Gizo is improved further

- (d) The dump site in Noro is included
- (e) Lessons learnt shall be shared with other stakeholders
- (f) SWM policy is formulated

The Gizo team also made a number of recommendations as follow:

- Focus should continue to be on capacity building
- There should be budgetary support for the project activities and an annual work plan
- Policies and legislation should be covered
- Regional interaction
- Priority to Gizo in terms of technical support

2.2 Capacity Assessment (Individual/ Institutional)

In July 2014, and April 2015, the C/Ps were provided with a form of individual capacity assessment, to evaluate their own capacities in the respective SWM categories and sub-categories. The officers were also requested to provide comments on the institutional aspects of SWM.

A comparison of the results of individual capacity assessment in 2014 and 2015, shows that there has been an improvement for most of the categories, especially 3Rs and Awareness. There has not been too much improvement in administration as the counterparts are still weak in terms of financial analysis and fees setting.

Regarding the institutional capacity, the counterparts had a relatively high level of satisfaction for the information sharing, staffing (number and qualifications) and transport and staff commitment. On the other hand they were not satisfied with budget allocation and public support for solid waste management activities.

2.3 Regional Training for Trainers

One member of the Counterpart team, Ms. Wendy Beti, participated in the regional training program held in Labasa, Fiji, during the period of 17th to 21st November, 2014.

2.4 South-south Cooperation among Pacific Islands Countries

The following activities of south-south cooperation were conducted.

- A study visit was organized for Gizo C/Ps on waste management activities in Vava'u, Tonga from 27th to 31st January, 2015. Mr. Derald Michael, Gizo Town Clerk, and Mr. Naoya Ueno, JOCV, joined the visit to learn and exchange opinions about community-based waste collection system and landfill operation in a small remote island.

- A study visit was done for Honiara C/Ps on Clean School Program and Home Composting to Nadi Town Council, in Nadi, Fiji from 14th – 18th July, 2015. Mr. Jerome Enato'o, Honiara City Council officer, and Ms. Hanako Yasuda, JOCV, went to Fiji to learn and promote the methods of Clean School Program and Home Composting.
- A regional landfill expert, Mr. Amos Mathias from Vanuatu, travelled to Honiara, to assist Ranadi landfill rehabilitation from 14th to 18th September, 2015. He held a landfill workshop on 18th September, 2015 to deepen the understanding of landfill operation for Solomon C/Ps.

A-3 Conclusions and Recommendations

3.1 Lessons Learnt

The Project Team, both counterparts and experts identified the importance of many activities as they implemented the Project over three years. While these lessons might have been in practice in other cities, some of them were new to both C/Ps and the residents, and needed to be adapted to the conditions of the town and its residents.

These include the following:

- (1) When the middle evaluation awarding was done in Honiara in September, the good practices were shared among the school teachers, which motivated the schools to carry out their activities more actively. It is effective to encourage the exchange of opinions among schools in the same city or region, which contributes to encouraging the schools to compete each other.
- (2) One of the motivated teachers from Eco School Program has joined the school visits to explain their progress activities. The lessons learnt from a teacher of the same country were more convincing, which also enhanced the motivation of other schools.
- (3) The pilot project of waste segregation at Panatina Valley Community gave some lessons, one of which was that the community composting is challenging because it requires the continuous and effective incentive. It is necessary to establish the system of giving the incentives to the community members to promote composting work.
- (4) The compost bins were intended to be introduced as a part of waste segregation pilot project to promote the reduction of organic waste; however, it was found out that the bins had to be imported from Fiji, which made the price more unstable and expensive and required a longer time for the procurement. On the other hand, a local NGO, Zai Na Tina has been involved to disseminate the compost methods suitable for the Honiara. It is necessary to take into consideration the risk and to utilize the local resources as much as possible, such as applying the materials and equipment available in the local market.
- (5) One landfill supervisor was recruited in March, 2014, and he has worked as a key person of landfill management. It is indispensable to have motivated C/Ps for the technical cooperation project; if necessary, it can be a good option to push the C/Ps organizations for

the recruitment of additional human resources in order to strengthen the organizational structure and to make it more sustainable.

- (6) Mr. Amos Mathias, regional landfill expert from Vanuatu, visited Honiara to support the rehabilitation of Ranadi landfill. Honiara City Council officers learned from him how to implement rehabilitation work. This also helped to enhance the ability of Mr. Amos Mathias as a regional expert. These kinds of regional cooperation are a good means of capacity development for both sides.
- (7) Melanesian solid waste management workshop provided the opportunities to discuss the challenges and the way forward among the counterparts from the neighboring countries. Most of the participants mentioned that they have been encouraged and motivated by the discussion there. It is important to arrange the space of the discussion such as regional workshops, in order to strengthen and utilize a regional network.
- (8) Waste characterization study has been conducted in the provinces in Solomon Islands under the strong initiative of the Ministry of Environment. It is efficient and substantial that the Central government gives the financial and technical supports to the provinces for their waste management system, because the provinces often faces the lack of resources.
- (9) The higher-level governmental officers had not been aware of the progress of the J-PRISM activities in Gizo during the first half of the J-PRISM, which caused their misunderstandings or gave worse impression to them. Hence, during the second half of the J-PRISM, the smooth communication among the higher-level officers and the C/Ps was encouraged such as frequent reporting, which has helped a lot in terms of securing the necessary supports. It is crucial to establish a proper reporting system among the C/Ps and the higher-level governmental officers.
- (10) The collaboration among the different stakeholders such as Japanese NGO (LEAF) and NZ Aid was encouraged. One advisor from NZ Aid joined the monthly C/Ps meeting in Honiara, which helped the exchange of knowledge and experiences. Continuous communication such as regular meetings should be recommended to promote efficient project operation.
- (11) Different stakeholders are collaboratively involved in the improvement of Ranadi landfill: Honiara City Council, MECDM and MHMS did the cost-sharing of hiring of heavy machinery while Japanese Embassy and NZAid covered the construction cost of administration office and fence. In a Pacific Islands country where the financial resources are limited, it is effective to encourage the collaboration among the related stakeholders.

- (12) JOCV was actively involved in 3R activities in Gizo, which has encouraged the participation of the Gizo C/Ps, especially in the area of public awareness activities. The collaboration with JOCVs can be a very effective way to conduct grass-roots activities.
- (13) One of the Gizo C/Ps got more actively involved in the J-PRISM activities, after joining the training in Japan and raising the awareness on solid waste management. It is efficient to support and involve the human resources who have joined the training in Japan, since there is a challenge in terms of the limited human resources.
- (14) During the waste characterization survey, some volunteers were hired, who have graduated from the Solomon Islands National University. They actively supported and helped the survey, which made the survey smoother. It was a good method to utilize the human resources such as the graduated students for the activities which need manpower.

3.2 Recommendations

As the project comes to a close, and it seems almost certain that Phase II will start sometime in the fourth quarter of 2016, the Counterpart team needs to keep up the project activities momentum during the gap period and maintain communications with the Project Office which will continue to operate in Apia. Accordingly the following activities are recommended.

(1) Securing the Human and Financial Resources for Post- J-PRISM Activities

J-PRISM has worked for several activities, such as waste minimization pilot projects and landfill improvement in Honiara and Gizo. The related governments should secure the necessary human and financial resources to sustain the activities.

(2) Promote the dissemination of experiences and lessons learnt from the J-PRISM activities

MECDM implemented waste characterization survey in other provinces to expand the solid waste management activities; the Gizo C/Ps have conducted several workshops on Clean school program and Community zoning program in Munda and Noro (Western Province). These kinds of activities to disseminate the experiences and lessons learnt should be promoted during the post J-PRISM period.

(3) Develop National Strategy and Solid Waste Management Plans

The workshop for the National Integrated Waste Management and Pollution Control Strategy (2016-2025) was held in November, 2015, and the Strategy is planned to be endorsed by the Cabinet by March, 2016. It is recommended that the national strategy

should be finalized and endorsed, so that the directions of the waste management are clarified from the short-term and long-term viewpoints.

In addition, the solid waste management plans have not been prepared in Honiara and Gizo. While there are several needs on the improvement of solid waste management in Gizo, it is important to identify the priority issues under the limited budget and human resources. The action plans for short-term and long-term should be reviewed according to the priority issues, and a solid waste management plans should be elaborated.

(4) Utilization of the Baseline Data

During the J-PRISM, several baseline surveys have been conducted, such as waste characterization study, time and motion study, and waste picker survey. These data should be utilized for the planning of the waste collection and landfill management.

(5) Promotion of Return System

In Honiara and Gizo the aluminum cans have been collected and shipped out abroad for the recycling. As the waste amount is expected to increase, this kind of “Return” system should be encouraged, by preparing the necessary legislations including Container Deposit Legislation, and by involving the private sectors in an effective way.

(6) Introducing Market Composting

There is many green waste generated in the markets, which is suitable for composting. It is also easier to segregate market waste, compared to the household waste. As the indicator of Overall Goal in PDM was revised during the 5th JCC meeting, it is recommended to introduce the market composting system, involving different sectors, such as private companies or NGOs.

(7) Strengthening the relationship and communication with the higher level officers

It is essential to secure the necessary budget to implement the activities, such as the rehabilitation and operation of Ranadi landfill. It was observed that the delay of the payment due to the lack of enough explanation to the higher level officers, which can be improved by following up and strengthening the communication with them.

(8) Holding regular meetings among the stakeholders in Honiara and Gizo

One of the characteristics in J-PRISM activities in Honiara is bringing together several stakeholders on solid waste management activities. Holding regular meetings among the stakeholders should be continued both in Honiara and Gizo.

(9) Secure necessary support on Ranadi landfill operation

The Ranadi landfill rehabilitation was completed, and a bulldozer was procured for the landfill operation. The necessary budget for the operation should be secured from Honiara City Council, such as fuel and maintenance.

(10) Encouraging the establishment of solid waste management system in the Provinces

It was observed that the establishment of solid waste management system is ongoing; waste characterization survey has been done in all the provincial level; the budget for the waste management was allocated at the Ministry of Environment, Western Province, in addition to the recruitment of one new office. These movements should be encouraged to promote the proper and sustainable waste management in the Provinces.

(11) Stimulating the involvement of Western Provincial Government

The Western Provincial Government is the key organization in Gizo, and should be more closely involved in the J-PRISM activities, including the financial support, to make the project activities more sustainable. It is necessary that the C/Ps report the Provincial Secretary more frequently and periodically on the activity progress and get the feedback; the reporting system should be improved.

C. Vanuatu

C Vanuatu

C-1 Assignment Implementation Brief

1.1 Assignment Period

The JICA Expert Team is composed of three members as shown in Table 12.

Table 12 JICA Expert Team

Name		
1	Mahmoud RIAD	Team Leader/ SWM Expert E (PNG, Vanuatu)
2	Akihiro OSADA	SWM Expert A1/E2 (Solomon, Vanuatu)
3	Hiroshi ABE	SWM Expert A2 (Solomon)/ Landfill Improvement (PNG, Solomon)

The officials and counterparts who directly participated in the Project activities are listed in Table 13.

Table 13 List of Counterparts – Vanuatu

Name	Organization	Title	Comment
Albert Williams	DEPC	Director	Project Director, until November 2014
Trinison Tari	DEPC	Acting Director	Project Director from December 2014
Carol Rovo	DEPC	Waste Management and Pollution Officer	Project Coordinator (absent from Feb. 2014 to June 2015 for study)
Touasi Tiwok	DEPC	Senior Executive Officer	Left for overseas studies in January 2015
Roger Tary	PVMC	Environmental Health Manager	Project Manager, until August 2015 after removal from PVMC
Ronald Sandy	PVMC	Town Clerk	Project Manager from September 2015
Amos Mathias	PVMC	Landfill Operations Supervisor	Left the project team in September 2015 after removal from PVMC

Name	Organization	Title	Comment
Berry George Mahau	PVMC	Waste Management Officer	Joined project from Feb. 2014
Rex Aromalo	PVMC	Manager – City Waste Removers	Joined project in 2015
Theophile Massing	PVMC	Manager – Central Market	Joined project in 2015
Chris Desonville	PVMC	Foreman – City Waste Removers	Joined project in 2015
Andrew Mark	PVMC	Landfill Supervisor	Appointed in Sept. 2015 replacing Amos Mathias
Marie Natonga	PVMC	Finance Officer	Joined project in 2015
Andrew Ala	LMC	Environmental Health Officer	
Gina Tari	LMC	Waste Management Officer	Joined project from Feb. 2014
Ray Vilvil	LMC	Environmental Health Officer	Joined project from Feb. 2014
Anaclet Philip	DEPC (Santo)	Environmental Extension Officer	
Proser Buletere	Santo Prov.	Provincial Planner	
Tom Nalau	Lenakel Munc.	Administration Officer	
Helen Kawiel	Lenakel Munc.	Waste Management Officer	
Mark Vurobaravu	DARD	Senior Information Officer	
Pakoa Rarua	Public Health	Environmental Health Officer	
Bretaine Tambe	Biosecurity Dept.	Biosecurity Officer	
Flaviana Rory	Chamber of Commerce	Advocacy and Policy Officer	
Brian Robert	WSB	Public Awareness	

This Completion Report covers the period of May 31st, 2014 to December 12th, 2015. Mahmoud RIAD and Akihiro Osada were assigned to Vanuatu during this period as indicated in Table 14.

Table 14 JICA Expert Team Assignment in Vanuatu

Name	Title	2014						
		May	Jun	Jul	Aug	Sept	Oct	Nov
Mahmoud RIAD	SWM-E1		(11) ■					(14) ■
Akihiro Osada	SWM-A1, E2		(23) ■		(22) ■		(30) ■	
Name	Title	2014	2015					
		Dec	Jan	Feb	Mar	Apr	May	Jun
Mahmoud RIAD	SWM-E1	(2) ■			(15) ■			
Akihiro Osada	SWM-A1, E2			(30) ■				(15) ■
Name	Title	2015						
		Jul	Aug	Sep	Oct	Nov	Dec	
Mahmoud RIAD	SWM-E1	(10) ■						
Akihiro Osada	SWM-A1, E2	(12) ■		(17) ■			(26) ■	
Note: Figures in parenthesis are numbers of days								

Together both experts had a combined assignment period of 227 days. A record of the daily activities of both experts is provided in **Attachment C-1**.

It should be noted that the Project Office dispatched Mr. Shiro Amano, Chief Advisor, to Vanuatu twice during the assignment period for a total of 5 days to attend the 4th and 5th JCC meetings. Mr. Makoto Tsukiji was also dispatched 4 times for a total of 56 days.

1.2 Project Management Activities and Issues

1.2.1 Cyclone Pam Generated Disaster Waste Relief Activities

Tropical cyclone Pam hit Vanuatu during the night of 13th March, 2015 and brought extensive damages to the city. Trees were felled generating an enormous amount of green waste, roofs were blown from a top of houses and some houses were completely destroyed, signboards and electric poles were downed, and there were some fatalities and many injuries. As a result, many of the roads were blocked to traffic and waste was hindering the city's recovery activities of food and water distribution and damages inspection.

The JPRISM expert team was there during the cyclone. On the following days, the experts together with the counterparts investigated the damages that occurred in the city, and met with Public Works and other governmental agencies to support the disaster waste clean-up efforts.

The JPRISM team directly implemented the following short term plan during the period of 16th to 23rd March;

- 1) Setting-up a green waste cutting and collection team
- 2) Assigning locations in the city for storage of the green wastes in order to re-use this waste type as much as possible and lessen the burden on Bouffa landfill
- 3) Purchasing chain-saws, hiring workers to cut and collect the green waste and hiring trucks to transport the green wastes
- 4) Communicating with communities to get their support for the clean-up effort
- 5) Supporting PVMC to manage Bouffa landfill to receive the large disaster waste amounts

The report on this activity is included in **Attachment C-14**.

The Project Office furthermore dispatched Mr. Faafetai, Assistant Chief Advisor, and Mr. Tsukiji, Project Coordinator during April to coordinate efforts with other aid organizations, prepare a detailed plan for developing a number of cells at Bouffa landfill to dispose of the waste there, and continue generated green waste collection and transport efforts.

1.2.2 PVMC Restructuring and Downsizing

In May, 2015, PVMC announced it's restructuring of the organization and redundancy of a number of its employees. The divisions were reduced from seven (7) to three (3). The new divisions are:

- 1) Town Planning and Infrastructure Development Division
- 2) Finance and Administration Division
- 3) Office of the Chief Warden

SWM is now to be implemented under Town Planning and Infrastructure Development Division. Furthermore for provision of waste collection services, PVMC has announced the formation of a new "public company" under the name of City Waste Remover. Three of the project counterparts; Mr. Roger Tary; the Project Manager, Mr. Amos Mathias; landfill operations counterpart and Mr. Berry George; waste audit and minimization counterpart, were removed

from PVMC in the first week of September. Mr. George was re-installed a couple of weeks after his suspension in September for a three month period.

Needless to say the loss of the three counterparts had a significant effect on the project activities and more importantly on the SWM activities in the city as a whole.

1.2.3 Financial Constraints of PVMC

During the project duration there were many news reports on the financial problems PVMC was facing and the seizing of PVMC property, vehicles and equipment by the courts for failure of PVMC to meet its financial obligations. PVMC has worked hard to deal with these financial problems through preparation of the corporate plan for the city, its restructuring, as well as attempts to privatize some of its services, such as waste collection and improve the collection of revenues.

These difficult conditions have affected the waste collection and disposal operations. Funds for purchase of fuel for operating the landfill heavy equipment were decreased, and some immediate repairs of collection trucks and heavy equipment were delayed.

PVMC is now working with new staff at the collection and disposal and it is hoped that they will grasp the amounts of required funds and address the situation.

1.2.4 Adoption of the Solid Waste Management Act

The Government of Vanuatu officially adopted the Waste Management Act no. 24 on 26th June 2014. Under the act municipal and provincial authorities are required to submit annual municipal and provincial waste management plans. On the municipal level, plans have already been prepared by Port Vila (2008) and Luganville (2013), and Lenakel (2015) was drafting its plan. On the provincial level only Sanma Province (2013) has developed its solid waste management plan.

The Project Team held the first workshop for provincial SWM officers to discuss the plan templates. Based on the workshop, Torba province developed its first annual SWM plan for 2016. This workshop helped the provinces to implement the Waste Management Act stipulation on preparing the plans.

1.2.5 JCC Meetings

1.2.5.1 4th JCC Meeting

The 4th JCC Meeting was held on 6th March 2015 in Port Vila. The meeting was chaired by Mr. Trinison Tari, Acting Director of DEPC and Project Director. From the Japanese side, JICA Representative, Mr. Moriya and Mr. Amano Shiro, Chief Advisor participated. From the Vanuatu side; high ranking members of the national government including Mr. Benjamin Shing, Director of DSPPAC, Mr. Ulrich Sumptoh, Mayor of PVMC, Mr. Ronald Sandy, Town Clerk of PVMC and Mr. George Borugu, Director of Tourism participated in the meeting. Counterparts from Luganville and Lenakel also attended the meeting.

At the JCC meeting two modifications were made to the project PDM/PO documents, as it was not possible to install a weighbridge at Bouffa landfill because of the lack of electricity there. However, in order to monitor the waste amounts entering the site a manual recording system has been introduced. Accordingly the original Objectively Verifiable Indicators (OVIs) for Output 2 of the project were modified to reflect this condition.

Output 2 Existing waste disposal sites (Bouffa and Luganville) are improved	
Original OVIs	Modified OVIs Modified in June 2014 C/P team Adopted 4 th JCC Meeting (March 2015)
2-1 Weighbridge system is established in Bouffa landfill	Cancelled
2-2 Data management system is established in Bouffa landfill	2.1 Manual data management system is established in Bouffa landfill
2-3 Operation and management plan for Bouffa landfill is utilized	2.2 Operation and management plan for Bouffa landfill is utilized
2-4 Closure plan for Luganville disposal site is established	2.3 Closure plan for Luganville disposal site is established

The minutes of the 4th JCC meeting are provided in **Attachment C-2**.

1.2.5.2 5th JCC Meeting

The 5th JCC meeting was held on 9th December 2015 in Port Vila. The meeting was chaired by Mr. Trinison Tari, Acting Director of DEPC and Project Director. From the Japanese side, Mr. Amano Shiro, Chief Advisor and Mr. Sekine, JICA Representative participated. From the Vanuatu side; Mr. Ronald Sandy, Town Clerk of PVMC and Project Manager and counterparts from Luganville and Lenakel also attended the meeting.

At the meeting, Mr. Amano expressed his concern that most of the project planned activities were not implemented due to the problems the Vanuatu side had in dealing with the aftermath of Cyclone Pam and the termination of two technical staff and counterparts of the Project by

PVMC, as part of its downsizing process. He emphasized the importance of counterpart capacity building under the project, and that the termination of the trained counterparts was a waste of energy and resources on the part of the Government of Japan.

At the meeting an MOU were signed between PVMC and Vanuatu Direct. This MOU confirmed the Vanuatu side's intention to continue the project activities of composting of market green waste at the Central Market with Vanuatu Direct.

The minutes of the 4th JCC meeting are provided in **Attachment C-3**.

1.2.6 Terminal Evaluation Mission

JICA dispatched the Terminal Evaluation Team (TET) to Vanuatu during the period of 31st August to 5th September, 2015. The TET collected reports and data on the project, held interviews with the counterparts and experts and made their evaluation of the degree of achievement of the project outputs and conclusions and recommendations.

The Terminal Evaluation Team's analysis and evaluation have been compiled in the Technical Evaluation Report and announced in Apia, at the SPREP annual meeting in September 2015.

Concerning the project activities in Vanuatu, the evaluation result was as follows:

Item	Degree of accomplishment
<u>Output 1</u> : Waste minimization mechanisms are developed	Partly achieved
<u>Output 2</u> : Existing waste disposal sites (Bouffa and Luganville) are improved	Partly achieved
<u>Output 3</u> : Capacities for waste management at the local and national level are enhanced	Fully achieved
<u>Project Purpose</u> : Human and institutional capacity base for sustainable SWM in the Pacific Region is strengthened through implementation of the Pacific Regional SWM Strategy (R2010-2015)	Partly achieved

The TET further made a number of recommendations aimed at PVMC to clarify the persons responsible for SWM in PVMC after the downsizing as well as the name of the new Project Manager.

1.2.7 Changes in the Counterpart Team

Many changes were made in the counterpart team including for both the Project Director and Project Manager within the counterpart team.

Mr. Trinison Tari was appointed as Project Director in December 2014, replacing Mr. Albert Williams.

Mr. Ronald Sandy became Project Manager in September 2015, replacing Mr. Roger Tary, and Mr. Rex Aromalo, Mr. Chris Desonsville, and Ms. Marie Natonga joined the counterpart team from PVMC.

1.3 Summary of Assignment Results

A brief review of the main assignment results are chronologically described in Table 15.

Table 15 Chronological description of the main assignment results

Year	Month	Result
2014	June	<u>Manual recording of incoming vehicles</u> was started at Bouffa landfill
	Aug. – Sept.	<u>Waste characterization surveys</u> were implemented in Luganville and Lenakel (PVMC visited Lenakel to implement the survey together with the Lenakel counterparts) <u>A delegation from Shibushi city, Japan</u> visited Vanuatu and exchanged views with the counterparts. <u>The first newsletter</u> was issued by the C/P team
	Oct. – Nov.	<u>Waste characterization survey</u> was implemented in Port Vila <u>Aluminum and steel can separation pilot project</u> was launched at Freshwota ward
2015	March	<u>Time and Motion survey</u> was implemented in Port Vila with Lenakel C/Ps <u>4th JCC meeting</u> was held <u>A clean-up campaign for disaster waste</u> was implemented in the aftermath of Cyclone Pam
	June	<u>The waste characterization report for Port Vila</u> survey was prepared <u>Evaluation of the aluminum can separation pilot project</u> was made.
	July	Works progressed to prepare <u>a new disposal cell in Bouffa landfill</u> using heavy equipment hired by J-PRISM (continued to December) <u>A two-day workshop</u> was held in Port Vila for provincial officers to introduce the project activities and develop the template to produce the SWM annual plan by each province <u>Site visit from Port Vila to Luganville</u> was organized with one of the C/Ps from Port Vila Municipality to exchange opinions about waste management with Luganville C/Ps
	August	Seven counterparts from Vanuatu participated in the <u>Melanesian SWM workshop</u> which was held in Solomon Islands on August 5 th -7 th . The <u>Terminal Evaluation Mission</u> visited Vanuatu from August 31 st to September 4 th
	September	<u>Regional landfill expert from Vanuatu</u> went to <u>Solomon Islands</u> to support

Year	Month	Result
		the rehabilitation of Ranadi landfill from September 13 th to 19 th
	December	<u>5th JCC meeting</u> was held on December 9th. <u>MoU among Vanuatu Direct and Port Vila Municipality/Central Market</u> to continue market green waste composting activity was signed on December 9th <u>MoU among Recycle Corp, Freshwota Communities and Port Vila Municipality</u> to continue aluminum cans separation and collection was signed on December 14th.

1.4 Implementation Methodology

During the assignment periods in Vanuatu, JICA Expert Team worked under the following guidelines.

- (1) Maintaining the J-PRISM principle of developing C/Ps' capacities through their direct implementation of the Project activities.
- (2) Working in the same office with the C/Ps most of the time
- (3) Site visits and meetings with stakeholders were principally conducted together with a C/P
- (4) Regular discussions with the C/Ps on an individual as well as collective basis
- (5) Minimizing interruptions to the C/Ps' daily works while maximizing utilization of the limited assignment periods
- (6) Maintaining personal records of activities and discussions
- (7) Reporting to JICA Vanuatu Office and the Project Office on a regular basis
- (8) Maintaining communications by emails when JPRISM experts are not in Vanuatu
- (9) Providing realistic and suitable suggestions, advice and guidance to the C/Ps

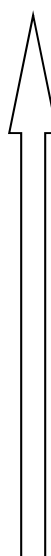
C-2 Details of the Assignment Implementation

2.1 Project Outputs and Activities

2.1.1 Plan of Operation

The Plan of Operation (PO) was amended based on recommendations put forward by the Terminal Evaluation Mission and accepted by the Vanuatu C/Ps during the 5th JCC meeting in December 2015.

The PO is summarized as follows.

	Overall Goal (Same for all PICs)	Objectively Verifiable Indicator
	Sustainable management of solid waste in the Pacific Region is enhanced.	1. Average amount of daily waste disposal at Bouffa landfill is decreased by at least 7% in 2018 compared with 2015.
	Project Purpose	Objectively Verifiable Indicator
	Human and institutional capacity base for sustainable solid waste management in the Pacific Region is strengthened through implementation of the Pacific Regional Solid Waste Management Strategy (2010 – 2015) (RS2010)	[Vanuatu] 1. Bouffa landfill is managed as planned in the Annual Operation Plan 2. One or more provinces implemented their respective action plan to promote minimizations and composting in respective provinces.

Project Outputs and Associated Activities - Vanuatu

Outputs and Activities	Objectively Verifiable Indicator
OUTPUT 1: Waste disposal amounts in the urban and peri-urban area are reduced through minimization mechanisms	
1-1-1 Undertake waste characterization studies (Port Vila)	1.1 Amount of organic waste generated from market is reduced by 20% (Port Vila)
1-1-2 Undertake waste characterization studies (Luganville)	1.2 NWMS is established
1-1-3 Undertake waste characterization studies (Lenakel)	1.3 Collection system for cans is established in Port Vila
1-2 Explore the use of organic waste for composting	

in partnership with Agriculture Department/ organic farming groups and Ministry of Health (Port Vila and Luganville) 1.3.1 Review and finalization of National Waste Management Strategy (NWMS) 1.3.2 Development of National Solid Waste Minimization Strategy (NSWMS) 1.3.3 Review, evaluation and updating of waste management plan of Port Vila Municipality (2008) 1.4 Establish and implement collection system for cans and plastic bottles (Port Vila) 1.5 Establish and implement collection system for cans and plastic bottles (Luganville)	
<u>OUTPUT 2: Existing waste disposal sites (Bouffa and Luganville) are improved</u>	
2.1 Conduct Feasibility Study (FS) on establishment of weighbridge system for Bouffa landfill. 2.2 Establish weighbridge system for Bouffa landfill 2.3 Develop and update a centralized data management system at Bouffa landfill with a weighbridge system 2.4 Develop the operational/ management master plan for Bouffa Landfill to incorporate data management 2.5 Develop closure plan for Luganville disposal site	2.1 Manual Data management system is established in Bouffa landfill 2.2 Operation and management master plan for Bouffa landfill is utilized
<u>OUTPUT 3: Capacities for waste management at the national and local government levels are enhanced</u>	
3.1 Conduct in-country training on waste characterization 3.2 Undertake in-country training on landfill management/ operations 3.3 Conduct training for waste collection operators/ handlers	3.1 More than one provincial officer recognizes the importance of waste minimization and SWM. 3.2 Manual for developing Solid Waste Management master plans at province level is prepared.

2.1.2 Progress of the Plan of Operations Activities

The status of each of the activities and the progress during this assignment period is described hereafter.

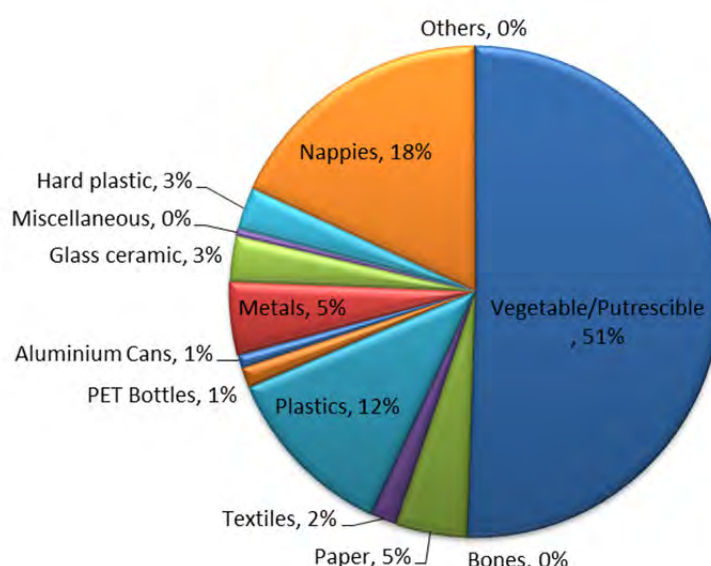
OUTPUT 1: WASTE DISPOSAL AMOUNTS IN THE URBAN AND PERI-URBAN AREA ARE REDUCED THROUGH MINIMIZATION MECHANISMS

1.1.1 Undertake waste characterization studies (Port Vila)

The waste characterization survey was conducted in Port Vila from October 28 to November 4, 2014 (8 days). Prior to the survey, questionnaire survey was implemented from October 22 to 24 (3 days) to grasp the basic information (number of persons living in each household, etc.) and the public awareness on solid waste management. The number of samples was: 110 households, 4 markets and 30 business establishment (such as hotels, restaurants and shops).

Two (2) JOCVs, from Port Vila Municipality and Department of Environment and Pollution Control, participated in the survey. The data analysis was done together with the C/Ps. The survey progress was put on the local newspaper (*Daily Post* on November 8) and local radio (*Radio Vanuatu* on November 3; refer to **Attachment C-7**). The findings of the survey were presented during a public awareness event on December 3rd, 2014 by the C/Ps of the Port Vila Municipality.

The preliminary analysis results shows that in Port Vila for domestic waste, the average unit generation rate increased to 0.63 kg/cap/d from 0.43 kg/cap/d in the previous year. The domestic waste composition was as follows.



The report was prepared for waste characterization survey conducted in Port Vila in 2014

1.1.2 Undertake waste characterization studies (Luganville)

The waste characterization survey was implemented in Luganville from August 18 to 25, 2014, as well as the questionnaire survey on the public awareness. The number of samples was: 50 households and 12 business establishment (such as hotels, restaurants and shops). Two (2) JOCVs from Luganville Municipality and Department of Environment and Pollution Control were involved in the survey. The 2014 survey report was prepared by the Luganville counterparts and JOCV in late 2015.

In August, 2015, the waste characterization survey was conducted under the initiative of the Luganville C/Ps.

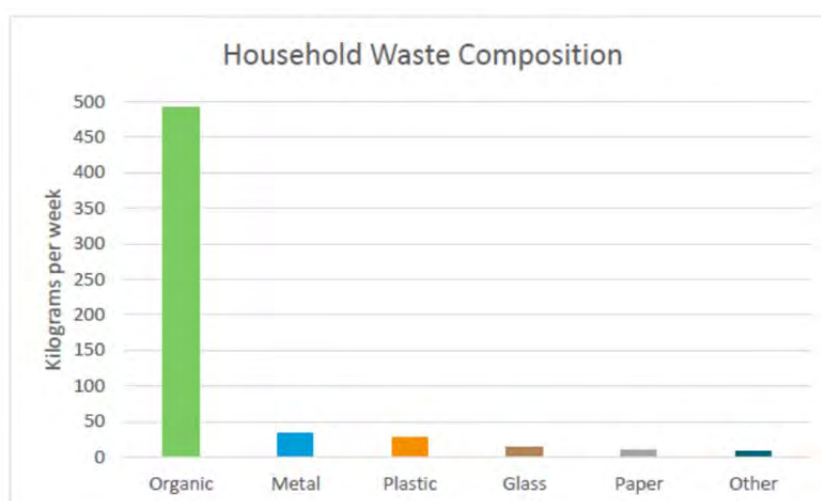
1.1.3 Undertake waste characterization studies (Lenakel)

The waste characterization survey was carried out in Lenakel from August 25 - September 1, 2014. The number of samples was: 40 households and 10 business establishment (such as hotels, restaurants and shops).

The report was finalized and endorsed by the local authority (Honorable Mayor Reginald Tangap and Administrator Nalau Manakel). The survey results were made available to the public through the local newsletter *Tafae News* (No. 08) in November, 2014.

One of the C/Ps from Port Vila Municipality supported the survey on site from August 25 to 29 (5 days).

The UGR for domestic waste was found to be 0.33 kg/cap/d. The domestic waste composition is predominantly organic as shown in the following chart.



1.2 Explore the use of organic waste for composting in partnership with Agriculture Department/ Organic Farming groups and Ministry of Health (Port Vila and Luganville)

A market waste compost pilot project, implemented at the central and Freswota market in Port Vila since October, 2013, continued to be monitored.

In mid-2014 it was found that the trips of collection vehicles to transport the market green waste to Vanuatu Direct became irregular, because of the improper coordination among the several divisions under Port Vila Municipality - Environmental Health Division, Public Works Division and Community & Customer Service Division (which is in charge of market management). The heads of three divisions discussed the issue in November, to allocate one vehicle to market waste collection. Trips to Vanuatu Direct were resumed at the end of November, 2014.

In early 2015, a market manager was newly stationed at the Central Market, which has made it easier to control waste separation. One truck was also allocated specifically for the market waste collection, which was discussed among the counterparts and was a good progress in terms of the waste management. As of November, 2015, the truck brings the organic waste to Vanuatu Direct, the end user once per day.

During the workshop for provincial officers on solid waste management plan, in July 2015, the participants visited the site and the market manager explained about the progress of the composting activities.

During the 5th JCC meeting in December, 2015, Vanuatu Direct gave the presentation about the importance of waste management, taking care of environment. Then, the participants visited the site of Vanuatu Direct, which helped them to deepen their understanding of the activity. During this meeting an MOU was also signed between PVMC and Vanuatu Direct to continue this activity.

For Luganville, the counterparts reported at the 5th JCC meeting that since mid-2015, one counterpart, Mr. Ray Vilvil had been directly assigned to oversee the composting at the market and since then there has been an improvement in the segregation and quality of the produced compost.

1.3.1 Review and finalization of National Waste Management Strategy (NWMS)

During 2014 a draft of the revised NWMS was prepared and discussed together with the C/Ps. The C/Ps updated relevant sections of the NWMS.

Amongst the revisions was the addition of a sixth “thematic area” to the original six, under “Public Awareness”.

The status of the Action Plan, after passage of two years was also reviewed. With the exception of the passage of the relevant laws, most of the actions have not yet started. A more realistic Action Plan has been proposed. Some of the revisions are included in **Attachment C-6**.

One seminar for NWMS was planned in November, 2015; however, it was postponed to 2016, because the higher-level strategy, National Environment Policy and Strategy, is currently under the revision.

1.3.2 Development of National Solid Waste Minimization Strategy (NSWMS).

As decided in the C/P team meeting in 2014, the waste minimization strategy has been incorporated in the revised NWMS.
1.3.3 Review, evaluation and updating of waste management plan of Port Vila Municipality (2008).
This activity was planned for the final year of the project in 2015. The plan review was to include the following items: (1) Waste quantity and quality update and forecasts (2) Waste discharge and collection plan (3) Waste disposal plan (4) Waste minimization (5) Financial and institutional aspects In March 2015, a report on the “Solid Waste Collection and Transport” was drafted, based on the project activities (Attachment C-8). This report covered the first two items listed above as well as partially for item number 5. More work was scheduled to be done by the Project Team but unfortunately due to the downsizing and removal of the two key counterparts and the counterparts being very busy with managing the disaster waste generated from Cyclone Pam, no further work was done.
1.4 Establish and implement collection system for cans and plastic bottles (Port Vila)
The pilot project for aluminum and steel can separation was launched in Freshwota ward, Port Vila, on November 10, 2014 with the participation of local authorities (Deputy Prime Minister/ Acting Minister of Climate Change and Lord Mayor of Port Vila Municipal Council etc.). Two (2) cages were donated by a local hardware shop and were provided to Freshwota 1 and 4. Signage for the cages and leaflet were prepared. Please refer to Attachment C-9. The monitoring by Freshwota 4 was started under the initiative of the committee members, with a monitoring book prepared by the C/Ps. Before the launching, a baseline survey on public awareness was conducted at the pilot project areas (Sept. 1-2; 70 households), and the results were incorporated into the planning of the pilot project. For the preparation, the community committees were established, and the involvement of community members such as youth groups was encouraged. Newspaper articles and radio programs were developed for the public awareness. The monitoring was done by the C/Ps with a monitoring sheet. The questionnaire survey for evaluation was conducted in June 2015, and the report was drafted. Two (2) JOCVs assigned in Port Vila Municipality also supported the monitoring and evaluation. The MoU for can collection system among Freshwota community (1&4), Recycle Corp and Port

Vila Municipality was signed on December 14 th , 2015 (Attachment C-10).
1.5 Establish and implement collection system for cans and plastic bottles (Luganville)
The existing aluminum can collection program continued to be expanded thanks to the efforts of the counterparts there and the VSA expert. 47 cages have been set up in total.
<u>OUTPUT 2: EXISTING WASTE DISPOSAL SITES (BOUFFA AND LUGANVILLE) ARE IMPROVED</u>
2.1 Conduct Feasibility Study (FS) on establishment of weighbridge system for Bouffa landfill.
The Bouffa landfill is located 3.2 kilometers from the main road and is accessed by an unpaved road. The power lines run along the main road but not to the site. The Counterpart team approached the Power Company to obtain a quote for extending the power supply to the site, but PVMC rejected the quotation as it was too high. Alternative power supplies, such as generator and solar panels were discussed with weighbridge suppliers but were not recommended by them. A second alternative was considered to install the weighbridge at the intersection of the main road and the access road to the landfill where the power lines are running. PVMC Mayor and Town Clerk announced at the 4th JCC meeting that they had approached the concerned authorities to allow them to utilize land in that area for this purpose. PVMC has also mentioned that they would be in a position to provide security for the weighbridge at that location as well as staff. The matter is now under review by the Vanuatu side.
2.2 Establish manual data collection system for Bouffa landfill
It was decided not to establish a weighbridge system under J-PRISM. Instead, the manual recording system was started on June 21, 2014. The following information has been recorded: a) the number of incoming vehicles, b) type of waste, c) waste collection area, d) capacity of collection vehicles, and e) type of collection vehicles. The data collection and analysis has been implemented even after the Cyclone PAM. The results were analyzed and incorporated in the report of collection analysis.
2.3 Develop and update a centralized data management system at Bouffa landfill with a weighbridge system
As explained in activities 2.1 and 2.2 above, it was decided not to establish a weighbridge system under J-PRISM. Instead, the manual recording system was started on June 21, 2014.
2.4 Develop the operational/ management master plan for Bouffa Landfill to incorporate data management
C/P Amos, responsible for the landfill prepared the concept for the development of the disposal area. An area adjacent to the present tipping areas A & B is proposed. Refer to Attachment C-12 .

Based on the operational/ management plan, the expansion of landfill has been started (hiring a bulldozer for 10 days and an excavator for 5 days). The expansion work has been completed except laying pipes. PVMC has yet to secure the budget to purchase and lay the pipes.
2.5 Develop closure plan for Luganville disposal site
During the 4th JCC, it was discussed that VSA (NZ volunteer) would be in charge of developing the closure plan.
<u>OUTPUT 3: CAPACITIES FOR WASTE MANAGEMENT AT THE NATIONAL AND LOCAL GOVERNMENT LEVEL ARE ENHANCED</u>
3.1 Conduct in-country training on waste characterization
One of the C/Ps from Port Vila Municipality, who joined the last survey in Port Vila in 2013, went to Lenakel to support the waste characterization survey from August 25 to 29, 2014. A workshop for provincial officers on solid waste management was held in July 2015, during which the Port Vila and Luganville counterparts shared the experiences of waste characterization survey to the participants. The provincial officers realized the importance of baseline survey such as waste characterization survey, which will be partially incorporated in their solid waste management plans. Based on the SWM Plan template developed in the workshop, Torba province prepared its draft SWM Plan.
3.2 Undertake in-country training on landfill management/ operations
During the workshop for provincial SWM officers held in July 2015, the PVMC and Luganville counterparts explained to the participants on the landfill activities in the two respective municipalities. The provincial officers also visited the Bouffa landfill to receive some training on the waste disposal operations there.
3.3 Conduct training for waste collection operators/ handlers
The training of Time & Motion Study was conducted in Port Vila on March 5th, 2015 for two (2) Lenakel counterparts and one (1) VSA (NZ volunteer). The results were also discussed among the counterparts to consider the suitable waste collection system. The Time & Motion Study was implemented in March 10th, 2015 with the Port Vila Municipality Counterparts. The results of the study were incorporated into the report of Solid Waste Collection and Transport Existing Conditions Review. One of the C/Ps, Mr. Chris from Port Vila Municipality went to Luganville with JICA Expert, and exchanged opinions with Luganville C/Ps, about the waste collection.

2.2 Melanesian SWM Workshop

The Melanesian SWM Workshop was held in Honiara, Solomon Islands during the period of August 5th -7th, 2015. C/Ps from PNG and Vanuatu were invited to the workshop to participate together with the Honiara and Gizo counterparts. Seven counterparts from Vanuatu participated in the workshop. They were from PVMC; Ronald Sandy (Town Clerk), Rex Aromalo, Berry George, Chris Desonville and Elison Tabisal (Councilor), from DEPC; Carol Rovo, and from LMC; Gina Tari.

The workshop covered five sessions as follows:

Session A – SWM good practices introduction

Session B – Reflections on J-PRISM

Session C – Field visits

Session D – Issues and Resolutions Discussions

Session E – Input into potential J-PRISM Extension Project

The C/Ps made presentations, engaged in group discussion and visited SWM activities and sites in Honiara. The Vanuatu presented three good practices, namely;

1. Composting of market green waste
2. Introduction of pre-paid bag system
3. Setting up a public collection company

Concerning the Vanuatu team opinions for J-PRISM II, the Vanuatu C/Ps responded that J-PRISM II was necessary and that their proposals for J-PRISM II outputs were as follows:

Output 1: Monitoring Capabilities

- Improve monitoring capabilities for PVMC, LMC and Lenakel municipalities.
- Develop the NWMS and 3Rs policy.

Output 2: Facilities Development and Equipment Procurement

- Improve landfill infrastructure and secure weighbridge (PVMC)
- Secure D6 bulldozer, shredder and bailing machine (LMC)
- Secure collection truck (Lenakel)

Output 3: Enhance Human Resources Capabilities

- Enhance capacity of SWM personnel (PVMC) and specifically for landfill supervisors (LMC and Lenakel)

2.3 Capacity Assessment (Individual/ Institutional)

A capacity assessment for individual staff members was done in 2014. All the items have been improved since July, 2013, especially “Policy”, “3R” and “Public Awareness”. Regarding the “Existing Conditions and Operational Analysis”, the analysis of waste characterization survey was done during this assignment period, and also the Time & Motion Study was implemented to strengthen this area of capacity.

In general the institutional capacity is relatively low, which indicates low satisfaction of the counterparts for the institutional capabilities. Especially the “Staffing (number and qualifications)” and “Budget Allocation” are challenges for the counterparts and needed to be improved.

C-3 Conclusions and Recommendations

3.1 Lessons Learnt

There are some lessons that may be learnt from the implementation of the Project. These include the following:

(1) Internal exchange of the C/Ps' experiences amongst Port Vila, Luganville and Lenakel

One of the Port Vila C/Ps, Berry joined the waste characterization survey in Port Vila in 2013, and went to Lenakel in 2014 to support the survey of Lenakel C/Ps. This support contributed to the successful implementation of the survey there. Internal exchange of the C/Ps' experiences amongst Port Vila, Luganville and Lenakel is helpful to disseminate what they learnt through the project.

(2) Allocation of sufficient number of staff members to SWM

The activities in Luganville became more stable and sustainable after the municipality recruited two officers (one waste management officer and one environmental health officer). On the other hand, the number of officers for solid waste management under Port Vila Municipality continued to be insufficient. In the case of DEPC, there is only one officer responsible for waste management. During the J-PRISM, it was a big challenging for one officer to take all the responsibilities on solid waste management at a national level, such as the monitoring of NSWMS.

It is indispensable to allocate a proper number of staff members into proper positions, which strengthens the organizational structure on solid waste management.

(3) Hiring of local assistant for the Project team

Since September, 2014, a new local project assistant has been hired. She helped the coordination of project activities, strengthening the relationship among the C/Ps and communities; especially, she is familiar with local culture and information, and assisted the operation of community-based activities. To hire a local project assistant can make the project operation smoother.

(4) Understanding the recycling market demand

In the Freshwota pilot project the community were asked to separate both aluminum cans and steel cans which would be sold to Recycle Corp. However, the market demand for steel

has dropped and accordingly Recycle Corp would not pay for steel containers. It is necessary to understand the market forces better and explain the market conditions to the community.

(5) Opinions exchange and experiences sharing between the municipalities and the provinces

Bringing the 3 municipalities and 5 of the 6 provinces in one room and for two days in July 2015, to discuss on SWM issues and planning helped all participants to identify the common issues, share new ideas and set-up a network of SWM stakeholders in Vanuatu. Two examples of common issues in the provinces were the difficulty to dedicate land for disposal sites and lack of staff experienced in SWM. Solutions proposed included involving communities and land owners in the landfill development and providing them with advantages and dispatching of the officers from the 3 municipalities and JOCVs to the provinces. This kind of exchanges of opinions among the municipalities and the provinces should be encouraged.

(6) Importance of maintaining communication with top management in PVMC

Both the Mayor and Town Clerk of PVMC participated for the full day of the 4th JCC Meeting. Both gentlemen made a number of important announcements such as the direction to privatize the waste collection, and attempts to secure land in an area connected to the power grid to install and operate the weighbridge for Bouffa landfill. Director for DSPPAC also attended and expressed the possibility to facilitate the connection of the Bouffa landfill to the power grid. The Project Team realized that having the top officials dedicate one day to SWM may help them to understand the problems as well as provide an opportunity for the officers directly dealing with SWM to understand the actions the top officials may be considered.

Also, the downsizing of the PVMC staff, which may have been justified on financial basis, has contributed to the loss of PVMC SWM staff and counterparts that were well trained under the Project. It is important to share the progress of the Project activities and the skills gained by the counterparts with the top management of PVMC on a regular base in order to make them aware of the roles the counterparts are playing in SWM.

(7) The importance of the community to understand and observe its responsibilities related to SWM and to document this understanding in writing

There were some difficulties in the implementation of cans separation pilot project in Freshwota Ward, such as conflicts among the local youth groups and delays in submitting environmental committee monitoring reports.

After the cages were allocated, the communities kept managing the cages in a good condition; however, there were some challenges such as the transparency of cans sales and dispatch of collection vehicles. In order to overcome the challenges and to ensure the system, the MoU was developed.

The community activities should be implemented carefully on a manner to enhance the sustainability. It is helpful to establish the written documents to enhance the sustainability. The targeting commercial areas such as supermarkets can be another option to be taken.

(8) Increased communication with stakeholders

During the 5th JCC meeting, local private sector companies participated such as Vanuatu Direct and Pacific Petroleum. All the participants exchanged opinions on composting and waste oil, which gave them the ideas on how to manage waste properly. It is meaningful to involve the private sectors to share the different viewpoints, in order to promote the future cooperation between the public and private sectors.

3.2 Recommendations

Some recommendations to improve and enhance the JPRISM activities are as follows:

(1) Stimulate the involvement of DEPC on SWM

Currently, the active participation of DEPC in the SWM sector is lacking due to the shortage in staff and heavy workload. The approach from national government level is essential especially for DEPC to implement its responsibilities as outlined in the NSWS, the Waste Management Act and coordination with the donor agencies on SWM.

In line with the Waste Management Act, the provinces are required to prepare their annual SWM plans. The project has supported this activity through convening of the Provincial Officers Workshop in in July 2015, and some provinces have started to prepare their plans. It is recommended that DEPC support the provinces in their efforts through follow-up and review of the draft plans they are preparing.

(2) More effective baseline survey of community before the pilot project implementation

The project has started working with the communities in implementing the separate aluminum cans pilot project in Port Vila. A better understanding of the composition of the communities and inclusion of effective leaders in the project efforts is one factor to sustain these activities.

- (3) Stronger communication with the management of PVMC to promote understanding of project activities

The downsizing of staff in PVMC in May 2015 has affected the project activities, generating delays and postponements of some of the activities. More communication with the management of PVMC may have helped to avoid, or keep at a minimum the disruptions to the project activities.

- (4) Documentation of effective utilization of lessons learnt in training programs

The counterparts have participated in a number of training programs during the course of the project. Many of the counterparts have effectively utilized their training experience to improve operation of the landfill, implement the waste audits, improve the separation of green wastes for composting, identification of issues of collection, etc. It is recommended that the counterparts document the lessons they applied to their daily works from the training in order to benefit those counterparts and staffs that have not had opportunity for training, as well as to share their training experiences with their management teams.

- (5) Adoption of the developed collection plan and Bouffa landfill development and operation plan

The project team held a number of discussions, implemented surveys and developed a good data base which was utilized to develop the waste collection plan and Bouffa landfill development and improved operation plan. The plans were compiled by the SWM Experts and submitted to the counterparts for review and implementation. It is recommended that the counterparts familiarize themselves with the final products and discuss the contents with their management.

- (6) Securing the necessary human and financial resources for the post-J-PRISM

As the J-PRISM project comes to a close, all the counterpart organizations should secure the necessary resources, including the staff members and budget, to sustain the activities developed during the project. For example, laying pipes at Cell C at Bouffa landfill is one of the activities; another is expansion of the can collection system based on the lessons learnt from the pilot project.

One of the challenges in Vanuatu is the limited number of C/Ps for solid waste management; it is essential to urge the participation of all the C/Ps as much as possible. Additionally, it is recommended to encourage the involvement of NGOs, such as Wan Smol

Bag, and the collaboration with JOCVs; Wan Smol Bag can play a significant role on public awareness activities.

(7) Clarifying the directions of waste management at the national and local levels

Currently the national waste management strategy is under review and planned to be finalized in 2016; the solid waste management plan in Port Vila is also under development. Much data, analysis of current issues and surveys techniques have been developed during the last 5 years of the Project, and these should be utilized in the review in order to produce realistic strategy and clear plans for implementation. These documents should be finalized and endorsed sooner, so that all the stakeholders can clarify the directions of the future waste management.

(8) Develop the system and framework of “Return” system

In Vanuatu only one recyclable collection company is operating; however, in order to promote the private sectors’ participation, and encouraging the Return system of the recyclables, it is recommended to produce a suitable environment that supports this activity, including the taxation that does not burden recycling companies.

(9) Importance to coordinate activities during disasters

Many lessons were learnt from the efforts to deal with the large amount of generated disaster waste in the aftermath of Cyclone Pam. These included the immediate need to coordinate activities between the government agencies involved; in this case PVMC and the Public Works Division, identification of temporary waste storage areas, implementing immediate awareness activities to ask the public to separate green waste, household waste and demolition wastes, etc.

(9) Preparations for J-PRISM Phase 2

JICA is expected to dispatch a mission to the Pacific Island Countries during the second quarter of 2016 to discuss on the contents of Phase 2. It is recommended that the Vanuatu side prepare for this mission, including the expected outputs for J-PRISM Phase 2.

Attachment

Attachment

A. PNG

A PNG

Attachment 1 Melanesia Solid Waste Management Workshop Report

Attachment 2 Daily Activity Record (Papua New Guinea)

Attachment 3 4th JCC Meeting Minutes

Attachment 4 5th JCC Meeting Minutes

Attachment 5 Baruni Landfill Operation Manual

Attachment 6 Water Quality Analysis

Attachment 7 Baruni Disposal Site Safety Monitor Plan

Attachment 8 Summary of Waste Pickers Survey Results

Attachment 9 Baruni Landfill Progress Mini-workshop

Attachment 10 Baruni Landfill Workshop Memo

Attachment 11 Proposed Modifications to the Collection Contracts

Attachment 12 Segani Ranuguri Settlement Waste Collection PP Progress Report

Attachment 13 Coronation Primary School Action Plan

Attachment 14 3R HEART Activity Report

Attachment 15 Gerehu Market Green Waste Compost Pilot Project

Attachment 16 NCD Solid Waste Management Plan

Attachment 17 Capacity Assessment Results

Attachment A-1 Melanesia Solid Waste Management Workshop Report

Japanese Technical Cooperation Project for Promotion of Regional Initiative on
Solid Waste Management in Pacific Island Countries (J-PRISM)

Melanesian Solid Waste Management Workshop Report



5 - 7 August, 2015

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Pictures of Melanesian Solid Waste management Workshop Day 1



Welcome Speech by Honiara City Clerk



Key note address by Permanent Secretary, MECDM



Participants Listening to Presentations



Presentation by Counterpart in Honiara



Presentation by Conterpart from PNG



Group discussion

Pictures of Melanesian Solid Waste management Workshop Day 2



Participants filling in Questionnaires



Presentation of Group Discussion



Presentation for Field Visit



Field Visit for Eco School Program
at St. Nicholas School



Field Visit for Community Composting
at Panatina Valley



Field Visit at Ranadi Land Fill

Pictures of Melanesian Solid Waste management Workshop Day 3



Presentation for General SWM Issue



Group discussion



Group Discussion



News Paper Articles about Melanesian Workshop



Presentation for Group Discussion



Presentation for Group Discussion

1. Introduction

1.1 Date and Venue

The 3-day workshop was held from 5th to 7th August, 2015, in Honiara, Solomon Islands at the conference room of the Solomon Kitano Mendana Hotel.

1.2 Participation

Three Melanesian countries of Solomon, PNG and Vanuatu participated in the workshop. The participating organizations by respective country were as follows:

PNG

National Capital District Commission (NCDC)

Solomon Islands

Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM)

Ministry of Health and Medical Services (MHMS)

Honiara City Council (HCC)

Western Province (WP)

Gizo Town Council (GTC)

Noro Town Council (NTC)

Vanuatu

Department of Environment and Pollution Control (DEPC)

Port Vila Municipal Council (PVMC)

Luganville Municipal Council (LMC)

Others

Embassy of Japan

JICA Solomon Office

LEAF

JOCV

Etc.



Lists of participants are provided in **Attachment 1**.

1.3 Workshop Objectives

The Workshop objectives were as follows:

- To share the lessons learnt from the J-PRISM among the Melanesian countries
- To exchange opinions among the J-PRISM counterparts on SWM issues and to identify the possible solutions
- To assess the J-PRISM project and recommendations for potential J-PRISM extension project
- To strengthen the partnership among the Melanesian countries

The expected outputs of the workshop were as follows

- The lessons learnt are recognized among the Melanesian countries.
- Recommendations on issues resolution are prepared

1.4 Workshop sessions

There were 5 sessions during the workshop.

SESSION A - SWM Good Practices Introduction

SESSION B - Reflections on J-PRISM

SESSION C - Field Visits

SESSION D - Issues and Resolutions Discussions

SESSION E - Input into Potential JPRISM Extension Project

1.5 Workshop Program

(1) Workshop 1st Day – SWM Good Practices Sharing

MC: Ms. Rosemary Apa/ Time keeper: Jerome Enato'o

SN	Time	Activity	Facilitator
1.1	08:30-09:00	Registration	Ms. Mercy Iilu Nunua
1.2	09:00-09:05	Prayer	Mr. Tom Nalau
WORKSHOP OPENING			
1.3	09:05-09:30	Welcome speech by City Clerk, HCC Short remarks by Japanese Embassy Short remarks by Deputy Provincial Secretary, WPG Key note address by Permanent Secretary, MECDM	Mr. Charles Kelly Mr. Kenichi Kimiya Mr. Patrick To'iraena Dr. Melchior Mataka
1.4	09:30-09:50	Group photos/ Coffee break	
1.5	09:50-10:00	Participants introduce themselves	Mr. Akihiro Osada
1.6	10:00-10:10	Purpose of the Workshop	Mr. Akihiro Osada
SESSION A SWM GOOD PRACTICES INTRODUCTION			
1.7	10:10-11:10	Solomon – MECDM & HCC & MHMS	Ms. Racheal Inamuka (PNG)
	(15 min.)	<u>Presentation 1</u> Stakeholders coordination activities	Mr. Jimmy Hilly
	(15 min.)	<u>Presentation 2</u> J-HOPE	Mr. Joe Kelesi
	(15 min.)	<u>Presentation 3</u> Waste audits implementation at provincial level	Ms. Wendy Beti
	(15 min)	Q&A	
1.8	11:10-12:10	PNG – NCDC	Ms. Carol Rovo (VAN)
	(15 min.)	<u>Presentation 4</u> Baruni Operations Improvement – Coordinating with surrounding community and contractor management	Mr. Simeon Terina
	(15 min.)	<u>Presentation 5</u> Waste collection improvement – Monitoring & expansion to settlements and villages	Ms. Vivianne Morofa Ms. Racheal Inamuka Mr. Sneka Pokani
	(15 min.)	<u>Presentation 6</u> Process to develop the SWM Plan for NCDC	Ms. Vivianne Morofa
	(15 min.)	Q&A	
1.9	12:10-13:10	Lunch	
1.10	13:10-14:10	Vanuatu – DEPC, PVMC & LMC	Ms. Rosemary Apa (SOLO)
	(15 min.)	<u>Presentation 7</u> Composting of market green waste	Mr. Berry Mahau
	(15 min.)	<u>Presentation 8</u> Introduction of pre-paid bag system	Ms. Gina Tary
	(15 min.)	<u>Presentation 9</u> Setting up a public collection company	Mr. Ronald Sandy Mr. Rex Aromalo

SN	Time	Activity	Facilitator
	(15 min.)	Q&A	
1.11	14:10-15:10	Solomon, Gizo	Ms. Gina Tary (VAN)
	(15 min.)	<u>Presentation 10</u> Developing a controlled dump site	Mr. Derald Michael
	(15 min.)	<u>Presentation 11</u> Introduction of collection station system (community zoning)	Ms. Margaret Moveni Ms. Julie Kalamana
	(15 min.)	<u>Presentation 12</u> Establishment of "Return" system of cans	Mr. Naoya Ueno
	(15 min.)	Q&A	
1.12	15:10-15:30	Coffee break	
1.13	15:30-16:15 (15:30-16:00) (8-10 min./group)	Group discussions on the practices introduced by each city (1) Group Discussion ● 3-4 mixed groups ● Each group covers 3-4 good practices ● Discussion topics: (1) Sustainability of good practices (2) Suggested improvements to the good practices (3) Applicability of good practices for other countries (2) Group Presentations	Mr. Mahmoud Riad Mr. Akihiro Osada
1.14	16:30-16:40	Wrap up of Day 1	

(2) Workshop 2nd Day – Field Activities and JPRISM Reflection Discussion

MC: Ms. Carol Rovo/ Time keeper: Berry George

SN	Time	Activity	Facilitator
2.1	08:30-09:00	Registration	Ms. Mercy lilu Nunua
SESSION B REFLECTIONS ON J-PRISM			
2.2	9:00-9:45	Reflections on JPRISM in each of the three countries – Part 1 (1) Group discussions ● 3 country groups ● Discussion topics: (1) Degree of capacity development achievement (2) JPRISM effect on the counterparts daily activities (3) JICA side project activities; training overseas, experts dispatch, small-scale equipment and facilities grants	Mahmoud Riad
2.3	9:45-10:00	Tea/ Coffee Break	
2.4	10:00-11:00	(2) Group presentations ● 15 minutes presentation by each group (45 minutes) followed by 15 minutes of Q&A	
SESSION C FIELD VISITS			
2.3	11:00-12:00	Three Presentation about the Field Visits (20 minutes each) (1) Saint Nickolas School (2) Panatina Valley community (3) Ranadi Landfill	Mr. Jerome Enato'o Ms. Mercy lilu Nunua Mr. Joe Kelesi
2.4	12:00-13:00	Lunch	
2.5	13:00-16:00	Field Visits (1) Saint Nickolas School	Mr. Jerome Enato'o Mr. George Moffat

SN	Time	Activity	Facilitator
		(2) Panatina Valley community	Ms. Mercy lilu Nunua
		(3) Ranadi landfill	Ms. Patricia Soqoilu Mr. Joe Kelesi

(3) Workshop 3rd Day – SWM Issues Resolutions Forum

MC: Ms. Janet Haua/ Time keeper: Ms. Racheal Inamuka

SN	Time	Activity	Facilitator
3.1	08:30-09:00	Registration	Ms. Mercy lilu Nunua
SESSION D ISSUES AND RESOLUTIONS DISCUSSIONS			
3.2	09:00-09:20	General SWM Issue	Mr. Mahmoud Riad
3.3	09:20-09:45	SWOT Analysis	Mr. Akihiro Osada
3.4	09:45-10:00	Coffee break	
3.5	10:00-11:00	Issues Resolution Ideas - Group Discussion: (1) SWOT Analysis for each group PNG group (NCDC) Solomon Gizo group (GTC, MECDM) Vanuatu group (DEPC, PVMC and LMC) Solomon Honiara group (MECDM, HCC, MHMS)	Ms. Vivianne Morofa (PNG) Mr. Derald Michael (SOLO) Ms. Gina Tary (VAN) Ms. Rosemary Apa (SOLO)
	11:00-12:00	(2) Group presentations ● 15 minutes presentation by each group (45 minutes) followed by 15 minutes of Q&A	
3.6	12:00-13:00	Lunch	
SESSION E INPUT INTO POTENTIAL JPRISM EXTENSION PROJECT			
	13:00- 14:30 (13:00-13:50)	JPRISM Project Phase II (1) Group discussions ● 3 country groups 1. Necessity of Phase II 2. Application of lessons learnt to Phase II 3. (3) Recommendations	All
		(2) Group presentations ● 15 minutes presentation by each group (10 minutes) followed by 10 minutes of Q&A	
3.10	14:30-15:00	Workshop wrap-up, Closing remarks	Mr. Taiji Usui Dr. Melchior Matakai
3.8	15:00-15:30	Tea/Coffee Break	

2. Opening Session

The four speakers of the Opening Session set the course of the workshop for the three days with their motivating speeches.

Mr. Charles Kelly, City Clerk, HCC, the first speaker welcomed the participants from the three countries and re-affirmed the commitment of HCC to improve SWM practices. He identified some issues that HCC faces, mainly increase in population and number of visitors to the city, and this causes increase in the waste amounts. He welcomed the support of JICA and other donor agencies to this important sector. He looked forward to the discussions of the workshop and while some conclusions only may be reached, the workshop may produce the vision for proper solid waste management.

Mr. Kenichi Kimiya, Ambassador of Japan, extended a warm welcome to the delegates from PNG and Vanuatu and thanked the host country, Solomon Islands for hosting this workshop. He spoke of the difficulties Japanese cities faced in the 70's of the last century in dealing with SWM and emphasized that not only technologies, but also raising public awareness were the keys to solve the SWM problems.

He stressed the similarities of the three Melanesian countries represented at the workshop and their geographical closeness and suggested that they share their experiences on SWM and provide support to each other through technical advice and regional meetings, such as this one.

Mr. Patrick To'iraena, Deputy Provincial Secretary, Western Province, gave thanks to J-PRISM on behalf of the Western Province delegation. SWM was not recognized as an important issue compared to other problems in the province, but through this project, the province has been trying to make some changes. In Gizo, improvements have started since last year. From this year, the provincial budget is supporting SWM. He expressed gratitude for this assistance. He mentioned the importance of increased communication with all communities in the province on SWM. People do not have the mentality of waste management so the challenge of the province is to increase their SWM awareness. Lastly, he wished all the participants a very fruitful workshop.

Finally Dr. Melchior Mataki, Permanent Secretary, MECDM, gave the keynote address. He welcomed the participants to the Solomon Islands. He took the participants back to the 19th century, when the people considered that diseases are caused by gases and sewage. At that time the focus of SWM was to dispose of waste far away from where the people were living. Germs were recognized towards the end of that century. People at the turn of the century started to link health issues with environmental concerns.

Today, at this workshop the Government of Solomon Islands, together with representatives from PNG and Vanuatu as well as JICA will be having a serious discussion on the waste issues. It is a challenge to reduce the waste amounts. This has to be done through the gradual change of the people's mindset.

Dr. Mataki applauded the obvious increase in the capabilities of the counterparts as a result of the JPRISM activities and indicated the desire of Solomon Islands for the project to be extended after February 2016, when this phase comes to a close.

3. Session A – SWM Good Practices Introduction

3.1 Presentations

Twelve good practices were presented by the counterparts. The practices are briefly described in Table 3-1.

Table 3-1 Good Practices presented at the Workshop

No.	Good Practice Title	Agency	Key Words
1	Stakeholders Coordination	MHMS, Solomon	Sharing of resources (manpower and financial) amongst the counterpart agencies
2	J-HOPE	HCC, Solomon	Project implemented in the wake of the floods in 2014 to deal with the disaster waste
3	Waste Audits in Provinces	MECDM, Solomon	Train provincial officers to implement waste surveys and collect general information on the SWM conditions in the provinces
4	Baruni landfill operation improvement	NCDC, PNG	Develop the Baruni disposal site from an open dump with uncontrolled burning to a controlled disposal site with no burning and working with the waste pickers and the community there.
5	Waste Collection Improvement	NCDC, PNG	Develop monitoring systems to better manage the private contractors and expand collection to the settlements.
6	Developing the SWM plan	NCDC, PNG	Presently NCDC is developing their SWM plan after a comprehensive understanding of the existing SWM conditions and conducting a series of workshops with stakeholders to discuss the plan contents.
7	Composting of market waste	PVMC, Vanuatu	Green waste from the central market is separated and transported to Vanuatu Direct, a private farm where it is composted and used there.
8	Introduction of Red Bag	LMC, Vanuatu	The pre-paid bag system has been introduced in LMC after detailed preparations covering legal matters, public awareness, and transparent tendering.
9	Setting up public collection company	PVMC, Vanuatu	PVMC is moving towards privatization of collection in stages, with the first stage is to set up the public collection company within PVMC
10	Developing a controlled landfill (small scale)	GTC, Solomon	Gizo has started taking steps to improve their disposal site by installing a fence and improving the site waste placing conditions
11	Introduce collection station system	GTC, Solomon	To introduce waste collection, Gizo town has been divided into seven (7) areas and 27 waste collection stations have been identified
12	Establish return system of cans	GTC, Solomon	Support has been extended to private citizens collecting aluminum waste cans.

The presentation slides are included in **Attachment 2**.

3.2 Details of the Good Practices Presented

Twelve good practices were presented by the counterparts from Solomon, PNG and Vanuatu. A description of each good practice is provided in the following sections.

3.2.1 Practice 1 - Stakeholders Coordination Activities

Presenter: Mr Jimmy Hilly, Ministry of Health and Medical Services, Solomon Islands.

(1) Necessity of the Good Practice

There are a large number of organizations involved in the J-PRISM project. These include two central government agencies, two provisional government agencies, local authorities of Honiara City Council and Gizo Town Council. A number of divisions in each organization are involved. Some private sector companies are also included.

It is important to coordinate amongst these organizations and divisions in a smooth manner in order to ensure that the project information is shared and the activities are not delayed.

(2) Method of implementation

The Solomon Islands counterpart team set up a number of initiatives as follows:

- Monthly meetings
- Organising events e.g. waste management campaigns, World Environment Day, etc...
- Participation of all organizations in training / workshops
- Participation of all organizations in pilot projects
- Sharing of resources (Human, finance, logistics, etc)
- Budget support e.g. support for Ranadi Dump site in 2014

(3) Lessons learnt

The Solomon Island counterparts emphasized the following lessons;

- To try and find the most effective ways to implement the activities
- To enhance communication amongst the counterparts
- To ensure that project information is shared through emails, social media and meetings
- To share the limited resources, and not only financial but also budget and human resources

(4) Issues

The challenges that the counterparts face were described as follows:

- Involved officers have to manage their own works on other sectors than SWM with the project activities
- It is sometimes difficult to meet time schedules set by JPRISM activities due to other pressing works
- The resources of all the organizations are limited

(5) Future measures

The counterparts explained that to meet the challenges they are introducing the following improvements;

- Prepare personal work plans
- Designate officers for specific duties
- Factor budget support in the annual operational plans

(6) Comments of the Participants

During the Group discussions the following recommendations were made by the participants to sustain this practice:

- Develop legislation or rules to support the counterparts in their coordination activities
- Ensure that there is political support and top management support to the coordination efforts
- Continuously update and improve communication links
- Prepare necessary reports on the activities
- Move from ad-hoc to more organized system
- Set-up the counterpart team as a SWM Stakeholders Coordination Unit that can continue to function beyond the JPRISM project.

3.2.2 Practice 2 – J-HOPE

Presenter: Mr Joe Kelesi, Honiara City Council, Solomon Islands.

(1) Necessity of the Good Practice

In April 2014, Honiara severed from continuous rainfalls which led to flooding and much damage to the city. Much disaster waste was generated comprising mainly fallen trees and building debris.

J-PRISM dispatched Mr Tsukiji the project coordinator and Mr Amos Mathias, the landfill manager from Bouffa to provide technical and financial support to the Solomon Island counterparts to deal with the situation.

The project, dubbed J-HOPE, had two main objectives;

- To promote partnership among Pacific Island Countries (PICs) and enhance Honiara counterparts to properly respond to post disaster waste
- To properly restore the dumpsite affected by the recent flood, and demonstrate cost effective measures and proper management of the disaster waste applying the 3Rs concept for the government staff and stakeholders including affected communities

In order to achieve these objectives three immediate outputs were identified as follows;

- Output 1: Ranadi Landfill Restoration
- Output 2: Awareness raising in Affected communities & evacuation centers
- Output 3: Mobile Chainsaw of Disaster waste

(2) Method of implementation

The J-HOPE project was implemented as follows

- Heavy equipment was hired to construct the road within the landfill, arrange the waste within the site and prepare the waste disposal areas.
- Post Disaster Awareness Workshop was organized and the participants, mostly from the community observed demonstrations for waste separation in order to minimize the waste amount going to Ranadi
- In addition to the workshop visits were made to 18 communities, 10 schools and 7 clinics to raise public awareness on efforts to deal with the disaster waste.
- A chainsaw team was mobilized and green wastes were cut at 8 different sites to facilitate composting and transport

(3) Lessons learnt

The Solomon Island counterparts emphasized the following lessons;

- To provide proper heavy equipment early on to deal with the crisis
- To effectively utilize available resources within daily operation plans
- To prepare an effective drainage system at the disposal site
- To encourage the communities to deal with their own disaster wastes
- To strengthen the disaster team's team work and commitment

(4) Issues

The main challenge that the counterparts faced during implementation of J-HOPE was the slowness of securing finances for the urgent activities.

(5) Future measures

The counterparts explained that to meet the challenges they are introducing the following improvements;

- Disaster waste management strategy is a very important tool that needs to be developed

- Encourage stakeholder partnership and collaboration with NGO's, private sectors, donor, local and national governments and individuals to avoid duplicating activities

(6) Comments of the Participants

During the Group discussions the following recommendations were made by the participants to sustain this practice:

- Training is required for the province officers to conduct the surveys on their own.
- The provincial government needs to provide more financial and human resources to this effort
- Waste audits for markets should also be implemented
- The decision makers should use the data as the basis for their decisions

3.2.3 Practice 3 – Waste Audits Implementation at Provincial Level

Presenter: Ms. Wendy Beti, Honiara City Council, Solomon Islands.

(1) Necessity of the Good Practice

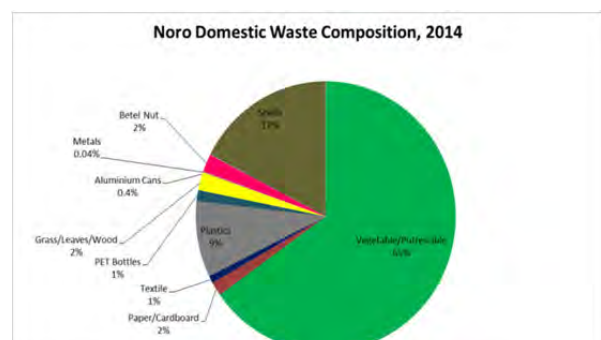
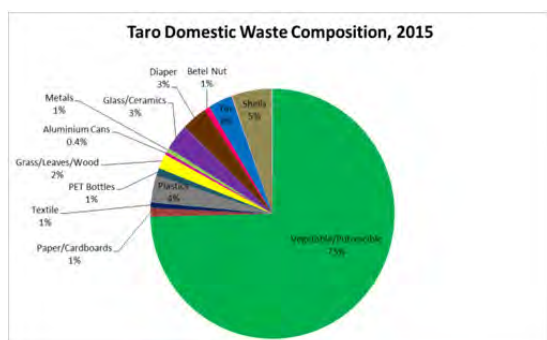
The Government of Solomon Islands is now reviewing the National Solid Waste Management (NSWM) Strategy and AP. Poor SWM practices at the source have also been identified as continuing issues of concern.

In order to provide the required feedback for the NSWM Strategy and better understand the SWM practices at source, MECDM has commenced the waste audits at the provincial levels. The visits to the provinces also include the collection of the solid waste management data in the provinces and discussions with the responsible officers there.

(2) Method of implementation

MECDM arranged visits to the provinces and the financial resources to implement the waste audit surveys in Noro, Munda and Buala in 2014 and in Taro in 2015.

The waste audits covered the two components of unit generation rate (kg/person/day) and waste composition. The results are shown in Figure 3-1.



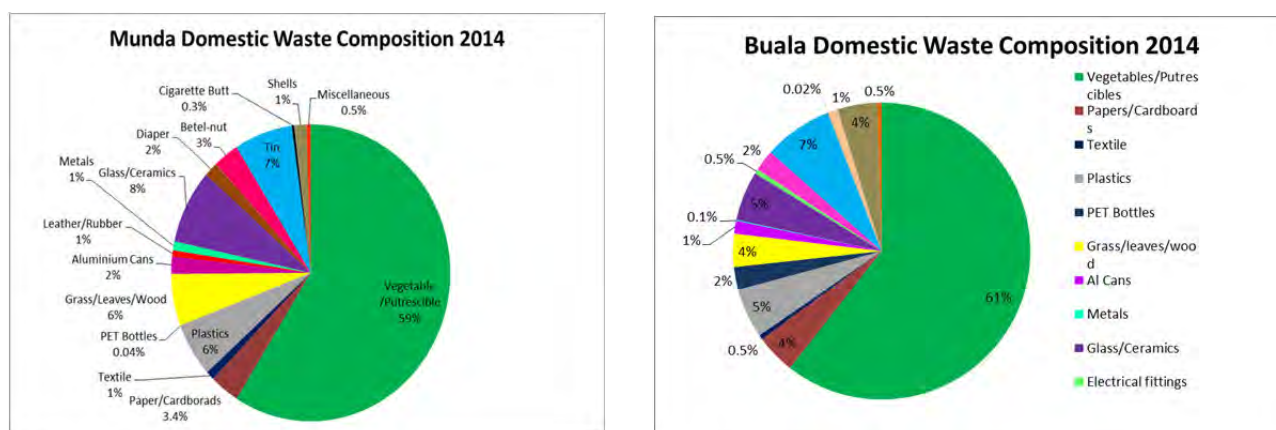


Figure 3-1 Waste Audits in the Provinces

These results are compared with the survey results for Honiara (2011) as shown in Table 3-1.

Table 3-1 Comparison of Waste Audit Results in Honiara and the Provinces

Item	Unit	Honiara	Taro	Munda	Noro	Buala
A. WASTE AUDIT						
(A-1) Vegetables/ Putrescible waste	%	51%	75%	59%	65%	61%
(A-2) Plastics	%	12%	1%	0.04%	1%	5%
(A-3) Tin/ Aluminum	%	9%	1.4%	3%	0.44%	5.5%
B. HOUSEHOLD WASTE UNIT GENERATION RATE	Kg/cap/d	0.86	0.32	0.27	0.1	0.22

The results show a clear difference between Honiara and the provinces in terms of waste generation and composition. The residents in the provinces still have good consumption practices and are not so “wasteful”. Also amounts of resources there, such as plastics and aluminum, are still low. Therefore the priorities for SWM in the provinces are different from those for Honiara.

(3) Lessons learnt

The Solomon Island counterparts emphasized the following lessons;

- Collaboration with other stakeholders with common interests to implement surveys and data collection
- Good consultation with Households & Commercial businesses
- Proper planning for waste audits
- Flexibility in implementation
- Utilize extracted information
- Education and Awareness accompanies the waste surveys
- Potential for small-scale recycling initiatives

(4) Issues

The main challenge that the counterparts faced during implementation of the waste audits were as follows;

- Need to increase awareness to households & commercial businesses to participate
- Logistics support
- Timing of Survey
- Lack of human resources to implement surveys at province level
- Weather can be a problem

- No Waste Collection system in most provincial centers
- Geography of area
- Location for waste sorting
- Ad hoc awareness raising
- Lack of proper landfill
- Human error in data collection e.g. forgot to issue plastic bag

(5) Future measures

The counterparts explained that it was important to continue the waste audits in the provinces and that they would face the challenges through improving their preparations, increased use of foreign

(6) Comments of the Participants

During the group discussions this practice was considered to be sustainable and should be applied to other countries.

3.2.4 Practice 4 – Upgrading of Baruni Landfill in Port Moresby

Presenter: Mr Simeon Terina, NCDC, PNG

(1) Necessity of the Good Practice

Baruni disposal site had been in operation since the 1970's with hardly any facilities or operating norms.

- Since it started, the site was used as an open and crude tipping site, while Port Moresby was slowly transforming from a small and humble township into a city after independence in 1975
- In 2010, the J-PRISM project formulation documentation was prepared and submitted for consideration, resulting in the current project rehabilitation programs.
- The site has a waste-picker and their independents, forming a population of over 500 persons.
- The site was under the control of the waste pickers and they basically directed the trucks to where to discharge the wastes and set fires to the waste once they removed the recyclable waste elements.
- Safety conditions within and around the site were dangerous

All these conditions necessitated both the upgrading of the disposal site into a landfill as well as improvement of the operations.

(2) Method of implementation

Under Output 1 of the JPRISM project, NCDC set out to both rehabilitate the disposal site and improve the operations there.

The rehabilitation plan was developed based on the semi-aerobic system and designs were prepared by the Project Engineer, who is a counterpart from the Engineering Department, NCDC. NCDC arranged the financing and the construction works commenced in 2014.

At the same time as the rehabilitation works progressed, the counterparts worked to improve the operations at the site in the temporary disposal area. The waste-pickers and their independents were engaged in discussions on the site improvements. Survey of the waste pickers' conditions was implemented.

With the cooperation of the waste pickers, the fires at the site were brought under control.

(3) Lessons learnt

The following lessons were emphasized:

- Improvement in monitoring and supervision

- Increased community cooperation
- Increased management support and cooperation
- Good stakeholders cooperation
- Safer and cleaner environment
- Potential to replicate the concept in other towns and cities or regions

(4) Issues

The main issues and challenges were described as follows:

- Huge number of waste pickers
- Loss of confidence and cooperation from waste picking community severely hampers the project progress
- Inefficient contractor
- In-effective contract implementation
- In-effective site supervision
- Lack of adequate static security
- No equipment and inadequate facilities for environmental monitoring

(5) Future measures

The counterparts explained the way forward as follows;

- Improve contract documentation
- Increase supervision on site
- Operate site as planned and designed (semi-aerobic system)
- Acquire adjoining portions of land for expansion and integration of other waste minimization initiatives

(6) Comments of the Participants

During the Group discussions the following recommendations were made by the participants to sustain this practice:

- The design needs to be flexible and depend on locally available resources
- The large budget allocated to the project by NCDC cannot be matched in other Pacific Island countries
- The group recommended that more environmental controls be adopted in the improved operations

3.2.5 Practice 5 – Waste collection monitoring improvement and expansion of collected services to settlements and villages

Presenter: Ms Vivianne Morofa, NCDC, PNG

(1) Necessity of the Good Practice

NCDC currently provides door-to-door collection service through private collection companies. The services are provided to suburban residents, commercial establishments, schools, markets and health care facilities.

The problems necessitating the improvement are;

- Inadequate services and levels of coverage
- Continuous breakdowns of collection trucks
- Non collections due to clients incorporative behaviour of improper waste storage
- Illegal dumping in settlements where services are randomly provided
- Piling of wastes due to contractor negligence

(2) Method of implementation

The counterparts developed a data base and physical understanding of the collection conditions through implementation of the following surveys:

- Time & motion
- Waste audit
- Incoming waste vehicle survey at the landfill
- Improved monitoring of the private waste collection companies

(3) Lessons learnt

The following lessons were emphasized:

- Keep effective communication skills with collection contractors and other relevant stakeholders to ensure services are effective and efficient on a professional level.
- Commitment and effective participation in all aspects of solid waste management
- Ensure effective monitoring system is in place
- Do not take bribes or favours from contractors as it will undermine your professionalism
- Develop, share and implement innovative ideas to help improve SWM

(4) Issues

The main issues and challenges were described as follows:

- Politics
- Funding
- Minimal Separation of waste
- Lack of Communication
- Lack of Commitment & Enthusiasm

(5) Future measures

The counterparts explained the way forward as follows;

- Introduction of the Communal Collection System in both Domestic & Settlement areas with more focus on settlements
- Active Awareness Program & Education to the settlers.
- Effective Monitoring & Assessment
- Continuous interaction with the community and the contractor

(6) Comments of the Participants

During the Group discussions the following recommendations were made by the participants to sustain this practice:

- Separate accounts for the revenue from the collection services fees should be established
- A better understanding of the costs for collection is necessary
- Legal framework should be established
- Continuous strengthening of monitoring capacities

3.2.6 Practice 6 – Development of SWM Plan

Presenter: Ms Vivianne Morofa, NCDC, PNG

(1) Necessity of the Good Practice

In 2014 NCDC adopted the WM Policy. The policy identified the need to prepare the NCDC SWM Plan. The plan itself was included in the Output 03 J-PRISM project schedule.

The project team then started work in early 2014. Studies were prepared on waste minimization in order, to prepare this component of the SWM Plan.

(2) Method of implementation

The plan is being formulated as follows;

- Baseline surveys were conducted to identify the present conditions of SWM.
- Existing conditions, issues and proposals for policies were prepared together with future forecasts on the waste amounts.
- First stakeholders workshop was held in 2014 to discuss issues and policies & receive comments & recommendations
- The framework was then prepared. It finalised waste amounts, priority issues, policies & strategies.
- A 2nd stakeholders' workshop was held in March 2015. Technical alternatives for the plan were discussed.
- 1st draft of the SWM Plan is in preparation & should be ready by September, 2015

(3) Lessons learnt

The following lessons were emphasized:

- Workshops must be well organised to engage stakeholders in more discussions
- Presentations are never enough to understand SWM, field visit arrangements are also important.
- Staff members of WMD facilitate the discussions with stakeholders & this deepen knowledge
- Public awareness is the key to successful & sustainable SWM & this was raised continuously in the workshops.
- Films & photos shared on the Baruni rehabilitation encouraged the general public to support the plan preparation
- More efforts on awareness is required to encourage residents to separate recyclables and bring out their wastes on time to collection stations.

(4) Issues

The main issues and challenges were described as follows:

- To obtain public support
- Difficulty of average stakeholders to understand technical issues of SWM, such as incineration
- The SWM Plan will address municipal waste. Hazardous industrial & Health care waste will have to become the responsibility of generators.
- It is now very important to speed up plan approvals

(5) Future measures

The counterparts explained the way forward as follows;

- To have the draft plan prepare by September, 2015
- Convene a final stakeholders workshop in November 2015
- Finalize the plan by January 2016
- Start the plan authorization process

(6) Comments of the Participants

During the Group discussions the following recommendations were made by the participants to sustain this practice:

- Develop more public awareness on SWM and considering the various strata of the society
- Obtaining the understanding and support from the decision makers in order to ensure that the plan will be implemented

3.2.7 Practice 7 – Composting of market green waste

Presenter: Mr Berry Mahau, PVMC, Vanuatu

(1) Necessity of the Good Practice

Waste Issue in Port Vila is a critical issue for Port Vila Municipal Council (PVMC) and the Council needs to put more efforts in dealing with waste issues and consider alternative solutions to improve its Solid Waste Management.

Port Vila Municipal Council (PVMC) operates two Markets in Port Vila in this pilot project, one in the center of the Town and the other one in a community based area called Freshwota, where farmers sell their local produces to the general public. But recently the market management and responsibility was given back to the community for Freshwota.

The Market Waste Compost Pilot Project was implemented within a two (2) months period, commencing on the 1st of October and ending on the 30th of November, 2013 at Central and Freshwota markets

The Pilot project was designed from the previous Solid Waste Survey outcomes as well as the waste stakeholders mapping. A small scale Solid Waste Survey was conducted by JICA assisting to find out the tendency of Port Vila waste composition, as well as the amount generation from household, business, and markets. The result shows that Central market is the biggest waste generator with 98% of organic waste.

Vanuatu Direct (VD), which involves in floriculture business in Mele, has past experience working with PVMC on the similar exercise. VD had intention using organic waste for composting.

(2) Method of implementation

The implementation was as follows;

- The mamas were educated by public awareness campaign to properly separate their green wastes from other wastes and bring to the designated point in the market
- Vanuatu Direct, a private concern, operates a farm and botanical garden. They agreed to receive the properly segregated green wastes at their farm and they would compost by themselves.
- Drum cans were placed for storage of the separated organic waste. However the capacity of the drum cans was not enough considering the generation amount of green waste and they were replaced by a designated open space.
- PVMC provided the vendors with black plastic bags for the separation.
- Collection workers of PVM segregate other wastes (plastic, metal etc.) during loading work at the designated place

(3) Lessons learnt

The following lessons were emphasized:

- The drums are too heavy when full and better to replace by the open space
- Public also used the discharge point to put in waste such as plastic and metal. It is necessary to put sign at the designated place
- A truck should be allocated for the project or for the market.
- Other than the designated location, many discharge points appeared.
- More awareness should be done at the market
- The signboards for the project were too small for people to read
- The vendors (Mamas) think that the market staffs are responsible to remove the waste the mamas' generate. But we have to educate them to be responsible for their own waste.
- There is still green waste from other markets going to landfill and we want the whole waste to go to Vanuatu direct. Even though there is no revenue from sale of the green waste but it helps the PVMC in:
 - reducing the amount of waste going to Bouffa
 - Fuel and road to VD is maintained
- There has to be a bylaw for the market concerning waste. The bylaw should include such items as waste is

not to be put out after working hours, waste is supposed to be put directly to the truck and not on the ground, and that everyone is responsible to bring their own waste to the truck.

- During the pilot project the central market overall cleanliness improved very much.

(4) Issues

The main issues and challenges were described as follows:

- Green waste attracts rats and other insects causing unhealthy and unsafe environment for public and tourists.
- Availability of the PVMC truck is not reliable and sometimes uncollected green waste at the market piles up and occupies too much space.

(5) Future measures

The counterparts explained the way forward as follows;

- A specific truck was allocated to the market
- The truck itself became the discharge point, avoiding the designation of an open point as much as possible
- Other discharge points were reduced in number at the market
- Vanuatu Direct is interested to receive more green wastes and therefore PVMC will include other markets in the future. Candidate markets are Anaburu, Manples and Freswota. Although these markets are not owned by Port Vila Municipal Council their wastes are going to the council landfill. Therefore PVMC plans to work with the market authorities to increase awareness on segregation of green wastes and will designate a vehicle for collection.

(6) Comments of the Participants

During the Group discussions the following comments were made about this practice:

- The practice seems to be sustainable
- However it is recommended to improve the transport system from the market to the end-user in order to reduce transport costs.
- The members from other countries in the group expressed interest to apply this practice in their own cities.

3.2.8 Practice 8 – Introduction of pre-paid bags system

Presenter: Ms Gina Tari, LMC, Vanuatu

(1) Necessity of the Good Practice

The pre-paid bag system is a 'Pay as You Throw' system, where residents pay for waste management services per unit of waste discarded rather than solely through property tax. It is equivalent to putting a price tag on each bag of rubbish that is placed out for collection.

When residents pay directly for waste management services they are provided with a financial incentive to reduce their waste through recycling, composting and waste reduction.

This system also helps the Municipality lower waste management costs and increase recycling and composting.

(2) Method of implementation

The implementation was as follows;

- Legislation framework was prepared;
 - Approval to go for tender was received by the Minister of Internal Affairs (27th June 2014) and the Minister of Finance (5th August 2014).
 - A by-law for introduction of the pre-paid bag system was submitted to the State Law Office and issued

(27th Sept. 2014).

- A tender was announced for import, storage, supply and distribution of the plastic bags. Three companies tendered, and under the Selection Panel Review Process the tender submitted by Santo Hardware was selected. A three year contract was signed (17th Sept. 2014).
- The system will work as follows:
 - Santo Hardware imports the bags and ensures a minimum 3 months' supply of bags is in Luganville at all times.
 - Santo Hardware will ensure all retailers large and small sell the bags
- The awareness program was implemented using radio, posters, church notices, brochures and letters, newspapers, stickers on business house windows and wardens. In addition some youth were employed as Red Bag Promoters (RBP) and worked as follows:
 - 4 RBP's visit every household explain the new system and provide one free Red Bag
 - 1 RBP visits every business house and small store and sell the bags.
 - 1 RBP stationed at a stall at the Market House and in LMC outside reception.
 - 4 RBP's are on the two trucks leaving a warning notice for first month
 - 4 RBP's are on the two trucks after first month issuing noncompliance notices

(3) Lessons learnt

The comprehensive approach, considering legislative requirements, tendering and public awareness and detailed preparations for each worked very well to successfully introduce the system in LMC.

(4) Issues

The main issues and challenges were described as follows:

- Changing attitudes and behaviors towards waste is a very lengthy process
- Complaints about the price
- Ensuring waste collection operators collect Red Bags only
- Political interference
- More community awareness and schools too

(5) Future measures

The counterparts explained the way forward as follows;

- Work with the Sanma Provincial Council Government to expand pre-paid bag into peri urban areas
- Review the Sanma & Luganville Waste Management Plan to include pre-paid bag activities for the Sanma Provincial Council
- Share information with other municipalities on pre-paid bag system

(6) Comments of the Participants

During the Group discussions the following comments were made about this practice:

- The practice is sustainable in LMC and applicable to other municipalities
- It is recommended to use durable bio-bags
- This practice reduces the number of waste pickers at the landfill.

3.2.9 Practice 9 – Public Waste Collection Company

Presenter: Mr Ronald Sandy, PVMC, Vanuatu

(1) Necessity of the Good Practice

Mr Sandy listed four aspects why the public waste collection company was introduced.

1. Regulatory Aspect:
 - I. Pollution Control Act
 - II. Waste Management Act
 - III. Municipality Act
 - IV. Employment Act
2. Policy & Administrative Aspect
 - I. Downsizing
 - II. Sustainable & Profitable Institution
 - III. Public Private Partnerships
 - IV. Zero Waste City and Litter Free City
3. Economic Aspect
 - I. Economic Growth versus Waste Management
 - II. Population growth versus waste management
 - III. Economic value of waste
4. Climate Change and DRR and Preparedness
 - I. Climate change adaptation
 - II. Disaster Relief and Rehabilitation (DRR)
 - III. Preparedness for disaster waste
 - IV. Resilient city

(2) Method of implementation

The implementation was explained in three steps as follows;

1. Corporate Governance
 - I. Name : City Waste Removers
 - II. Registered Company : Approved Vanuatu Financial Service Company
 - III. Public Company : 100% shares – PVMC
 - IV. Shareholders : Lord Mayor of Port Vila
 - V. Structure & Board : Approved by Council
2. Administration & Management
 - I. Operating Revenue : 100 million Vatu per year
 - II. Staffing : 2015; 25 staff
 - III. Management : Manager, Foreman and 18 Staff
 - IV. Finance Control : Sub Contract Accounting
 - V. Products : Pre-paid bags, gauges and bins
3. Priority Focus
 - I. Financial Performance
 - II. Operational Performance
 - III. Custom Service & Marketing Performance
 - IV. Utility & Employment Safety, DEVT & Performance

(3) Lessons learnt

The Public Company will operate for a couple of years and if it is successful it will be transferred into a full private company.

(4) Issues

No issues were presented as the practice has just started.

(5) Future measures

The counterparts explained the way forward as follows;

- Performance
- Sale of shares
- Sub-contracting

(6) Comments of the Participants

During the Group discussions the following comments were made about this practice:

- The group was divided on whether the practice could be sustainable or not.
- The group members also explained that the practice may not be applicable to some municipalities
- In order that the system succeeds the group proposed that the government provide support and that there should be economical instruments

3.2.10 Practice 10 – Developing a controlled dump site in a small town

Presenter: Mr Derald Michael, GTC, Solomon Islands

(1) Necessity of the Good Practice

The Gizo open dump site has been in use for the last 20 years. There were no facilities, equipment, and operation plans there.

At the start of the J-PRISM project, the expert team prepared the “Master Development Plan for Gizo Waste Disposal Site 2012-2016”. However due to lack of equipment and other resources the implementation of this plan never started. Recently the team has developed a more practical plan and provided an attachment for the tractor in order to push the waste at the site.

(2) Method of implementation

In August 2012, an excavator was hired for a few days to start the re-arrangement and placement of the waste at the site.

The J-PRISM team provided an attachment part for the tractor (a blade) in 2014. Since then the waste has been arranged at the site almost daily. A fence and gate have also been erected in 2015 along the site perimeter.

(3) Lessons learnt

The Counterparts explained that the lessons learnt from the improvement of the site were as follows;

- Importance of Regular Dumpsite maintenance
- Proper awareness about the Risks of lighting fires
- When using Tractor to move waste around in the dumpsite care must be taken to ensure that tires don't get punctured
- Proper fencing is important in order to control careless dumping of wastes
- A caretaker must be stationed at the Dumpsite to control incoming wastes

(4) Issues

The main issues and challenges were described as follows:

- The open dump is uncontrolled and insanitary posing health risks.
- It is situated along the road side and may cause road congestion should it be full
- The refuse dump harbors rodents and other vermin.

- The dumpsite is smelly.
- No appropriate logistics in place for refuse management on site.
- Insufficient capacity to manage current dump site.
- Public Awareness is lacking
- Finance is difficult to secure continuously
- Lack of man power
- Still yet to develop an operating Manual for the Dumpsite

(5) Future measures

The counterparts explained the way forward as follows;

- A regular maintenance of the dumpsite
- Proper Public awareness
- Recruitment of a dumpsite caretaker
- Controlled waste dumping
- Improvement on budgetary support
- Development of an operating manual for the dumpsite

(6) Comments of the Participants

During the Group discussions the following comments were made about this practice:

- The practice is sustainable in GTC and applicable to other municipalities
- The Group recommended the following:
 - Complete the installation of the fence
 - Recruit staff for the site
 - Prepare signage and notices
 - More training for GTC staff on landfill operation
 - Erect a dump-site office
 - Allocate an area at the site for healthcare waste
 - Develop awareness education

3.2.11 Practice 11 – Introduction of collection station system

Presenters: Ms. Margaret Moveni and Ms. Jully Kalamana, WPC and GTC, Solomon Islands

(1) Necessity of the Good Practice

There has been no regular collection service in Gizo.

This practice was introduced with the following aims and objectives:

- To identify the best collection system to provide efficient collection and transport of the waste
- To collect all solid wastes from the households
- To encourage segregation of wastes and composting of organic wastes.
- To make Gizo Town clean and healthy

(2) Method of implementation

The Gizo team explained their process for implementation as follows:

- First we found out which places were most suitable for allocating collection stations
- Then we decided what time was suitable for collecting wastes, how community will manage their platform and the flow of wastes.
- The team built the platforms and installed within each zoning community
- Public and household awareness was made about the collection station.

- Prepare the monitoring plan to observe how the public use the stations, how much waste was collected and how it was collected

(3) Lessons learnt

The Counterparts explained that the lessons learnt from the collection system were as follows;

- Counterparts became committed when the time for field work started
- Information sharing among counterparts
- Less illegal dumping around town and community zones area.
- The public understood the importance and use of the collection station.
- Partnership with few business houses supports the success of the project
- Provincial Government concern on, and support for the project

(4) Issues

The main issues and challenges were described as follows:

- Wastes are not properly put in plastic bags and tied.
- Wastes are just poured on the platform and fall around it.
- Much organic wastes are collected which can be used for composting.
- Time management for transporting wastes to the dump sites is important
- Public is careless to use collection stations
- Public continue bringing wastes for collection any time they want and do not follow the wastes collection schedule

(5) Future measures

The counterparts explained the way forward as follows;

- Public awareness (house to house, radio) for the following messages;
 - Date of rubbish collection
 - Which rubbish can be collected
 - Proper way to manage rubbish (tight up by plastic bag)
- Keep monitoring rubbish collection stations and expand it to other areas
- Increase number of collection stations to minimize over flow of rubbish at collection stations
- To create proper rubbish collection schedules by Gizo Town Council
- Community help more to keep collection stations clean and well-managed

(6) Comments of the Participants

During the Group discussions the following comments were made about this practice:

- The practice is sustainable and applicable to other cities and towns
- The group recommended the following:
 - Develop more community participation through public awareness
 - Increase the commitment on the part of the waste collectors
 - Develop the necessary legislation and plan

3.2.12 Practice 12 – Establishment of “Return” system of cans

Presenter: Mr. Naoya Ueno, JOCV attached to GTC, Solomon Islands

(1) Necessity of the Good Practice

This practice was introduced for the following reasons:

- Gizo is an outer island from capital city
- It is costly to send recyclable materials to Honiara

- There is no recycling company in Gizo
- There is no formal recycling system there
- Recyclable waste is everywhere in Gizo Town

(2) Method of implementation

The Gizo team tried to create a recycling system by:

- Finding a company or organization to buy, send and sell to recycling company as a part of their job
- Find a return route to Honiara
- Find any company to buy the recyclable materials
- Increase awareness on recycling

However the Gizo team could not find such a company operating in Gizo. Instead they found a private person, together with her family who collects the aluminium cans and sends the collected cans by their own means to Honiara. In Honiara, a recycling company is buying the cans for export.

The Gizo team decided to support this individual by collecting more aluminium cans and giving to her so she can send to Honiara and sell them there.

(3) Lessons learnt

The Counterparts explained that the lessons learnt from this practice were as follows;

- Public should be leading this “return” project, because the Government is not stable
- The Government can be a good supporter
- All possibilities should be explored in order not to miss the chance
- Follow up on a weekly base and plan future prospective together
- Consider potential to recycle other waste materials

(4) Issues

The main issues and challenges were described as follows:

- Transportation
 - need transport to bring Aluminum Can to port
- Bags for storage and sending to Honiara
 - not enough bags
 - Its costly
- Storage
 - no proper place to keep Aluminum Can
- Shipment
 - not regularly scheduled and freight is expensive
- Sustainability!!
 - not much high income but a lot of work

(5) Future measures

The counterparts explained the way forward as follows;

- Install Aluminum Can Collection cage at Market
- Prepare storage container at Gizo hospital
- Open recycle shop at market every week
- Continuous Support from Government
 - Budgetary (e.g. freight)
 - Public Awareness

(6) Comments of the Participants

During the Group discussions the following comments were made about this practice:

- In the long run this practice may not be sustainable in rural areas where the supply and demand for recyclables are both low. Recycling is more likely to succeed in the urban areas.
- In general a government subsidy is required for the recycling activity to succeed.
- It would be helpful if there was a regional agreement for government intervention
- This practice may not be applicable to all municipalities

3.3 Questions & Answers at completion of presentations

Some questions were raised, and comments made at the end of each country's presentation. These are briefly summarized as follows.

Ms. Carol Rovo had a question to Mr. Joe Kelesi whether separate cells were arranged for medical Waste and sludge (presentation 2) during the disaster waste clean-up, and asked about the waste quantities from the quarantine or biosecurity.

- Mr. Joe Kelesi answered that there are many problems and they don't have a proper site for sludge.

Ms. Carol Rovo asked about national policy of waste management (Presentation 3), and whether there is any priority about solid waste management?

- Ms. Wendy Beti answered that HCC has a law called Honiara Litter Ordinance, and Isabel said that the Western province has a waste solid management ordinance.

Ms. Carol mentioned that Vanuatu had one recycle company. She asked how many recycle companies does Solomon have?

- Ms. Wendy Beti answered there are about 4 companies collecting aluminium cans and scrap metals.

Mr. Simeon Terina commented that it was good for all participants to talk to each other and share experiences and suggestions.

Ms. Vivianne Morofa asked about the waste audits made in Honiara.

- Ms. Rosemary answered that waste audits in Honiara were done for each of household waste and commercial wastes.

Mr. Andrew Mua, commented about Mr. Jimmy's comment about budget. To realize SWM, the attitude of people has to be changed. As to budgeting, the National Government and the people need to understand the concept of SWM. Honiara City Council is continuing to improve the landfill. SIG put budget for the dumpsite. We need to relocate the land fill.

- Mr. Charles Kelly announced that HCC is working on relocation on landfill. They had looked for a land, and it has been offered, so they will negotiate from now on. Also, HCC is working for new ordinance for SWM. They will review every current ordinance and make new ones using EU aid.

Mr. Patrick To'iraena commented that the law can help with the people living in the dump site.

- Dr. Melchior Mataki answered they chase away these people but after a few month, they return. He said that it was important to engage them because they are also contributing SWM.
- Proper WM should be taught at very small age. School has a program of Water management.
- HCC is serious about this matter and relocation of landfill. SIG will try, too. There are many big problems to

realize, but commitment is very important.

Mr. Richard Jones commented that there are many challenges, but it is good raise up and we can learn from them.

Mr. Charles Kelly commented that HCC is facing serious financial problem, so they are discussing about charge of \$10 on top of ticket for any one coming to Honiara from outside its boundaries, and use the money for waste management.

Mr. Ronald Sandy commented if we had a good technology, we could treat the waste before throwing it away as rubbish.

- Mr. Simeon Terina answered that they have a good collection system but do not separate the waste. Much funding is needed to introduce improvements in the landfill and treatment.
- Mahmoud Riad commented that it is important to understand how much waste is generated , will be collected and disposed when planning for suitable treatment facilities.

Mr. Tom Nanau Commented that for waste collection, there are three partners. The first one is collector, second is resident, and the third is authority. It is very important to involve the private collector. He wants to learn as well.

- Mr. Simon Terina answered that they have open tender for waste collectors. It takes a long time to establish the waste collection system. In Port Moresby, there is a good collection system. The authority and the collector are communicating well.

Mr. Tom Nanau stated that from Mr. Simeon's explanation we have learned that instructions are given to the community, and if the waste collector did not come on time, the residents can call the authority. In this case the authority will not pay until the collector collects the waste. In Gizo's case, they have already done the zoning and started collection system, so the communication with community and collector is important. He also commented about Mr. Naoya's presentation. It is good that Mr. Naoya made agreement with the lady collecting the aluminium cans; it is a win-win situation. This lady is also a collector. The collectors are the key for improvement of waste collection. Also, giving hand to community is also important.

3.4 Group Discussions

At the end of the presentations the participants were randomly divided into four (4) groups. Each group was allocated three of the 12 good practices presented and tasked to discuss the following specific topics:

1. Is the Practice sustainable?
2. What improvements can be suggested?
3. Is the Practice applicable to your countries/ municipalities?
4. Group selection of Best Practices of 12?

The discussions contents are produced in **Attachment 2**. A brief summary is provided in Table 2-2.

Table 3-2 Summary of Session A Group Discussions on Good Practices

Group 1	Group 2	Group 3	Group 4
<u>Practice 1:</u> (1) Sustainability; Yes and No (requires constant monitoring and	<u>Practice 2:</u> (1) Sustainability Not for Ranadi due to poor site location	<u>Practice 3:</u> (1) Sustainability Yes	<u>Practice 4:</u> (1) Sustainability Yes

Group 1	Group 2	Group 3	Group 4
coordination) (2) Improvements: - Legislation - Political support - Budgetary support (3) Applicability: Yes	(2) Improvements: - Disaster waste management awareness - Proper landfill assessment (3) Applicability: Yes	(2) Improvements: - Train province officers - Separate audits for settlements (3) Applicability: Yes	(2) Improvements: - Flexible design/ plan - Use local materials (3) Applicability: Yes
<u>Practice 5:</u> (1) Sustainability Yes (2) Improvements: - Special accounts - Legal framework (3) Applicability: Yes	<u>Practice 6:</u> (1) Sustainability Yes (2) Improvements: - Decision makers support - Awareness raising (3) Applicability: Yes	<u>Practice 7:</u> (1) Sustainability Yes (2) Improvements: - Transport costs improved (3) Applicability: Yes	<u>Practice 8:</u> (1) Sustainability Yes (2) Improvements: - Source separation - Bio-degradable bags (3) Applicability: Yes
<u>Practice 9:</u> (1) Sustainability Yes and No (2) Improvements: - Government support - Economical instruments (3) Applicability: Yes and No	<u>Practice 10:</u> (1) Sustainability Yes (2) Improvements: - Complete required facilities - Engage skilled staff (3) Applicability: Yes	<u>Practice 11:</u> (1) Sustainability Yes (2) Improvements: - Community/ collector commitment - Develop plan (3) Applicability: Yes	<u>Practice 12:</u> (1) Sustainability Yes (urban), No (rural) (2) Improvements: - Government subsidy - Regional cooperation (3) Applicability: Yes and No
Best: Practice 8	Best: All Practices	Best: Practice 8	Best: All Practices

Most of the good practices were deemed sustainable and applicable to the other municipalities. Two of the four groups selected the pre-paid bag system practice introduced in LMC as the best practice while the other two groups declined to make a selection.

4. Session B – Reflections on J-PRISM

The participants were asked to reflect on the J-PRISM project, especially on how it has increased their capacities to perform their work. Two methods were applied: first the participants were given individual questionnaires to fill out and submit, and this was followed by group discussions.

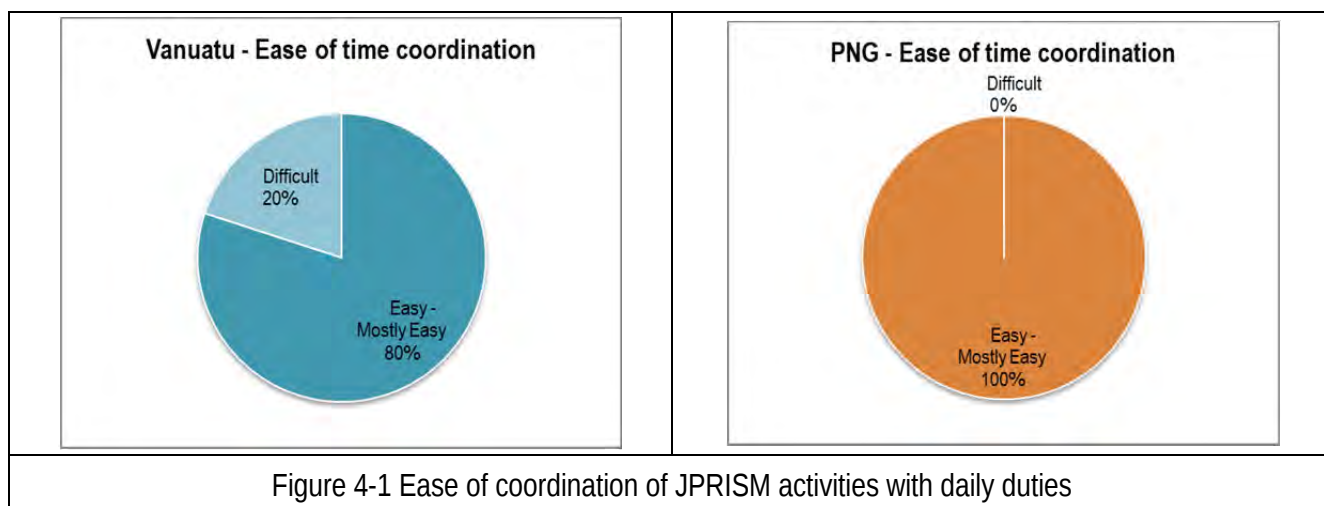
4.1 Individual Questionnaires

The questionnaires covered the items as shown below:

Item	Evaluation			
1) Has the project PDM and PO in your country formed a good basis for the project activities?	() Very good	() Mostly good	() Not good	() Don't know
2) Has it been easy to coordinate your time between your duties and J-PRISM activities?	() Easy	() Mostly easy	() Difficult	() NA
3) Has your experience participating in J-PRISM activities affected your job delivery efficiency?	() Much improved	() Some improvement	() No difference	() NA
4) Evaluate your capacity improvement in the following;	Very much	Some improvement	None	NA
(4.1) Technical aspects	()	()	()	()
(4.2) Institutional aspects	()	()	()	()
(4.3) Public awareness	()	()	()	()
(4.4) Financial aspects	()	()	()	()
5) Evaluate effectiveness of some J-PRISM activities	Very much	Some Effect	None	NA
(5.1) Training in Japan	()	()	()	()
(5.2) Training in regional countries	()	()	()	()
(5.3) Dispatch of JPRISM experts	()	()	()	()
(5.4) Providing small scale equipment of facilities	()	()	()	()
(5.5) Holding of workshops	()	()	()	()

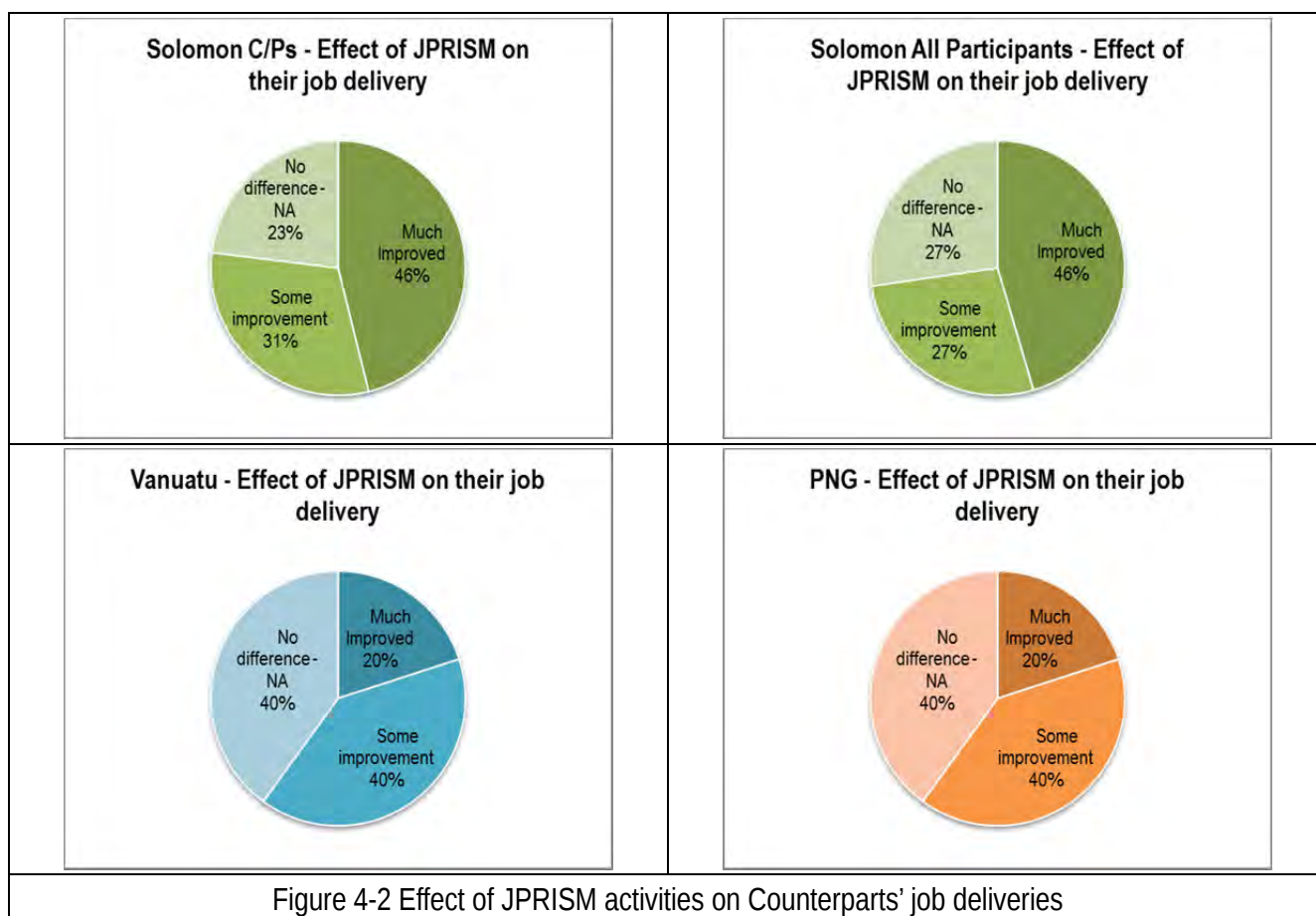
The counterparts responding to the questionnaires were also requested to include their comments as appropriate. In terms of the ease of incorporating the project activities within their daily activities the participants replied as graphically represented in Figure 4-1.





The PNG counterparts had no problem with managing their daily duties with the JPRISM activities. On the other hand more than one third (38%) of the Solomon counterparts found difficulties in incorporating the JPRISM activities with their daily duties. This may be understood by the dual responsibilities of the Solomon counterparts as both public health officers as well as waste management officers, while in the case of PNG counterparts, their sole responsibility is solid waste management.

Figure 4-2 shows the graphical results of the participants' replies to the extent of the effect JPRISM has had on their job delivery efficiencies.



The Solomon counterparts replied that due to JPRISM their job deliveries had much improved, at just short of 50%. On the other hand both PNG and Vanuatu counterparts replied that JPRISM had "some" improvement.

4.2 Group Discussions

Upon completion of the individual questionnaires, the participants were divided into four groups. The group composition was per-arranged to ensure a mix of countries. Each group discussed on the following topics;

Discussion topics:

1. Degree of capacity development achievement
2. JPRISM effect on the counterparts daily activities
3. JICA side project activities; training overseas, experts dispatch, small-scale equipment and facilities grants
4. Any other comments

Upon completion of the discussions each group made a presentation of their group discussions. Some noteworthy comments are described in the following Table 4-1.

Table 4-1 Significant Comments of Session B Group Discussions on J-PRISM Reflections

Group 1	Group 2	Group 3	Group 4
(1) Degree of capacity development achievement			
- Increased SWM awareness on natl. level - Improved skills for landfill management	- Local expert for landfill - Legislation is being arranged	- Capacity has been developed at all fronts	- Better coordination - Increased motivation
(2) J-PRISM effect on counterparts daily activities			
- Discipline to meet target datelines - More responsibilities to counterparts	- SWM is prioritized - Project activities are part of counterparts' daily activities	- Enhanced collaboration amongst C/Ps - Broader view of SWM	- Positive effects
(3) JICA side project activities			
- Experts need to stay longer periods - Facilities grants minimum and process is time consuming	- Utilize local experts more - Allocate project funds based on countries activities/needs	- More regional training - Shift more aid to large scale facilities development	- Improvement of daily activities - Changing mindsets
(4) Any other comments			
- Experts should "speak same language" with local C/Ps. - Notify PICs on project budget allocations.	- Long term experts dispatch - Project TOR should be broadly publicized	- Strengthen communication between Pacific regional countries - Assist with legislation at all levels	- Increased political support for SWM - Extend J-PRISM to Phase II

4.3 Questions & Answers at completion of group presentations

Some questions were raised, and comments made at the end of each country's presentation. These are briefly summarized as follows.

After presentation of Group 3, Mahmoud Riad requested clarification on their recommendation for more regional training. Group 3 had suggested increasing overseas trainings; did that mean that one person should go many times or that many people should be given the opportunity to train.

Mr. Jimmy Hilly, the presenter of group 3 answered that many people should be given the opportunity to train.

Mr. Patrick To'iraena suggested that for sustainability, it's good to involve those people who have better understanding of SWM. Political support is important, too, but those people can spread the knowledge.

After Presentation of Group 2, Mahmoud Riad asked about the meaning of the TOR that they recommended to be fully publicized?

Mr. Ronald Sandy, the presenter of Group 2 answered that in the national policies; there should be specific mention of solid waste management. At present most of the national policies talk about the environment as a whole. To put solid waste management in the policy, the project can be in a better position to provide advice on legislation.

Mr. David Mamupio commented that each government is working for waste management within the law, and apart from that we should all work together on solid waste management and improve upon the laws.

After Group 4 gave their presentation, Mr. Tom Nanau commented that it's time to commercialize this concept to community. Some may consider that SWM is the problem of city councils, but we all have to seriously work on SWM before the problem becomes too big to control.

After Group 1 gave their presentation, Mr. Ronald Sandy commented that the private sectors should help management (e.g. as practiced in the electricity sector), and that we should make more efforts to realize composting.

Mr. Derald Michael commented that for Gizo dump site, JICA had spent a large amount of money, but because of poor planning, the rehabilitation has not been completed. Therefore, for J-PRISM phase II, the plan has to be made properly.

Mahmoud Riad replied that the experts were already in the field and that the amount was not as large as that. However it is better for all to reach a common agreement on the plan. Presently this is the case in Gizo, as we understand.

Ms. Natsuko Kishimoto commented that the feedback from counterparts is very important to be able to improve upon the training programs. Also the trainees who return to their countries and find it difficult to implement the action plans they prepare during their training may consult with their trainers and inform them of the problems they faced when trying to implement the plans.

Mr. Simeon Terina commented about capacity building. He said we can develop capacity and capability through working on such as training and doing action plans. PNG has new action plans now. Costs of the plans should be carefully estimated and revenues considered so that the implementation of these plans can be self-financed.

5. Session C – Field Visits

5.1 Targeted Field Visits

The Honiara counterparts arranged three field visits for the participants, in order to witness the progress and challenges they face in SWM. Prior to the field visits the HCC counterparts made three presentations related to the sites to be visited (**Attachment 3**).

(1) Saint Nickolas School

Eco School Program has initiated in Honiara under J-PRISM to raise awareness in schools for both teachers and students to understand the impact of waste to health and environment and to advocate and educate schools to practice 3Rs and minimize waste etc. HCC has organized several workshops and monitoring to encourage the teachers and students.

The Saint Nicolas School is one of the active schools under Eco School Program, and has already initiated some activities such as collection of aluminum cans, competition of classroom eco-friendly activities etc.

(2) Panatina Valley Community

Waste segregation has been promoted as a pilot project at Panatina Valley Community since 2013. The main goal of the pilot project was to have a better understanding on waste segregation and collection schedule by the residence where only inorganic wastes are collected and allowing organic to be use back to the soil.

The participants visited the Panatina Valley Community, exchanging opinions about their activities, for example, how to improve community composting.

(3) Ranadi landfill

Ranadi landfill is the only landfill in Honiara and HCC plans to rehabilitate the existing disposal site by adopting the semi-aerobic landfill method under JPRISM. Some progress has been observed: Solomon Counterparts conducted several surveys (topographic survey, waste picker survey etc.) and HCC employed a landfill supervisor. It is notable that an administration office and fence were constructed with the support of Grass-root scheme of Japanese Embassy.

5.2 Questions & Answers at completion of presentations

Some questions were raised, and comments made during the field visits. These are briefly summarized as follows.

Saint Nicholas School

Mr. Jerome Enato'o introduced Mr. George Moffat, school teacher and responsible for the Eco School Program in the school to all participants.

Mr. George Moffat guided and explained eco school project in St. Nicholas school. He showed pot flower competition, collection of aluminum cans, organic waste (compost), waste separation wheel bins, and decorations in the school made by waste items.

Ms. Gina Tary Viuge asked if the wastes are separated in the class.

Mr. George Moffat answered no. They put every waste in one bin at class, and separate at wheel bins outside. And they are planning to arrange classroom monitors and give awards to the best classes that separate the wastes.

Ms. Gina suggested that the time schedule should be set and have the students look after waste by themselves.

Mr. Jerome Enato'o thanked St. Nicholas school and Mr. George Moffat for their efforts in the eco-school program and welcoming the workshop participants.

Panatina Valley Community

Ms. Mercy lilu Nunua introduced the central home compost system in Panatina Valley community.

Ms. Gina Tary Viuge commented that to make compost, we need dry waste such as banana leaves, and make layers of wet and dry waste. It is not good to mix too many times, and better to just turn over once a month, and then the heat will be raised to 60-70 degrees.

Mr. George Titulu explained that there are about 40 households in this community, and since the area is located in town, new people are always coming to reside here. That is making awareness and instruction difficult. At this pilot site, they are trying to instruct people on waste separation and compost is a part of it. The community discussed and built a compost facility at Community Hall here with the guidance of SINU professor.

Ms. Gina Tary Viuge commented that she saw many dry leaves on the ground and road, but those are better to be composted, not burned. In Luganville, they encourage citizens to compost instead of burning for reduction of the waste and also health reasons (to avoid burning plastics with dry leaves). Cardboards and papers can be composted, too.

She also explained the technique of their composting. They use local materials to make 1 x 2 meters casing, and put waste inside dry and wet layered. They mix only once a month, because if the waste is mixed too frequently the bacteria cannot work. If the temperature of the waste reaches 60-70 degrees, then the composting process is considered to be working well. When ready, we can use the compost for gardening, and it is ideal for seed bed. The place of building compost has to be a level place, and sheltered by roof for avoiding wet by rain.

Ms. Mercy lilu Nunua showed the use of compost in the flower garden of one of nearby households.

Ranadi Landfill

Mr. Joe Kelesi introduced staff and facilities at Ranadi landfill, and mentioned that the storage of recyclables will be built by the LEAF project. The training centre was made by the Embassy of Japan under their grass roots project, and the fence was erected by DFAT.

Mr. Joe Kelesi showed the disposal area. There is only one tire wheel loader pushing rubbish, and it is very hard work. The loader is fueled once a week.

Ms. Meriwena Vivian Morofa asked if only residential waste was being disposed of at the site.

Mr. Joe Kelesi answered that they are accepting all types of waste from the city.

Ms. Meriwena Vivian Morofa suggested to collect tipping fees from business houses to help cover operation costs, because it is necessary to have funds to manage the waste.

Mahmoud Riad commented that every truck emptying at the landfill and not belonging to HCC could be charged tipping fee.

Mr. Joe Kelesi showed the Medical Waste and sludge disposal areas.

6. Session D – Issues and Resolutions Discussions

6.1 Purpose of the Session

The purpose of this session was to identify issues that each of the four municipalities faced and the means they have to deal with these issues. This session would also allow them to consider resolving these issues through introduction of ideas from other municipalities.

Another purpose of this session is to help the counterparts to better analyze their issues and identify their priorities.

The SWOT analysis (Strength – Weakness – Opportunities – Threats) method was utilized. After explaining this method, the participants were divided into four groups; (1) Honiara, Solomon, (2) Gizo, Solomon, (3) NCDC, PNG and (4) PVMC and LMC, Vanuatu.

The SWOT analysis of each of the four groups is provided in the following sections.

6.2 Feedback from the SWOT Analysis

6.2.1 Honiara, Solomon

The main elements discussed by the group are shown below.

<u>Strength:</u> - Technical experts and human resources - Ranadi land ownership and site office - HCC litter ordinance - SWM budget - Political support - Data baseline - LEAF Project/ REP/ J-HOPE	<u>Weakness:</u> - Heavy equipment - No HCC SWM Plan - Recovery cost of waste services - Lack of waste segregation/ composting - Private importers non-involvement in SWM - Mixed medical and sludge wastes at landfill - No SWM officer or unit - Lack of equipment/ outdated legislation
<u>Opportunity:</u> - Increased small scale recyclers - Promotion of tourism - Partnership with other government agencies, e.g. with Ministry of Education - Purchase of heavy equipment for landfill by NZ govt.	<u>Threat:</u> - Natural disasters - Staff turnover - Change of government - Social instabilities and maladies - No deterrent legislation

The SWOT analysis for Honiara has identified the need for the SWM plan and development of the SWM unit.

The Group also prioritized their issues as follows:

1. Develop the legal framework
2. Enhance SWM in school curriculum
3. Raise awareness on SWM
4. Develop Integrated SWM Plan

6.2.2 Gizo, Solomon

The main elements discussed by the Gizo group are shown below.

<u>Strength:</u> - Zones and stations have been set-up for collection - Political and administration bodies started to recognize SWM importance - Baseline survey data - Potential for contracting out services - Some budgetary support is available - Public awareness activities have started	<u>Weakness:</u> - Lack of institutional coordination - No policy framework and ordinance - SWM not included in annual province work plan - No proper equipment - Baseline data/ information not properly used - High costs of operation - Poor public attitude towards SWM
<u>Opportunity:</u> - Tourism development a national priority - J-PRISM Phase II - Rollover to other population centers - Cooperation with other stakeholders	<u>Threat:</u> - Natural disasters - Poor public attitude towards SWM - Environmental threats from imported foreign materials

The SWOT analysis for Gizo has identified the need for policy framework and ordinance development and the poor public attitude towards SWM..

The Group also prioritized their issues as follows:

1. Formulation of SWM policies
2. Completion of dump rehabilitation
3. Strengthen collection system
4. Continuous and consolidation of awareness

6.2.3 NCDC, PNG

The main elements discussed by the NCDC group are shown below.

<u>Strength:</u> - Improved capacity - Financial backing - Waste data - Waste Management Policy at NCDC level - By-law under preparation - Waste Management Division is available - Political support - Improved stakeholders cooperation - Landfill O&M Manual is available - User pay system in place - There is a City Beetle nut Ban in force	<u>Weakness:</u> - Limited use of the developed capacity - SWM national policy is lacking - Political interferences - Limited monitoring / supervision - Lack of enforcement - Limited use of existing O&M manual - Lack of SWM capacity at the province level (national weakness)
<u>Opportunity:</u> - Increased media interest and support - J-PRISM II - Regional involvement - SPREP new regional strategies	<u>Threat:</u> - Increase in number of informal settlements - Difficulty in acquiring plots adjacent to Baruni - Undue political influence - Natural disaster - Economic downturn

	- Multicultural aspects - Rapid increase in population
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The SWOT analysis for NCDC has identified that there are many strong points supporting SWM in the city. The only significant weakness is the issue of political interferences in contracts allocations.

6.2.4 PVMC and LMC, Vanuatu

The main elements discussed by the Vanuatu group are shown below.

<u>Strength:</u> - Waste audit data updated annually (2011-2014) - Collection schedule for five wards (PVMC) - Private sector support for collection - Establish pre-paid bag system (PVMC, LMC) - Political will is there - Waste management by-law - Local landfill operations expert - Restructuring to save costs - Installing GPS system in trucks	<u>Weakness:</u> - Aged collection and landfill equipment - Two unsuccessful attempts to introduce pre-paid bag - Loss of local experts after restructuring at PVMC - No power and water at Bouffa landfill site - Low public awareness on SWM - Revenue collection is not sufficient - Poor condition of access road to landfill - No established waste collection points - Collection is not consistent
<u>Opportunity:</u> - Government sanctions privatization - JOCV and NZ aid - Government support to local authorities to develop SWM policies, legislation, strategies, and plans - LAAV (Local Authorities Association of Vanuatu) fosters coordination amongst authorities - Establish sister cities between municipalities (e.g. Honiara and Port Vila) - J-PRISM Phase II	<u>Threat:</u> - Undue political influence - Natural disaster - Government imposed taxes on export of scrap metals slows recycling - MSG and PACER trade agreements

The SWOT analysis for Vanuatu has identified that there are many strong points supporting SWM in terms of soft components but that there are equipment and hardware problems.

The Vanuatu team listed their priorities as follows:

1. Improve waste collection system
2. Improve landfill operation
3. Increase training opportunities
4. More efforts on waste minimization (composting and 3Rs)

6.3 Comments after completion of the group presentations

Some questions were raised, and comments made after the group presentations. These are briefly summarized as follows.

After the presentation of Group A (Gizo), Mr. Patrick To'iraena gave an additional comment and said that each provincial government has its policy, and to make budget, they need to prepare the plan and collect quotations, so that they can make SWM as a priority policy.

After the presentation of Group D (Vanuatu), Mr. Ronald Sandy commented additionally that every truck of the PVMC will be equipped with a GPS system and monitored. Also, cooperating with telecom, they will arrange competition at the market. Lastly, all the councils and staffs will wear team tags.

After all the presentations, Mr. Akihiro Osada commented that the basic idea of SWOT analysis is if we strengthen opportunity, we can minimize the threat.

7. Session E – Input into Potential J-PRISM Extension Project

At the final session of the workshop, the participants were once more grouped into four municipalities and asked to discuss and present the conclusions of their discussions concerning a possible J-PRISM extension project.

The topics discussed were as follows:

- (1) Is Phase II of J-PRISM necessary?
- (2) If necessary; what are the proposed outputs for each country?
- (3) Any recommendations; in addition to those already mentioned on Day 2 to improve upon J-PRISM II?

The summary of the discussions are provided hereafter for each municipality.

7.1 Honiara, Solomon Group on J-PRISM II

The group determined that there was a need for J-PRISM II.

They proposed a number of activities which they would like to see included in the outputs of J-PRISM II. These include:

- (a) Economical instruments
- (b) Legislation review
- (c) Improve waste collection system
- (d) Composting (small, medium and large scale)
- (e) Resource recovery, including the Return concept
- (f) Waste disposal system improvement
- (g) 3R activities in Honiara and also in the provinces
- (h) Lessons and experiences learnt are shared with provinces

7.2 Gizo, Solomon Group on J-PRISM II

The group determined that there was a need for both extension as well as expansion of J-PRISM II.

They proposed a number of activities which they would like to see included in the outputs of J-PRISM II. These include:

- (a) 3R activities are practiced in Gizo, Noro, Munda and Seghe
- (b) Waste collection service is improved further
- (c) The dump site in Gizo is improved further
- (d) The dump site in Noro is included
- (e) Lessons learnt shall be shared with other stakeholders
- (f) SWM policy is formulated

The Gizo team also made a number of recommendations as follow:

- Focus should continue to be on capacity building
- There should be budgetary support for the project activities and an annual work plan
- Policies and legislation should be covered
- Regional interaction
- Priority to Gizo in terms of technical support

7.3 PVMC and LMC Group on J-PRISM II

The group determined that there was a need for J-PRISM II.

They proposed a number of activities which they would like to see included in the outputs of J-PRISM II. These include:

Output 1: Monitoring Capabilities

- Improve monitoring capabilities for PVMC, LMC and Lenakel municipalities.
- Develop the NWMS and 3Rs policy.

Output 2: Facilities Development and Equipment Procurement

- Improve landfill infrastructure and secure weighbridge (PVMC)
- Secure D6 bulldozer, shredder and bailing machine (LMC)
- Secure collection truck (Lenakel)

Output 3: Enhance Human Resources Capabilities

- Enhance capacity of SWM personnel (PVMC) and specifically for landfill supervisors (LMC and Lenakel)

The Vanuatu team also made a number of recommendations as follow:

- Include private sector SWM service providers' staff in training and workshops
- JICA experts need to have long assignments

7.4 NCDC Group on J-PRISM II

The group determined that there was a need for J-PRISM II.

They proposed a number of outputs for J-PRISM II as follows:

Output 1: Expansion and Improvement of Collection system in NCD

Output 2: Waste minimization mechanisms and educational awareness

Output 3: Expansion and enhancement of Baruni waste disposal facility

Output 4: "PNG plus" Expansion of J-PRISM into two (2) more provinces

The NCDC team also made a number of recommendations as follow:

- Introduction of Output 4; to spread to other provinces
- Review national and regional framework
- J-PRISM/ JICA counterpart funding within a trust account
- Inclusion of hazardous and e-waste

7.5 Comments after completion of the group presentations

Some questions were raised, and comments made after the group presentations. These are briefly summarized as follows.

After the presentation of Group C (PNG), Mahmoud Riad commented that it is good idea to expand to two more provinces, because J-PRISM is already working in several provinces in other countries.

After all the group presentations, Mahmoud Riad commented that as all the three countries think J-PRISM II is necessary, it is recommended that they prepare from now. He emphasized that all should start thinking how to make J-PRISM II successful.

Mr. Akihiro Osada commented that the group discussions with different country members were good opportunity for exchange of experiences. He also appreciated to everyone for readying the topic focused presentation. And it will be a good preparation for the final evaluation.

8. Closing Session

Ms. Rosemary Apa, MECDM chaired this session.

The delegations from the Solomon Islands and Vanuatu exchanged gifts and words of appreciation were made by representatives of all three countries.

Mr. Taiji Usui, Representative, JICA Solomon Islands office, gave some closing remarks. He appreciated the efforts of all the participants for helping make this SWM workshop a success, and in general all their efforts in the field of SWM. He commented on some of the good practices discussed in the workshop and hoped that the relationship between PNG, Vanuatu and Solomon Islands becomes more close because of this workshop and that the counterparts from the three Melanesian countries continue to work together for SWM.

Dr. Melchior Mataki, PS, MECDM gave some closing remarks. He stated that through the reports from each of the three countries, we could learn more about SWM and look forward to the future possibility of implementing J-PRISM II to further improve the capabilities in SWM. Dr. Matak

i emphasized that 3R plus Return, plus innovation are both very important to move forward. He appreciated all for sharing experiences, and JICA experts, JICA, and Japanese government. Also he wished safe journeys to the overseas and regional participants as they return to their homes.

Mr. Akihiro Osada thanked all the participants for their hard work during the 3-days workshop and closed the workshop.

9. Conclusion and Recommendations

9.1 Conclusions

(1) Good Practices

The good practices presented in the workshop were selected to offer ideas to the participating countries on what has been achieved and to obtain the participating countries comments on how to improve these practices.

The counterparts presented the good practices mostly with a clear understanding of what they had successfully achieved and an analysis of the issues they face as they continue the good practices.

Based on the presentations made and discussions, we have prepared a brief review of the good practices as shown in Table 9-1. We commented on the clarity of the presentation and explanation in terms of ease to understand the explanation and the comprehensiveness of that explanation. As the JPRISM project comes to a close, and hopefully the extension of the project; JPRISM II can start in late next year, we considered whether the good practice would be sustainable during the gap period and also based on the contents of the project itself. Finally we included some brief comments.

Table 9-1 Review of the Presented Good Practices

Practice		
Clarity of Contents	Sustainable	Comments
Practice 1 - Stakeholders Coordination Activities (MHMS, Solomon Islands)		
Very clear	Sustainable	The coordination and information sharing by the SI project team has already contributed to the upgrading of Ranadi disposal site and Gizo dumpsite, and implementation of waste audits. With the present counterpart team leadership it is expected to continue beyond JPRISM.
Practice 2 – J-HOPE (HCC, Solomon Islands)		
Very clear	Sustainable	All practical elements were considered to deal with the huge disaster waste generation and mobilization was rapid due to coordination between SI agencies, JPRISM project office and JICA office, and community.
Practice 3 – Waste Audits Implementation at Provincial Level (MECDM, Solomon Islands)		
Clear	Sustainable	It is an important practice for national government to understand the SWM issues in the provinces and for provinces to deal these issues. More information on the type of SWM information collected and how it will be recorded and reported within MECDM would have been appreciated.
Practice 4 – Upgrading of Baruni Landfill in Port Moresby (NCDC, PNG)		
Clear	Partially	The presentation covered operation improvement as a major topic but also dealt with the upgrading activity. Concerning the operation improvement more information on the efforts made to incorporate the 500 plus waste-pickers community at the site is desirable. While the operation improvement is sustainable, the upgrading works are rather sophisticated in nature occurring high costs and funding has to be carefully considered for them to be sustainable.
Practice 5 – Waste collection monitoring improvement and expansion of collected services to settlements and villages (NCDC, PNG)		
Very clear	Sustainable	Through the involvement of the community and commitment of the collector, with the monitoring of NCDC, this system can be sustainable.

Practice		
Clarity of Contents	Sustainable	Comments
Practice 6 – Development of SWM Plan (NCDC, PNG)		
Very clear	Sustainable	The plan is being drafted after developing a strong understanding of current SWM conditions, identifying realistic principles and aims, and regular communication with stakeholders. The plan is also a requirement of the Waste Policy adopted by NCDC in 2014.
Practice 7 – Composting of market green waste (PVMC, Vanuatu)		
Very clear	Partially	PVMC clearly understands the importance of diverting the market green waste from the landfill and transporting it to Vanuatu Direct farm where it is composted by the farm. However the problem of trucks at PVMC makes transport of only the green waste difficult at times. Also the vendors need constant awareness rising.
Practice 8 – Introduction of pre-paid bags system (LMC, Vanuatu)		
Very clear	Sustainable	LMC has prepared the solid groundwork for the system and understands the challenges. They are reportedly monitoring the system to ensure the public continues to cooperate and the supplier keeps sufficient stock of bags.
Practice 9 – Public Waste Collection Company (PVMC, Vanuatu)		
Clear	Partially	In principle privatization of waste services improves cost efficiency. However in the case of PVMC, the lack of large scale private collectors and the poor conditions of the present collection fleet may create a threat.
Practice 10 – Developing a controlled dump site in a small town (GTC, Solomon Islands)		
Very Clear	Sustainable	The improvement works in Gizo open dumpsite are proceeding in a realistic manner and based on the available resources.
Practice 11 – Introduction of collection station system (WPG and GTC, Solomon Islands)		
Very Clear	Partially	It will require a lot of efforts on the part of Gizo counterparts to keep the public aware of the system and the sole tractor for collection abide by the collection schedule.
Practice 12 – Establishment of “Return” system of cans (GTC, Solomon Islands)		
Clear	Partially	From the presentation the extent of support provided to the private collector of the aluminum cans was not clear. However the private sector is in a much better position to implement this activity, so the approach is very reasonable.

(2) Information and Experiences Exchange

The Workshop provided time for the participants to exchange information and experiences during the mixed group discussions, the field visits and the informal discussions during the workshop break times.

(3) Issues Resolutions

The original intent of “Session D – Issues and Resolutions Discussion” was for the participants of the four municipalities to present their issues and for the other three municipalities to propose some resolutions to them. However after each of the four municipalities presented their SWOT analysis, there was not too much discussion from the other participants.

However, as the four municipalities identified the issues they are facing, under the SWOT exercise they also listed up their strengths and therefore could tackle their issues with more confidence. All the four municipalities listed their built-up capacities as strength, which was very encouraging to hear.

(4) J-PRISM Reflections

On reflection of the activities of JPRISM, all the participants directly involved in the JPRISM activities determined that their capabilities had been developed. However most of them mentioned that there was more need to include in the project activities development of soft components such as institutional systems, financial aspects and legal frameworks.

All the four municipalities voiced the need for J-PRISM II.

Some interesting outputs that may be included in potential J-PRISM II activities for each of the four municipalities are:

HCC, Solomon Islands	→	Establishment of Waste Management Unit Preparing the SWM Plan
GTC, Solomon Islands	→	Continued rehabilitation of the Gizo disposal site
NCDC, PNG	→	Setting up the SWM financial system Inclusion of other provinces in the project activities Introduction of waste minimization facilities
PVMC, Vanuatu	→	Improvement of the collection system Promotion of waste minimization

9.2 Recommendations

(1) Appreciation of Issues and Planning

The SWOT exercise helped the counterparts to both attach priority to their issues and at the same time to recognize their capabilities to deal with those issues.

Planning is another tool that needs to be improved in order to decide when, how and the required resources to resolve these issues. LMC has an ongoing SWM plan. NCDC is expected to have its SWM plan by the year end, which is being developed with an understanding of the relevant issues. PVMC has prepared its draft technical plans for collection and landfill and needs to incorporate them in a revised SWM plan. And GTC is now preparing its budget based on a plan for SWM activities next year.

(2) Use of gained capabilities

All the workshop participants directly involved in the JPRISM activities have determined that their capabilities have been raised. But a number of participants voiced concerns that they cannot utilize their newly acquired capabilities in their daily works.

It is important that the counterparts keep their managements informed of their training activities, their improvement proposals and their action plans. They need their managements' support. On the other hand, the managements need to consider these counterparts as valuable resources on SWM and utilize them effectively.

(3) Melanesian SWM Network

Our counterparts from Solomon Islands are to be much appreciated for organizing the first Melanesian SWM Workshop. Many participants expressed interest that this forum for Melanesian SWM officials should become permanent fixture and Town Clerk, PVMC also suggested that the Melanesian Spearhead Group include SWM sector in its activities.

The counterparts may request JICA to include the convening of the Melanesian SWM Workshop on a regular base in the activities of JPRISM II. Furthermore it would be more advantageous to include Fiji in the next Melanesian SWM Workshop, given the advances Fijian local authorities are making in SWM and that Fiji is also participating in JPRISM.

(4) Coordination amongst Donors

The Pacific Islands Countries are blessed with having many donor friends wanting to work with them and support the SWM sector. These include JOCV volunteers, VSA from NZ, UNDP, ADB, Peace Corps and others.

Although the donors do try and coordinate their activities, it is much more effective if the counterpart agencies themselves take the lead in the coordination. This is important as all the donors require the attention of the counterparts who then face difficulties to discharge their daily duties. Some unification of efforts should be decided as “demarcations” between the various donors activities many times do not work.

(5) Preparation for JPRISM II

All the workshop participants expressed interest for JPRISM II to proceed. Proposed outputs for the extension were discussed.

It is recommended that from now, the counterparts try and include these outputs in the activities of JPRISM II when JICA dispatches its preliminary teams to prepare the JPRISM II Project Design Matrices (PDM). The counterparts should also as much as possible prepare for the activities within their respective agencies and local authorities.

Should HCC include the new organization of SWM unit in JPRISM II, then it needs to prepare the administrative process within HCC to have this unit ready or at least for the process to start before the extension starts. NCDC has proposed to include planning for the expanded Baruni landfill and implementation of project activities in the provinces. It would be helpful for NCDC to complete the process of acquiring the adjacent plots to the landfill and also discuss with other government agencies on how to work in the provinces prior to commencement of JPRISM II. Similarly the other local authorities may need to make some administrative preparations.

Attachment1 List of Participants

(1) Participants for the three days

no	Name	Organization	Division/Section	Title/Position	Mobile/ E-mail	4/8	5/8	6/8	7/8
1	Mr. Kenichi Kimiya	Embassy of Japan in Solomon Islands		Ambassador			○		
2	Ms. Keiko Nakamura	Embassy of Japan in Solomon Islands		Researcher and Adviser			○		
3	Mr. Taiji Usui	JICA Solomon Islands Office		Resident Representative					○
4	Ms. Akiko Fukuda	JICA Solomon Islands Office		Project Formulation Coordinator		○	○	○	○
5	Mr. Andrew Mua	Honiara City Council		Councilor			○		○
6	Mr. Charles Kelly	Honiara City Council		City Clerk			○		
7	Mr. Fred Jones Warereau	Honiara City Council		Deputy City Clerk			○		
8	Ms. Megan Praegar	Honiara City Council		Lead Adviser (HEDSUP)			○		
9	Mr. Andrew Fanasia	REP Project/World Bank		Project Manager			○	○	
10	Dr. Merchior Matak	Ministry of Environment, Climate Change, Disaster Management, & Meteorology (MECDM)		Permanent Secretary			○		○
11	Mr. Francis Kapini	MECDM	Environment and Conservation Division (ECD)	NIP Project Coordinator			○		
12	Mr. Brendon Pinau	MECDM	ECD	Principal EIA Officer			○	○	
13	Ms. Rosemary Apa	MECDM	ECD	Chief Environment Officer		○	○	○	○
14	Mr. Allen Kisi	MECDM	ECD	Senior Environment Officer			○	○	
15	Ms. Wendy Beti	MECDM	ECD	Environment officer		○	○	○	○
16	Mr. George Titiulu	Honiara City Council	Environmental Health Division (EHD)	Chief Environmental Health inspector		○	○	○	○
17	Mr. Richard Jones	Honiara City Council	Public Works Division	Advisor			○		
18	Mr. John Labu Talu	Honiara City Council	Works Division	Director		○	○	○	○
19	Ms. Christina Onahikeni	Honiara City Council	EHD	Senior Environmental Health Inspector			○		○
20	Mr. Jerome Enato'o	Honiara City Council	Environmental Health Division	Environment Health Officer		○	○	○	○
21	Ms. Mercy lilu Nunua	Honiara City Council	Environmental Health Division	Environmental Health Inspector		○	○	○	○
22	Mr. Joe Kelesi	Honiara City Council	Works Division	Landfill Supervisor		○	○	○	○

no	Name	Organization	Division/Section	Title/Position	Mobile/ E-mail	4/8	5/8	6/8	7/8
23	Mr. Tom Nanau	Ministry of Health and Medical Services (MHMS)	EHD	Director		○	○	○	
24	Mr. Patterson Bobby Blteser	MHMS	EHD	Chief Environmental Health & Management Officer			○	○	○
25	Mr. Jimmy Hilly	MHMS	EHD	Environmental Health Management Officer		○	○	○	○
26	Mr. Rolly Viga	National Referral Hospital, Ministry of Health and Medical Services	Infectious Control & Risk Management Unit	Infectional Control Officer			○	○	○
27	Mr. John Richardson Sa'ohu	National Referral Hospital, Ministry of Health and Medical Services	Infectious Control & Risk Management Unit	Infectional Control Officer			○	○	○
28	Mr. Patrick To'iraena	Western Province		Deputy Provincial Secretary		○	○	○	○
29	Ms. Julie Kalamana	Western Province		Environment Health Inspector		○	○	○	○
30	Ms. Margaret Movini	Western Province		Planning Officer		○	○	○	○
31	Mr. Derald Michael	Gizo Town Council		Town Clerk		○	○	○	○
32	Mr. David Mamupio	Noro Town Council		Town Clerk		○	○	○	○
33	Mr. Frank Siosi			S.I. Waste Association			○	○	○
34	Mr. Naoya Ueno	JICA		JICA volunteer		○	○	○	
35	Ms. Hanako Yasuda	JICA		JICA volunteer		○	○	○	○
36	Ms. Natsuko Kishimoto	LEAF				○	○	○	○
37	Mahmoud Riad	JICA Project Team		JICA expert		○	○	○	○
38	Mr. Akihiro Osada	JICA Project Team		JICA expert		○	○	○	○
39	Ms. Niika Hiraishi	JICA Project Team		Project Assistant		○	○	○	○
40	Mr. Charles Kadamana	Solomon Star					○	○	
41	Mr. Dingle Mulekda	Island Sun						○	
42	Mr. Simeon Terina	National Capital District Commission, Papua New Guinea (NCDC, PNG)	Waste Management Division (WMD)	Senior Officer		○	○	○	○

no	Name	Organization	Division/Section	Title/Position	Mobile/ E-mail	4/8	5/8	6/8	7/8
43	Ms. Janet Haua	NCDC, PNG	WMD	Senior Officer			○	○	○
44	Ms. Meriwen Vivianne Morofa	NCDC, PNG	WMD	Officer		○	○	○	○
45	Ms. Racheal Orpah Inamuka	NCDC, PNG	WMD	Officer		○	○	○	○
46	Mr. Sneka Lumakno Pokani	NCDC, PNG	WMD	Supervisor		○	○		○
47	Mr. Ronald Sandy	Port Vila Municipality (PVMC) Vanuatu		Town Clerk		○	○	○	○
48	Mr. Elison Tabisal	PVMC, Vanuatu		Counselor		○	○	○	○
49	Mr. Reuben Seule Aromalo	PVMC, Vanuatu	City Waste Remover	Manager		○	○	○	○
50	Mr. Chris Desonville	PVMC, Vanuatu	City Waste Remover	Assistant Manager		○	○	○	○
51	Mr. Berry Mahau	PVMC, Vanuatu	Environmental Health Division	Waste Management Officer		○	○	○	○
52	Ms. Carol Rovo	Ministry of Environment, Vanuatu	Department of Environment, Pollution Control	Senior Waste and Pollution Control Officer		○	○	○	○
53	Ms. Gina Tari Viuge	Luganville Municipality Council Vanuatu		Waste Management Officer		○	○	○	○
[4/8; Welcome Dinner, 5 – 7/8; Workshop]						Total	32	51	41 39

(2) Session A – Group Members (Random arrangement)

Group 1	Group 2	Group 3	Group 4
Mr. David Mamupio Mr. John Labu Mr. George Titiul Mr. Patterson Bobby Blteser Ms. Rosemary Apa Mr. Allen Kisi Ms. Janet Haua Mr. Sneka Pokani	Mr. Francis Kapini Mr. Jerome Enato'o Ms. Wendy Beti Ms. Margaret Moveni Ms. Jully Kalamama Mr. Ronald Sandy Ms. Carol Rovo Mr. Frank Siosi	Mr. Richard Jones Ms. Christina Onahikeni Mr. Jimmy Hilly Mr. Brandon Pinau Mr. Derald Michael Ms. Vivianne Morofa Ms. Gina T Viuge Mr. Reuben Aromalo Mr. Naoya Ueno	Mr. Tom Nanau Mr. Patrick Toiraena Mr. Chris Desonville Mr. Simeon Terina Mr. Joe Kelesi Mr. Berry Mahau Mr. John Sa'ohu Ms. Racheal Inamuka Ms. Mercy I Nunua

(3) Session B – Group Members (Selected arrangement)

Group 1	Group 2	Group 3	Group 4
Ms. Janet Haua Mr. Andrew Fanasia Ms. Carol Rovo Ms. Margaret Movini Ms. Natsuko Kishimoto Mr. Reuben Seule Aromalo Mr. Allen Kisi Mr. John Labu Talu Ms. Rosemary Apa	Ms. Wendy Beti Mr. Ronald Sandy Mr. Patterson Bobby Blteser Mr. Derald Michael Mr. Rolly Viga Mr. Simeon Terina Mr. Frank Siosi Mr. David Mamupio Mr. Joe Kelesi	Mr. Jimmy Hilly Ms. Hanako Yasuda Mr. Chris Desonville Ms. Mercy lilu Nunua Ms. Julie Kalamana Mr. Tom Nanau Ms. Gina Tary Viuge Ms. Racheal Orpah Inamuka	Mr. George Titiulu Mr. John Richardson Sa'ohu Mr. Berry Mahau Mr. Patrick To'iraena Mr. Brendon Pinau Mr. Naoya Ueno Ms. Meriwen Vivianne Morofa Mr. Elison Tabisal

(4) Session D – Group Members (By country)

Group 1	Group 2	Group 3	Group 4
GTC + MECDM + MHMS, Solomon Islands	HCC + MECDM + MHMS, Solomon Islands	NCDC, PNG	PVMC + LMC + DEPC, Vanuatu

(5) Session E – Group Members (By country)

Group 1	Group 2	Group 3	Group 4
GTC + MECDM + MHMS, Solomon Islands	HCC + MECDM + MHMS, Solomon Islands	NCDC, PNG	PVMC + LMC + DEPC, Vanuatu

Attachment A-2 Daily Activity Record (Papua New Guinea)

*The Japanese Technical Cooperation Project for Promotion of Regional Initiative on
Solid Waste Management in Pacific Island Countries (J-PRISM) (Solid Waste Management A, E)*

No.	Date	Activity
First Assignment in PNG (Riad ;SWM Expert E1)		
1	2014/5/31	Departure Japan
2	2013/6/1	Arrival Port Moresby ● Documents and data review
3	2014/6/2	● Meeting with individual C/Ps ● Visit to Baruni disposal site ● Meeting with JICA PNG Office
4	2014/6/3	● Individual C/P meeting
5	2014/6/4	● Meeting with PNG Recycling ● First Counterpart Team meeting during this Stage 2
6	2014/6/5	● TV Conference with JICA Headquarters ● Interview for the post of Project Assistant
7	2014/6/6	● Annual Project Review Meeting between Government of PNG and Japan
8	2014/6/7	● Documents and data review
9	2014/6/8	● Meeting with individual C/P on the incoming waste survey data analysis at NCDC office
10	2014/6/9	National Holiday ● Documents and data review
11	2014/6/10	● Meeting with Market Division to discuss on their SWM activity at Gordon ● Meeting with Kana Construction to discuss about the survey works
12	2014/6/11	● Visited Gordon Market ● Visited Baruni disposal site
13	2014/6/12	● Meeting with individual C/P ● Reporting to JICA PNG Office
14	2014/6/13	Departure PNG
Second Assignment in PNG (Abe; SWM Expert A2 / E3)		
1	2014/6/14	Arrival to Port Moresby from Honiara
2	2014/6/15	● Documents and data review
3	2014/6/16	● Individual meetings with C/Ps ● Meeting with Kana technical staff ● Reporting to JICA PNG office
4	2014/6/17	● Visit to Baruni disposal site – confirming survey works
5	2014/6/18	● Meeting with NARI to discuss on water quality surveys
6	2014/6/19	● Visit to Baruni disposal site – Fly count survey
7	2014/6/20	● Individual meetings with C/Ps
8	2014/6/21	● Documents and data review
9	2014/6/22	● Documents and data review
10	2014/6/23	● Meeting with C/Ps to discuss on Baruni operations and upgrade works
11	2014/6/24	● Baruni disposal site visit
Third Assignment in PNG (Riad; SWM Expert E1)		
1	2014/6/25	● Individual meetings with C/Ps ● Meeting with Riad, Expert E1
2	2014/6/26	● Visit to Baruni site ● Reporting to JICA PNG Office
3	2014/6/27	● Counterpart Team Meeting
4	2014/6/28	● Internal meeting; Abe and Riad SWM Experts A2 / E3 departure from Port Moresby
5	2014/6/29	● Documents and data review
6	2014/6/30	● Individual C/P meeting ● Visit to NARI to arrange for water quality survey
7	2014/7/1	● Meeting of JICA PNG Office representatives with PM in NCDC ● Meeting with Kana Construction
8	2014/7/2	● Baruni site visit
9	2014/7/3	● Meeting at World Bank to discuss UYEP ● Attended WMD Division Meeting

*The Japanese Technical Cooperation Project for Promotion of Regional Initiative on
Solid Waste Management in Pacific Island Countries (J-PRISM) (Solid Waste Management A, E)*

No.	Date	Activity
		● Meeting with 3R HEART team
10	2014/7/4	● Meeting with UN WOMEN ● Meeting with DEC Secretary ● Visit to Baruni disposal site
11	2014/7/5	● Documents and data review
12	2014/7/6	● Documents and data review
13	2014/7/7	● Visit to Baruni disposal site ● Meeting with JICA PNG representatives and PM at NCDC
14	2014/7/8	● Meeting with PM ● Visit to Baruni disposal site ● Weekly meeting between NCDC and Kana Construction
15	2014/7/9	● Visit to Baruni disposal site
16	2014/7/10	● Meeting with individual C/P ● Visit to Baruni disposal site
17	2014/7/11	● Visit to Baruni disposal site ● Meeting with 3R HEART team
18	2014/7/12	● Documents and data review
19	2014/7/13	● Documents and data review
20	2014/7/14	● Meeting with World Bank officials
21	2014/7/15	● Visit to Baruni disposal site ● Weekly meeting between NCDC and Kana Construction
22	2014/7/16	● UYEP Workshop ● Meeting at JICA PNG Office
23	2014/7/17	● Visit to Baruni Disposal Site ● Meeting with PNG Gardner
24	2014/7/18	● Meeting with Parks and Gardens Division ● Visited NARI
25	2014/7/19	SWM Expert A1 arrival Port Moresby
26	2014/7/20	● C/Ps meeting ● JICA PNG meeting
27	2014/7/21	● Meeting with Markets Division ● Visit to Baruni disposal site ● Meeting at DEC together with JICA PNG to discuss request for project extension
28	2014/7/22	● Visit to Baruni disposal site ● Weekly meeting between C/Ps and Kana Construction ● Meeting with UYEP
29	2014/7/23	● Meeting with PM ● Meeting with 3R HEART Team
30	2014/7/24	● 3R HEART Teachers' Training Workshop
31	2014/7/25	● C/P Team Meeting ● Visit to Baruni disposal site
32	2014/7/26	Departure Port Moresby
Fourth Assignment in PNG (Riad; SWM Expert E1)		
1	2014/9/6	Departure Japan
2	2014/9/7	Arrival Port Moresby
3	2014/9/8	● Baruni disposal site visit ● Meeting with PM ● Reporting to JICA PNG Office
4	2014/9/9	● Weekly meeting between NCDC and Kana Construction
5	2014/9/10	● Counterpart Team meeting ● Meeting with PM
6	2014/9/11	● Individual meeting with C/P ● Meeting with 3R HEART Team
7	2014/9/12	● Baruni disposal site visit

No.	Date	Activity
		● Meeting with PM ● Meeting with members of 3R HEART Team
8	2014/9/13	● Documents and data review
9	2014/9/14	● Documents and data review
10	2014/9/15	● C/P reported tragic accident occurred at Baruni – Two children lost their lives while playing near the disposal operations area
11	2014/9/16	National Holiday ● Individual meetings with C/Ps to understand the situation at the disposal site after the accident
12	2014/9/17	● JICA PNG Office Ito san meeting in NCDC with PM and Simeon to discuss on the accident
13	2014/9/18	● Visited Baruni disposal site to offer condolences ● Visited site proposed for composting ● Meeting with PM
14	2014/9/19	● C/P meeting to prepare for SWM Plan Workshop
15	2014/9/20	● Workshop preparations
16	2014/9/21	Arrival of Abe; Expert A2/E3 and his assistant, Ishiura san ● Meeting with Counterparts to discuss on Baruni disposal site ● Workshop preparations
17	2014/9/22	● Workshop on SWM Master Plan ● Reporting to JICA PNG Office
18	2014/9/23	Departure of Abe and assistant to Honiara ● Visit to Baruni disposal site
19	2014/9/24	● Visit to Baruni disposal site ● Meeting with Market Division ● Weekly meeting between NCDC and Kana Construction
20	2014/9/25	● Visit to Baruni disposal site and meeting with waste pickers working at the disposal site
21	2014/9/26	● Meeting with 3R HEART team ● Reporting to JICA PNG Office
22	2014/9/27	● Documents and data review
23	2014/9/28	● Documents and data review
24	2014/9/29	● C/Ps meeting to discuss their safety plan ● Visit to Baruni disposal site
25	2014/9/30	● Meeting with PM
26	2014/10/1	● Weekly meeting between NCDC and Kana Construction ● Meeting with Child Fund
27	2014/10/2	● C/P Team Meeting ● Visit to Baruni Disposal Site
28	2014/10/3	● Meeting with PM ● Visit to Catholic Archdiocese ● Visit to Baruni disposal site ● Visit to Laloki pre-school
Fifth Assignment in PNG (Abe; SWM Expert A2/ E3)		
1	2014/10/4	Riad departure Port Moresby ● Abe and assistant arrive Port Moresby
2	2014/10/5	● Design documents review
3	2014/10/6	● Meetings with related C/Ps
4	2014/10/7	● Visit to Baruni disposal site and weekly meeting between NCDC and Kana Construction
5	2014/10/8	● Baruni site visit
6	2014/10/9	● Baruni site visit ● Meetings with C/Ps on the design
7	2014/10/10	● Baruni site visit ● Meeting with JICA PNG Office

No.	Date	Activity
8	2014/10/11	● Design documents
9	2014/10/12	● Meeting with C/Ps on the design
10	2014/10/13	● Meeting with PM ● Water sampling at Baruni disposal site
11	2014/10/14	● Following disturbances at the Baruni disposal site caused by some disgruntled waste pickers over delay in settling of Sept. 15 th accident
12	2014/10/15	● Visit Baruni disposal site ● Complaint to Kana supervisor about their work ● Submitted to and discussed recommendations with the C/Ps
13	2014/10/16	● Delivered priority work drawings ● Visit to Baruni disposal site
14	2014/10/17	● Reporting to JICA PNG Office ● Visit to Baruni disposal site
15	2014/10/18	Departure Port Moresby
Sixth Assignment in PNG (Riad; SWM Expert E1)		
19	2014/12/3	Arrived Port Moresby ● Meeting with Joshua PM
20	2014/12/4	● (AM) Attended BLSC meeting at Baruni disposal site ● (PM) Attended Baruni weekly meeting with Kana ● Meeting at JICA PNG office
21	2014/12/5	● Visited operations area at Baruni disposal site
22	2014/12/6	● Documentation review
23	2014/12/7	● Meeting with Counterparts James and Vivianne to discuss on the design
24	2014/12/8	● Office work ● Visited area where POMAS students were engaged in clean up
25	2014/12/9	● Counterpart Team meeting ● Baruni site visit
26	2014/12/10	● Weekly Baruni meeting
27	2014/12/11	● Baruni Landfill Safety Committee meeting ● (Site visit by Toyama Kacho and Nesaki san, from Tokyo headquarters) ● Meeting with 3R HEART team ● JICA PNG office meeting
28	2014/12/12	● Office work ● (Tsukiji san departed Port Moresby)
29	2014/12/13	● Working on SWM Plan
30	2014/12/14	● Document review
31	2014/12/15	● Meeting with Counterparts Ronnie and Vivianne to discuss industrial waste audit survey
32	2014/12/16	● Baruni site visit ● Visited proposed clay materials source area at 6-Miles
33	2014/12/17	● Baruni site visit for soil study ● Meeting with Counterparts Simeon and James to discuss on Baruni LF
34	2014/12/18	● Meeting of BLS Committee ● Discussion with Counterparts Joshua and Ronnie on SWM Plan ● Submission of Interim Report 1 to Joshua PM
35	2014/12/19	● Reporting to JICA PNG Office before departure
36	2014/12/20	● Departure Port Moresby, Arrival Japan, ISA
Seventh Assignment in PNG (Riad ;SWM Expert E1)		
1	2015/2/14	Departure Narita to Port Moresby
2	2015/2/15	Arrival Port Moresby
3	2015/2/16	● Brief meeting with PM Joshua Sam ● Attended 3R HEART workshop at Coronation Primary and Secondary School
4	2015/2/17	● Baruni site visit and weekly meeting ● JICA PNG office meeting
5	2015/2/18	● Visit to NARI to discuss on water quality analysis

No.	Date	Activity
		● Workshop at POMNATS cancelled
6	2015/2/19	● Baruni site visit ● Baruni Landfill Safety Committee meeting cancelled because waste pickers did not come
7	2015/2/20	● Water sampling work
8	2015/2/21	● Working with Counterparts on presentations
9	2015/2/22	● Documentation review
10	2015/2/23	● Visited NARI to pay for waste quality analysis ● Counterpart meeting to discuss about presentations
11	2015/2/24	● Amano san arrival to Port Moresby ● Meeting with Joshua PM ● Weekly meeting at Baruni landfill ● JICA PNG office meeting
12	2015/2/25	● 4th JCC Meeting and Baruni landfill visit
13	2015/2/26	● Meeting in Baruni with NCDC and Kana to discuss on safety conditions ● Counterpart team meeting
14	2015/2/27	● Amano san departed from Port Moresby ● Jubilee School teachers workshop and Baruni visit ● Meeting with Counterpart to discuss about market waste survey at Gerehu scheduled for the first week of March
15	2015/2/28	● Documents preparation and review
16	2015/3/1	Departure from Port Moresby to Honiara
Eighth Assignment in PNG (Riad; SWM Expert E1)		
1	2015/3/18	Arrival Port Moresby ● Attended 3R HEART workshop at Port Moresby National Secondary School ● Brief visit to Baruni disposal site
2	2015/3/19	● Discussions with Counterparts on recent incident of truck burning at Baruni. ● JICA PNG office meeting
3	2015/3/20	● Meeting with C/Ps on the SWM Plan workshop preparation
4	2015/3/21	● Meeting with C/P to discuss on collection contract revisions
5	2015/3/22	● Document review
6	2015/3/23	● Situation at Baruni reported to be tense. Working in the office.
7	2015/3/24	● Visited Baruni disposal site with Counterparts ● Meeting with Tulait Consulting Architects, together with Joshua to discuss about training center construction
8	2015/3/25	● Meeting with Simeon and Walter C/Ps on landfill operation ● Lunch meeting with JICA PNG Office and Joshua PM
9	2015/3/26	● Visited Baruni disposal site ● WMD division meeting on the new By-law ● Meeting with JICA PNG office
10	2015/3/27	● Discussions with C/Ps on incidents happening at Baruni
11	2015/3/28	● Working in NCDC office
12	2015/3/29	● Holiday
13	2015/3/30	● Visited Baruni disposal site ● Meeting with C/Ps to discuss SWM Plan workshop preparations ● Capacity assessment
14	2015/3/31	● NCD SWMP 2nd Workshop
15	2015/4/1	● Visited Baruni disposal site ● Capacity assessment
16	2015/4/2	● Visit Baruni disposal site ● Meeting with JICA PNG Office
17	2015/4/3	● (Public Holiday) Preparing reports
18	2015/4/4	Departure PNG
Ninth Assignment in PNG (Abe; SWM Expert A2/E3)		
1	2015/5/9	Departure Narita

No.	Date	Activity
2	2015/5/10	Arrival at Port Moresby ● Documents review and preparation
3	2015/5/11	● Meeting with Counterparts ● Baruni site visit and site meeting
4	2015/5/12	● Confirmation of site works progress
5	2015/5/13	● (Rain) Confirmation of Cell 1 pit and leachate pond drawings
6	2015/5/14	● Examination of construction schedule ● Meeting to discuss on commissioning ceremony
7	2015/5/15	● Examination of Disposal Operation Area ● Visit to Kana office
8	2015/5/16	● Preparation of drawings
9	2015/5/17	● Discussion with Counterpart, James on required drawings
10	2015/5/18	● Discussion with Joshua PM on actions required to be taken ● Surface water sampling
11	2015/5/19	● Discussion with Counterpart Walter and NARI on surface water analysis
12	2015/5/20	● Meeting with Senior Road Engineer to discuss on access road and drainage ● Confirmation of Baruni rehabilitation progress and examination of drawings
13	2015/5/21	● Counterparts meeting ● Reporting to JICA PNG Office
14	2015/5/22	● Counterparts meeting
15	2015/5/23	● Documents review and arrangement
16	2015/5/24	Departure from Port Moresby to Honiara
Tenth Assignment in PNG (Riad; SWM Expert E1)		
1	2015/5/30	Departure Japan
2	2015/5/31	Arrival Port Moresby
3	2015/6/1	● Discussion with Counterpart Ronnie on the industrial waste survey analysis ● Visited Baruni and observed ongoing pipes welding work and disposal operations area
4	2015/6/2	● Attended community meeting at Ranuguri settlement with Counterparts to discuss on collection improvement ● Visited Baruni site to observe progress of pipe leveling work
5	2015/6/3	● Visited Baruni site to observe damage caused by a large fire which was lit last night along the western slope of disposal operation area. Counterparts making efforts together with Kana to extinguish the fire. ● JICA PNG office meeting. ● Discussed with C/P Ronnie on supplementary industrial waste survey to fill in gaps.
6	2015/6/4	● Visited Baruni site. Efforts to extinguish the fire succeeded. ● Confirmed details of supplementary industrial waste survey with Counterpart Ronnie.
7	2015/6/5	● Visited Baruni site twice with counterparts to discuss on perforations of the pipes and secondly on the difference in the design drawings and actual welding angles of the branch and main pipes. ● Meeting with UN Women Project Expert; Ms. Christina to discuss composting potential at Gordons Market. Attended by Counterpart Diana.
8	2015/6/6	● Visited NCDC booth at Nature Park to celebrate Earth Day ● Visit to Baruni disposal site to observe work progress
9	2015/6/7	● Visit to Baruni disposal site to observe work progress ● Prepared Settlement Waste Collection improvement concept for discussion with Counterpart Racheal.
10	2015/6/8	National Holiday ● Visited Baruni disposal site together with Joshua PM, who just returned from Japan ● Analysis of Industrial Waste Survey data
11	2015/6/9	● Visited Baruni with Project Engineer, James to observe rehabilitation

No.	Date	Activity
		- progress ● Meeting at NCDC to discuss preparations for the commissioning ceremony. JICA PNG Office Dr. Iwamoto attended.
12	2015/6/10	● Visited Baruni with Counterparts. Observed concrete pouring at leachate pond. ● Discussed Settlement Waste Collection with Counterpart Racheal.
13	2015/6/11	● Visited Baruni site with Counterpart. Inspected the disposal operation area and condition of soil cover application
14	2015/6/12	● Visited Baruni site with Counterpart James. Discussed on the pipes perforations.
15	2015/6/13	● Discussion with Counterparts Ronnie on the supplementary industrial waste survey and with Janet on the preparations for the commissioning ceremony.
16	2015/6/14	● Weekend holiday
17	2015/6/15	● Meeting with C/Ps (Paul, Joshua, Simeon, Ronnie, Diana) to discuss 3R HEART Progress, especially monitoring by the WMD staff at the eight schools. ● Visited Baruni. Problems with community on delayed payments affecting work progress. ● Meeting with Joshua PM to discuss the work schedule during this assignment.
18	2015/6/16	● WMD meeting (Joshua, Simeon, Janet, James and Diana) to discuss commissioning preparations. ● Baruni visit together with JICA PNG Office's Iwamoto san and Horikoshi san and C/Ps.
19	2015/6/17	● Meeting with Joshua PM to develop goal, targets and principles of the SWM plan. ● Submitted cautionary email to Joshua PM on the poor management of Kana. ● Visit to Baruni site with counterparts (Joshua, James, and Simeon) and tested the water flow in the main pipe.
20	2015/6/18	● Visited City Mission PNG farm together with Joshua PM to ask their interest in composting market waste at the farm. They presently do not have enough space.
21	2015/6/19	● Visited Baruni site twice today with Simeon, James and other counterparts to observe the progress. Tested water flow in the six branch lines already laid.
22	2015/6/20	● Visit to Baruni disposal site with Walter. Later Ronnie, Paul, John Kavu and others joined. Observed laying of rocks over the pipes.
23	2015/6/21	● Preparing Interim Report 2.
24	2015/6/22	● Dealing with problem of sudden postponement of commissioning by the NCDC Governor. ● Visited PAU to discuss on their potential use of market waste as compost.
25	2015/6/23	● Arrival of Chief Advisor, Amano san. ● Together visited Baruni disposal site. ● Meeting at JICA PNG Office.
26	2015/6/24	● Held the counterpart team meeting, in the presence of Amano san. ● Discussed with Paul Wisi on the progress of 3R HEART program. ● Visited Baruni disposal site together with Amano san and counterparts. ● Internal meeting with Chief Advisor.
27	2015/6/25	● Preparing Interim Report 2. ● Visited some shops to research costs for equipment that may be procured under the project budget.
28	2015/6/26	● Preparing Interim Report 2. ● Visited some shops to research costs for equipment that may be procured under the project budget. ● Visited Baruni disposal site together with Joshua.
29	2015/6/27	● Supporting counterparts for preparations related to Baruni landfill commissioning.

No.	Date	Activity
		● Preparing Interim Report 2
30	2015/6/28	● Preparing Interim Report 2
31	2015/6/29	● Baruni sanitary landfill commissioning.
32	2015/6/30	● Visit to Baruni disposal site to discuss on remaining works related to Cell 1.
33	2015/7/1	Departure PNG
11th Assignment in PNG (Riad ;SWM Expert E1)		
1	2015/7/9	Arrived to Port Moresby from Honiara
2	2015/7/10	● Baruni site visit with counterparts ● Meeting with Kana at their office to discuss outstanding issues on rehabilitation
3	2015/7/11	Departure from Port Moresby to Japan
12th Assignment in PNG (Riad; SWM Expert E1)		
1	2015/8/15	Departed Honiara, Arrived Port Moresby
2	2015/8/16	● Meeting with Terminal Evaluation Team
3	2015/8/17	● Kick off meeting with Terminal Evaluation Team
4	2015/8/18 (Tue)	● Visited Baruni disposal site ● Meeting with Terminal Evaluation Team
5	2015/8/19	● Visited Baruni disposal site
6	2015/8/20	● Community meeting at Segani-Ranuguri settlement ● Meeting with Terminal Evaluation Team
7	2015/8/21	● Terminal Evaluation Team wrap-up meeting
8	2015/8/22	● Data analysis and reporting
9	2015/8/23	● Weekend
10	2015/8/24	● Discussions with counterparts on Baruni site operations suspension
11	2015/8/25	● Water sampling downstream of Baruni landfill
12	2015/8/26	National Holiday for Repentance Day ● Data analysis and reporting
13	2015/8/27	● Working on the NCDC Waste Plan ● Visited NARI laboratory for the water sampling
14	2015/8/28	● Visited Baruni landfill ● Meeting at JICA PNG office
15	2015/8/29	● Documents preparations
16	2015/8/30	● Documents preparations
17	2015/8/31	● Incoming waste survey at Baruni landfill ● Collection of quotations for equipment
18	2015/9/1	● Visited Baruni landfill
19	2015/9/2	● Visited PAU to discuss about compost pilot project ● WMD meeting to discuss problems with Kana at Baruni landfill
20	2015/9/3	● Meeting with company hired to prepare project video
21	2015/9/4	● Visit to Baruni landfill ● Visited Atlas Steel for quotation on fence materials
22	2015/9/5	● Working on NCD SWM Plan.
23	2015/9/6	● Working on the NCD SWM Plan
24	2015/9/7	● Meeting at NARI to discuss about composting pilot project ● Working on NCD SWM Plan
25	2015/9/8	● Ranuguri Settlement community meeting ● Collecting quotations for wheel barrows ● Working on NCD SWM Plan
26	2015/9/9	● Visited Baruni landfill ● Meeting at JICA PNG Office
27	2015/9/10	● Purchased wheel barrows for settlement pilot project ● Working on NCD SWM Plan
28	2015/9/11	● Visit to Gerehu Market ● Working on the NCD SWM Plan
29	2015/9/12	● Working on the NCD SWM Plan

No.	Date	Activity
30	2015/9/13	● Documents preparation
31	2015/9/14	● Meeting with Mr. Veari at CEPA ● Visit to Baruni landfill
32	2015/9/15	● Counterpart Team Meeting
33	2015/9/16	National Holiday; Independence Day. ● Documents preparation
34	2015/9/17	● Collecting quotation for equipment for the landfill
35	2015/9/18	● Tested pump purchased by the project for Baruni disposal site
36	2015/9/19	Departed Port Moresby, returned to Japan
13th Assignment in PNG (Abe; SWM Expert E2)		
1	2015/10/3	Departure from Japan
2	2015/10/4	Arrival to Port Moresby
3	2015/10/5	● Meeting with Counterparts ● Visit to Baruni landfill ● Meeting at JICA PNG Office
4	2015/10/6	● Segani-Ranuguri settlement community meeting
5	2015/10/7	● Visit to Baruni landfill
6	2015/10/8	● Visit to Baruni landfill
7	2015/10/9	● Water sampling at Baruni landfill area
8	2015/10/10	● Preparation for the workshop
9	2015/10/11	● Weekend holiday
10	2015/10/12	● Visited NARI in connection with water sampling and analysis
11	2015/10/13	● Meeting with Counterparts and Kana
12	2015/10/14	● Preparation for workshop
13	2015/10/15	● Mini-workshop on Baruni landfill development
14	2015/10/16	● Counterpart meeting ● Discussions with CEPA ● Reporting to JICA PNG Office
15	2015/10/17	● Report preparation
16	2015/10/18	Departure from Port Moresby, arrival to Honiara
14th Assignment to PNG (Riad; SWM Expert E1)		
1	2015/11/7	Departure Japan
2	2015/11/8	Arrival Port Moresby
3	2015/11/9	● Counterpart team meeting to discuss NCD SWM Plan preparation ● Baruni landfill visit ● JICA PNG Office visit
4	2015/11/10	● Gerehu market public awareness program ● Meeting with Counterparts for landfill component of NCD SWM Plan ● WMD Division meeting
5	2015/11/11	● Meeting with Counterparts for collection and waste minimization components of plan ● Meeting with CEPA to discuss Baruni workshop ● Visit to Baruni landfill
6	2015/11/12	● 3R HEART prize award ceremony at Jubilee Secondary School ● Working on NCD SWM Plan report
7	2015/11/13	● Working on NCD SWM Plan report
8	2015/11/14	● Gerehu market public awareness program ● Working on NCD SWM Plan
9	2015/11/15	● Working on NCD SWM Plan
10	2015/11/16	● Working on NCD SWM Plan
11	2015/11/17	● Meeting with CEPA, NCDC and JICA PNG Office ● Visit to Baruni landfill
12	2015/11/18	● Counterpart team meeting to discuss JCC and seminar meetings preparations ● Visit to Segani-Ranuguri settlement
13	2015/11/19	● Meeting at Baruni landfill with NCDC and Kana

No.	Date	Activity
14	2015/11/20	● Preparations for 5th JCC Meeting
15	2015/11/21	● Mr. Amano, Chief advisor arrived to Port Moresby ● Meeting with the Chief Advisor
16	2015/11/22	● Weekend
17	2015/11/23	● Site visits to NARI, Baruni landfill and Segani-Ranuguri settlement with Amano san ● Meetings with Amano san and Counterparts
18	2015/11/24	● 5th JCC Meeting ● Meeting at JICA PNG Office
19	2015/11/25	● Meeting with counterparts on the NCD SWM Plan ● Working on NCD SWM Plan
20	2015/11/26	● Meeting at NARI with NCD to discuss on the compost pilot project ● Working on NCD SWM Plan ● Preparing for Baruni landfill workshop together with counterparts ● Visit to JICA PNG Office
21	2015/11/27	● Visit Baruni landfill ● Working on NCD SWM Plan
22	2015/11/28	● Meetings with Counterparts on preparations for the seminar ● Working on NCD SWM Plan
23	2015/11/29	● Weekend
24	2015/11/30	● Preparations with Counterparts for Seminar ● Prepared the 5th JCC meeting memo
25	2015/12/1	● Seminar on NCD SWM Plan
26	2015/12/2	● Meetings with two NCDC collection contractors ● Workshop on composting with NARI and NCDC
27	2015/12/3	● Preparing Seminar memo ● Preparing Interim Report 3 ● Discussions with Counterparts
28	2015/12/4	● Preparing Interim Report 3
29	2015/12/5	● Preparing Interim Report 3
30	2015/12/6	● Preparing Interim Report 3
31	2015/12/7	● Counterparts meeting on the NCD SWM Plan
32	2015/12/8	● Meeting with CEPA and Counterparts to prepare for Baruni Landfill Workshop
33	2015/12/9	● Baruni Landfill Workshop
34	2015/12/10	● Baruni Landfill Workshop
35	2015/12/11	● Counterpart discussions, JICA PNG Office meeting
36	2015/12/12	Departure Port Moresby

Attachment A-3 4th JCC Meeting Minutes

MINUTES OF MEETING

4th PNG JOINT COORDINATING COMMITTEE (JCC)

ON JAPANESE TECHNICAL COOPERATION PROJECT
FOR PROMOTION OF REGIONAL INITIATIVE ON
SOLID WASTE MANAGEMENT IN PACIFIC ISLAND COUNTRIES (J-PRISM)

HELD AT HOLIDAY INN HOTEL, PORT MORESBY,
PAPUA NEW GUINEA

WEDNESDAY 25TH FEBRUARY 2015

SIGNATURES

Mr. Gunther Joku

Secretary and Project Director

Conservation and Environmental
Protection Authority (CEPA)

PAPUA NEW GUINEA

Mr. Shiro Amano

Chief Adviser

J-PRISM Project Office
Tokyo, JAPAN

Mr. Shigeru Sugiyama

Chief Representative

JICA PNG OFFICE

Ms. Juliana Kubagu

The Acting Secretary

Department of National Planning and
Monitoring.

PAPUA NEW GUINEA

Mr. Leslie Alu

City Manager

National Capital District Commission
Port Moresby City,
PAPUA NEW GUINEA

MINUTES OF MEETING OF
THE FOURTH PAPUA NEW GUINEA J-PRISM JOINT COORDINATING COMMITTEE
(JCC)

Date: 25th February, 2015
Time: 10:00 – 12:30
Venue: Holiday Inn & Suites, Port Moresby

Meeting Documents:

Annex 1: Meeting Agenda
Annex 2: List of Participants
Annex 3: Status of the Objectively Verifiable Indicators

A. OFFICIAL OPENING OF THE MEETING.

- i) Mr. Michael Wau, Executive Officer of DEC and Chairman welcomed the participating members of the committee from different agencies to the fourth JCC Meeting for J-PRISM in Papua New Guinea. He thanked everyone for accepting the invitation to attend this meeting, particularly for making an effort to make themselves available despite their busy working schedule and announced his eagerness in conducting this meeting on behalf of Mr. Joku, the Secretary to the Department of Environment and Conservation who could not attend due to other pressing engagements.
- ii) The Chairman then invited Mr Joshua Sam, Manager of WMD, and NCDC to lead the meeting with a word of prayer.

B. KEYNOTE ADDRESSES OF THE MEETING

- i) On behalf of the City Manager, Mr Leslie Alu, Mr. Joshua Sam, Manager of Waste Management Division acknowledged the presence of the project directors especially Department of Environment and Conservation (DEC), Department of National Planning and Monitoring (DNPM) for the yearly funds allocated for the project, JICA, National Department of Health (NDOH) and the NCDC Waste Management Staff.

He stated there are many challengers in urban living and solid waste management is one of them. NCDC has realized its importance hence the JPRISM Projects has come at a very significant time enhancing the city to take on the challenges the city will face. JPRISM is referred to as a flagship program improving solid waste management in the city and building the capacity of waste professionals in the commission.

ii) The JICA Chief Representative, Mr. Shigeru Sugiyama couldn't make it due to other pressing commitments. As such Mr. Horikoshi apologized on his behalf.

He mentioned that the JPRISM is a flagship program for Pacific Island Countries positively impacting them in terms on solid waste management.

He thanked and acknowledged the presence of the important stakeholders present.

C. PROGRESS REPORT OF THE PROJECT ACTIVITIES

Mr Joshua Sam, Manager of Waste Management Division (WMD) outlined that the presentation of the Progress of the project would be done by the respective Senior Waste Management Officers, who were Output Managers of the respective Project Outputs.

However at the start he evaluated the achievement levels of the Objectively Verifiable Indicators (OVI), which require stronger efforts to accomplish during this last year of the Project, as follows (details in Attachment 3):

[OVI 1-1] Baruni upgrading plan is prepared and implemented

The COUNTERPART team has developed their skills in both design and implementation of sanitary landfill; however the start of the work was delayed a number of times and finally commenced in earnest in July 2014. It may be difficult to implement the total upgrade plan by the end of this year.

[OVI 2-1] Collection coverage is increased to 70%

In order to increase the collection coverage better collection service needs to be extended to the settlements where large populations are living. The Counterpart team will make more efforts to introduce community participatory approach to SWM in these settlements, in order to improve the waste collection services there.

[OVI 3-1] SWM Plan is developed and adopted

The basis for the SWM Plan is the NCDC SWM Policy which was adopted in September 2014, the SWM by-law which is under preparation and a reliable data base.

The Counterpart team is developing the by-law as well as collecting more accurate information on solid waste generation amounts, industrial waste amounts, collected waste amounts to develop the data base. Further the COUNTERPART team is making efforts to promote pilot recycling activities in order to include a detailed recycling plan within the SWM plan.

The COUNTERPART team will make the utmost effort to at least develop the SWM plan by the end of this year, while the actual process of adoption may be delayed to early 2016.

1) Progress of Output 1: Solid Waste Disposal Facility & Operation is improved

Mr. Simeon Terina and Mr. James Ricky made a presentation of Output 1 activities progress as follows

1.1 Develop a work plan for the rehabilitation of the Baruni Dump

This activity has been completed.

1.2 Conduct site investigation into Baruni dumpsite

This activity has been completed.

1.3 Undertake EIS work including Stakeholder consultation

The EIS study has been completed and the Environmental Permit issued in May 2014.

A survey of the working and social conditions of some 100 householders involved in waste picking in Baruni has been completed.

1.4 Undertake upgrading works on the rehabilitation of Baruni Dump

The upgrading works contract was concluded between NCDC and Kana Construction Limited (KCL) in April 2014, and the work started in earnest in July 2014. The major upgrading works implemented to date were as follows:

- Excavation, and earthworks for cell 1 and leachate pond
- Excavation for cell 2
- Site offices and roofed area prepared
- Leachate main and branch pipes arrived in Port Moresby
- NCDC initiated a soil study at the proposed weighbridge location.

1.5 Develop an operation & maintenance manual for Baruni dump

An O&M Manual has been prepared and given to the Contractor in July 2014. The Counterparts have amended/ modified the manual in October 2014, based on the experience gained from present operations improvement and more safety articles inserted in the wake of the mid-September accident.

1.6 Establish water monitoring system and implementation

Water samples have been analyzed in July and October 2014. Sampling was done in February 2015 and the analysis is under way.

1.7 Conduct training for both for landfill management staff and operators

Since the commencement of the upgrading works, the waste disposal operations have been confined to the rear of the site, beyond the construction areas for cells 1 and 2. Training of the Counterparts to supervise KCL's operators has focused on:

- Placing of waste in smaller spaces, permitting for time for waste picking, waste placing and compaction, application of cover materials and waste slopes safety
- In the aftermath of the accident of Sept. 15th, 2014 a number of activities related to the safety control at the site were implemented. These included attaching a spotter to each unit of heavy equipment to guide the operator, and positioning of a site supervisor for the operations only.
- The Project team developed a safety monitoring plan to improve safety in the site, after identifying the required safety measures. Two important points were stationing WMD officers at the site during the working hours and beginning to control children working in waste picking. A Baruni Landfill Safety Committee was also initiated with waste pickers as members (both elders and youth). A meeting was held with the waste pickers at the site to discuss about site safety.

1.8 Monitor operations of the upgraded landfill and evaluate its efficiency.

NCDC officer level staffs are preparing to be on site at all times during operations and upgrade works to more effectively monitor the works.

2) Progress of Output 2: Waste Collection in Port Moresby is improved

Ms. Vivianne Morofa made a presentation of Output 2 activities progress as follows:

2.1 Develop work plan to carry out time-and-motion study

This activity had been completed.

2.2 Undertake time-and-motion study

During 2014 no time and motion studies were implemented.

2.3 Analyze results and generate study report

The report of the time and motion study completed in 2011 was drafted, reviewed and finalized. The analysis of the survey data of this year has been completed and a preliminary report has been prepared. The Counterparts have made enormous efforts to implement the survey, input and analyze the data. The final report was compiled in December 2014.

2.4 Make amendments to the contracts for the waste collection contractors

No work was done on this activity during this fiscal year.

2.5 Conduct training for all contractors

In February 2014, during the training workshop held for the private collection contractors, the difficulty of providing regular waste collection services at the settlements was raised. Since then WMD has held a number of community meetings at settlements to discuss on how to provide better waste collection services there. The Counterparts are now preparing to implement a pilot project to improve waste collection in the settlements together with the community and the collection contractors.

2.6 Monitor and evaluate at scheduled intervals

The Counterparts have developed monitoring sheets and passed them on to schools and businesses in order to collect information on the regularity of the collection services there. In addition the Counterparts are continuing to analyze the non-collection complaints, in terms of their numbers, locations and contents.

The Counterparts have also developed the formats for collection of incoming-waste vehicles data at the disposal site and will be analyzing them in order to evaluate the work of the collection contractors.

3) Progress of Output 3: Capacity of Planning & Monitoring of Solid Waste Management in Port Moresby (National Capital District Commission) is increased.

Mr. Ronnie Ranu made a presentation as follows:

3.1 Promotion of 3Rs for inclusion in plan

The Counterparts are continuing to work in twofold on promotion of the 3Rs through the implementation of the 3R HEART initiative and planning for the introduction of market waste composting.

A. 3R HEART Initiative

- Action plans were collected from the 8 schools participating in the initiatives and were summarized into standard sheets for discussion with the respective schools.
- In September 2014, a workshop was held for teachers from the eight (8) participating schools to explain about SWM and confirm the action plans
- The initiative was launched on 31st October, with the attendance of the NCDC Governor.
- WMD distributed bins and educational materials to the eight schools.
- Based on the action plans submitted by the schools, at two of the schools workshops were held to explain the general SWM service and discuss in details with the teachers.

B. Market Compost Pilot Project

The Counterparts have developed the survey plan to be implemented at the markets in order to identify the market waste amounts and contents generated there. The Counterparts have also identified potential farms willing to receive the market waste and compost it. The survey and implementation plan will be developed during the remaining year of this project.

3.2 Develop work plan for the waste characterization exercise

This activity had been completed.

3.3 Undertake waste characterization exercise

The industrial waste audit survey has been implemented in January and February, 2014. Around 100 industrial and commercial concerns were interviewed.

3.4 Analyze results and generate report

The data collected from the industrial waste survey is now being input and analyzed.

3.5 Develop Solid Waste Management Plan for Port Moresby

The first workshop for the SWM Plan which covered the plan framework was held on September 22nd. The first part of the workshop dealt with the launching of the new NCDC waste policy. The Governor and City Mayor attended the workshop.

The Counterparts have prepared a draft of the first part of the SWM Plan, which includes a description of the present conditions of SWM in NCDC and identification of the related issues. The Counterparts have targeted to hold the second workshop at the end of March 2015, with the objective of discussing a number of scenarios for the master plan with the stakeholders and selecting the optimum scenario for detailed planning.

3.6 Adoption of Waste Plan by DEC and NCDC managements

This activity will follow the preparation of the plan. However the Counterparts are keeping the managements informed of the plan preparation through the workshops.

3.7 Implement and monitor the Waste Management Plan

The target of the team is to adopt the Waste Management Plan by the end of 2015 or early 2016.

D. OTHER IMPORTANT OCCURENCES

1) Accident at Baruni Disposal Site

On September 15th, 2014 two children, ages 3 and 5, belonging to the waste pickers were playing at the foot of the waste slope at the waste disposal area. The bulldozer operator, hired by the Contractor's sub-contractor was pushing the waste down the slope. The children were playing under a makeshift cardboard paper roof and the operator did not notice them. The children were suffocated under the waste and died instantly.

As a consequence of this accident the Counterparts and KCL initiated a number of countermeasures to improve safety at the site. Upgrade works were suspended for two weeks.

2) Counterparts participation in Lambasa Regional Training of Training Workshop

Three Counterparts; Mr. Joshua Sam, Mr. James Ricky and Ms. Vivianne Morofa participated in the regional training of trainers workshop, which was held in November 2014 in Fiji, joining other selected counterparts from nine of the JPRISM target countries.

The three PNG Counterparts covered the sectors of waste management institutional system and waste pickers management, landfill design and time and motion study.

E. CHANGES IN THE COUNTERPART TEAM

On the NCDC side, Mr. Joshua Sam informed the meeting of the following changes in the team.

Ms. Vivianne Morofa, Acting SHMO is the manager of Output 2.

Ms. Rachael Inamuka and Ms. Diana Wapyer have both been appointed as officers of the WMD and are participating in the project activities.

F. MATTERS ARISING FROM DISCUSSIONS

1) Progress of Baruni Landfill Construction Project

In a reply to a question from Mr. Horikoshi, Representative from JICA PNG Office, the Baruni Upgrading Project Director from Kana Construction, Mr. Lopia informed that the project is running 10 weeks behind schedule. He attributed the delay mainly due to the time lost after the accident in mid-September 2014, when two children from the waste pickers' community were killed, as well as the recent bad weather.

2) Social impacts of the project on the surrounding community

Dr. Iwamoto, Project Formulation Advisor, JICA PNG Office asked about any countermeasures the project is taking to offset impacts of the project on the surrounding communities. NCDC's Mr. Joshua Sam explained that during the environmental and natural conditions study that was implemented before the project started, a social study was included. Furthermore the Project team conducted a more detailed waste pickers' social study last year. Mr. Simeon Terina explained on the measures that NCDC was taking inside the project area with the waste pickers to maintain communication and improve their working conditions. As for the broader outside community not much was being done at this time.

Ms. Margaret George from JICA pointed out that every construction work has an impact on the community. She asked of the possibility of involving other stakeholders (e.g. Social and Education Department) to address the issue of waste picking?

In response, NCDC's Mr. Terina mentioned that currently it is of utmost concern to make sure that the waste picking is done in a clean environment. Attempts have been made to set up a school dormitory and a social facility but these have not been realized so far.

3) Disposal of medical wastes at the site

Mr. Ken, from the Department of Health mentioned that they needed a site to construct an incinerator for medical wastes. He asked for some area to be allocated at the Baruni disposal site. Mr. James Ricky explained that the present site area could not accommodate this facility but in the future when the titles of the surrounding plots are changed to NCDC's name then a site may be specified.

4) Allocation of surrounding sites to Baruni disposal site

In his presentation, Mr. James Ricky explained that within the site's present area the amount of waste that can be disposed of there is for about 4-5 years. However he showed that if the adjacent areas are acquired and then the disposal volume can be significantly expanded to three or four times. So there is an urgent need for NCDC to move more rapidly on the process of allocating the surrounding plots to NCDC.

Mr. Charlie Pengi from NCDC Markets Division acknowledged the progress of the Baruni Rehabilitation Project. He understood that Baruni has around 5 years remaining hence asked what the future plans were for Baruni. Would there be any recycling facility built there to address the pressing issue of Baruni filling up too quickly?

Mahmoud Riad, JICA Expert mentioned the current issue is land space. Without land expansion, Baruni will have only 5 years as stated but if the surrounding plots were acquired then it the site may be used for a longer period. Also there is sufficient land area build a Material Recovery Facility (MRF) in Baruni in the future.

5) Disposal of Bulky Wastes

Mr. Gregory Lenga from DEC asked about the plans for management of special wastes, such as tires and hazardous wastes.

In response to his question, Mr. Simeon Terina stated that the current disposal area was planned to be for bulky wastes but due to the quantity of wastes going into Baruni, this issue had not been dealt with. Currently scrap metals and tires are used by the waste picking community for recycling purposes.

When doing the Solid Waste Management Plan, this issue would be taken into consideration as stated by Mr. Joshua Sam.

6) Terminal Evaluation Mission and JPRISM Extension

Mr. Amano explained that the terminal evaluation mission would be visiting the region in July – August to make the final evaluation of the Project. Maybe at the same time or slightly after, another mission from JICA would be dispatched to the region to discuss about the JPRISM extension project after the completion of this phase of JPRISM in February 2016.

G. PROJECT PDM

Mahmoud Riad explained that in the Project Design Matrix (PDM) for Overall Goal, the "Objectively Verifiable Indicators" (OVI) and its "Means of Verifications" had not yet been defined. The Overall Goal,

which is common for all the eleven countries covered under J-PRISM states that; “Sustainable management of solid waste in the Pacific Region is enhanced”.

Riad proposed that waste minimization is important to sustain the management of solid waste, and therefore proposed that the OVI for the Overall Goal be as follows:

The importance of waste minimization is understood and more than one waste minimization scheme is practiced in NCDC.

And that the Means of Verification for this OVI would be as follows:

Implementation report on waste minimization schemes.

H. CLOSING OF THE MEETING

The Chairman thanked everyone for their inputs and contributions to the discussions held during the meeting. He thanked NCDC the leading agency and it's Project Team for the implementation of activities and the progress already made. He also thanked the Department of Planning and Monitoring team for their generous support which secured funding assistance for the project. He also thanked JICA and the government of Japan for its continuing financial support to this project. He wished everyone and the project a success.

He declared the meeting officially closed

ANNEX 1: MEETING AGENDA

No.	Time	Agenda Items	Presenters
1	09:00 - 09:30	Registration/ Facilitator	Ms. Diana Wapyer
2	09:30 – 09:35	Opening prayer	
3	09:35 – 09:40	Opening remarks	Mr. Michael Wau, Chair, Executive Officer DEC
4	09:40 – 09:45	Opening remarks	Mr. Joshua Sam, WMD Manager, NCDC
5	09:45 – 09:50	Opening remarks	Mr. Daisuke Horikoshi, Representative, JICA PNG
6	09:50 – 10:25	Progress reports	Mr. Simeon Terina/ Mr. James Ricky (Output 1) Ms. Vivianne Morofa (Output 2) Mr. Ronnie Ranu, Mr. Paul Wisi (Output 3)
7	10:25 – 10:40	Q&A	Chair & Co-chair
8	10:40 – 10:50	Tea break	
9	10:50 – 11:20	Major project issues, including comparison of actual work against PO and revised PO for 2015/2016 and major project deliverables for 2015 and deadlines	Mr. Joshua Sam, Project Manager (Ms. Diana, Acting Project Coordinator)
10	11:20 – 11:30	Concluding remarks and JPRISM main activities in 2015, including Terminal Evaluation Mission	Mr. Shiro Amano, Chief Advisor
11	11:30 – 11:40	Q&A	Chair and Co-chair
12	11:40 – 12:00	Closing remarks	Co-chair and Chair
13	12:00 – 13:00	Lunch	

ANNEX 2: LIST OF PARTICIPANTS

- 1. Japan International Cooperation Agency(PNG Office)**
Mr. Daisuke Horikoshi, Resident Representative
Dr. Hiromitsu Iwamoto, Project Formulation Advisor
Ms. Margaret George, Program Officer
- 2. J-PRISM Project**
Mr. Shiro Amano, Chief Advisor, J-PRISM
- 3. Department of Environment and Conservation**
Mr. Michael Wau, Executive Officer, DEC
Mr. Veari Kula,
Mr. Gregory Lenga, Scientist, Industry Standards
- 4. Department of National Planning and Implementation**
Mr. Dan Lyanda
Mr. Hideo Kobayashi, Advisor/ JICA
- 5. National Department of Health**
Mr. Ken Neyakawapa, Program Officer, EHD
- 6. Markets Division, NCD**
Mr. Charlie Pengi, Acting Manager
Mr. Rex Kuman, Supervisor
- 7. Kana Construction**
Mr. Lopia Laima, Project Director, Baruni Upgrading Project
- 8. National Capital District Commission**
Mr. Joshua Sam, Manager, WMD
Mr. Simeon Terina, Senior Waste Management Officer
Mr. Ronnie Ranu, Senior Waste Management Officer
Ms. Vivianne Morofa, Acting Senior Waste Management Officer
Mr. Paul Wisi, Waste Management Officer
Ms. Nanai Raga, Waste Management Officer
Mr. Walter Aukleya, Waste Management Officer
Mr. James Ricky, Development Engineer & Project Engineer
Ms. Rachael Inamuka, Waste Management Officer
Ms. Diana Wapyer, Waste Management Officer
Mr. Sneka Pokani, Supervisor, WMD
Ms. Louisa Elias, Supervisor, WMD
Mr. Joseph Kaupa, Supervisor, WMD
Mr. John Kavu, Supervisor, WMD
Mr. Johnny Tiankin, Supervisor, WMD
Mahmoud Riad, SWM Expert E, J-PRISM

9. Media

Mr. Tony Sii, Gold ring Media

Mr. Paul Morea, Gold ring Media

Mr. Tokana Hasavi, EMTV

Mr. Garry Pinge, EMTV

Mr. Eiwana Kila, EMTV

ANNEX 3: STATUS OF THE OBJECTIVELY VERIFIABLE INDICATORS

Overall Goal Sustainable management of solid waste is enhanced
The importance of waste minimization is understood and more than one waste minimization scheme is practiced in NCDC
● WMD is implementing 3R HEART program and market green waste and industrial waste surveys to promote and enhance waste minimization.
Project Purpose Human and institutional capacity base for sustainable solid waste management in the Pacific Region is strengthened through implementation of the Pacific Regional Solid Waste Management Strategy (2010 – 2015) (RS2010)
1- Four (4) Experts (Trainers) are listed in the SPREP inventory
● Conditions of listing in the inventory are not yet available
2- Landfill management/ collection services are implemented according to the SWM plan
● SWM Plan preparation started in May 2014
OUTPUT 1 Solid waste disposal facility and operation is improved
1-1 Baruni upgrading plan is prepared and implemented
● Rehabilitation works started on June 3rd at the site ● Cells 1 and 2 are expected to be completed by the end of JPRISM project
1-2 Operation and maintenance manual is prepared and implemented
● Manual has been prepared
OUTPUT 2 Waste collection in Port Moresby is improved
2-1 Collection coverage is increased to 70%
● Collection coverage in 2014 estimated to be 60%
2-2 Number of complaints are reduced by 30%
● Complaints records are being analyzed
2-3 One Time and Motion study conducted by NCDC itself annually
● Time and Motion was implemented in 2013 and was scheduled to be done in October, 2014.

However due to the Counterparts' pre-occupation with other works no T&M survey was implemented in 2014.
OUTPUT 3 Capacity of planning and monitoring of Solid Waste Management in Port Moresby (National Capital District: NCDC) is increased
3-1 SWM Plan is developed and adopted
• SWM Plan preparation started in May 2014
3-2 Solid Waste Management budget is prepared and SWM expenditure is analyzed for FY2015
• Yet to be discussed with the Counterpart team

Attachment A-4 5th JCC Meeting Minutes

MINUTES OF MEETING

5th PNG JOINT COORDINATING COMMITTEE (JCC)

ON JAPANESE TECHNICAL COOPERATION PROJECT
FOR THE PROMOTION OF REGIONAL INITIATIVE ON
SOLID WASTE MANAGEMENT IN PACIFIC ISLAND COUNTRIES (J-PRISM)

HELD AT HOLIDAY INN HOTEL, PORT MORESBY,
PAPUA NEW GUINEA

TUESDAY 24th NOVEMBER 2015

SIGNATURES

Mr. Gunther Joku
Managing Director and Project Director
Conservation and Environment Protection Authority
(CEPA)
PAPUA NEW GUINEA

Mr. Shiro Amano
Chief Adviser
J-PRISM Project Office
Tokyo, JAPAN

Mr. Leslie Alu
City Manager
National Capital District Commission
Port Moresby City,
PAPUA NEW GUINEA

Mr. Shigeru Sugiyama
Chief Representative
JICA PNG OFFICE

MINUTES OF MEETING OF
THE FOURTH PAPUA NEW GUINEA J-PRISM JOINT COORDINATING COMMITTEE
(JCC)

Date: 24th November, 2015
Time: 09:20 – 12:30
Venue: Holiday Inn & Suites, Port Moresby

Meeting Documents:

Attachment 1: Meeting Agenda

Attachment 2: List of Participants

Attachment 3: Conclusions of the Terminal Evaluation Team and PNG Side Comments

Attachment 4: Recommendations by the Terminal Evaluation Team and PNG Side Comments

A. OFFICIAL OPENING OF THE MEETING

Ms. Janet Haula officiated as Mistress of Ceremonies for the meeting. Welcoming all the participants, Ms. Janet asked Mr. Gabriel, Supervisor, WMD to say a word of prayer.

i) Mr. Michael Wau, Director, EPW of CEPA and 5th JCC meeting Chairman welcomed the participating members of the committee from relevant agencies to the fifth JCC Meeting for J-PRISM in Papua New Guinea. He thanked everyone for accepting the invitation to attend this meeting, despite their busy working schedules and announced his eagerness in conducting this meeting on behalf of Mr. Gunther Joku, the Managing Director of CEPA, who could not attend the meeting due to other pressing engagements.

Mr. Wau congratulated the NCDC Team on successfully completing the J-PRISM project activities and recognized the strong efforts the team had made to achieve this. Mr. Wau also expressed the intention of CEPA to partner with NCDC and JICA to spread the experience gained in SWM to the country's provinces at their urban centers. CEPA recognizes that this will require development and implementation of national policies and institutional programs on SWM.

Mr. Wau confirmed the intention of CEPA to work together with JICA and NCDC for Phase II of the project.

ii) Mr. Honk Kiap, Acting City Manager, NCDC welcomed the participants on behalf of the City Manager. He expressed the satisfaction of NCDC with the work that has been accomplished by the project, especially in Baruni landfill. Mr. Kiap stated that the Baruni sanitary landfill may now be considered as one of the best landfills in the South Pacific region, in terms of its environmental and user friendly design. He emphasized that the NCD staff capabilities have been significantly increased and the project engineer may take the lead to execute similar landfill improvement projects in the country.

Mr. Kiap indicated that there is now a need to move ahead with other facilities of SWM, such as a transfer station with the capacity to separate the recyclable materials before sending the residual wastes to the landfill.

Mr. Kiap referred to the article of the National newspaper, which appeared in 2013 with the headline that “NCD at risk” due to the severe poor management of solid wastes in the city. He noted that much has improved since then.

Finally, Mr. Kiap expressed his hope that the partnership of CEPA, NCDC and JICA in the field of SWM would continue in the future.

iii) Mr. Shigeru Sugiyama, Chief Representative of the JICA PNG Office welcomed the participants to the meeting. He stated his satisfaction that the activities of JPRISM, in Phase I, were successful and although JICA could not provide all the resources, Mr. Sugiyama pointed out that NCDC provided sufficient financial, material and human resources to the project activities.

Mr. Sugiyama referred to the on-going 3R HEART program; the project initiated in schools and the importance of working with the younger generation. He appreciated that NCDC has indicated its intention to continue this activity in the coming years as one of its recurrent activities.

He explained that the JCC meeting would provide a good opportunity to share the successes achieved, as well as difficulties encountered in the project's implementation. He noted CEPA's recent strengthened involvement in the project and advised that all parties need to think of the activities that would be implemented in Phase II.

He hoped that the NCDC counterparts, whose capabilities have been significantly increased, can support CEPA at the regional level to develop the SWM in the provinces.

Mr. Sugiyama finally expressed his realization that the NCDC counterparts have not only developed their SWM capabilities but also strengthened their sense of responsibility as good public servants. Mr. Sugiyama finally congratulated the counterparts for being awarded the best Counterpart Team award in 2015 by the Project Office.

B. PROGRESS REPORT OF THE PROJECT ACTIVITIES

Ms. Janet then called upon each Output team to present the progress of the output activities and good practices.

1) Progress of Output 1: Solid Waste Disposal Facility & Operation is improved

Mr. Simeon Terina briefly explained the progress of Output 1. He stated that there has been significant improvement at Baruni landfill. Waste disposal is expected to start at Cell 1 by the end of December, and Cell 2 may be completed during the first quarter of 2016.

Mr. Terina mentioned that more funds and efforts will be required to continue to fund future facilities at the site. He then requested Mr. Walter Aukleya, WM Officer, to explain in more details.

Mr. Walter presented the progress in Output 1, first explaining the improvements in operation as follows:

- Improvements in monitoring, supervision and reporting
- Development and use of the O&M manual
- Daily presence at the site by WMD officers and supervisors to supervise the contractors
- Increased cooperation and incorporation of the waste pickers community at the site
- Increased support from NCD management
- Improved working conditions at the site

Mr. Walter addressed some challenges the team faced in implementing Output 1 as follows;

- There often is a breakdown in communications at the site between the contractor, community and NCDC
- There are delays in provision of materials and manpower due to financial challenges the contractor faces
- The rehabilitation work has been often suspended due to friction between the community and contractor, mainly on financial issues
- The operator does not always adhere to the operation and maintenance manual, especially the application of cover materials
- There is poor litter control
- Slopes and terracing need to be further improved
- Fires have broken out at the site on a periodical base

2) Progress of Output 2: Waste Collection in Port Moresby is improved

Ms. Vivianne Morofa briefly explained the progress of Output 2 activities during this year. It was not possible to implement the time and motion study as scheduled in October 2015 as the counterparts were engaged in other pressing work. She identified the current issues waste collection is facing in Port Moresby as follows:

- Lack of **Communication & Control** between contractor and managing authority (NCDC)
- Low Collection Efficiency
- Less Coverage
- Poor Management of collection operations by contractors

Ms. Vivianne elaborated on the introduction of waste collection to settlement areas, as a preliminary step to amend the collection contracts to cover settlements and thereby expand the waste collection service. She asked Ms. Racheal Inamuka to explain the pilot project in more details.

Ms. Racheal Inamuka presented the settlement waste collection pilot project as follows:

- There are about 63 settlements in NCD with a very roughly estimated population of 25% of the total NCD population, i.e. 100,000 persons
- This pilot project is being implemented at Segani-Ranuguri Settlement, which there are about 2,500 persons residing from three different ethnic groups
- Public awareness meetings have been held with the settlement residents five times during the last 4 months and they agreed to bring their waste to a communal station twice a week (Wednesdays and Saturdays). The residents have formed two SWM committees to oversee the system, one at Segani and the second at Ranuguri.
- NCD is constructing three structures, made of cement blocks and mortar to serve as communal waste stations.
- The project has donated 4 wheel barrows to transport the waste from distant houses to the stations. The wheel barrows are maintained by the SWM committees and operated by the youth
- The pilot project started already at two of the three stations and the first issue was the collection contractor's failure to come on the designated collection days. NCD is making more efforts with the contractor to meet the schedule that all three parties had agreed to at the start of the pilot project.

3) Progress of Output 3: Capacity of Planning & Monitoring of Solid Waste Management in Port Moresby (National Capital District Commission) is increased.

Mr. Ronnie Ranu, Senior WM Officer and manager of Output 3 briefly explained that the counterpart team had successfully completed the 3R HEART program for 2015 and intends to expand the number of member schools in 2016. Mr. Ranu also stated that the Gerehu Market green waste composting pilot project is expected to start in January 2016. He further mentioned that the main activity of the output, to prepare the NCD SWM plan was progressing on schedule and that a seminar would be held on December 1st to introduce the draft plan to the stakeholders. This stakeholders' meeting will be the third in the process of preparing the plan.

Ms. Vivianne Morofa, explained the 3R HEART program on behalf of Mr. Paul Wisi, WM Officer who was unable to attend the meeting. She reviewed the phases of implementation of the program and highlighted the award ceremony that was held on 12th November to present the awards to the winners from the eight participating schools. She confirmed that the 3R HEART program would be expanded to include an additional 14 schools in 2016 and that WMD had already allocated the necessary budget for this activity.

Ms. Diana Wapyer, WM Officer, presented the progress at the Gerehu Market. She explained the outcome of the survey that had been conducted there, the activities to raise awareness amongst the vendors and shoppers on waste separation and decreased use of plastic shopping bags. She outlined the progress that had been made with NARI to partner with NCD on implementing the compost pilot project, and that the transport of the green waste from Gerehu Market to NARI was expected to start in late January 2016.

C. DISSEMINATION OF NCD GOOD PRACTICES ON SWM TO OTHER PROVINCES

Mr. Veari Kula, Executive Manager, CEPA addressed the desire of GoPNG to spread the good practices that NCD implemented under the project to other provinces. In this regard he made the following remarks.

- CEPA is very satisfied that the counterparts' SWM capacity has been developed
- It is necessary to consider the appropriate approach to roll out the project results to the other provinces. One way would be to focus on one or two urban centers in each province, and in turn that urban center would then introduce SWM practices to surrounding smaller urban and rural centers.
- At the national level CEPA will continue to try to commit more resources to this effort.
- It is necessary to develop a national policy on waste and chemicals, and SPREP or other partners may be able to provide support to CEPA in this regard
- The commitment and support of NCDC to this effort is the largest success factor. It is hoped that NCDC officers may assist in training officers in other provinces.
- CEPA is mindful of the present efforts made by Environmental Health Officers in respective provinces in the field of SWM and the EHOs need to be involved in future efforts of the project in the provinces and considered it important to build on current existing initiatives rather than to develop new mechanisms.
- It is also necessary to increase the awareness of politicians on the importance of SWM and to ensure provinces made resources available on waste management through their provincial plans etc.
- Mr. Veari stressed that the relevant stakeholders in the provinces would be consulted when developing the national policy
- The Project activities should continue during the gap period between the end of Phase I and start of Phase II.

D. COMMENTS ON TERMINAL EVALUATION TEAM CONCLUSIONS AND RECOMMENDATIONS

Mr. Joshua Sam, Project Manager outlined the evaluation results, conclusions and recommendations of the Terminal Evaluation Mission that had been presented to the PNG side in September 2015.

1) The Terminal Evaluation Team evaluated the output degree of accomplishment for each of the three project outputs and the Project Purpose at the end of the project as being “Mostly Achieved” for the three outputs and “likely to be achieved” for the project purpose. Mr. Joshua stated that the team was satisfied with these evaluation results.

2) The Terminal Evaluation Team identified four issues that need to be addressed by PNG side after the project completion to ensure the effects of the Project. Mr. Joshua explained how all four issues were being addressed by NCDC and CEPA and are expected to be satisfactorily resolved. (Refer to Attachment 3).

3) The Terminal Evaluation Team recommended that the Indicator and Means of Verification for Overall Goal be reviewed as follows.

Item	Original	Modification
Indicator for Overall Goal	The importance of waste minimization is understood and more than one waste minimization scheme is practiced in NCDC	Landfill management, collection services, and waste minimization are implemented according to the action plan of the SWM plan (2016 – 2020) in three years after completion of the Project.
Means of Verification	SWM Plan implementation	Monitoring report on implementation of the SWM plan

Mr. Joshua stated that the PNG side agreed with both modifications. He added that the term of the Action Plan of the NCD SWM Plan, presently being drafted has been set at 3 years to better comply with the modification.

Concerning the other recommendations made by the Terminal Evaluation Team, the PNG side basically agreed and explained for each the current efforts being made and expected time of achievement as suitable. (Refer to Attachment 4).

E. ISSUES FACED BY THE PROJECT

Mr. Joshua Sam, explained some of the issues the Project team faced in implementing the project and hoped that these issues would be resolved by the commencement of Phase II of the Project. These issues were briefly:

- Capacity of contractor on construction of sanitary landfill is lacking
- Contract management has been difficult in many instances
- Project coordination & management is sometimes insufficient
- Timely payments for project activities
- Waste pickers issues
- Counterparts' financial skills in costing waste services.
- Limited support from GoPNG.
- Occasional lapses in commitment and enthusiasm by counterparts.

F. EXPERIENCES FROM PHASE I AND EXPECTATIONS FOR PHASE II

Mr. Shiro Amano, Chief Advisor, J-PRISM first described the achievements of Phase I of the project. He reminded the participants of the project's early focus on the rehabilitation of the Baruni disposal site, and how effective that had been.

Mr. Amano referred to the evaluation results of the mid-term evaluation team in September 2013 for the Outputs 1, 2 and 3 as "Significant Delay", "Moderate Delay", and "Slight Delay". He recognized the significant efforts made by the PNG Project Team to overcome those delays within the last two years.

He highlighted some of the achievements of the PNG Team as follows:

- * **PIDOC (Pacific Database of Capacity Development Activities)**
 - (1) 9 individuals registered as a trainer with trainer mileage points
 - (2) Total cumulative number of 19 trainers in 8 fields (duplicated)
- * **The Best Team Award for 2014/2015**
 - (1) NCDC/DNPM/CEPA/JICA-PNG cooperation and coordination
 - (2) Baruni Rehabilitation both in physical and social terms
 - (3) 3R HEART/Awareness Program completion
 - (4) Extension of Waste Collection to Settlement areas
 - (5) Stakeholder involvement (high officials/waste-pickers/squatters)

Mr. Amano shared with the participants his concept for Phase II of J-PRISM as follows:

- Promotion of South-South Cooperation at national and regional levels with the use of PIDOC
- Establishment of "3R + Return" mechanisms at national and regional levels
- Balancing activities at national and regional levels

Mr. Amano further advised the participants of the process that JICA is considering adopting towards commencement of Phase II.

- Keeping the Project Office at SPREP for another 10 months for follow-up and preparation of Phase II
- Dispatch of Detailed Planning/Consultation Mission to the region in early 2016 (the 1st quarter)
- Forming a new Project Office somewhere and procuring consultant teams
- Start of Phase II

G. MATTERS ARISING FROM DISCUSSIONS

With the completion of the program activities, Ms. Janet, Mistress of Ceremonies invited comments and questions from the participants.

Mr. Daisuke Horikoshi commented on the point made by Mr. Veari regarding the gap period. Mr. Horikoshi advised that the PNG side needs to continue successful implementation of the project activities and share the achievements with other stakeholders.

Mr. Horikoshi further expressed his pleasure at the leadership CEPA was showing towards the convening of a workshop for Baruni landfill with the participation of SWM officers from other provinces of PNG.

Mr. Gregory Lenga, CEPA, referred to the stipulation of the environmental permit issued by the then DEC for the rehabilitation of Baruni landfill, concerning the identification of a special purpose area at Baruni landfill for the management of special wastes, such as; hazardous wastes, non-compactable and bulky

wastes and the same location will hold the construction of an incinerator. He asked NCDC on the progress of both and stressed that this is a permit condition.

Mr. Lenga also mentioned the avenue provided for sound environmental management of Hazardous and other waste under the Basel and Wagnani Convention's trans-boundary movement of such waste.

Mr. Sam replied that the policy of the NCD SWM Plan is to gradually shift the onus on the management of hazardous wastes to the generators as NCD does not have the facilities or the technical expertise to treat these waste types. In the short term, NCD is receiving hazardous wastes from health care facilities and burying these wastes in the site.

Mr. Sugiyama indicated that it was important for NCDC and CEPA to realize that when there are no facilities to treat these special wastes then the wastes should be returned to the country of origin.

Mr. Honk stressed the need to develop long term policies on the national level to address such issues.

H. CLOSING OF THE MEETING

Mr. Honk thanked everyone for their inputs and contributions to the discussions held during the meeting and commended the NCD team for their presentation. He wished everyone and the project a success and looked forward to Phase II commencement.

He declared the meeting officially closed.

Attachment 1: MEETING PROGRAM

MC: Ms. Janet Haua, Project Coordinator

No.	Time	Agenda Items	Presenters
1	09:00-09:30	Registration/ Facilitator	Ms. Diana Wapyer
2	09:30–09:35	Opening prayer	
3	09:35–09:40	Opening remarks	Mr. Michael Wau, Chair , Director, EPW CEPA
4	09:40 – 09:45	Opening remarks	Mr. Leslie Alu, CM, NCDC
5	09:45 –09:50	Opening remarks	Mr. Sugiyama, Chief Representative, JICA PNG
6	09:50 –10:20	Outputs Achievements and Issues Output 1 – Operational problems at Baruni and rehabilitation delays Output 2 – Expansion of collection to Segani-Ranuguri settlement Output 3 – 3R Heart Program and Gerehu Market awareness activities	Mr.Walter Aukleya/ Mr. James Ricky Ms. Racheal Inamuka Mr.Paul Wisi/ Ms. Diana Wapyer
7	10:20 – 10:30	Method to disseminate NCDC SWM good practices to other provinces in PNG.	Mr. Veari, Executive Manager, CEPA
8	10:30 –10:40	Q&A	Chair & Co-chair
9	10:40–10:50	Tea break	
10	10:50–11:20	(1) NCDC action on Terminal Evaluation recommendations (2) The issues the project faced/is facing and their resolution by NCDC (Refer to Attachment)	Mr. Joshua Sam, Project Manager
11	11:20 – 11:30	Experience of Phase I and Expectations from Phase II	Mr. Shiro Amano, Chief Advisor
12	11:30–11:40	Q&A	Chair and Co-chair
13	11:40–12:00	Closing remarks	PM and PD
14	12:00–13:00	Lunch	

Attachment 2: LIST OF PARTICIPANTS

1. Japan International Cooperation Agency(PNG Office)

Mr. Shigeru Sugiyama, Chief Representative
Mr. Daisuke Horikoshi, Resident Representative
Dr. Hiromitsu Iwamoto, Project Formulation Advisor
Ms. Margaret George, Program Officer

2. J-PRISM Project

Mr. Shiro Amano, Chief Advisor, J-PRISM

3. Conservation and Environment Protection Authority (CEPA)

Mr. Michael Wau, Director, Environment Protection Wing
Mr. Veari Kula, Executive Manager, Industry Services
Mr. Gregory Lenga, Principal Scientist, Industry Standards

4. National Capital District Commission

Mr. Honk Kiap, Acting City Manager
Mr. Joshua Sam, Manager, WMD
Mr. Isowa More, Chief Health Surveyor
Mr. Simeon Terina, Senior Waste Management Officer
Mr. Ronnie Ranu, Senior Waste Management Officer
Ms. Vivianne Morofa, Acting Senior Waste Management Officer
Ms. Nanai Raga, Waste Management Officer
Mr. Walter Aukleya, Waste Management Officer
Mr. James Ricky, Development Engineer & Project Engineer
Ms. Rachael Inamuka, Waste Management Officer
Ms. Diana Wapyer, Waste Management Officer
Ms. Ava I, Accounts, WMD
Mr. Alu Aluvula, PR Officer
Ms. Zulieka Bob, Intern, WMD
Mahmoud Riad, SWM Expert E, J-PRISM

Attachment3: CONCLUSIONS OF THE TERMINAL EVALUATION TEAM AND PNG SIDE COMMENTS

No	Recommendations	PNG side Comments
1.	Completion of the construction of the remaining ancillary parts, such as access road, drainage system & admin area of Baruni Landfill.	NCDC intends to complete these works by 2 nd quarter 2016.
2.	Enhancement of the incoming waste monitoring at Baruni landfill with accurately calculated data.	NCDC has made waste monitoring a part of the duties of its landfill attendants.
3.	Enhancement of administrative capacity, including capacity for financial analysis, setting fees, and procurement/contract management, for effective waste collection and landfill management.	This is ongoing. We are now costing the NCDSWM Plan. The costing exercise will help officers to develop their capabilities for the areas identified.
4.	Involvement and support of national agencies in order to disseminate NCDC's efforts to other provinces.	CEPA is starting to take an active role in this effort.

Attachment4: RECOMMENDATIONS OF THE TERMINAL EVALUATION TEAM AND PNG SIDE COMMENTS

No	Recommendations	PNG side Comments
1.	Completing the construction work for Cell 2 of Baruni landfill and ensuring power supply	Agreed. The power supply has been delayed due to the ongoing road works, but can be supplied once the road works are completed, within 2-3 months
2.	Completing the update of the O&M manual for Baruni landfill	This will be done within December
3.	Reviewing contracts for the Baruni landfill construction and operation as well as the waste collection	Ongoing and may be reflected in the revised contracts early 2016
4.	Incorporating the O&M manual for Baruni landfill into a new contract for the landfill operation which will be awarded in March 2016	Agreed
5.	Updating the waste collection coverage and reporting to the final JCC scheduled in December 2015	The preliminary analysis of the September 2015 incoming waste survey showed that there has not been much change in the waste collection coverage during one year. The final analysis is expected in December, 2015.
6	Finalizing the SWM plan and submitting it to the Board of NCDC for its adoption (On schedule)	On schedule
7	Incorporating 3R pilot activities, including 3R HEART Program and the market green waste composting, into the regular program of NCDC	These have been incorporated and budget allocations have been made in the 2016 budget.
8	Strengthening coordination and linkage with the relevant organizations, including DNPM and CEPA, by identifying focal persons and having regular meetings with them	Ongoing in the case of CEPA but we are facing some difficulties in identifying focal points for DNPM
9	Continuing to promote the interaction with local stakeholders, including communities of waste pickers and residents of settlements	Ongoing. Interactions with settlement and waste-pickers communities, and stakeholders' contribution to the development of the NCD SWM Plan.

Attachment A-5 Baruni Landfill Operation Manual



NATIONAL CAPITAL DISTRICT COMMISSION
Community & Social Services Dept.
Waste Management Division

Baruni Landfill Operation Manual

“Baruni Landfill Operation and Maintenance Manual” (hereinafter referred to as **O&M Manual**) means the set of operational instructions contained in a manual that will control and guide the daily operations of the semi-aerobic landfill. This O&M Manual has been prepared based on the clauses of the contract # 05/2013 and the safety requirements for operating a sanitary landfill.

1 Specification of operational duties

1-1 Hours of operation: 8:00 to 3:00

- a. Working day : Every day except Sundays, Good Friday, Easter Monday, Christmas day and New year's day
- b. Any alteration to the operational hours of the landfill and the contractor shall be by endorsement from the Manager – Waste Management Division.

1-2 Receipt of waste

- a. Assess the volume and type of waste
- b. Vehicle owned by the commission or contracted to the commission for cleaning shall access the landfill without user pay receipts while every other vehicles shall be required to access ONLY by this ticket/receipt or otherwise.
- c. Keep daily records of the site operations using a format approved by the WMD

1-3 Control of landfill users

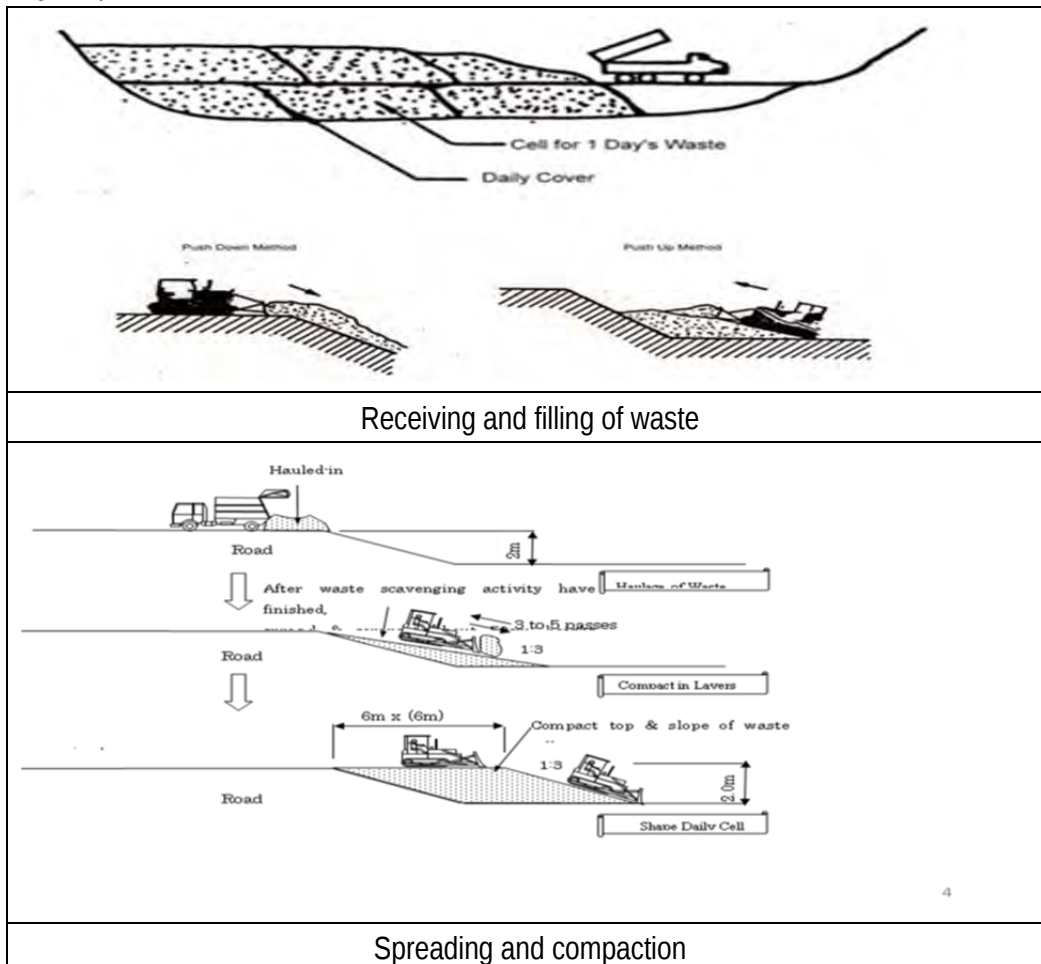
- a. Direct each driver to the tipping face that is in use.
- b. At the tipping face, direct and supervise safe and orderly disposal
- c. Designate disposal area for regulated or difficult to manage wastes.
- d. The contractor shall report to Manager-Waste Management Division any vehicles who fails to comply with reasonable directions.

1-4 Access to the landfill:

Prohibited waste is not to be disposed at the landfill

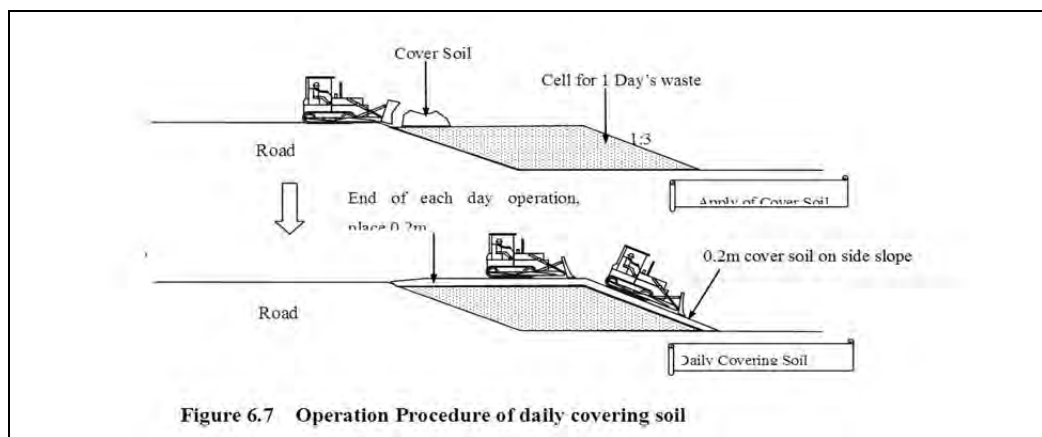
1-5 Disposal of waste

- Contractor shall be responsible for the daily operation and maintenance
- Contractor shall operate and maintain the temporary disposal area
- At the end of each operational day, contractor shall push freshly deposited waste to the active site (active Cell) to be compacted and covered with cover soil.
- Contractor shall take control of waste pickers and prohibit setting fire or shall extinguish any naked flames immediately.
- At the completion of the construction phase and commissioning, the Landfill must be operated in the manner outlined in the operations manual and as per the DEC Sanitary Landfill Code of Practice.
- The contractor shall restrict the disposal of waste to one designated cell only
- The contractor shall ensure waste are spread and compacted (for reference see the attached figures)



- The contractor shall stockpile local soil and as cover material
- The contractor shall ensure active cell is in good operating condition

- j. The contractor shall subdivide the active disposal site into a sizeable or manageable area to allow for wastes to be disposed, spread, compacted and covered with cover material. Keep it as small as possible depending on the number of vehicles and volume entering daily.
- k. At the attainment, the active cell shall be capped off with fifteen (15) cm appropriate cover material.



- l. The contractor shall ensure that final capping of a filled cell and its closure are undertaken.

1-6 Other operational requirements

- a. Prevent litter blown about
- b. The contractor shall remove all litter
- c. Any waste shall be removed
- d. Commission shall have sole salvage rights
- e. The control of flies, rat or other vectors
- f. Animal carcasses shall be covered with soil immediately
- g. The contractor shall not cause any damage to any facilities

1-7 Noise:

No unreasonable noise shall be caused

1-8 Environmental Management

- a. Contractor shall submit an emergency response plan
- b. Contractor shall comply with the Landfill Environment Permit conditions (LEP).
- c. Contractor shall have in place an approved Environment Management Plan (EMP)
- d. The contractor shall carryout periodical monitoring as per the EMP Terms and Conditions
- e. The contractor shall be liable for penalties in the event of environmental non-compliance and breach of permit conditions.

1-9 Safety Management at the Site

The Contractor shall take control of the site and provide safety to his staff and equipment, the NCDC staff and the waste pickers within the site by the following measures:

- a. The Contractor shall prepare and submit to NCDC for approval the Site-Specific Safety Management Plan and Emergency Response Plan
- b. The Contractor shall employ sufficient and trained staff at the waste disposal area to ensure the separation of the three activities of:
 - (1) collection vehicle movement and unloading of waste by the collection contractors,
 - (2) waste picking by the waste pickers, and
 - (3) waste placing and compacting by heavy equipment.
- c. The Contractor's staff at the disposal area shall include:
 - the Site Supervisor – Operations (x1),
 - spotters to direct the waste collection vehicles to the disposal areas, and
 - spotters to guide the heavy equipment operators (2)
- d. The Contractor shall control the lighting of open fires at the site and stockpiling of recyclable materials at places that do not obstruct the operations
- e. Contractor shall maintain the access road in good repair at all times.
- f. The contractor shall provide adequate, appropriate and visible signages on and throughout the site

2 Supervision

2-1 Supervision

- a. The contractor shall in the performance of all obligations and duties under the contract accept and comply with any direction or order and attend to any complaints. The contract shall carryout all required tasks to the satisfaction of the Manager – Waste Management or his/her delegate and their decision on the quality of work output would be final and conclusive. Delegated Officials shall have unlimited access to the site and may inspect the Contractors plant and equipment from time to time.
- b. Delegated Officers may give directions, orders and complaints at any time of the day by any means of communication for correction.
- c. Any complaints regarding the **operations** shall receive the immediate attention of the contractor and the cause of complaint corrected or eliminated as soon as practicable.
- d. All supervisory reports shall be briefed to the City Manager to endorse penalty measures if supervisors establish any non-compliance on the part of the contractor as per this contract.

2-2 Supervision of Contract:

- a. The whole of the contract duties and obligations under this contract shall be under the personal supervision of the nominated supervisor from the Contractors organization.

- b. The Supervisor shall have full power and authority to accept and act upon all directions, orders and complaints which may be given to the contractor under this contract and to carry out these services without limitations in any way whatsoever. All references to the Contractor in this contract shall be deemed to include any person so nominated.

2-3 Contractor to observe Legislation:

The Contractor shall observe and comply with all appropriate legislations or enactments and directions of any appropriate department or Authority with regards to landfill management.

2-4 Contractor to attend meeting of the Commission or Commission committee.

The Contractor shall upon request attend meetings of the Commission or Committee and answer any queries and questions which may be put to him by the Governor or the Chairman of the committee at such meetings and shall supply any information regarding daily operations of Baruni Landfill.

3 Provision of Staff, Site Office and Plant

3-1 Contractor's staff requirements.

- a. The Contractor shall employ sufficient number of staff to undertake the daily operational tasks as required under this contract.

The Staff shall include:

- I. One site supervisor (1)
 - II. Vehicle reception and inspection Officer (2)
 - III. Landfill inspector (2)
 - IV. Operators (2)
 - V. Drivers (2)
 - VI. Security Guards.
- b. The contractor shall ensure that all staff wear uniforms and PPE whilst engaged at the landfill operations. The staff uniform must bear the name of the contractor and the employee's first name and must be kept clean and good repair.
 - c. All staff engaged at the landfill site shall treat all landfill users with courtesy and respect.

3-2 Office Accommodation

- a. A temporary site office shall be provided by the Contractor until a permanent site office is built and fitted with all necessary fixtures and fittings or amenities.
- b. The Contractor shall have shared use of the site office with officers of the waste management division.
- c. The Commission shall be responsible for maintenance and other overhead costs of this office

- d. The Contractor shall reimburse to the Commission the maintenance cost in addition to electricity charges, water rates and other rentals such as telephone etc. Such reimbursements shall be deducted by the Commission from monthly payments due under this contract.

3-3 Plant and Equipment

- a. The contractor shall provide all necessary plant and equipments for the operation of a landfill as stipulated under this contract "Schedule A".
 - I. Bulldozer (1) – the bulldozer shall be equivalent of a CAT D7 crawler type and not less than two (2) years old.
 - II. Excavator (1) – the excavator shall be of the equivalent to Komatsu PC220 crawler type and not less than two (2) years old.
 - III. Dump Truck (2) – the contractor shall provide x2 dump trucks for the purpose of carting waste or cover material on site. The dump truck shall have a minimum capacity of not less than 2.5 tonnes and not more than (2) years old.
 - IV. Other necessary plant and equipment for the enhancement of the operations that may not be available shall be hired under the contractor's responsibilities and obligations.
- b. The plant and equipments specified in the Tender (Schedule "A") shall be used by the contractor in this performance the execution of this contract.
- c. The plants shall at all times be kept in running order and in good repair and shall be cleaned and represented to the satisfaction of the Manager – Waste management Division or his delegate.

4 Payments for Services

4-1 Payments for the supply of services shall be on the basis of the accepted tender price.

4-2 This part of the contract shall be paid at K71, 760.00 per month, total sum of K861,120.00 per annum

Attachment A-6 Water Quality Analysis

WATER ANALYSIS AND RESULT COMPARISON

HYPOTHESIS

It is anticipated that as the construction works commence, all interested water parameters will be high with relations to standard accepted as per the National Regulated standard accepted by National Department of Health(NDoH) and Conservation & Environmental Protection Authority (CEPA).

BACKGROUND INFORMATION

Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) are parameters used to measure the organic breakdown of dissolved organic matter. It is very vital to measure this parameter where a Landfill is situated to understand the organic breakdown that may leach into surface water and underground water affecting aquatic life in a water body.

As well as that other relating information such as temperature, chloride (inorganic matter), Total Suspended Solid and other chemically determined parameters are also measured to indicate whether external influences may affect the water body.

Otherwise, all these information are captured in BOD/COD and Turbidity results.

INTRODUCTION

As such, this report serves to highlight water results analysed and tabulated for a quarterly period in two (2) years for our comparison to see if we have decreased level of contamination leaching into our water ways.

Geographically, Baruni Landfill is situated in a slanted valley enabling water run offs to flow in a downward gradient towards the westerly direction.

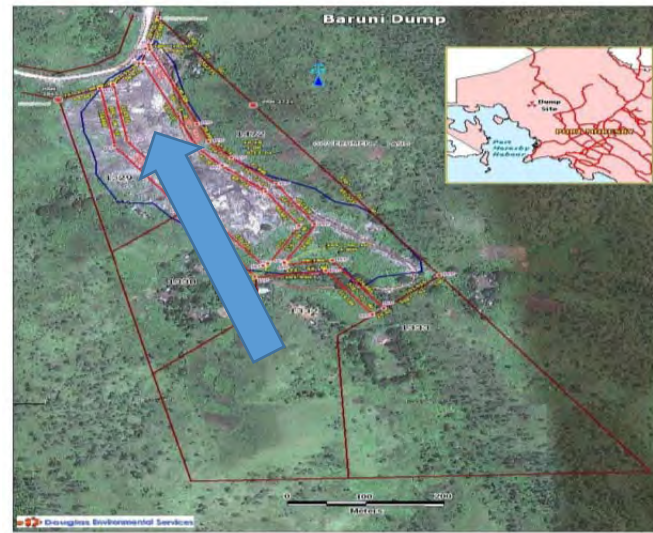


Figure 1. Water Flow direction (source; DES)

Samples were collected from three source points outside of the landfill area so as to capture underground run off that surfaced below as well in three (3) separated areas.

In most cases, sampling point one (1) will be the most contaminated. These levels will decrease as distance increases away from the contamination source due to biological breakdown.

Other influences such as the weather may also impact a lot of differences on the final readings resulting in higher contamination level.

Unfortunately, boreholes upstream were not capped and therefore were blocked off by foreign matter inserted into it. The bottom borehole was also destroyed. Samples were only taken from surface water below the LF site.



Figure 2. Sampling points

Both the Road construction and Baruni Rehabilitation works influenced a lot the results especially with the increase in turbidity. This was basically, due to the fact that there was so much of the loose material (soil) that easily eroded into the nearby creek.

According to results from the National Agricultural Research Institute (NARI) Chemistry Laboratory, BOD and COD was very high, exceeding minimal standards set during the first half of last year (2014) and again towards the end of last year and beginning this year (2015).

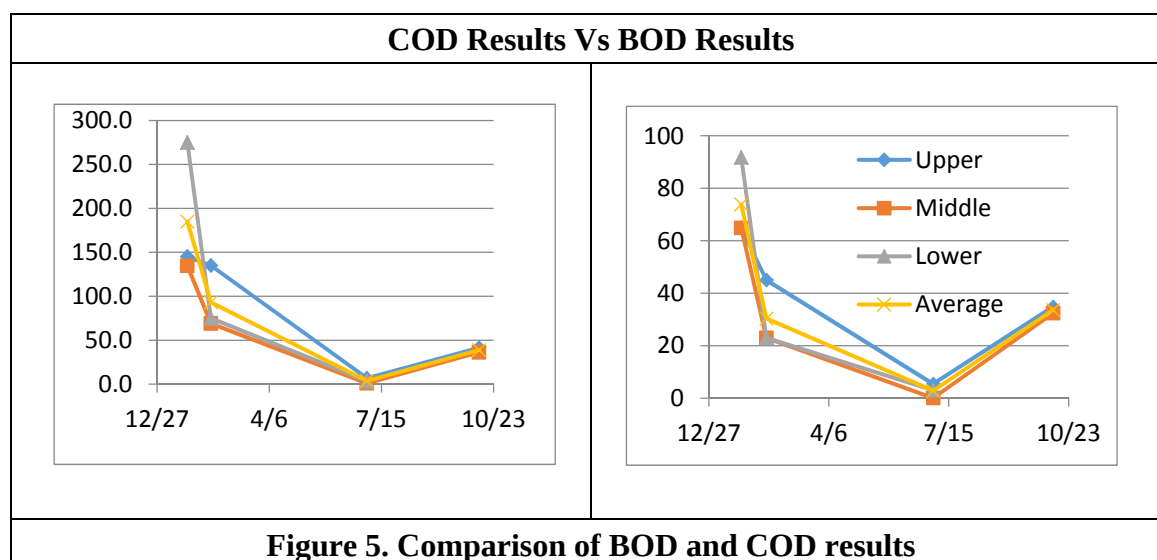
	Items	Unit	Date	2014/1/23	2014/2/13	2014/7/2	2014/10/10	2015/2/20	2015/5/18	2015/8/25	2015/10/9
1	Temperature	degree	Upper	26.80	26.40	23.10	27.50	23.80	25.50	26.40	26.90
			Middle	26.60	26.50	23.20	27.50	24.00	25.50	26.00	27.20
			Lower	27.00	26.70	22.90		24.20	25.50	26.10	26.90
			Average	26.80	26.53	23.07	27.50	24.00	25.50	26.17	27.00
				2014/1/23	2014/2/13	2014/7/2	2014/10/10	2015/2/20	2015/5/18	2015/8/25	2015/10/9
2	COD	mg/L	Upper	145.20	135.00	6.70	41.40	152.00	17.25	45.90	10.70
			Middle	134.70	69.00	1.00	36.20	96.00	17.30	9.10	9.40
			Lower	275.00	75.00	3.45		251.50	19.80	10.60	14.30
			Average	184.97	93.00	3.72	38.80	166.50	18.12	21.87	11.47
				2014/1/23	2014/2/13	2014/7/2	2014/10/10	2015/2/20	2015/5/18	2015/8/25	2015/10/9
3	Turbidity	mg/L	Upper	9.85	0.91	20.00	16.80	22.80	51.50		1.02
			Middle	3.82	0.51	2.40	8.34	3.93	15.20		1.80
			Lower	3.03	0.45	14.00		17.90	12.50		0.82
			Average	5.57	0.62	12.13	12.57	14.88	26.40		1.21
				2014/1/23	2014/2/13	2014/7/2	2014/10/10	2015/2/20	2015/5/18	2015/8/25	2015/10/9
4	Color	Hazen units	Upper	30.00	30.00	25.00	30.00	30.00	30.00	30.0	
			Middle	30.00	10.00	8.00	15.00	10.00	30.00	10.0	
			Lower	10.00	10.00	10.00		30.00	25.00	10.0	
			Average	23.33	16.67	14.33	22.50	23.33	28.33	16.67	
				2014/1/23	2014/2/13	2014/7/2	2014/10/10	2015/2/20	2015/5/18	2015/8/25	2015/10/9
5	Total Dissolved Solids	mg/L	Upper	3,256.00	2,024.00	2,770.00	3,828.00	1,247.00	1,347.00	1,760.00	1,163.00
			Middle	651.00	475.00	900.00	272.00	1,048.00	1,460.00	1,244.00	1,058.00
			Lower	1,118.00	1,018.00	990.00		1,035.00	1,132.00	1,158.00	1,092.00
			Average	1,675.00	1,172.33	1,553.33	2,050.00	1,110.00	1,313.00	1,387.33	1,104.33
				2014/1/23	2014/2/13	2014/7/2	2014/10/10	2015/2/20	2015/5/18	2015/8/25	2015/10/9
6	Suspended Solids	mg/L	Upper	49.00	8.00	81.00	6.00	23.00	87.00	38.0	74.0
			Middle	93.00	25.00	5.00	4.00	3.00	73.00	14.0	56.0
			Lower	33.00	8.00	19.00		25.00	58.00	69.0	9.0
			Average	58.33	13.67	35.00	5.00	17.00	72.67	40.33	46.33
				2014/1/23	2014/2/13	2014/7/2	2014/10/10	2015/2/20	2015/5/18	2015/8/25	2015/10/9
7	BOD	mg/L	Upper	64.90	45.00	5.40	34.80	130.50	44.12	5.90	9.72
			Middle	64.90	23.00	0.06	32.40	76.20	38.83	2.80	7.95
			Lower	91.80	23.00	3.06		113.00	26.77	2.10	6.54
			Average	73.87	30.33	2.84	33.60	106.57	36.57	3.60	8.07
				2014/1/23	2014/2/13	2014/7/2	2014/10/10	2015/2/20	2015/5/18	2015/8/25	2015/10/9
8	Dissolved Oxygen	mg/L	Upper	6.80	6.37	7.88	5.17	7.20	7.05	18.8	4.8
			Middle	4.05	3.77	7.31	6.64	7.80	6.06	5.1	4.6
			Lower	5.51	5.88	7.83		6.80	7.00	4.4	5.3
			Average	5.45	5.34	7.67	5.91	7.27	6.70	9.43	4.89
				2014/1/23	2014/2/13	2014/7/2	2014/10/10	2015/2/20	2015/5/18	2015/8/25	2015/10/9
9	Conductivity	usm	Upper	4,360.00	3,620.00	2,520.00	2,645.00	1,287.00	529.00	458.5	2,130.0
			Middle	962.00	974.00	1,272.00	354.00	1,086.00	513.50	368.0	1,759.0
			Lower	1,751.00	1,564.00	1,317.00		952.50	472.00	364.0	1,854.0
			Average	2,357.67	2,052.67	1,703.00	1,499.50	1,108.50	504.83	396.83	1,914.33
				2014/1/23	2014/2/13	2014/7/2	2014/10/10	2015/2/20	2015/5/18	2015/8/25	2015/10/9
10	PH	-	Upper	7.20	7.00	7.20	7.38	8.10	7.60	7.1	6.9
			Middle	7.00	7.70	7.70	7.67	8.90	7.83	7.4	7.4
			Lower	7.20	7.30	7.30		8.80	7.94	7.5	7.9
			Average	7.13	7.33	7.40	7.53	8.60	7.79	7.33	7.40
				2014/1/23	2014/2/13	2014/7/2	2014/10/10	2015/2/20	2015/5/18	2015/8/25	2015/10/9
11	Chloride	mg/L	Upper	43.40	862.30	29.89	1,359.86	344.00	496.71	5,413.90	396.00
			Middle	64.20	134.00	22.95	58.52	260.00	381.40	3,650.60	340.60
			Lower	32.10	253.80	25.81		222.00	343.05	3,949.70	420.10
			Average	46.57	416.70	26.22	709.19	275.33	407.05	4,338.07	385.57

Figure 3. Water Results

The Waste Management Team sampled the three sites using PET bottles (600mls).

These PET bottles were delivered on the same day to NARI Chemistry Laboratory for further analysis and results were then obtained after two weeks.

During the initial period when all disposal was moved to the back COD and BOD levels were low, however; the results increased again due to certain reasons and influences experienced over time.



According to Public Health (Drinking Water) Regulation Chapter 226, all these results are way too much and is deemed contaminated. (Maximum BOD=6mg/L and COD=10mg/L)

Chlorine according to Environmental Act 200 should be at 0.005 at pH 6, unfortunately all readings registered at 7. (Maximum level accepted below 1000 mg/l)

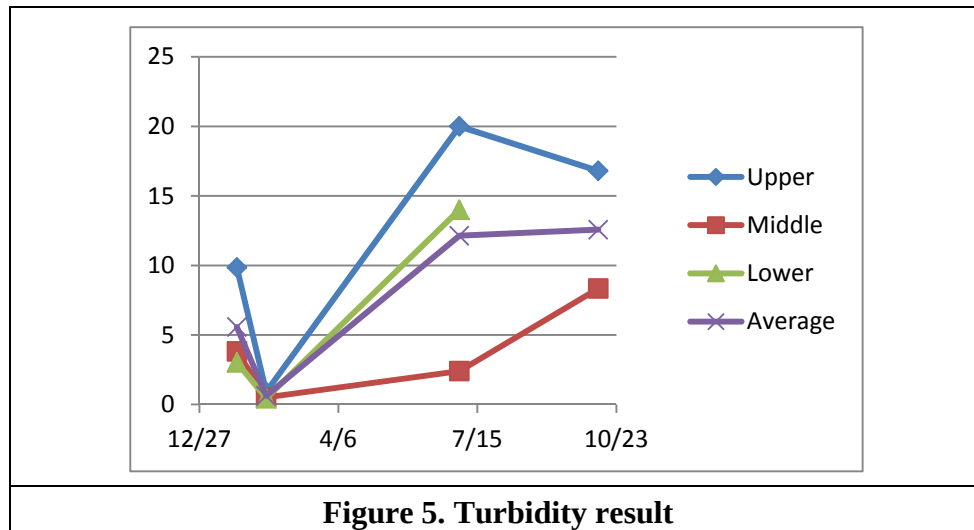
Reasons for the shapes of the graphs are due to;

1. Weather (No rainfall in mid-year resulting in decrease in levels)
2. Movement of disposal site to the rear (old waste near surface water produced decrease in level)
3. Moisture content (High moisture will result in increase and vice versa)

The increase of levels again was a direct result of rainfall and no drainage and retention pond to collect surface run off.

Increase in moisture levels also have resulted in active microbial activity that have impact on the eventual discharge of increased level of dissolved organic matter and Chloride (inorganic matter) to an accepted level as per NDoH, chapter 226..

Turbidity also was high towards the end of last year due to the road construction. This was because of the heavy rains towards the end of last year and this year that washed away the loose soil material into the water body.



These results have contrasted our hypothesis, as we wait for the leachate pond to be constructed and again test to compare results that will yield our expectation due to the fact that there is no drainage system in place and a leachate pond to contain all leaching.

To finally conclude we have not met our goals of reducing leachates yet as we are yet to complete our leachate pond and drainage system. Until then, we will still see fluctuation in water results and water colour will still remain as it is.

We now look forward to capturing a sound environmental and lessened contaminated water body after the completion of the leachate pond and drainage system.

Attachment A-7 Baruni Disposal Site Safety Monitor Plan

29th September, 2014

Baruni Disposal Site Operations and Upgrading Project Team

Baruni Disposal Site Safety Monitor Plan

Preamble

This plan has been drawn up by the project team for “The Daily Operation and Management of the Baruni Landfill and its Upgrade from an Open Dump to a Sanitary Landfill” (hereinafter referred to as the Project). The plan will serve as a guide for the project team to satisfactorily implement the Project.

It is understood that the contractor entrusted with operation and upgrading of the Baruni disposal site is contractually responsible to provide safety control for all Baruni disposal site users; WMD staff, Project personnel, waste pickers and contractor staff. However it is NCDC's responsibility to monitor the Contract and the Contractor's performance. The Plan is presented in the following structure:

Preamble
A Background
B Safety Concerns at Baruni disposal site
C Immediate Actions by NCDC to improve Safety Control at Baruni disposal site
D Other required measures

A BACKGROUND

A-1 NCDC Policy towards Waste Pickers at Baruni Disposal Site

The policy¹ adopted by WMD towards the waste pickers at Baruni is as follows:

- (1) Involve the waste pickers in an organized manner, and try and retain at the site the waste pickers who have been working there for a long time.
- (2) Control the waste pickers in order to avoid any confrontations, threats or harassments
- (3) There is no intention to evict the waste pickers from the site
- (4) NCDC would like to work together with the waste pickers to improve the site safety control and management and make them part of the system at Baruni.
- (5) Involve some of the waste pickers in operations and upgrade works

A-2 Strategy to achieve the Waste Pickers policy

To deliver this strategy the Project team discussed² measures that should be taken by both NCDC and the Waste Pickers

¹ As outlined by Mr. Simeon Terina in a meeting with Goilala Foundation Incorporated (GFI) in September 2013

NCDC measures	Waste Pickers measures
(1) Employment of some waste picker for operation and upgrade works (2) Include separation work by waste pickers in operation process (3) Provide temporary resting places and water use from the facilities to be introduced in the upgraded landfill. (4) In future provide space for the separation works to remove recyclables from the waste (5) Cooperate with waste pickers and related authorities to provide access for waste pickers' children to education and other social services	(1) No burning of the waste (2) Acceptance of waste vehicles control by NCDC (3) Cooperate to maintain security and safety at the site (4) Coordinate among all the waste pickers blocks to self-manage safety of waste pickers and their families working there

B. SAFETY CONCERNS AT BARUNI DISPOSAL SITE

Implementation of the Project started in earnest in July 2014. On the operational level there has been significant improvement. However the Project Team has also identified certain issues that cause safety concerns and require immediate attention by Kana, NCDC, and the Waste Pickers. These are as follows:

B-1 Kana Construction

- (1) Resources allocated to Operations and Upgrade activities are not properly separated
- (2) Supervision of the operation activities is insufficient
- (3) Control of the waste pickers is not enough
- (4) Site safety plan is not fully implemented at the site

B-2 NCDC

- (1) Monitoring of the Contract needs to be strengthened
- (2) Constant presence of WMD staff at the site is required
- (3) Operation and upgrade progress records are not sufficiently maintained

B-3 Waste Pickers

- (1) Endanger their children by making them work in waste picking and letting them play in the site
- (2) Generally do not follow the safety instructions of Kana and NCDC
- (3) Are not coordinating enough amongst the different waste pickers blocks on security matters

² Discussed in project team meetings in October 2013

C. IMMEDIATE ACTIONS BY NCDC TO IMPROVE SAFETY CONTROL AT BARUNI

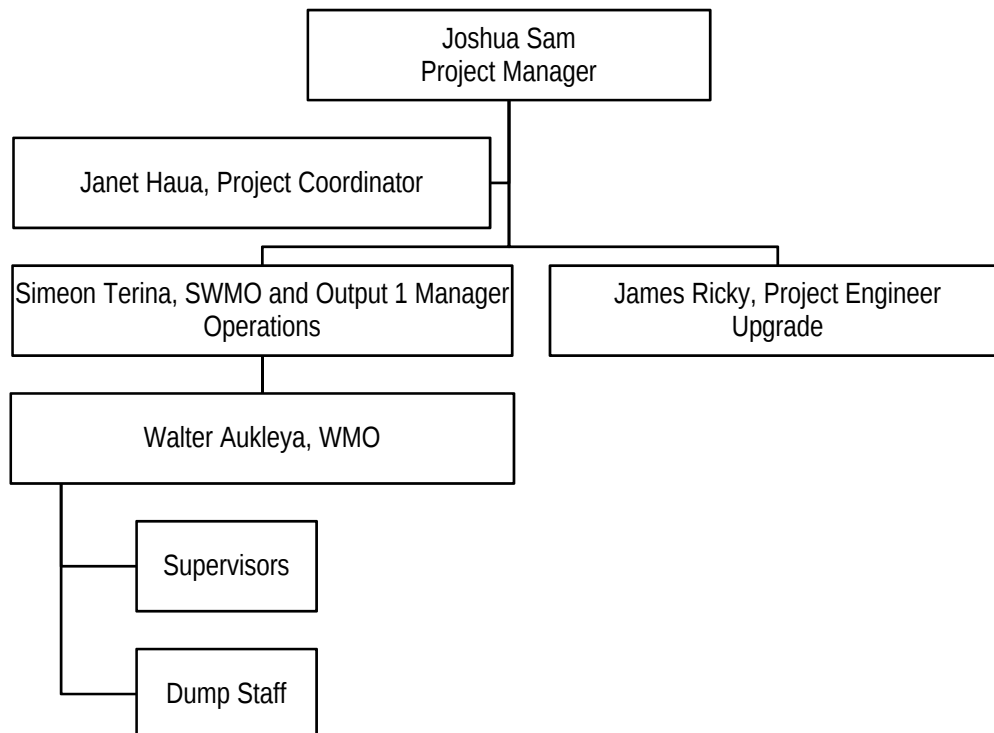
While contractually Kana Construction has a responsibility to control safety at the site, the Project Team recognizes that NCDC has the role of monitoring the Project activities discharged by the Contractor. To improve its monitoring capability at the site, NCDC shall implement the following immediate actions.

1. Confirmation of Baruni Project Team formation and duties
2. Establish WMD Officers presence at Baruni during working hours
3. Effectively supervise and monitor the Operations & Upgrade Contract
4. Continue and enhance safety control measures already introduced
5. Activate and participate in the Baruni Landfill Safety Committee
6. Consider measures to improve social conditions of waste pickers

These actions are detailed in the following sections.

C-1 Confirmation of NCDC's Baruni Project Implementation Team

The NCDC Project team is shown below. The duties, responsibilities and adequacy of the Project Team shall be determined by the PM and the SWMO.



The J-PRISM experts are providing technical advice to this team.

C-2 Establish a continuous presence of WMD Officers at Baruni disposal site

WMD shall establish a continuous presence at Baruni disposal site during the official working hours there.

Simeon Terina (SWMO) and Walter Aukleya (WMO) will alternate their presence at the site.

The Project Manager and SWMO will provide necessary logistics and site office support to WMD officers at the site. SWMO will draw up a budget to cover site expenses as may be necessary.

C-3 Effectively Supervise and monitor the Operations & Upgrade Contract

The Project Team shall hold regular meetings with Kana and the waste pickers, keep records of the project activities, and physically monitor the progress of the works. Some immediate requirements are described in the following table.

SN	Action	Description
A – Operations		
1	Operation Records and Documents: (1) O&M Manual (2) Daily Operation Logs (Attachment 1) (3) Operations Instructions Book (4) Incoming Vehicles Data (5) Visitors Log Book (6) Contract Documents (7) Others	(1) Basis for operations monitoring (2) Supervisor → Walter Aukleya (3) Kana (All instructions from NCDC to Kana should be noted in the Book) (4) Kana → Walter Aukleya (5) Kana (6) NCDC to keep a copy at the site (7) Kana submissions of documents as accidents reports, EMP and Emergency Response Plan will be checked and copies kept at the site office.
2	Site Meetings: (1) Weekly meeting with Operator (2) Baruni Landfill Safety Committee meeting	(1) Every Tuesday, before the Upgrade meeting. Chaired by SWMO. (2) Every morning the BLS will meet briefly to review any outstanding issues. And during weekly meeting with Contractor, at the end of the meeting the BLS Committee will report/ discuss on safety issues.
B – Upgrading		
1	Upgrade Activities Records: (1) Contract Documents (2) Upgrade Instructions Book (3) Daily Work Records	(1) Copies of contract, drawings, BOQ and technical specifications should be kept at the NCDC site office. (2) Kana (All instructions from NCDC to Kana should be noted in the Book) (3) NCDC confirms that Kana is maintaining daily records of upgrade work progress which may be reviewed by NCDC at any time.

SN	Action	Description
	(4) Others	(4) Kana shall maintain data concerning accidents, construction materials, quantities of work, topographic surveys, etc. at the site office in an organized way for review by NCDC at any time
2	Site Meetings: (1) Weekly meeting with Operator	(1) Every Tuesday, after the Operations meeting. Chaired by SWMO and co-chair by NCDC Project Engineer. Record of the Meeting to be maintained.
3	Upgrade progress monitoring: (1) Survey works (2) Materials quality (3) Quantities surveys	(1) Kana shall provide surveyors to set levels and positions. NCDC shall check the survey work. (2) Kana shall provide data and test results on the materials to be used at the site. (3) Kana shall prepare surveys to quantify the completed upgrade works as discussed by NCDC and to the satisfaction of NCDC.

C-4 Continue and Enhance already introduced safety control measures

C-4-1 Safety Control Measures presently implemented

Since July 2014 some safety control measures have been introduced to improve the safety conditions at Baruni site for the waste pickers, contractor and NCDC. These are identified as follows.

1. Separation of operations and upgrading works in the contract documents
2. Removing designation of waste placing areas from waste pickers to the Operator
3. Organizing waste disposal within a smaller area
4. Providing time for waste picking after emptying of trucks and before placing and compaction
5. Employment of waste pickers both as NCDC permanent staff and as Kana workers
6. Almost total elimination of open fires
7. Inviting PNG Recycling back to the site to pick up the scrap metal

These measures need to be continued and improved upon as necessary.

C-4-2 Additional Measures to be immediately introduced

The Project Team will instruct Kana Construction Ltd., and coordinate with the Waste Pickers to introduce additional safety measures in Baruni within the next few weeks, as follows.

SN	Additional Safety Measure	Responsible Organization
1	Separation of operations and upgrade activities in terms of	Kana

SN	Additional Safety Measure	Responsible Organization
	resources allocation as stipulated in the Contract	
2	Developing clear safety rules on site and advertising them through sign boards, leaflets, and other means	Kana
3	More control over waste picking and gradually disallowing children to pick waste or be in the disposal area	Kana, Waste Pickers
4	Set up security system in the site	Kana, NCDC
5	Regular meetings with all waste pickers to increase awareness	Kana, Waste Pickers, NCDC
6	Elders of Waste Pickers to take more responsibility to coordinate within the waste pickers and improve security on site. Introduction of a registration system shall be discussed with the elders.	Waste Pickers
7	Establishing and participating in the Baruni Landfill Safety Committee activities (refer to section C-5 of this plan)	Kana, Waste Pickers, NCDC

C-5 Participate in the Baruni Landfill Safety Committee

During the meeting held with the Waste Pickers on 18th September, 2014, NCDC and Kana and the waste pickers agreed to set-up the Baruni Landfill Safety Committee, with the following duties:

- Report to the Kana Site Supervisor any issues related to safety that the members notice
- During the working hours advice and caution the waste pickers on any activities that might create safety problems
- Inform waste pickers of any safety notifications issued by Kana's Site Supervisor
- Report to the Operations & Upgrade Weekly meetings every Tuesday

NCDC will consider providing preferential treatment to the waste pickers that will be members of the committee, such as payment of some wages, issuing of vests, etc.

C-6 Work towards improving social conditions of the waste pickers at the site

The Project Team has conducted a survey on the conditions of the waste pickers at Baruni site. There are 11 blocks of waste pickers, with 95 households. The total population is 503 persons. Of this population, around 73% are engaged in waste picking. And 32% of those engaged in waste picking are children.

All the waste pickers (99%) complained of poor health, with 95% responding that respiratory related sickness was the main ailment (95%), and followed by malnutrition (80%) and addiction (60%). While 65% reported that they have access to health services, only 37% have access to educational facilities for their children. And 85% of the waste pickers desire to continue to work as waste pickers.

The survey results indicate the following:

- There are over 100 children working in waste picking
- The children do not have sufficient access to educational facilities
- The waste pickers do not have a desire to change to other jobs

- The waste pickers are interested in working on other jobs related to the upgrade Baruni landfill, such as security, landfill workers and operators

The elimination of open fires in the past few months is expected to contribute to improve health conditions of the waste pickers.

NCDC shall discuss with relevant organizations, NGOs and funding agencies to provide educational opportunities to the waste pickers' children.

NCDC shall also consider setting up a temporary facility in the back of the site (south-western) area, where the old school was, to engage the children in educational activities. NGOs with experience in these matters shall also be approached for assistance.

D. OTHER REQUIRED MEASURES

In the longer term the Project Team shall implement a number of measures related to improving the safety control at the site. These include the following measures:

- | |
|---|
| <ol style="list-style-type: none">1. Review the contract for Operations & Upgrade and related submissions by Kana2. Future plans for the Baruni Landfill expansion3. Relocation of waste pickers living inside the site4. Study on NCDC direct operation of the landfill in the future |
|---|

Attachment A-8 Summary of Waste Pickers Survey Results

2014/10/06

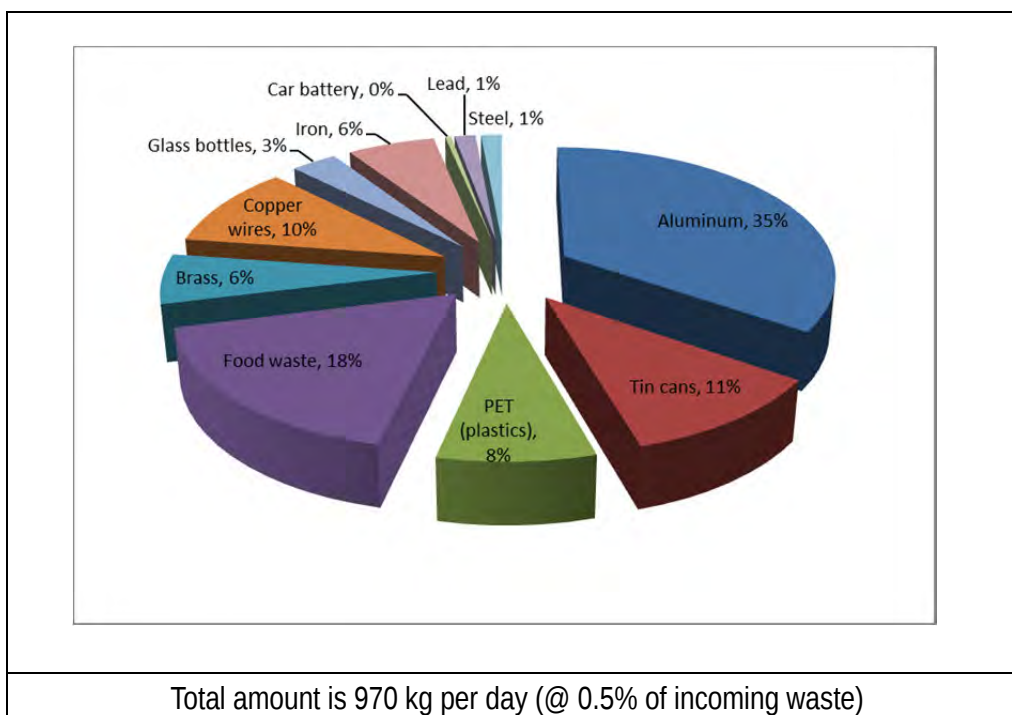
J-PRISM Team

Waste Pickers Survey Preliminary Results

1. Waste Pickers Population

SN	Population attribute	Result	Comment
1	Number of Blocks	11	
2	Number of Households	95	
3	Total population	503	
4	People working in waste picking	314 persons	62% of total population
		212 adults	68% of waste pickers
		102 children	32% of children
5	Average age of HH heads	37 years old	
6	Average period HH related to Baruni	24 years	

2. Recyclable materials collected



3. Issues at the Baruni disposal site (multiple choices)

SN	Issue	Result	Comment
1	Disputes with other waste pickers	13%	
2	Increasing number of waste pickers	33%	
3	Health related problems	99%	Health is the major concern
3.1	Respiratory	95%	
3.2	Malnutrition	80%	
3.3	Addiction (drugs)	61%	
3.4	Malaria	57%	

4. Access to services:

4.1 To health services 65%

4.2 To educational facilities 37%

5. What are the most serious problems about Baruni disposal site

SN	Problem	Result	Comment
5.1	Open burning	98%	This is related to health issue
5.2	Security	1%	
5.3	Work opportunity	21%	Not enough from waste picking
5.4	NCDC management	5%	
5.5	Relation with other blocks	5%	

6. Future prospects

SN	Problem	Result	Comment
6.1	Desire to continue waste picking	85%	
6.2	Desire for other HH members to continue waste picking	80%	
6.3	Interest in other jobs	74%	Not enough from waste picking

Attachment A-9 Baruni Landfill Progress Mini-workshop

Subject	:	Mini Workshop - Baruni Landfill
Progressive Status	:	
Presenter	:	Mr. Hiroshi ABE
Date	:	15th October, 2015
Time	:	10:30 am - 12:00 pm
Meeting Venue	:	New City Hall - Board Room

1. PURPOSE OF MEETING

The purpose of this meeting is to outline:

- ✓ Present and Future image of Baruni
- ✓ Steps of improvement of Baruni Landfill
- ✓ Participation on the Project and;
- ✓ Consideration and Recommendations

2. PROCEEDINGS

The meeting was attended by; (1). JICA representatives, Mr. Shigeru Sugiyama (JICA Chief Rep), and Mr. Daisuke Horikoshi (JICA Rep), and Mr. Hiroshi Abe (JICA Expert, J-PRISM Project) and (3) NCDC Staff from; (1) Engineering Division, Mr. James Ricky (J-PRISM Project Engineer) and (2) Waste Management Division staff, Mr. Joshua. Sam (Manager), Mr. S. Terina (Output 1 Manager), Janet Haua (Project Coordinator), Ms. Morofa (SWMO), Mr. Wisi (WMO), Miss. Inamuka (WMO), Mrs. Wapyer (WMO) and Mr. Joshua Robert (Supervisor) .

Mr. Sam acknowledged the presence of Mr. Sugiyama and Mr. Horikoshi and thanked everyone for attending the meeting and without further ado asked Abe-san to proceed with his presentation.

3. PRESENTATION

Abe-san brief presentation covered:

1. Present and Future Image of Baruni
 - Baruni in 2013 before the project
 - Baruni Today
- ✓ Basic Semi- Aerobic System
 - Fukuoka Method comprises the (a) Leachate Collection pipes, and (b) Gas Venting Pipes
 - Advantage - speeds up decomposition process
- ✓ For Future Baruni - Land Issue

- NCDC is using portion 1472
- Adjacent land (allocated for landfill): 1329, 1330, 1332 and 1333
- Abe-san said to ask Riad-san to recommend acquiring of adjacent portions of land
- ✓ Basic Idea for rehabilitation (Using the Existing Road)
 - Arrangement 1 – inside the planned road
 - Arrangement 2 – using adjacent land
- ✓ Design Parameters
 - Storm water catchment area
 - Legal Boundary = 38 ha
 - Catchment A_1 = 42.8 ha
 - Catchment A_2 = 32 ha
 - Catchment A_t = 74.8 ha
 - Abe-san mentioned that this area is big for the given method.
- ✓ Long-term Plans
 - Work in phases
 - Phase 1, Phase 2 and Phase 3
- ✓ Future Layout
 - Using whole allocated land and further expansion
 - Some areas can be used for facilities like the recycling facilities as indicated by F1, F2, and F3 in the presentation handout, page. 2
- 2. Steps of Rehabilitation Contract and Events
 - Design and cost estimation, 2013 September
 - Baruni Visit, 2013 October
 - Contract document preparation, 2013 December
 - Contract signed, 2014 April
 - Start Work, 2014 July
 - Accident, 2014 September
 - JCC 2015 February
 - Cell 1 Commissioning, 2015 June
 - Start of Operation at Cell 1, 2105 November
 - Completion of Cell 2, 2015 December

Abe-san mentioned after discussion with Kana, start of operation of Cell 1 and completion of Cell 2 would be as above.

Notable improvements included clean, clear site without smoke and controlled disposal. Despite minor issues include almost non- compaction and suggested continue soil cover to avoid fire as experienced in 7th October, 2015.

- ✓ Steps of Improvement of Baruni

- i. Operation improvement (Control of operation, and of incoming waste)
- ii. Rehabilitation using Fukuoka method for Cell 1 & Cell 2
- iii. Expansion of Fukuoka Method (Expansion of leachate collection and drainage system)
- iv. Introduction of pretreatment and recycling

The highlighted are future plans

3. Participation on this Project: Abe -san

- 2013 – September, Design
- 2013 – October, Design and waste picker
- 2013 – December, Contract document
- 2014 – January Contract document
- 2014 – June Operation manual
- 2014 – October, Monitoring of construction work
- 2015 – May, Preparation of Commissioning Cell 1
- 2015 – October, Monitoring

4. Consideration and Recommendation

4.1. Design of rehabilitation

- ✓ Use of local/general material
- ✓ Priority must be given to daily operation
- ✓ Development toward Waste Management & Clean Center

4.2. Future expansion and land acquisition

- ✓ Must be seriously considered
- ✓ Surrounding four portions
- ✓ Upper catchment area

4.3. Recommendation on Contract

- ✓ Is very important
- ✓ Technical capability and sincerity
- ✓ Accountability

4.4. Operation of landfill

- ✓ Needs to be simple but the difficulty lies in how to maintain.
- ✓ Control of incoming waste, compaction and soil cover
- ✓ Special attention must be given to the first layer of Cell 1 and Cell 2 to avoid damage of leachate collection and gas ventilation system
- ✓ Suggestions on operation by Abe-san is as follows:
 - i. Normal operation
 - ii. Special operation as in bullet points three.

4.5. Implementation of Contract

- ✓ Documentation and filing system
- ✓ Periodical meeting and record.
- ✓ The above two are necessary

4.6. More Understanding

- ✓ Survey increases understanding, hence better discussion
- ✓ Cooperation of Waste Pickers

4. QUESTION AND ANSWER SESSION

1. Mr. Horikoshi thanked NCDC for inviting JICA to this mini workshop and asked, “apart from NCDC, are there any other participants?”

Ans: Mr. Veari Kula from CEPA was invited but could not attend due to other appointment (Ms. Janet Haua)

2. Mr. Terina expressed his concern about the operations, mentioning that we have been experiencing problems with the contractor especially for the operation and construction and chances are that we might not be able to do that ourselves, hence asked if there’s any possibility for the project office to provide assistance for the next phase, i.e. J-PRISM Plus since the experts that are currently dispatched will not return? Mr. Horikoshi said to discuss that and would advise of the outcome.

Mr. Terina also asked regarding the submissions to acquire the adjoining portions, stating that the disposal of industrial waste at the current disposal area as gone over its boundaries. He said he made a submission and wanted to know the status and if possible could acquire that portion quickly so to avoid pressure on the division. According to Mr. Sam, the submission was forwarded to Mr. Ravi which was then forwarded to the Executive Management Committee (EMC).

Furthermore, Mr. Terina stated that even though the team has gained learnt a lot from the project, the team still lacks hand on experience on actually doing the operation and construction ourselves since the contractor is engaged to do everything. He gave an example, saying that he cannot be able to do landfill himself since the contractor there was no training to handle heavy equipment, and contractors are always engaged to do such. He asked if training could be organized concerning handling of heavy equipment so that NCDC team can be able to operate the site ourselves.

Mr. Horikoshi responded saying that a trainers training can be organized where trainers can train those who are interested.

3. Mr. Sugiyama thanked NCDC for the invite to attend the workshop and thanked Mr. Terina for his questions and comments. He mentioned that the project is regional technical cooperation, and that there are indications of which the first is budget and since JICA is partnering with other stakeholders and to maintain control, JICA is trying to address as much as possible priority issues relating to solid waste management.

Furthermore, he mentioned sighting the current contract document and noticed a lot of areas that can be improved so that the contract is clearer for instance there are a lot of ambiguous things that needs clarification.

4. Close up:

The workshop ended at 11:45 am with light refreshment.

Image of Improvement and rehabilitation of Baruni Landfill

Contents of presentation

1. Present and Future image of Baruni
2. Steps of improvement of Baruni
3. Participation on the project
4. Consideration and Recommendation

J-PRISM Project, JICA Expert A2
Hiroshi Abe

Baruni Dump Site 2013

[\(Social and Waste Management Center for Public\)](#)



Main Part

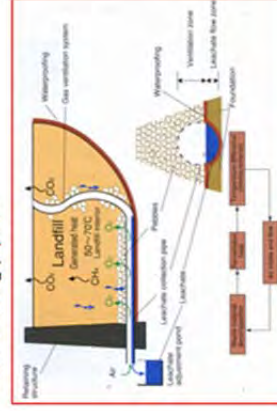
1. Present and Future Image of Baruni (1) Baruni 2013



Basic Semi-Aerobic System

Fukuoka Method

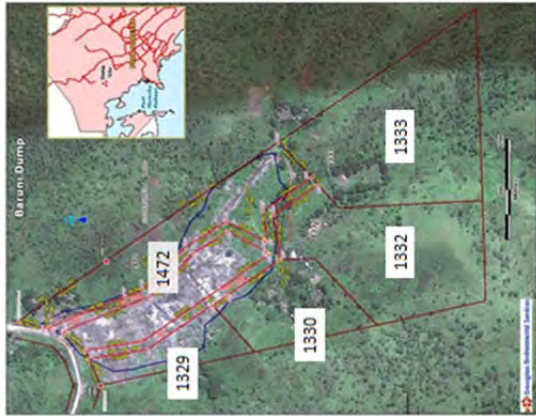
- Leachate collection pipes
- Gas venting pipes



**For future Baruni
Land Issue**

NCDC using
1472

Adjacent land
(allocated for landfill)
1329
1330
1332
1333



Base Idea for rehabilitation (Using Existing Road)



**Arrangement-1
(inside the planned road)**



**Arrangement-2
(using adjacent land)**



Design Parameters

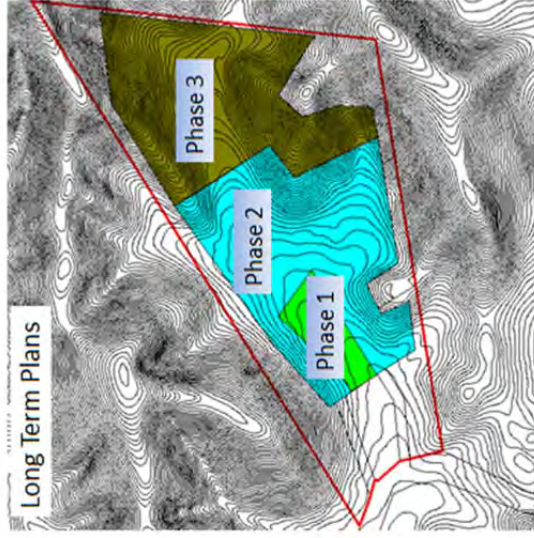
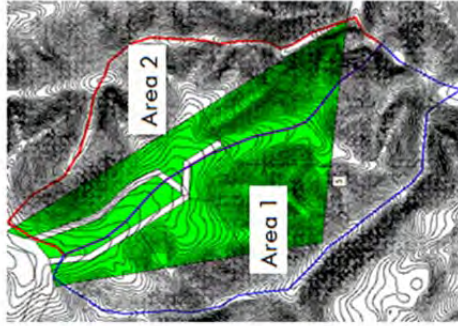
Stormwater Catchment Area

Legal Boundary = 38 ha

Catchment A_1 = 42.8 ha

Catchment A_2 = 32 ha

Catchment A_t = 74.8 ha



Future Layout

using whole allocated land and further expansion)



2. Step of Rehabilitation

Contract and events

- Design and cost estimation 2013 Sept.
- Baruni Visit 2013. Oct.
- Contract document preparation 2013. Dec.
- Contract signed 2014 April
- Start the works 2014 July
- Accident 2014 Sept
- JCC 2015 Feb,
- Cell 1 Commissioning 2015. June
- **Start of Operation at Cell 1 2015. Nov.?**
- **Completion of Cell 2 2015. Dec?**

Baruni Visit 2013 (before contract)



Oct. 2014
(after accident)

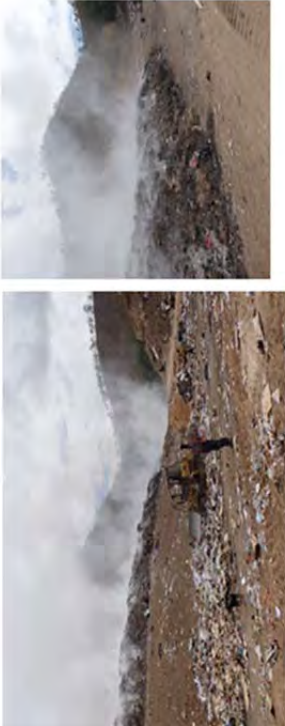


Baruni March, 2015 (Google)



Baruni Operation area,
May 15, 2015 (Gentle slope)



At Present (Oct. 2015)  5 (Mon.) 7 (Wed)	Baruni Fire Oct.7 																
Steps of improvement of Baruni 1. Operation improvement (Control of operation, control of receiving waste, compaction and covering soil) 2. Rehabilitation using Fukuoka method for Cell 1 and 2 3. Expansion of Fukuoka method (Expansion of leachate collection and drainage system) 4. Introduction of pretreatment and recycling system	<u>Participation on this project</u> Abe: <table> <tr> <td>(1) 2013:</td> <td>September (Design)</td> </tr> <tr> <td>(2) 2013:</td> <td>October (Design and waste picker)</td> </tr> <tr> <td>(3) 2013:</td> <td>December (Contract document)</td> </tr> <tr> <td>(4) 2014:</td> <td>January (Contract document)</td> </tr> <tr> <td>(5) 2014:</td> <td>June (Operation manual)</td> </tr> <tr> <td>(6) 2014:</td> <td>October (Monitoring of construction work)</td> </tr> <tr> <td>(7) 2015:</td> <td>May (Preparation of commissioning Cell1)</td> </tr> <tr> <td>(8) 2015:</td> <td>October (Monitoring)</td> </tr> </table>	(1) 2013:	September (Design)	(2) 2013:	October (Design and waste picker)	(3) 2013:	December (Contract document)	(4) 2014:	January (Contract document)	(5) 2014:	June (Operation manual)	(6) 2014:	October (Monitoring of construction work)	(7) 2015:	May (Preparation of commissioning Cell1)	(8) 2015:	October (Monitoring)
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<u>4. Consideration and Recommendation</u> 4.1 Design of rehabilitation - Use of local/general material - Priority on daily operation - Development toward Waste Management & Clean Center 4.2 Future expansion and land acquisition (1) Surrounding four lots (2) Upper catchment area 4.3 Recommendation on Contract (1) Technical capability and sinserity (2) Accountability	<u>4. Consideration and Recommendation</u> 4.4 Operation of landfill - Receiving waste control, Compaction and covering soil - Special attention for first layer of cell 1 and 2 to avoid damage of leachate collection and gas ventilation system 5.5 Implementation of Contract - Documentation and failing system - Periodical meeting and record
<u>Survey – More understanding – Better discussion</u> <u>Workshop on SWM Plan</u>  Counterparts implementing waste audit and time and motion surveys In Jan. 2015, WMD staff were selling drinks from the office In Sept. 2014, the WMD Officers were engaging stakeholders at SWMPlan Workshop 23	<u>Improvement of Baruni Landfill</u>  Cell 1 (background), and Cell 2 under construction. April 2014 Leachate pond Construction of new cells under re-landscaping Waste disposal at the rear of the site

Cooperation of Waste Picker

Block	HH	Spouse	Children	Total
1	11	9	31	51
2	15	12	26	53
3	10	5	6	21
4	15	10	21	46
5	13	10	12	35
6A	23	10	20	53
6B	3	2	6	11
7	28	13	34	75
8A	14	6	5	25
8B	19	13	7	39
9	7	6	5	18
10	7	6	13	26
11	11	10	13	34
Total	193	115	700	1008
Spouse	129	89	104	302
Orphan	84	48	98	230



25



Site entrance, 2011



Waste picking in smoke, 2013



Rear part of the site, 2013



Open fire from chemical waste near entrance, 2013

Attachment A-10 Baruni Landfill Workshop Memo

SOLID WASTE MANAGEMENT TRAINING WORKSHOP

9TH & 10TH OF DECEMBER 2015- SHADY REST HOTEL, PORT MORESBY

Mr Langa welcomed all and asked a participant to open the workshop with a work of prayer.

Mr Veari Kula in his opening remarks mentioned that the purpose of this workshop was to share the experience with what NCDC is doing. Waste is a huge challenge. This workshop is also timely as a National Waste Management Framework is also in progress. There are a lot of challenges in Waste Management, such as capacity building, Human Resource and technical expertise.

He further mentioned that CEPA also recognizes that LLG or provinces need improvement. Therefore he urged all to take this opportunity to ask so many questions and learn. And he welcomed all to the workshop.

Mr Kiap (Deputy City Manager for NCDC), on behalf of the Governor and the City Manager thanked CEPA for the workshop and welcomed all visitor. Waste Management is a very interesting topic to discuss. Waste is produced daily however, to manage and identify wastes is something we lack knowledge of. Waste is considered not wastes.

In PNG, we lack knowledge in handling wastes. He thanked JICA for providing technical expertise and way forward.

Other Centres were encouraged to learn from NCDC and CEPA, and when there is need, NCDC is willing to send its local experts to other provinces.

He also acknowledged JICA & CEPA for such initiatives. Currently the Waste Management Policy is in draft and hopefully discussions will be useful during this workshop.

Horikoshi San (JICA), extended greetings from JICA, CEPA and also thanked Honk Kiap for (NCDC's) efforts in Waste Management.

JICA through its JPRISM Project for 5 years in its Solid Waste Management in Pacific Island Countries in which 11 countries in the Region are participating.

Waste Management in Port Moresby belongs to Waste Management Division. However, Technical Expertise comes from JICA.

2 years ago, the Baruni Dump was difficult however, today, it is a beautiful landfill. The method used is a Japanese Technique called the Fukuoka Method.

- Landfill – Fukuoka Method
- Communal Waste Collection in Settlement
- Market Waste Composting
- 3R HEART Eco- School Project.

The 2nd Phase of the JPRISM Project will commence next year. Hopefully, other centres in the country will join NCDC in the second phase.

Upon completion of the opening remarks, the following presentations were made.

Presentation 1: Mr. Kula – Overview of National Government's (Solid) Waste Management Strategy and the JPRISM Project.

Presentation 2: Mr. Mahmoud Riad- Heart of the typical Waste Management System and Reviewing of JPRISM project achievement of the NCD Solid Waste Management System upgrading.

Presentation 3: Ms. Vivianne Morofa – Waste Collection and Carting.

Presentation 4: Mr. Ronnie Ranu- Intermediate Treatment and Waste Minimization

Presentation 5: Disposal site upgrading work (Baruni Landfill)

Presentation 6: Operations of the landfill

QUESTIONS AND ANSWERS

1. Horikoshi San comment: General overview of what NCDC does in the JPRISM project. A lot of work done at the dumpsite, a lot of money spent and we cannot afford, Riad San mentioned that JPRISM supports much more smaller countries such as Tonga 30,000.00 thus advised the participants not to worry as JPRISM can surely assist with their projects. Simeon Terina stressed that we only have a 2 day workshop and so much information thus it is very important to get to know people to source out information on whatever projects they are interested in, and can plan better for their projects. CDs will be burnt and sent out, however, concentrate on the workshop and later all will fall in place.
2. Paul Wiwi (MLLG) question to JICA
other provinces need a landfill as well, can JICA explain on how can they assist in terms of finance, NCDC is ok as they have the financial capacity.
Horikoshi san replied that JICA is in a technical operation but not a financial operation thus can give only technical assistance but JICA can support and get funds from government organizations to assist with the project, as it is seen as a national project.
3. Riad San further commented that, it is important to know before asking for how much, u need to know how much you need and where your need is. Priority is important. Low cost effort.
Margaret. A lot of work requires stakeholders to work together. It is the taxpayers money therefore there are some things such as technical assistance.
4. Iwamoto San mentioned that If this is a National Plan, DNPM is the public investment therefore the governor who is in charge of the money and can give some money for your project. JICA is a technical assistance operation.
5. Mr. Kula commented that the issue of financing is a huge problem in all areas. The National Government cannot help much with funding however, in the tomorrow presentation will highlight how best we can work with minimum funds.
6. Mr. Lemeki from Kokopo Town LLG stated that Suva (Fiji) is not only the capital and also some provinces. If the policy is done at the National Level, this may be used to assist the other provincial areas.
7. Mr. Kula said that the National Policy will assist in delivering funding. Provincial level, members are given direct authority in dealing with funds therefore it will be done.
8. The Town Manager for Goroka town stated that after presentation, there is a big gap and challenge to efficiently manage SW. in Goroka, Solid Waaste disposal and management is not a good topic to discuss. Acquiring land is a problem, local landowners do not give land to free up land as it is not a good development. In order to change the mindset of the people is to do things properly. If we not do things properly, communities will not want to help. POM is ok, as they have free land, however, other centres they need to go through to local landowners.
9. Mr. Langa stressed that awareness is ok, so apart from CEPA, DNPM, is the IPI. Hope after workshop, there will be a lot of work. Data Base is very important and hopefully, will get the favour of the Provincial.

10. The Alotau town manager asked if there is a low cost method that can be used as there was no definite answer however, when we work together than will know. And can work together. Techniques depend on materials available.
11. James Ricky replied that bamboo is used as low cost. Dozers might break them therefore we use the pipes and lay rocks. Or even drums as alternative materials. Fukuoka method used because it is very cheap, it is suitable for PNG and other Pacific Island Countries. Well liners can also be used, or culverts. Other material available.

Q&A for Baruni Landfill visit (Design and Operational issues of the Baruni landfill)

Facilitator: Riad San.

Discussions of the presentations in the morning and in the afternoon visited the dump.

Frank Peu. Wasiu

- **Is there any fumigation takes place in the landfill?** Fumigation is not done at the dump. Only thing is the expired medical wastes, however, there are private incinerators to incinerate medical wastes. Only technique used is deep burial for hazardous wastes.
People living there also have access to the dump, is there any way to prevent people from having access to them and also how is the daily dumping method done?
Mr. Simeon Terina stressed that there is welfare and safety for the people. Isolation and having control to pickers at the dump. By 11am and 12noon there are heavy flow of the traffic, people even children jump onto the vehicles to check the contents. It is really impossible.
We do have safety committee, contractor and project implementers and even though they know the risk, it is a risk.
They have been there, always. This group of people do not look to be the type of people we had a few years back. Their attitudes have changed, health, working conditions and livelihood have changed. They make money out of the landfill.

Due to the project, their mindsets have changed and overtime should have impact on their lives. Food scraps collected is for domestic animals. Their children are born and bred there.

Harold Abori- Goroka Town Manager

- These presentations are an eye opener to some of us. NCDC is sharing with us their success. There are land issues to come up with Waste Management site plan. NCDC has finance, technical expertise, it is a challenge for other provinces to follow. To work together and also to learn and address this. We want answers, and the presentations presented on the issues. Some of us are not told what we do is wrong or what we do is right. We need guidelines.

In any city or town, there must be good waste management plan. We all issues and nobody can solve those issues. Provincial Govts have their land as well. Previous officers may have attended this kind of workshop however, may not have done anything. If it would be ok, to include other provinces. What will we achieve?
- NCDC is a pilot project. Most of the issues were tackled by NCDC. The CEPA will re-enforce this tomorrow afternoon. NCDC has the experience, and JICA might be included in the next phase. It will be brought out in the cost of time. NCDC is a govt of its own, operating within the city, it also creates its bylaws, and provinces or LLGs are supposed to reinforce. NCDC with experience now has its issues as there is no National Policy to guide them. CEPA also knows that other provinces need them. We should

all learn from the JICA thing. We hoping that Phase 2 will be implemented in our discussions tomorrow

Dennis Yandasins- EHO Mt. Hagen

- This is an eye opener, managing SW in PNG has been neglected for 45 years. Govt has not recognized SWM in our country and thanks those esp. CEPA for coming up with initiation. We are not technical expertise however trying to learn and also success rate of such systems. NCDC didn't have what they have today. However, Mr. Riad is always with the staff of the WMD and always ensures that this project is a success. RR- all provinces have their system of collection and disposal and also have budget. How can we improve? NCDC WMD began with 5 staff, now there's 30 staff. But we have to know what our system is in order to get what we want.

Vagi Malona.

Thanked all for attending especially CEPA. He is trying his best to get a landfill at his district. Hopefully, with JICA and CEPA's presence he should have the results he is after. As it is really difficult to involve members of the parliament representing the province and districts.

DAY 2- 10/12/15

Mr. Langa asked the participants to reintroduce for the sake of new participant. Mr Kula sent his apologise as he will not be in till 12 midday.

Recap of yesterday's activity.

Two parts, NCDC spoke of experience.

Mr. Kula – overview of govt function and role of WM in the country and also mentioned that area rectified and also will assist other provinces. Also he highlighted the difficulties.

Mr Riad san used PO Land fill as an example of current activities.

WMD staff, collection and disposal, treatment of wastes, landfill. 3 parts into landfill, operation, design, landfill management.

Mr Langa Landfill Code of Practice. 9.28

There is a lot of work to do before acquiring a permit. Need of audit to be done before going to CEPA.

PNG's Environment Regulatory Process; # the environment permit process and the # Permit Conditions.

Definitions:

What is an Environment Permit?

Why have an Environment Permit?

What is an Environmental Regulatory process that give rise to an environment permit?

Regulatory process.

Framework provides a three-tier progress for dealing with activities with potential for causing environmental harm. Activities are classified as a Level 1, 2 and 3

Notification must have no more than 5 pages for intention notice for even level 3. The environment permit for a land fill project is Level 2(b) under the prescribed activities of the Environment (Prescribe activities) Regulations 2002.

Level 2 process, Level 3 also has a tedious process. CEPA confirms level of activity, once confirmed, concerned persons are asked to go back and prepare for the intention notice. A guideline is also given a detailed guideline.

No work must start until an Environment Permit is given. However, there are some who are given prep work before permit is given. Permit is also given as per number of population that determines the level of activity. Baruni landfill upgrade was charge K2400 however, as CEPA is also a counterpart. CEPA paid K400 and NCDC K2000.00

Once population is more than 20,000 a permit is needed. Not all provinces need a permit however those who have more than 20,000.00 will need a permit.

Permit usually takes 90 days however, NCDC took 1 year to complete the submission. Environment Permits are given after the submission is complete. One of the things in the process of Environmental Permit is a notification. Everyone is encouraged to submit notification. CEPA will give the permit.

The End of Presentation Number 1.

Level 2

Question

Mt. Hagen City, using open dump method used centuries ago. They use a gazetted land area however, is operating without a permit. There are complaints from those living nearby.

At the moment, an open dump landfill is operated, however, with more than 20,000 population, a permit is needed.

Mr. Langa- Presentation Number 2

Environmental code of Practice for Sanitary Landfill Sites in PNG

Presentations of Provincial Centre's Waste Management Situations

(1) East New Britain- Kokopo Town Council

Mr. Lemeki- Town Manager, thanked NCDC, JICA & CEPA.

There are two urban set ups in East New Britain; Kokopo & Rabaul

Existing dump is Rainolo Refuse depot, and new proposed Ramale Refuse depot is a threat to the town's water system.

Kokopo township was rushed after the volcano eruption and eventually is now a fast growing system.

Kokopo/ Vunamami Urban LLG is a Local Medical Authority.

Produces a large volume of residential, commercial and industrial wastes daily therefore Waste Management must be a focal implementation program.

Raniolo Refuse Depot commenced in 2011 till current. It is located near a settlement and the town's water supply is at the foot of the galley, therefore with CEPA's advice the govt has agreed to propose for a new refuse depot called Ramale .

Sold Waste Removal and Disposal Equipment.

1. 2x 6 ton G&S Compactors
2. 2 x drivers and 6 crews

Collection schedule. The township is divided into 4 zones.

- Zone 1 Butuwin – PNG Motors
- Zone 2 PNG Motors- Anders

Kokopo Township solid Waste Storage

- 50 x 44 gallon drums placed in PP, R
- Residents served notice to provide on bins.
- Commercial also served notice to provide own receptacles.
- Industrial as per above.
- Rubbish Storage Trays (3x3x3)

Proposed bin just like the one at Ela Beach. Most workmen have faced workplace occ health problems thus the design.

Structure.

- Raniolo Refuse Depot
Volume of solid waste storage and disposal at Raniolo Refuse Depot.
Solid Waste Recycling Status.
3 x metal and can recycling companies (Scrap metals, cans.)
- Volume calculation of Kokopo township
- Daily 36 tons/day
- 216 tonne week
- 5184 tonnes/month

Kokopo Township SWM Awareness & Education.

Done during inspection or complaints.

- Usage of residential waste for Garden and flower compost.
- Rubbish category separation.
- Collection and selling of recycling metal and cans
- Proper storage and disposal of rubbish in refuse bins.

AWARENESS AND EDUCATION

- RENB 30 mins program
- Public Awareness System (PA System)
- Both Public and Private Official Program awareness and education whilst on duty.

INSTITUTIONAL SYSTEM OF SWM

- Proper storage of rubbish inside water tight green moveable bins.
- Update and on time collection

Proper and efficient disposal of rubbish

PROGRESSIVE REPORT ON NEW RAMALE REFUSE DEPOT

- Growing into a city status hence requires an additional dump site.
- In its primary stge, where Island Design and Engineering contracted to conduct feasibility studies and design.
- ID of landowners already.
- All stakeholders confirmed already to commence on dump project.
- 120 years life span for Ramale Refuse Depot.
- Four cornered deep steep gully

- Ideal for a city waste disposal system

LIMITATIONS

- KCC has been passed but no Solid Waste Management Plan done yet. There is a huge need to improve waste collection to disposal the total waste produced.
- Raniolo Refuse Depot which was recently upgraded, had a limited landfill volume as well as lack of security.

WAY FORWARD

- Rubbish separation at Raniolo Refuse Depot
- Fencing of Raniolo Refuse Depot
- Town Council working at improving and enhancing operator skills, improve safety of waste pickers and establish specific facilities to pre-treat and dispose hazardous waste.
- More awareness on recycling conditions is needed but the Government must also fund an establishment of a waste recycling technology.

(2) LAE CITY AUTHORITY

A system is in place for collection and storage of wastes. It is important to know and learn from NCDC. CEPA needs to advice all Provinces that it is vital to have a landfill.

- Domestic 240 L/
- Public Place- Galvanized drum.
- Commercial Area- Cage
- Collection *1.5 cubic meter dump truck x 26. K400 per day & K200 weekend.
- Storage is done on ground level. Wheel barrows are used in the market to cart wastes to the vehicles.
- Collection done by Private and City Council contractors.
- Land issue, current dump site used since 1973, proposed dump site call second seven dump site.
- Land owners have agreed to lease the land to the Lae City Council. Scavengers also a problem and they light fire wherever and whenever they see fit.
- Illegal dumping is also a major problem.
- Planned settlements are not serviced therefore wastes end up in drains or even on the sea shores.
- Recycling x 4 companies. (Bottles, can tins, aluminium and metals.)
- All recycling plants should be subsidized and can be taken onboard by CEPA

(3) MT HAGEN

- Third largest city and is overpopulated in the country and Waste Management is a major problem.
- Collection is done at residential, commercial.
- Wastes are kept in premises and do door to door collection. Wastes in public places are placed in drums.
- Kerebug Dump has been used for almost 40 years and is situated on a hill and backhoe is used every weekend to compact wastes. Problem occurs during rainy season.
- Wastes are not segregated, all wastes enter the dump, scavengers, pigs, occupy dump.
- City authority does not have any fleet therefore they hire vehicle x 4, and dump site is 5 mins drive out of town.
- 10 tons of wastes disposed daily.
- Currently no public awareness is done. After an incident, public awareness has ceased.
- Challenges are that there are no trucks, therefore they hire trucks, 9 months no payment therefore their schedules are not completed thus work is incomplete.

- General attitude of the citizens and clean up groups are engaged every day, and some by standers are careless.
- Financial constraints thus limiting our work performance. 190 million not true.

(4) LORENGAU

- Manus is a small province with only 1 district.
- 1 Wamundu Open Dump pit.
- Salamei Sanitary Landfill
- 1. Wamundu Open Dump Pit

(5) GOROKA TOWN COUNCIL

- All wastes disposed at dump site.
- Open burning taking place daily
- Financial constraints.
- Dump site is 10 kilometers from the town.
- Dump site is customary land and is paid K1500 monthly.
- Dump site has been in used for the last 3 years.
- No equipment and manpower stationed there.
- 30 tons month
- Wastes collected daily by contractors.
- 44 Gallon drums are placed on public site however, stolen at night.
- Domestic wastes are placed at front gates in plastic bags on bins for collection.
- Changing mindset is a big problem
- There is no recycling process for any wastes.
- 60-65% of waste collected are organic wastes.
- GLLG has ID a portion of land for new dump site.
- SW management by Goroka urban and LLG
- Govt has to recognize the severity of this environmental problem
- Land proposed for dump site has been surveyed however nothing has been done yet.

(6) CENTRAL PROVINCE (KWIKILA)

- Central Province still looking for land to build capital town.
- Land mass 29500 km². 4 electorates, 5 districts
- Population 236272 as of 2011
- Health Services delivery emphasise more on attitude
- Concern over illegal dumping

Infrastructure

Central Province doesn't have facilities to accommodate everything therefore a policy formulation should be done especially delay in funding.

Challenges

- Funding delay is a challenge
- Lack of skilled personal
- Inconsistency in plans and its implementation
- PHA & DDA
- Attitude, not only in CP but in other centres.

Way forward

- Emphasise on Preventative Public Health activities
- Increase man power (LLG EHO & SEHO)
- Plan for a proper dump site
- Establish networking with other stakeholders

(7) ALOTAU

- Acknowledged all CEPA, JICA, NCDC and other provincial participants.
- 400 hectares of land, with 13,000 people
- Plant and equipment. X2 compactors and 1 x tipper.
- 10 hectares of land, aerobic dump site, burning, push and cover.
- All wastes enter the dump, hazardous wastes are burnt.
- 1 x EHO
- 6 trips a day with 5 collectors.
- Public litter bins, 60 double litter bin stand, 120 bins with lid. Provided 2000 to Alotau residents
- Door to door collection. Commercial and industrial, hazardous wastes
- Ward system used to be used however, now changed, twice weekly, commercial twice daily and domestic 1 x fortnightly.
- Pickers only for aluminium cans.
- RECYCLING
- Nil

Awareness

- T-shirts
- Local Radio Station
- Circular
- Milne Bay Chamber of Commerce and industry
- Churches
- Clean up campaigns
- Schools

INSTITUTIONAL SYSTEM

- Municipal Challenges
- Control tipping
- Recycling and composting
- Revenue and funding to LLG
- Land for a new landfill
- Political Climate
- Reliable refuse collection services
- Litter control
- Sustaining and improving the quality of service

(8) MADANG

- Madang urban in Madang District with 50,000 people.
- Open dump – household wastes
- Dump- industrial wastes

After the 2007 workshop, they obtained a backhoe. X 2 compactors, 3 tippers, 1 x dozer and 8 cleaners.
Door to door services

Area for collection is zoned, Monday and Tuesday (Domestic), Wednesday Institutions.

Commercial properties are allowed to dispose on wastes, they pay user fee for the whole year. Settlement is not serviced due to survey found that they cannot pay for the services.

Budget is done for dump maintenance and others.

CHALLENGES FACED

Face management support, breakdown of equipment, harassment of staff visit at the dump site, land issue.

WAY FORWARD

In need of management support

Negotiating with lands and physical and planning board of Madang in acquiring land.

RIAD

Wrap up of presentation

He thanked all for their presentations and is pleased that all are aware of their problems.

Kokopo- need some more effort is waste calculation. (measure the vehicle with a tape measure and give the volume) waste estimate too much.

- Landfill has smoke therefore burning takes place at landfill
- 3 x recycling companies. Do they send it to POM, LAE or
- Be careful when saying the landfill has a life of 120 years, without showing how this was estimated.

MOROBE-

- Is the Lae City Council collecting wastes in the port site?
- Dump site activities.
- Hiring trucks, have you done some estimates whether it is proper to hire or buy?
- Collection schedule was not specified.
- Value of money. How much is spent.

MT HAGEN

- Hire truck or buy own? Any cost estimate
- Waste amount is not clear.
- Population of 1000 x .5 = 5 tons.

GOROKA

- Problem with funds
- Survey with land (do you have a complete survey map with topography?) if given, we can assist. And work together and figure out your best layout.

KWIKILA

- Do not have their own system.
- Kwikila has only 7000 people.
- Why illegal dumping?
- Regret they should've been with the project for 5 years.

ALOTAU

- Development plan for construction at the West of Alotau and asked for the plan.

- Encouraged town manager to consider incorporating Solid Waste Management plan to prevent.
- Satellite to be built on the dump site, used for 43 years, gas coming out after all these years. It will be a problem, usually a dump site must be idle for 5-10 years.

MADANG

- 2 sites. (industry
- al and domestic)
- 50,000 people and having two landfills, the other closed.
- Schools and institutions on Wednesday (University & Colleges)
- Land issue, current one almost filled thus looking for new site.

The first step is to see what type of land you need? Access, far from people, than you can start to look. Customary land issues.

Public Awareness- is becoming a problem, sometimes our management needs to know, therefore in the future if JICA will be in support, and awareness can be done.

Riad San : JICA Phase 2, JICA will be collaborating with other provinces. By March 2016, team will be prepared. Some questionnaire, should be done as a start off.

3 categories to be done if we can prepare together and get feedback from the participants before kick start of Phase 2

Veari Kula- Waste Management Initiatives

Regional Strategy- SPREP has now adopted a new strategy over 4 years with different types of wastes. Questionnaire sent out was for feedback to be given to Riad san so it is important to answer the questionnaire. SPREP has a chemical profile for each country. Under PNG, there are provinces therefore it is important to fill in the questionnaire.

We talked about JPRISM project and also visited the landfill. Therefore objective of this session is to inform you about what CEPA does.

Current Project.

- We are now taking part in a 2 year for POPs chemical. Review and update National Implementation Plan in order to comply with reporting obligations and updating obligations of Convention.
 - GEF PAS POPs regional project. However, only 6 relevant to PNG. SPREP will redevelop POPs project.
 - Component 1: regional uPOPs prevention and management strategy.
 - Component 2: Training and awareness raising in solid and hazardous waste management best practices (including pilot project)
 - Component 3: improved management and safe disposal of unwanted pesticides (including POPs) and school labs. SPREP will conduct a chemical management training course in PNG in 2015.
 - Component 4: Used oil Export/ Reuse System.
- Project agreement signed between CEPA and SPREP for a 2 year project in November 2015.
JICA/GoPNG, 5 year Project, Mine Waste Management Project.
Mercury Minamta Initial Assessment (MIA) Project.
- Basel and Waigani Convention objectives provide for the environmental safe management of hazardous wastes. Shipment confiscated in SI, as there were no approvals from the CEPA or the other government.
 - If you deal with POPs or mercury, it is better for you to know what CEPA does in the National Level.

Horikoshi san asked if CEPA could share its future views and plans on Waste Management Policy and plans for the other provinces. Mr. Kula mentioned he will answer that in his next plan.

JPRISM Project- launched on the 21st meeting in Madang. It was done according to needs. Baruni was never part of the project, however, allowance was done and here the project is at its state.

Road map

- Development institutional capacity in CEPA and Health Dept.

- Capacity building programs

Develop waste and chemicals policy and strategy with partners

Consultations in provinces

Finalise policy and strategy consistent with Regional pollution control strategy 2016-2025.

We look at 1 or 2 provinces within the Region, they can be used to reach out to the other centres nearby.

When consultation will be done in the provinces, capacity building needs to be done especially in Waste Management. We need to start somewhere. During this consultation, budget for Waste Management must be done. Example on NCDC. You do not need to follow what they are doing. Capacity building training and waste audit is ok, to deal with Waste Management issue.

NCDC experience to be utilized in roll out- lessons learnt from the JPRISM project will be useful. Political support is very important. Resources are very limited, therefore while provinces have the commitment and interest than we should work together.

Questions and Answers!

Iwamoto San- Commended Mr Kula on his well-thought approach to the provincial level.

JICA has concern. – you have couple of global projects going on, (GEF, POPs, MIA), some issues are relevant , and as donors they have limited resources however, when phase 2 commences , it is important to strategize and think about using donor funding effectively and try not to overlap with other global issues and programs.

Mr. Kula - Took note of the comment. This project is very focus and very specific therefore when you look at JPRISM project, there is no duplication in project however, can be linked with Waste Management, as many global projects have clear specifications.

Catherina- re stressed what Mr. Kula said and also thanked JICA for their support.

Horikoshi- Formulating projects

Mr. Lemeki: National Policy on Waste Management Plan, will there be any timeframe?

Mr. Kula- There was no timeframe made, as he is one. Therefore JICA is also asked to assist with the policy. Funding also needs to be secured for this.

Simeon Terina- in terms of plans to roll out program to the other provinces. Are we able from the ministry to director and also secretary collectively put money together to do consultation before we roll out to other provinces? Having reference from the 2007 workshop, while desire is there, can we do something quickly?

Mr. Kula- Collaboration of Health Dept, and CEPA and also agreed with mr. Terina's comments and is hoping to achieve things a little bit more better. CEPA needs initial funding. We must not do things according to planned project and find funds.

Horikoshi- Extend sincere gratuity and active participation in the workshop. All provinces have different issues of financial constraints but keep on striving. As long as JICA is around, they will try to assist much.

Other options of Waste Management- POPs BATEP.

You must still try our best to look for funds. There are many options available. CEPA can help by sourcing funds from leaders at the national level.

We need to raise the profile of Waste Management. Right now there is no budget. From one basket, it is shared, but if we get to raise the profile and approach them then we should be ok. Our politicians do know about it, but it is us to forward it to the politicians to fund our projects. Encouraged all to take a step forward and not to forget about what is learnt during the workshop.

Mr. Kula- JPRISM project, is there to assist. We need to plan something that is more suitable to us.

Catherina- asked for update for the ban and plastic shopping bags.

Mr. Kula is not sure who advised however, it is already in the regulation therefore those manufacturing biodegradable bags must have a permit. Even those who import biodegradable bags must get a permit however, but there is a ban for non-biodegradable bags.

Madang- any provisions for the EHOs to implement?

Mr. Langa & Kula- biggest difficulty in trying to implement this alone, therefore they work with customs officers as they are at the front.

Importation of plastic bags, can CEPA ensure that plastic is a total ban as it will also have an impact on the mothers who can make a living by making shopping bags.

Conservation Environment Promotion Authority

Catherina: Many times when we try to use environmentally friendly products, cause a rise and many factors considered before decisions are made. There is a specific policy in 2009 and has planned to roll out to other centres of the country.

Proposed landfill site will cover a gully. The place is huge and if there is any consultation with CEPA.

The engineer who is the consultant said they confirmed with DEC, and is held up as DEC have their own consultation.

Less than 20,000 population needs a permit however, regardless of population all must come through CEPA.

Notification to CEPA is like a screening process. All intentions of having a dump site must be through the CEPA.

Catherina: screening process can take a very long process and be stopped as many times CEPA is targeted by land owner.

Q&A Session closed at 3.30pm by Mr. Langa.

Mr. Terina encouraged all that what all are going through is what NCDC went through. It is important to ask for help and it is important to not to worry about money and hang around and develop this passion for yourself.

Attachment A-11 Proposed Modifications to the Collection Contracts

19th March, 2015

Mahmoud Riad

JPRISM, SWM Expert E

Domestic, Schools and Settlements Waste Collection Contract

1. Waste Amounts

Modification 1: The Contractor shall provide the collection service to about 76,000 households living in the residential areas and in 63 settlements. The number of schools to be served is ____.

The estimated amount of generated MSW in 2015 is 281.3 ton/day. Out of this amount, 56% is estimated to be generated from residences; i.e. domestic waste. This is equivalent to about 160 ton/day.

The waste amount generated from schools is estimated to be 25 ton/day.

Modification 2: The Contractor shall provide sufficient manpower and equipment to collect an estimated amount of 220 to 230 tons per day generated from residents and schools.

Assuming that the contractor will use compactors of haulage capacities 3, and 4 tons/trip and dump trucks or bins of 3 tons/trip, and each truck will average two trips per day then the contractor will need around 36 trucks.

2. Service Quality

Modification 3: The Contractor shall provide collection service twice a week, during the daytime hours from 8 AM to 2 PM.

Modification 4: The Contractor shall prepare and submit his collection schedule to NCDC for approval. The schedule shall identify the collection areas by road name and ward. A map shall be included. The schedule shall show the days of the week (Monday thru Saturday) and time of the day (within 3 hour windows; e.g. from 8 AM to 11 AM, or 11 AM to 2 PM) when the collection shall be provided. The Contractor shall prepare the schedule taking into consideration the capacities of his equipment and efficient utilization.

Modification 5: Once the Contractor's submitted collection schedule has been approved by NCDC, the Contractor shall then prepare and distribute leaflets to the residents in residential areas and settlements and schools to indicate to them the collection times. The Contractor may also be required to use other means to ensure that the collection schedule is informed to the people.

Modification 6: The residents and schools shall discharge their wastes in plastic bins, bags or any other acceptable and closed container. The Contractor shall provide sufficient guidelines and instructions to the residents on the proper manner for waste discharge as may be required.

Modification 7: The Contractor shall utilize adequate waste hauling vehicles such as compactors, dump trucks and skip carrying trucks. The vehicles shall be washed regularly to avoid odor emission and rust. The boxes carrying the waste should have no holes or perforations for fear of leakage of the waste leachate. For open trucks the waste box shall be covered by canvas to avoid littering of the waste during transport to the disposal site. The hydraulic systems of the compactors shall be operated by the collection crews and the general public shall not be permitted to operate them.

Modification 8: The Contractor's crew shall be provided with safety gear (uniform, gloves, boots, masks, etc.). The crews shall be trained to respond effectively to work accidents as well as safety work measures.

Modification 9: The collection crews shall cooperate with the NCDC appointed personnel at Baruni site. They shall report on the location where the waste they are hauling in was collected from, the type of waste the collected and other data that might be required. They shall also follow the instructions of the disposal area staff as to where to discharge the waste they are hauling into the site.

Modification 10: The Contractor shall set up a system to receive and manage complaints from the residents, which shall be approved by NCDC.

Modification 11: The Contractor shall provide sufficient number of personnel to implement the service efficiently. The collection crew shall respond civilly to the general public, and shall not solicit any extra funds from them.

Attachment A-12 Segani Ranuguri Settlement Waste Collection Pilot Project

Progress Report



Communal Collection Pilot Project Ranuguri Segani Settlement Progressive Report & Updates



16 November 2015

The following report gives an update on the communal collection pilot project for settlements in Ranuguri – Segani Settlements with the various activities that have been conducted so far.

1. Awareness Program

The awareness programs at the two (2) project site were staged successfully. Although there were some misunderstandings and conflicts between the leaders at Segani, the outcome of the event was successful with all the community members participated in the program and activities.

2. Construction of Wastes Bays

Three (3) waste bays were proposed to be constructed on the project site. One has been completed and two are yet to be completed. There are some delays in acquiring of the materials to complete construction as stated by the Contractor (Sunanem Contractors).

3. Community Participation

So far the community have been conscious about how they care for their wastes initiating voluntary clean ups and bringing out their wastes on collection days. They are keen on the project showing eagerness and willingness to participate in the project.

After the completion of the two wastes bays, the community have agreed to do a voluntary clean up to remove all the wastes within the settlement.

4. Waste Collection – PNG WASTECO

PNG WASTECO is yet to improve on its collection to the project site. The collection of the waste has been inconsistent in the settlement. On several occasions, we have verbally advised them strongly to collect wastes as scheduled in the pilot project site. We have stressed to them that the success of this project depends largely on their performance hence they need to perform as required.

We have been pushing them to do the collection at the pilot site which indicates their poor performance for waste collection in settlement areas.

General Remarks

The construction of the two waste bays by Sunanem Contractors is very slow. They gate of the bay is yet to be constructed to fully complete its construction. Upon various consultations with the contractor, he has mentioned that they are yet to acquire some

materials and due to some family responsibilities, the work is on hold but it is foreseen to be completed before the 20th of November, 2015.

The waste bay constructed by Master Yori Contractors is in use now by the community.

Prior to the construction and the awareness program, various clean-up activities were organised and the community participated voluntarily.

Two (2) of the four wheel barrows given to by the project were delivered to the Ranuguri community on the 13th of November, 2015. Upon the completion of the waste bay at Segani, the other two will be delivered to the community for primary collection of wastes.

Monthly inspection schedule have been drawn up for inspection and monitoring of the project. The supervisor and officer for Settlement Wastes will be doing the monitoring and supervision.

A monitoring form for the Contractors Performance and Community Participation is developed and will be used to assess the pilot project within the next three months.

Pictures



Figure 1



Figure 2

Figure 1 & 2 – Completed Waste Bays at Ranuguri Settlement



Figure 3



Figure 4

Figure 3 & 4 – Incomplete waste bays at Ranuguri & Segani Settlement



Figure 5



Figure 6

Figure 5 & 6 – Delivering of wheel barrows to Ranuguri Community



Figure 7



Figure 8

Figure 7 & 8 - Voluntary cleanathon at Segani Settlement by the community members.



Figure 9



Figure 10

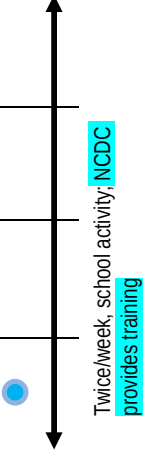
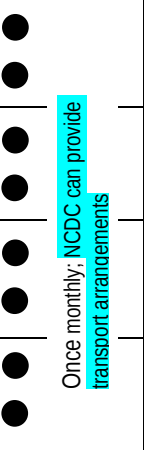
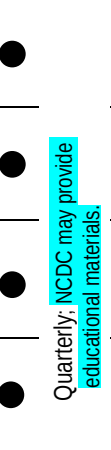
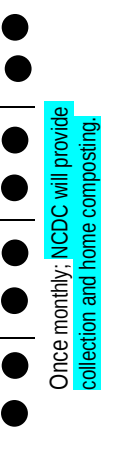
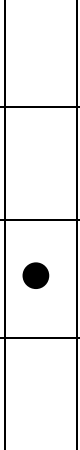
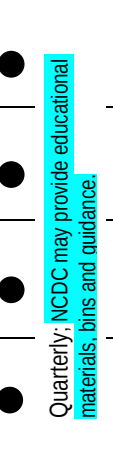
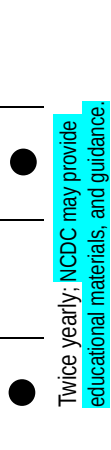
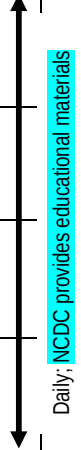
Figure 9 – Awareness program at Ranuguri Settlement.

Figure 10 – Awareness at Segani Settlement

Attachment A-13 Coronation Primary School Action Plan

Activity	First Term	Second Term	Third Term	Fourth Term	Description
1. Waste Education and Awareness: <u>Goal: Educate Teachers and Students about details of NCDC services, waste materials collected and how waste is discharged, transported and disposed.</u>					
1) W/S and training for teachers	● Twice annually; NCDC will arrange one workshop		●		-Teachers will be trained and well informed on waste management. -Teachers will also be informed and trained on waste segregation method
2) Waste education in curriculum	↔	↔	↔	↔	Curriculum includes topics on waste.
3) Educational materials, posters	● Quarterly; NCDC will arrange produce in Term 1	●	●	●	-Educational materials will be produced on quarterly basis and issued to schools to enhance teaching on waste management. (Charts/ newsletters/ pamphlets)
4) Cleanliness of the School	↔ Daily; a school activity				-Rubbish drums will be labeled in school for disposal of waste -Segregation method is followed -Work parade is carried out by assigned classes -Students carryout awareness on waste management to peers to create a clean school or learning environment.
5) Others -collection of recycle waste materials	↔ End of each month; NCDC will arrange collection				NCDC to collect the waste from school end of the month
2. Waste Reduction and Reuse: <u>Goal: Promote the minimization of the quantity of waste produced through improving consumption practices and reusing goods at schools instead of throwing them away.</u>					
1) Less waste of stationary	●	●	●	●	Students will be encouraged to use their stationeries wisely
2) Improved use of educational materials	● Twice/year; a school activity		●		Students will apply simple classroom library rules to care for their educational materials

3) Maintenance of school activities	● Once/year, when need arises		Students will take good care of their existing school facilities. If a student damages a school facility, the child is responsible for the maintenance.
4) School canteen and shops	↔ Daily; a school activity		-Order enough food for daily consumption. -If more is ordered and there are leftovers, reduce the price so they can all be bought. -Bins must be labeled and out for waste segregation.
5) Flea markets	● During cultural show; a school activity		-Prepare enough food for sales so there should not be any leftovers. -Dispose all rubbish correctly into labeled drums (segregation method) -Vendors will daily pay certain amount to the school for using its area to market
3. Recycling and Composting: <u>Goal: Reduce the amount of waste going to the disposal site by recycling and composting of waste materials as much as possible</u>			
1) Separation of aluminum and metal cans	● ● ● ● ● Twice monthly; NCDC will collect separated items for recycling		-Reduced aluminum cans and metals will increase -Students will learn the segregation method -Students will generate income from it.
2) Separation of PET bottles	↔ Daily; NCDC will collect separated items for recycling twice Termly.		-Recycled PET bottles will increase -Students will generate income from it -Students will use it as water cans to water plants (save water) -Students will use it to make boundaries around their flower gardens

3) School composting		-Segregation method is learned -Students will bring vegetable peeling from home to contribute to their compost. -Student will learn more about composting -Student will make use the compost to nurse plants in their greenhouse
4) Others -Used tyres -Bring empty 1kg Rice Pks		-Students will make flower pots out of it. Generate income -Nurse plants in them -Sell and generate income
4 Partnership Working: <u>Goal: 3R HEART initiative is expanded by the efforts of the students at their homes and the schools in the surrounding communities.</u>		
1) Involving parents in 3R HEART activities		-Teachers and students will make awareness to parents on waste management.
		-Parents will help their children bring in PET bottles, food peelings and aluminum cans
		-Parents will build a greenhouse to nurse our plants using used timbers
2) Encouraging the surrounding community to participate in 3R HEART activities		-Students and Teachers will make awareness to the surrounding community on waste management -Students place waste bins/drums in the surrounding communities for waste disposal
		-A working bee will be organized for the surrounding community to participate
3) Students improve waste management		-Students will provide different labeled bins at home for waste

Attachment A-14 3R HEART Activity Report

TO : MANAGER – OUTPUT 2

FROM : 3R HEART COORDINATOR

DATE : 2nd DECEMBER 2015

SUBJECT : 3R HEART REPORT 2014 - 2015

The JRPISM project for PNG sponsored through the Department of Environment & Conservation and implemented by the NCDC and its partners, JICA, Department of National Planning & Monitoring, Health, University of Papua New Guinea and other stakeholders has seen a lot of developments.

There are 3 outputs. One of which is the improvement of Baruni Dump, secondly the improvement of collection and transportation system of NCD and finally the development of the NCDC Waste Management Plan.

NCDC has taken the lead to ensure that the objectives of the outputs mentioned under the MOU between the GoPNG and GoJapan are realised and achieved as per the requirements that were set. We are pleased to advise that progress has been made to all outputs. One of which culminated in the launching of the NCD Waste Management Policy and also the current progress of the other two outputs as well.

This report gives a better insight on the 3R HEART activities conducted in 2014 – 2015. It includes an introduction of the 3R HEART concept and the steps in which the concept has gone through for the last two years, way forward, the conclusion and the recommendations.

Introduction

Under output two, the 3R HEART concept was introduced as a strategy to improve collection efficiency by allowing participation at the community level, decreasing wastes going to Baruni land fill and changing mindset of people on how they handle waste. The idea was to allow waste to be reduced at the household level. As such, we introduced this concept to be piloted through the schools so that the idea of “Reduce, Reuse & Recycle” can be achieved.

Steps

There are 10 Steps to the 3R HEART Initiative:

Step 1: School Questionnaire Survey

Questionnaires' were served to all the schools in NCD in January 2014. John Navara was the 3R HEART coordinator at that time and we served 54 questionnaires to all 54 schools in NCD. We got only 17 questionnaires back.



Step 2: 3R HEART Logo Competition

3R HEART Logo competition award was held on early February 2014 with five winners to the competition. Kila Kila Secondary School won the Logo competition. Below is the current Logo for 3R HEART Initiative. After the logo competition; 8 schools were chosen for the 3R HEART pilot project. The 8 schools were taken mostly from the 17 schools that submitted their questionnaires back to Waste Management Division.

Step 3: Develop materials for awareness (pamphlets, newsletters)

Materials were developed for awareness especially before the School Teachers Workshop. Quite a number of pamphlets & newsletters were produced.

Step 4: School Teachers Workshop

The school teachers' workshop was held on 24th of July 2014 at Holiday Inn. This was done to enable the teachers to understand the concept and its action plan template and come up with their own ideas and plan actions needed for their schools based on their situations and environment. The teachers taking part were from the 8 selected schools for the Pilot projects.



Step 5: Finalization of Schools 3R HEART Action Plans (Schools submitted their action plans which are finalized together in discussion with NCDC).

The 8 schools were working on their action plan on the month of August 2014. Early September 2014; NCDC & JICA experts had a discussion with each schools to finalized their action plans. The whole months of August & September 2014 was spent on working with the schools action plans.

Step 6: *Launching of the Eco – School Action Plan*

The Launching of the Eco – School Action Plan was conducted on the 16th of October 2014 at Kila Kila Secondary Schools. Teachers from the 8 schools attended the ceremony which was hosted by NCDC and JICA. The 8 participating schools were given their final action plans during the Launching.



Figure 6 – Mr Sugiyama Chief Resident Rep – JICA Office PNG shaking hands with the deputy principal for Kila Kila Secondary School while giving out the final action plan for Kila Kila Secondary School.

Step 7: *Technical staffs to conduct training on certain subjects in the schools*

As per the Action Plan for each of the 8 participating schools for the 3R HEART pilot project; a part in the action plan is for NCDC and JICA staffs to conduct training in each school. So far we had covered 6 schools and the other 2 yet to cover.

Step 8: *Monitoring & Assessment*

Monitoring & Assessment of the 3R HEART Initiative in the 8 participating schools commenced at the end of May 2015. Below are some of the photos taken from the 8 participating schools on the practices of Reuse and Recycle conducted in the schools.

	
<i>Figure 8.1 Port Moresby National High Wire Cage</i>	<i>Figure 8.2 Coronation Primary Flower Bed Fencing made from PET Bottles</i>
	
<i>Figure 8.3 Coronation Primary Curtains made from PET Bottles Lids</i>	

Step 9 Determine Successful Schools, Qualified 3R HEART awards

Out of the 8 schools, prizes will be only awarded to the top 3 schools with trophies to the winner and the runner up. There were a total of 8 3R HEART Committee members, however, only 5 of the committee were mandated to do the monitoring and assessment.

From the monitoring and assessment conducted; the final assessment were done by 3 members of the 3R HEART committee on the 11th of November 2015. The final assessment done was in line with each of the schools action plans. We look through each school and what they plan to do for each month, thus, points given by the 5 committees were added, however; did the schools achieved what they plan for each month? Schools that achieved what was in their action plans had their points recognized while other schools that did not achieve what was in their action plans had their points deducted.

Step 10 Seminar to announce awards

On November 12th 2015; the first ever 3R HEART Award Ceremony was conducted at Jubilee Secondary School. The prizes are as follows:

3rd Prize – Jubilee Secondary School
2nd Prize – Hagara Primary School
1st Prize – Waigani Primary School

The event was wonderful and beautiful in the presence of Chief Jica Representative, DCM – C&SS, CEPA Rep, Manager – Waste Management & other invited guest. Jubilee Secondary School also composed a song which Waste Management Division will get it from them and make it the Division's 3R HEART Song. The song also made DCM – C&SS happy that he pledged to buy Jubilee Secondary School a full set of band as of next year 2016.

Way Forward

Waste Management has adapt 3R HEART as part of its annual recurrent programs. Budget for 3R HEART was already submitted as part of the recurrent programs under Area A. Fourteen (14) additional schools to join in 2016 to make it a total of 22 schools. The next target now is to work closely with the National Department of Education to incorporate 3R HEART into the school's curriculum. Currently, the schools are teaching 3R HEART under certain subjects like 'Personal Development', Home Economics, etc. but we will try our best to make 3R HEART a subject of its own in the school curriculum.

Exchange Travel and study activities are still under negotiations. Amano san, Mako san and I are still discussing to use the J-Prism & Sprep vote to fund the travels next year since Mako san and 'Faafetai san will be staying in Apia Samoa for 10 months without traveling. Their travel funds can be used to fund Nafiza from Fiji here and two or three supervisors to Fiji to see and exchange ideas with Nadi Town Council.

Conclusion

3R HEART initiative was a successful initiative and will expand to all the schools in the Nation's Capital. By the year 2025; all the schools in NCD will practice 3R HEART and eventually the concept will apply to every household in NDC.

Recommendations

- Continue monitoring the schools and input any necessary changes as the year goes by to get the concept of reduce, reuse and recycle on the right track
- The committees should attend any related trainings on 3R in any country to update our 3R HEART concept

- Increase the number of committees as the number of schools increases
- Get any necessary advice from any experts whether local or foreign in order for 3R HEART to achieve its goal year after year

3R HEART Committees

1. Joshua Sam	4. Ronnie Ranu	7. Vivianne Morofa
2. Janet Haua	5. Racheal Inamuka	8. Paul Wisi
3. Simeon Terina	6. Diana Wapyer	9. Mahmoud Riad (expert)

Attachment A-15 Gerehu Market Green Waste Compost Pilot Project

Compost Pilot Project Progress Report

Diana Wapyer

SWM Officer, WMD

December 7, 2015

1. Background

The amount of waste produced in the Port Moresby has drastically increased given the rise in human population due to urban drift triggered by rapid social and infrastructural developments in the city. Pressure is now on the already stressed waste management services. Effective waste management is vital to compliment the developmental changes.

In addition, all the wastes produced by the city residents go straight to the dump. From these waste, green waste or organic waste constitute a major portion and so increases the risk and likely production of Greenhouse gases and leachate production which will be a disadvantage for the recently upgraded landfill. As such the Waste Management Division has prepared a trial for the green waste composting piloting at Gerehu Market. The actual composting project will commence February, 2016 as a way of diverting organic waste from the landfill. In doing so also promoting the 3Rs, Reduce, Reuse and Recycle.

2. Overview of Pilot Project Activities

Since the decision and the approval to trail the pilot project efforts have been made to implement the pilot project. Ongoing meetings were held with potential composters and end-users to identify and secure a composter and end-user.

In preparation for the trial, awareness campaigns were also planned and implemented targeting market vendors and other markets users specifically on the compost pilot project, its importance and associated benefits, but the emphasis was on proper waste separation since green waste will be only needed for composting.

The National Agricultural Research Institute (NARI) agreed to partner with NCDC in this pilot project based on the understanding the end product, i.e. compost will be used by the institute for research considering the benefits to local farmers who partner with the institute in terms of improving their crop yield given different seasons.

The proposed and much appropriate method of composting to use is the windrow method, where by green waste will be piled loosely (heap piling) in rows ((length =3m x width = 2m x height = 1m). Canvas will be used as cover to prevent high evaporation and access water from rain, hence maintaining water content of compost.

3. Update on each pilot project activity

Output	Date	Progress of Activities	Activities to be implement in December up to 2016
Pilot Project Plan	January, 2015	Completed	
Undertake Waste Characterization	19 th – 20 th February, 2015		
Meeting with UN Women	5 th June, 2015	Discussion on Pilot Project	
Meeting with Pacific Adventist University (PAU)	22 nd June, 2015	Discussion on PAU to be potential composter and end-user	
Meeting with NARI	7 th September, 2015	Potential composter and end-user	
Submission of concept note to NARI	29 th September, 2015	NARI submitted to NARI's Headquarters for final discussion and approval for partnering with NCDC	
Awareness Campaign	2 nd , 4 th , 6 th , 10 th and 14 th November, 2015	Awareness at Gerehu Market for waste segregation	
Securing Composted & End-user	5 th November, 2015	NARI confirmed as composter and end-user	
Visit to NARI by NCDC and JICA Team	23 rd November, 2015	Selection of Compost Site	
Meeting with NARI Team	26 th November, 2015	Discuss and agreed on date for the mini-workshop for the experimental design	Mini-workshop for compost pilot project experimental design, scheduled for 2 nd December, 2015.
Mini-workshop	2 nd December, 2015	-Confirm site selection, Site 2B near NARI Station 2. -Agreed on experimental design	Actual composting process to commence March, 2016
Tools and Equipment		Purchasing of necessary tools and shredder	1 st January, 2015
Site Clearing and Preparation		Clearing of compost site and fencing	Commencing 1 st February, 2016

Output	Date	Progress of Activities	Activities to be implement in December up to 2016
Compost Implementation		Commencing composting process	Windrow composting method will be used, 1 st March, 2016
Monitoring		Ongoing monitoring of project	Scientist to test for compost quality and other parameters during project duration, 1 st March to June, 2015

4. Schedule for the pilot project

Stages of the Project	'15	2016										Comment
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
1 Pilot project												NCDC & NARI
2 Site Preparation												Site clearing and fencing
3 Evaluation meeting												Either terminate, end of PP or continue?
In case of continuance												
4. Prepare continuance plan												
5. Implement continuance plan												Plan to include financial aspects, commercial system, etc.
6. Introduce other markets by NCDC												Based on the outcome of the pilot project.
7. Design & construction of compost facility												Funding by Donors or NCDC

5. Photographs

5.1. Waste Characterization Exercises



Waste separated according to waste type and weighed to determine waste composition.

5.2 Waste Segregation Awareness Campaign at Gerehu Market



WMD Manager, Mr. Sam addressing the public during the awareness program launching.



Waste separation demonstration by actors to public, also via display of posters on white board and on bins and engagement of public in waste separation activities



Question and Answer session by the public to NCDC and NCDC to Public

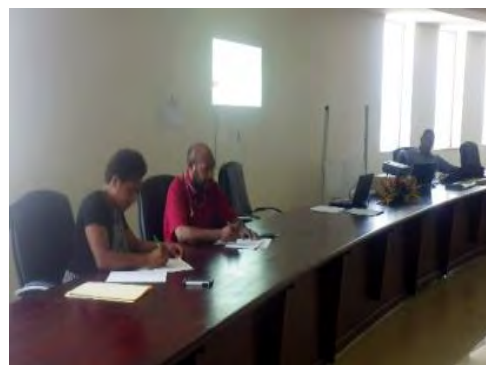
5.3 Compost Site Selection



Visit to NARI on the 23rd November, 2015 by NCDC and JICA team to select compost.

Selected Site, 100 meters from the NARI Station 2, located on the left side from Port Moresby to NARI

5.4 Meeting with NARI at NCDC City Hall



Participants include NCDC and JICA. Discussed and agreed on the experimental design and pilot project schedule

Attachment A-16 NCD Solid Waste Management Plan

Executive Summary

1. SWM Conditions in NCD

NCDC is presently providing collection and disposal services, through private contractors for residential, commercial, school and medical wastes. The municipal solid waste amount generated in NCD in 2015 was 281 ton/day, with each resident of NCD generating 0.68 kg/day. The Waste Management Division (WMD) of NCDC is responsible for SWM in the city. The SWM capabilities of the senior officers and officers of WMD have been significantly strengthened in the last few years due to training overseas and in regional countries and the J-PRISM project. There is one disposal site at Baruni which has recently been rehabilitated into a semi-aerobic sanitary landfill. There are no intermediate treatment facilities. Some recycling is conducted by private sector and the waste-picking community at Baruni, but the recycled amount is estimated not to exceed 3% of the total generated waste.

2. SWM Issues addressed in the plan

The present SWM issues have been identified through surveys, data collection and analysis, and stakeholders meetings. The following issues have been reflected in the planning process.

<u>Waste collection and transport</u>	Insufficient collection coverage at 60% Service to settlements and villages is inadequate Private contractors services are inefficient Specialized collection service for hazardous waste is lacking
<u>Intermediate treatment</u>	There are no intermediate treatment facilities
<u>Final disposal</u>	Baruni LF has limited landfill volume Security at the site is not stable Operator skills are limited Insufficient safety compliance by the waste pickers Lack of specific facilities to pre-treat and dispose of hazardous wastes
<u>Waste minimization</u>	Lack of data on recycling conditions Lack of public awareness Lack of government support to recycling
<u>Institutional aspects</u>	There is no specific law for SWM Hazardous waste management is not adequate
<u>Financial aspects</u>	Expenditure; Contract rates for collection and disposal operation lack details Revenue; Basis for collection service charges and tipping fees are not related to the actual services costs Rate of collection of revenues is low

3. Planning Framework

The NCD SWM Plan focuses on municipal solid waste management for the period of 2016 to 2025 in NCD. The principles, strategies and targets were set to guide the plan formulation.

3.1 Principles

The principles underpinning the plan are;

- (1) The waste hierarchy principle which prioritizes reduction, re-use and recycling of generated wastes, followed by the intermediate treatment and as a final resort the sanitary landfill of the remaining wastes.
- (2) The beneficiary to pay principle, which puts the responsibility on the generators of waste to cover the costs of managing their wastes in a sanitary and safe manner.
- (3) Selection of the Best Practicable Environmental Options, which provide the most benefits or the least damages to the environment, as a whole at acceptable costs and within available technical capabilities to ensure that the options are sustainable in the long run

3.2 Strategies

The strategies adopted to implement the plan activities in the coming years are;

- (1) An integrated solid waste management approach which reflects all relevant aspects of SWM in the implementation of the plan activities.
- (2) Defining municipal solid waste as the waste types to be managed by NCD and gradual phasing of hazardous and bulky wastes management directly to the generators of these waste types under nationally accredited standards
- (3) Introduction of intermediate treatment facilities to support waste minimization
- (4) Vigorous public awareness activities on SWM to promote community understanding and participation in SWM
- (5) Introducing community participatory SWM at the Town Areas and Ward levels

3.3 Planning Targets

Targets have been developed for achievement by the years 2020, mid-way through the NCD SWM Plan implementation and at the end of the plan period in 2025.

SWM Element	Service level	2020	2025
Waste Discharge	Door-to-door	70%	60%
	Open station	30%	40%
	Source separation	30%	50%
Waste Collection	Collection coverage	70%	78%
	Separate collection	30%	50%
Recycling	Share of total waste	5-8%	10-15%
Intermediate treatment	Compost plant	5%	10%
	MRF	5%	10%
	Incinerator	0%	10%
Final disposal	Procure Baruni lots	✓	
	Landfills	1	2
Institution	Exclude hazardous waste from WMD	✓	
	Re-organize WMD	✓	
	SWM Act	✓	
	Open tenders		✓
	Waste Committee	✓	
Finances	SWM Account	✓	
	Tipping fee coverage	50%	90%
	Collection fee cover	30%	60%

4. The NCD SWM Plan

The NCD SWM Plan introduces new facilities, practices, plans and studies and institutional arrangements for WMD. These activities have been proposed after identifying various options and taken into consideration technical, social, environmental and financial aspects to evaluate these options. Some of the NCD SWM Plan activities are as follows:

<u>New Facilities</u>	<u>New Institutional Arrangements</u>
(1) Material Recovery Facility (MRF) (2) Compost Plant (3) Cell 3 at Baruni LF	(1) Public Awareness Unit in WMD (2) Waste Minimization Unit in WMD (3) Waste Committee
<u>New Practices</u>	<u>Proposed Plans and Studies</u>
(1) Community participation in SWM - TABA and Settlements (2) Clean Town Area Award (3) Recycling Stakeholders Annual Round Table meetings (4) Register list of private collection companies (5) SWM Account set-up	(1) Feasibility Study for Incineration Plant (2) Feasibility Study for 2 nd SWM facility east of the city (3) Public Awareness Plan (4) Reverse Logistics Study

The plan implementation schedule and the estimated capital and operational costs have been prepared. An Action Plan with details the activities for the first three years (2016 – 2018) has also been developed to facilitate and monitor the plan implementation. The schedule of the plan activities is shown in the following table.

Item	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
A. MSW GENERATION, COLLECTION, RECYCLING AND DISPOSAL AMOUNTS (ton/day)										
A-1 Generation amount	294	307	320	334	349	365	381	398	416	435
A-2 Collection Amount	186	199	213	228	244	261	278	298	318	339
A-3 Recycling Amount	5	14	45	46	47	48	50	52	54	58
A-4 Disposal at Baruni landfill	181	185	168	182	197	213	229	246	263	281
A-5 Illegal waste disposal and open burning	108	107	107	106	105	104	102	101	98	96
B. NCD SWM PLAN ACTIVITIES										
1. Expansion of waste collection services										
1.1 Expansion of the service to the settlements										
1.2 Setting up Town Area Base Approach										
1.3 Review of Collection Contractors contracts										
1.4 Preparation of Monitoring plan										
1.5 WMD Monitoring of collection services										
2. Intermediate Treatment and Waste Minimization										
2.1 Material Recovery Facility at Baruni (Aluminium, Metals and Plastics)										
1) Facility plan and design										
2) Construction										
3) Operation										
2.2 Compost Plant, at Baruni										
1) Facility plan and design										
2) Construction										
3) Operation										
2.3 Incineration Plant										
1) Feasibility Study										
2) (If feasible) Site selection and surveys										
3) Design										
4) Environmental Impact Analysis										
5) Financing arrangements/ tendering										
6) Construction and plant installment										
7) Operation										
2.4 Recycling by the private sector										
1) Reverse logistics study										
2) Annual Stakeholders meeting										
3) Annual data collection										
4) Annual Public Awareness										
3. Sanitary Landfill										
3.1 Procurement of Baruni surrounding plots										
3.2 Completion of Baruni LF Cells 1 and 2										
3.3 Completion of Administration area										
3.4 Installment of Weighbridge										
3.5 Review of LF Operating Contract										
3.6 Development of Baruni LF Cell 3										
3.7 F/S for new 6 Miles LF development										
3.8 Preparation of Monitoring Plan										
3.9 WMD Monitoring of landfill operation										
4. Public Awareness										
4.1 Prepare the PA unit (staff, etc) within WMD										
4.2 Develop the PA Plan										
4.3 PA Training programs for WMD staff										
4.4 Clean Town Area Award										
4.5 3R HEART Program										

Attachment A-17 Capacity Assessment Results

(1) Capacity Assessment Method

Evaluation by	JS	JH	ST	JN	RR	VM	KA	NR	PW	WA	RI	DW	JR
1) Self (in 2013)	✓ (‘15)	✓ (‘15)	✓	✓	✓	✓	✓	✓	✓	✓	✓ (‘15)	✓ (‘15)	✓
2) Mutual (in 2015)	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
3) PM (in 2015)	NA	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓
4) Institutional comments (2015)	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓

- (1) In July 2013 the senior officers and officers of WMD were asked to evaluate their capabilities for a number of SWM activities.
- (2) In March 2015 the Project Expert team had individual discussions with each senior officer, officer and the WMD manager to mutually evaluate their capabilities.
- (3) In March 2015 the Project Manager was requested to evaluate the efforts made by each of his officers towards the project outputs.
- (4) In March 2015 the officers were requested to provide comments on the institutional aspects of SWM.
- (5) Two WMD officers (JN and KA), who provided self evaluation in 2013 are presently away from WMD. In addition two officers have been recently hired by WMD within the last 6-7 months (RI and DW)

(2) Capacity Assessment Forms

Main Category	Sub-category	Main Category	Sub-category	Main Category	Sub-category
1. Policy	Solid waste Solid waste plan Laws/Regulations EIA	4. Collection	Collection service coverage Service plan Contract out Supervision	7. Public Awareness	Message Tools Implementation
2. Administration	Finances Collection fees Tipping fees Organization Duties	5. Disposal	Landfill design Disposal method Leachate Water quality Waste pickers EIA	8. Individual skills	Attitude Leadership Knowledge and skills Awareness Communication
3. Existing conditions surveys	Surveys Data analysis	6. 3Rs	Definition Recycling in POM		for you to carry out your duties

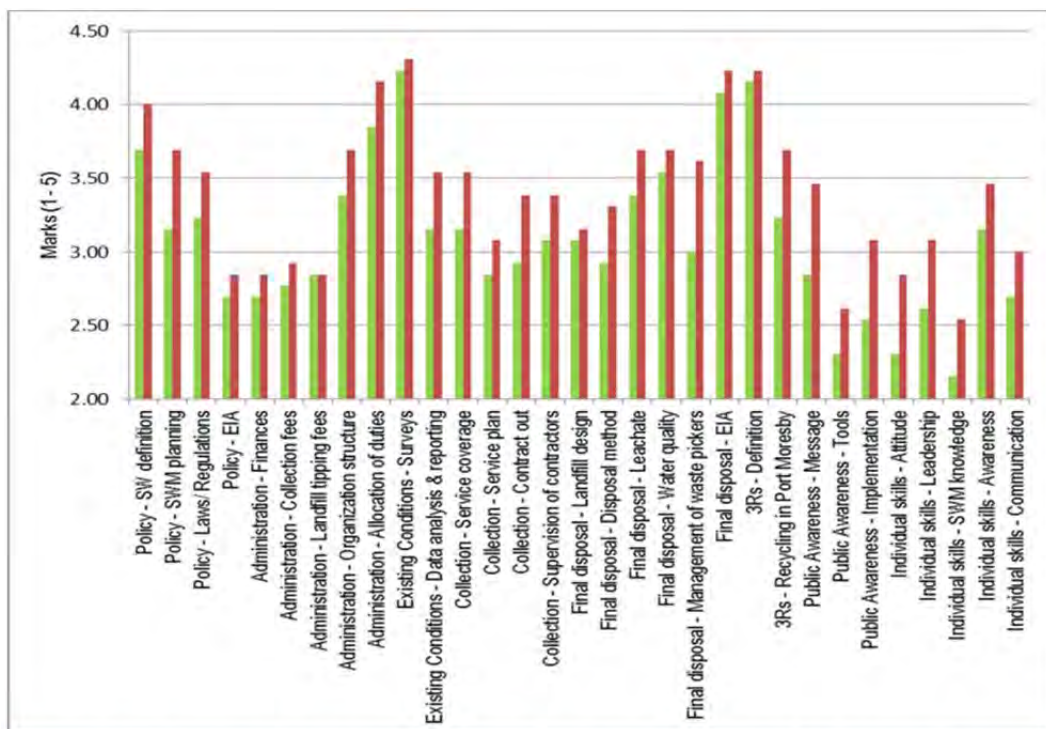
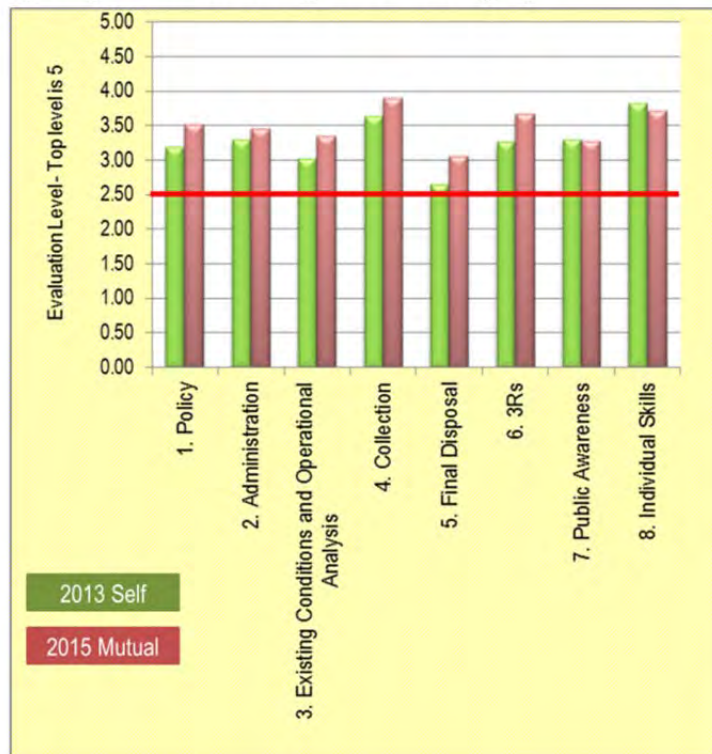
Question	
1. Is the present management system within your organization suitable	a) Information sharing and reporting (), b) Staffing (), c) Budget allocation (), d) Existing laws and regulations ()
2. How do you evaluate the working environment	a) Office and facilities (), b) Transport (), c) Staff commitment (), d) Public support to the SWM activities ()
3. Please state any improvement recommendations you may have.	

(3) Overall Capacity Assessment by SWM Category

This graph shows the average levels for each of self evaluation (2013) and mutual evaluation (2015) in each of the queried 8 categories.

There has been an improvement for categories of surveys, collection, final disposal and 3Rs.

There has not been too much improvement in administration as the counterparts are still weak in terms of financial analysis and fees setting.



Levels by sub-category are shown in this graph. Not much progress has been made in administration aspects and EIA. On the other hand there has been significant improvement in most of sub-categories of landfill and collection

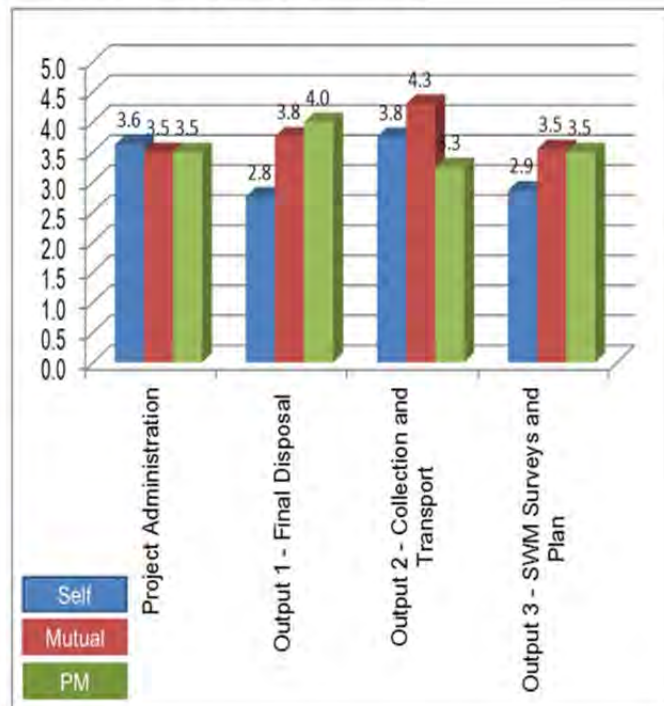
(4) Capacity Assessment by Project Activity

In addition to both self evaluation and mutual evaluation, the PM also evaluated the counterparts engaged in each output.

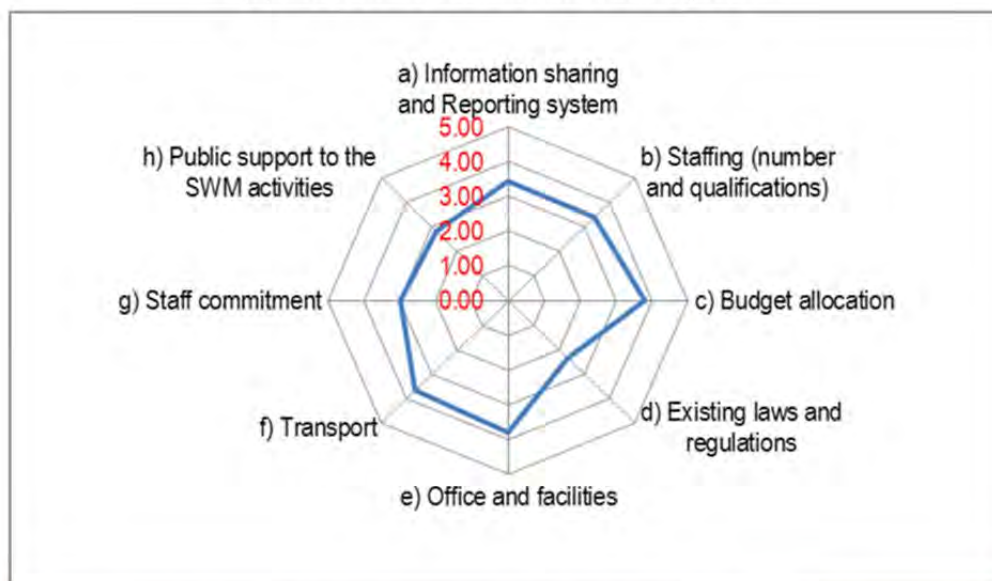
Due to the strong focus on Baruni, the counterparts assigned to Output 1 are more capable than they were two years ago in landfill design and operation.

Counterparts working on outputs 2 and 3 also have become more capable than two years ago in the activities of both outputs.

While the PM appears satisfied with increase in capacities for Output 1, he is less satisfied for capacity increase in Output 3, and is demanding more for Output 2. Obviously collection is the new priority now.



(5) Assessment of Institutional Aspects



The counterparts had a high level of satisfaction of budget allocated to SWM activities, available office and working facilities and transport means. On the other hand they were not satisfied with existing SWM laws (not enough), public support to SWM and overall staff commitment, especially punctuality.