

**OEEM/ Kosrae State (KIRMA, DT&I)/ Pohnpei State (EPA, T&I)/ Chuuk State (EPA, DT&PW)/
Yap State (EPA, DPW&T), Federated States of Micronesia
SWM-BPW/ (SWM-KSG), Republic of Palau
MPW/ OEPPC/ OCS/ MAWC/ EPA/ MOE/ KALG, Republic of the Marshall Islands**

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

(Solid Waste Management C, D)

Project Completion Report

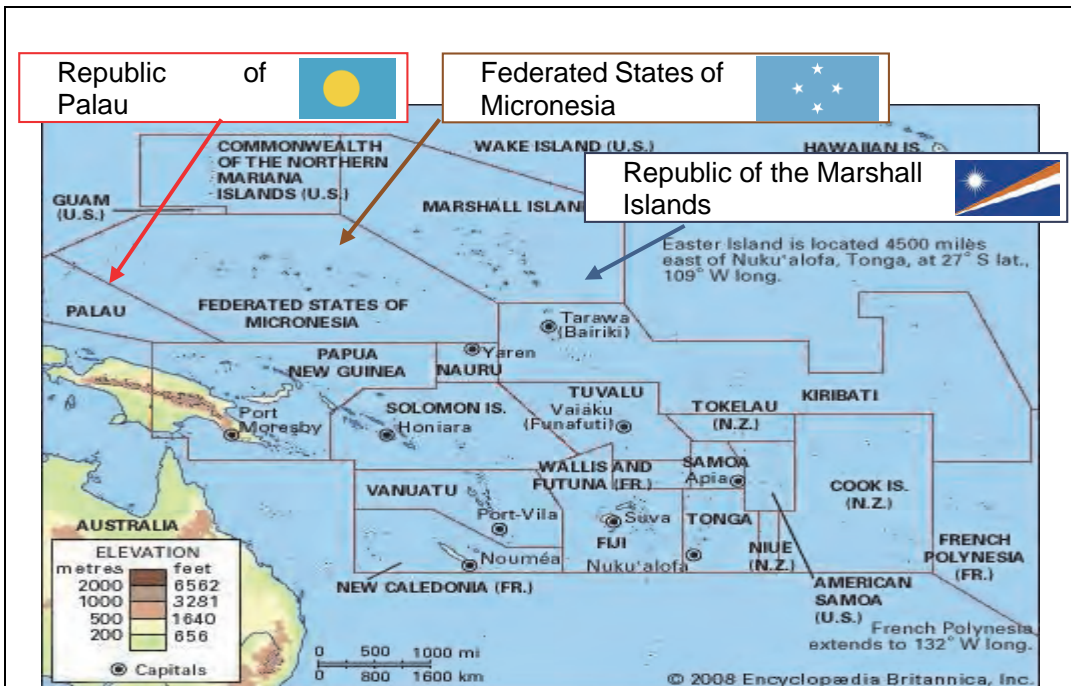
February 2016

Japan International Cooperation Agency (JICA)

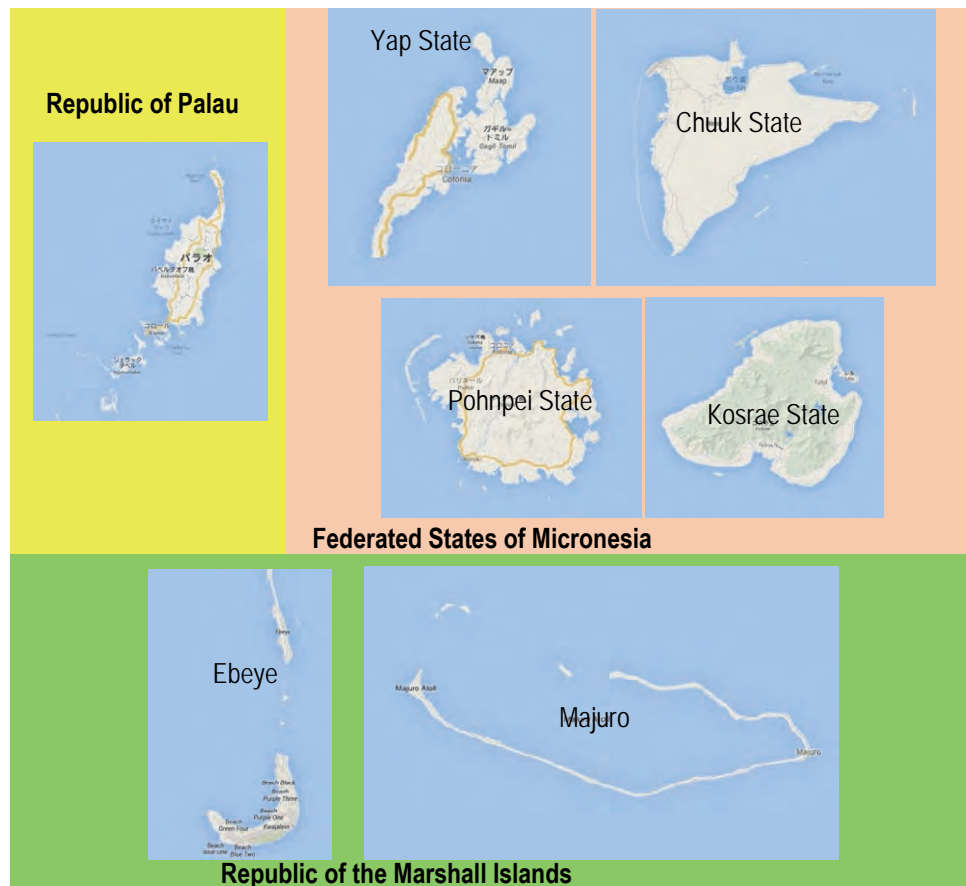
Ex Research Institute Ltd.

GE
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16-027

Republic of Palau, Federated States of Micronesia, Republic of the Marshall Islands



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(Map source: Google Map)

Table of Contents

1	Background of the Project	1
2	Outline of the Project	1
2.1	Project Area	1
2.2	C/P Organizations	1
2.3	Goal of the Project	2
2.4	Dispatch Schedule of the JICA Experts	2
2.5	Policies of the Project	4
3	Project Outputs and Achievements	8
3.1	Achievements of the Outputs	8
3.2	Achievements of the Project Purpose	16
3.3	Recommendations for Achievement of the Overall Goal	18
4	Unique/Elaborated Approaches Taken and Lessons Learnt in the implementation of the Project	19
4.1	Elaborated/Improved Approach to decision makers and upper agency	19
4.2	Pohnpei State of FSM (Internal Transfer/Retirement of C/P Members).....	20
4.3	Unique Characteristics of National and State regime of FSM	21
5	The Federal Government, FSM.....	22
5.1	The Outline of the Activities of OEEM	22
5.2	Activity Report of Each Output	25
6	Kosrae State, the Federated States of Micronesia	31
6.1	The Outline of the Activities of Kosrae State	31
6.2	Activity Report of Each Output	34
7	Pohnpei State, the Federated States of Micronesia	51
7.1	The Outline of the Activities in Pohnpei State.....	51
7.2	Activity Report of Each Output	54
8	Chuuk State, the Federated States of Micronesia	87
8.1	Outline of the activities in Chuuk State	87
8.2	Activity Reports of Each Output.....	91
9	Yap State, the Federated States of Micronesia	126
9.1	Outline of the activities in Yap State	126
9.2	Activity Reports of Each Output.....	130
10	Palau	167

10.1	Outline of the Activities in Palau	167
10.2	Activity Report of Each Output	172
11	Republic of Marshall Islands.....	209
11.1	Outline of Activity in RMI.....	209
11.2	Activity Report of Each Output	214

ANNEX

Tables

Table 5-1: Leachate monitoring parameters.....	28
Table 6-1: The summary of the monitoring on the Action Plan (September,2014)	34
Table 6-2: (ref.) The Environmental targets and activities discribed in the SDP (SWM sector).....	36
Table 6-3: UPDATES of the result of the Action Plan:	38
Table 6-4: The Result of the landfill site inspection (Summary of the Check List)	39
Table 6-5: The summary of the waste collection systems in Kosrae State.....	42
Table 7-1: The activities of the Action Plan and its monitored progress.....	54
Table 7-2: The updated monitoring results of progress in Pohnpei State.....	56
Table 7-3: The results of the monitoring on the Action Plan	58
Table 7-4: Status of waste collection in Pohnpei (September of 2014).....	60
Table 7-5: Status of the waste collection in municipality in Pohnpei (November of 2015)	63
Table 7-6: The Time frame of the 2nd Cell	73
Table 7-7: Data table.....	79
Table 7-8: Points of the amendment drafted by the legislature	79
Table 7-9: Revised data sheet	82
Table 7-10: The recommendation paper ver.2	82
Table 8-1: Progress of each activity of the Action Plan.....	91
Table 8-2: Summary of the Achievement level of the Activities	94
Table 8-3: Plan of the WACS	95
Table 8-4: Sampling area	95
Table 8-5: Summary of the evaluation of the Study Trip.....	103
Table 8-6: Tentative schedule of the construction of the new landfill in Chuuk State	106
Table 8-7: Operation Plan of the Marina Dumpsite (draft).....	113
Table 8-8: The drafted plan of the awareness activities	116
Table 8-9: Finalized awareness-raising plan	118
Table 8-10: Awareness-Raising activities conducted by EPA	120
Table 9-1: Activities of the Action Plan and its monitored progress.....	130
Table 9-2: Achievement levels of the Action Plan by the categories.....	132
Table 9-3: Progress of the activities of the Action Plan.....	132
Table 9-4: Progress of the Action Plan by the categories in 2014 and 2015	134
Table 9-5: Law and regulations developed from 2013 to 2015.....	135
Table 9-6: Plan of the WACS	136
Table 9-7: Categories of the municipalities	136
Table 9-8: Rehabilitation cost of the existing dumpsite.....	146
Table 9-9: Data of the leachate monitoring.....	149
Table 9-10: Landfill operation/condition monitoring sheet	150
Table 9-11: Check sheet of the condition of the maintenance of the landfill	151
Table 9-12: Second phase of the awareness-raising activity plan of Yap State	152
Table 9-13: Summary of the Public Hearing in Yap	155
Table 9-14: Target items and its deposit (US\$)	159
Table 9-15: Balance of the import volume and recycled volume of containers	162
Table 9-16: Drafted activity schedule of the pilot project.....	163
Table 9-17: List of the regulations enacted or amended in Yap.....	166
Table 10-1: Number of Imported and Redeemed containers with Redemption Rate.....	173
Table 10-2: Number of Containers Redeemed (classified by types)	174
Table 10-3: Deposit Fee/ Recycling Fund/Compensation/ Refund	174
Table 10-4: Recycling Fund.....	174
Table 10-5: Summary of the CDL: figure of containers and finance	176
Table 10-6: Monitoring result of the Action Plan of Palau	178
Table 10-7: The awareness-raising activities conducted by SWM-BPW from 2014-Feb. 2015	182
Table 10-8: Monitoring parameters and frequency	192
Table 10-9: Monitoring the subsidence of the landfill	192
Table 10-10: Parameter and evaluation criteria of the stabilization.....	193
Table 10-11: The idea of the contents of the text book	194
Table 10-12: The Tentative In-Country Training Program	195
Table 10-13: Summary of the cost of the In-Country Training	199
Table 10-14: Result of the test	199
Table 10-15: Result of the evaluation of the Training	200
Table 10-16: Waste generation amount in Babeldaob	202
Table 10-17: The revised indicators of PO	206
Table 11-1: Activities of the Action Plan and its monitored progress.....	214
Table 11-2: The summary of the reported matters in the C/P meeting on 29 th May, 2015.....	216
Table 11-3: Result of the monitoring on OUYPUT 5	218
Table 11-4: Trend data of the income from the composting and recycling in MAWC	219

Table 11-5: The data of the income from composting and recycling in MAWC	219
Table 11-6: Activities in Ebeye in the third dispatch	225
Table 11-7: The Action plan of PW	227
Table 11-8: The Action plan of EPA	228
Table 11-9: The plan of improvement of waste collection	229
Table 11-10: The results of the time and motion study	242
Table 11-11: The summary of the Waste Composition in Ebeye	246

Figures

Figure 6-1: The chart of the results on the monitoring of the action plan (September, 2014)	35
Figure 6-2: The Summary of the result of WACS in Kosrae State	37
Figure 6-3: The chart of summary of the monitoring on the action plans	38
Figure 6-4: The method to measure the level height of the landfill site	44
Figure 6-5: The lifespan survey of the Kosrae Landfill site	45
Figure 6-6: The results of the Capacity Assessment in Kosrae	49
Figure 7-1: The Summary of the result of WACS in Pohnpei State	57
Figure 7-2: Institutional arrangement of the SWM in Pohnpei State	65
Figure 7-3: Outline of the treatment plan	67
Figure 7-4: The Improvement plan of the site (Drafted by PWMS)	70
Figure 7-5: The result of construction of the 2 nd cell at the dumpsite	71
Figure 7-6: The Layout plan of the 2 nd cell	73
Figure 7-7: Base Plan and Status of the 2 nd Cell (14 th of December)	75
Figure 7-8: Flow of the current CDL program in Pohnpei State (Aug. 2013)	77
Figure 7-9: Flow of the CDL revised in Sep. 2014	78
Figure 7-10: Volume of the imported and recycled (redeemed) cans (Pohnpei)	80
Figure 7-11: Volume of the imported and recycled cans (Yap)	80
Figure 7-12: Volume of the Imported and recycled cans in two States (Oct. 2012-Sep.2014)	81
Figure 7-13: Volume of the recycled v cans	81
Figure 7-14: Chart of the Capacity Assessment in Pohnpei	85
Figure 8-1: Waste composition in 2011 and 2015	96
Figure 8-2: Waste Stream 2015	98
Figure 8-3: Outline of compaction work	103
Figure 8-4: Example of making cells in the dumpsite	106
Figure 8-5: An example of use of marina are	109
Figure 8-6: An example of the management	109
Figure 8-7: Facility Plan of the Marina Dumpsite	114
Figure 8-8: Collection area of Chuuk State	116
Figure 8-9: Chart of the capacity assessment (Chuuk)	125
Figure 9-1: Waste composition (2009, 2011 and 2015)	138
Figure 9-2: Waste Stream in 2015	139
Figure 9-3: 2 Slides from the Operation Manual	142
Figure 9-4: Monthly hauled waste amount at Yap Landfill in 2015	150
Figure 9-5: Distribution System of My Bags	154
Figure 9-6: Balance of the imported and redeemed containers	161
Figure 9-7: Financial balance of the CDL	161
Figure 9-8: Chart of the capacity assessment in Yap	165
Figure 10-1: Balance of containers: imported and redeemed	172
Figure 10-2: Financial Balance	173
Figure 10-3: Number of Imported and Redeemed containers with Redemption Rate	174
Figure 10-4: Proposed monitoring parameters	184
Figure 10-5: Temperature monitored at the gas venting pipes in August 2014	186
Figure 10-6: One example of installing the sign boards	187
Figure 10-7: Concept of the monitoring after closing	192
Figure 10-8: Design of the final cover soil	192
Figure 10-9: Monitoring method of the subsidence	192
Figure 10-10: Result of the institutional capacity assessment in Palau	208
Figure 11-1: Organizational framework in Ebeye	221
Figure 11-2: Improvement plan at the dump site (Revised in October 2014)	232
Figure 11-3: 2 slides from the drafted Operation manual	234
Figure 11-4: The waste collection plan drafted in November, 2015	242
Figure 11-5: The results of the time and motion study (Map of collection points)	243
Figure 11-6: Chart of the capacity assessment in Majuro	248
Figure 11-7: Chart of the capacity assessment in Ebeye	248

Abbreviations

BPW (Palau)	Bureau of Public Works
DOE (Kosrae)	Department of Education
DT&A (Pohnpei)	Department of the Treasury and Administration
DPW&T (Yap)	Department of Public Works and Transportation
DT&PW (Chuuk)	Department of Transportation and Public Works
EPA (FSM, RMI)	Environmental Protection Agency
EQPB (Palau)	Environmental Quality Protection Board
FSM	Federated States of Micronesia
OCS (RMI)	Office of Chief Secretary
OEEM (FSM)	Office of Environment and Emergency Management
OEPPC (RMI)	Office of Environmental Planning and Policy Coordination
KALG (RMI)	Kwajalein Atoll Local Government
KIRMA (Kosrae)	Kosrae Island Resources Management Authority
MAWC (RMI)	Majuro Atoll Waste Company
MOE (RMI)	Ministry of Education
MOF (Palau)	Ministry of Finance
MPIIC (Palau)	Ministry of Public Infrastructure, Industries and Commerce
MPW (RMI)	Ministry of Public Works
NSWMP (Palau)	National Solid Waste Management Plan
NSWMS (FSM)	National Solid Waste Management Strategy
PWMS (Pohnpei)	Pohnpei Waste Management Services
RMI	The Republic of the Marshall Islands
SSWMS (FSM)	State Solid Waste Management Strategy
SWM-KSG (Palau)	Solid Waste Management Office of Koror State Government
T&I (Pohnpei)	Division of Transportation & Infrastructure
TC&I (FSM)	Department of Transportation, Communications & Infrastructure
YSPSC (Yap)	Yap State Public Service Corporation
C/P	Counterpart
CD	Capacity Development
CDL	Container Deposit Legislation
CSP	Clean School Program
FY	Fiscal Year
IC/R	Inception Report
SWM	Solid Waste Management
JCC	Joint Coordinating Committee
JOCV	Japan Overseas Cooperation Volunteers
J-PRISM	Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management
OSH	Occupational Safety and Health
PDM	Project Design Matrix
PICs	Pacific Island Countries
PO	Plan of Operation
SDP (Kosrae)	Kosrae State Strategic Development Plan
SPREP	Secretariat of the Pacific Regional Environment Programme
SV	Senior Volunteers
WACS	Waste Amount and Composition Survey

1 Background of the Project

It is sometimes difficult in the Pacific Islands Countries to ensure appropriate solid waste management because of the constraints of geographical isolation and traditional land tenure, etc. Consequently, it causes negative impacts on natural resources, tourism, public health, environment, and industries both in high islands and atolls. In addition, the modernizations of lifestyle and population concentration make solid wastes generation increasing and more diverse.

Under such circumstance, JICA had provided technical cooperation on solid waste management since 2000, such as in Samoa, Fiji and Palau. Subsequently 11 pacific countries requested technical cooperation projects to JICA, and JICA coordinated them into a regional project as “Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management in Pacific Island Countries (J-PRISM)”. It aims at improving solid waste management in the Pacific Island Countries in accordance with the Regional Strategy 2010-2015 (RS2010) and National Solid Waste Management Plans prepared in the previous JICA Technical Cooperation Projects with the obtained knowledge and shared experiences in the region. The term of the J-PRISM is from 2011 to 2016 and this paper reports the project activities from May 2014 to January 2016 in Federated States of Micronesia (FSM), the Republic of Palau (Palau) and Republic of the Marshall Islands (RMI).

2 Outline of the Project

2.1 Project Area

Four States in the FSM (Kosrae, Pohnpei, Chuuk and Yap), Palau and RMI.

2.2 C/P Organizations

National Government, FSM	Office of Environment and Emergency Management (OEEM)
Kosrae State, FSM	Kosrae Island Resources Management Authority (KIRMA) Department of Transport and Infrastructure (DT&I)
Pohnpei State, FSM	Environment Protection Agency (EPA) Division of Transportation and Infrastructure (T&I)
Chuuk State, FSM	Environmental Protection Agency (EPA) Department of Transportation and Public Works (DT&PW)
Yap State, FSM	Environmental Protection Agency (EPA) Department of Public Works and Transportation (DPW&T)
Palau	Solid Waste Management office of Bureau of Public Works Solid Waste Management Office of Koror State Government (SWM-KSG)* <small>*Although 4 organizations were listed in R/D as C/P organizations, SWM-BPW is a main C/P organization and SWM-KSG is partly collaborating in the activities.</small>
RMI	Ministry of Public Works (MPW) Office of Environmental Planning and Policy Coordination (OEPPC) Office of Chief Secretary (OCS) Majuro Atoll Waste Company (MAWC) Environmental Protection Agency (EPA) Ministry of Education (MOE) Kwajalein Atoll Local Government (KALG)

2.3 Goal of the Project

Name of the overall Project:	Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management in Pacific Island Countries (J-PRISM)
Name of this Project:	Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management in Pacific Island Countries (J-PRISM) (Solid Waste Management C,D)
Overall Goal:	Sustainable management of solid waste in the Pacific Region is enhanced
Project Purpose:	Human and institutional capacity base for sustainable Solid Waste Management in Palau is strengthened through implementation of the Pacific Regional Solid Waste Management Strategy (2010-2015) (RS2010)

2.4 Dispatch Schedule of the JICA Experts

The table below shows the dispatch schedule of the JICA Experts from May 2014 to January 2016.

First Dispatch: Total 99 days

Haseyama (55days)	Yap :	10 th of June, 2014 - 20 th of June, 2014	11days
	Palau :	21 st of June, 2014 - 1 st of July, 2014	11days
	Pohnpei :	2 nd of July, 2014 - 13 th of July, 2014	12days
	Marshall :	14 th of July, 2014 - 3 rd of August, 2014	21days
Muranaka (44days)	Yap :	10 th of June, 2014 - 20 th of June, 2014	11days
	Palau :	21 st of June, 2014 - 1 st of July, 2014	11days
	Pohnpei :	2 nd of July, 2014 - 12 th of July, 2014	11days
	Chuuk :	13 th of July, 2014 - 23 rd of July, 2014	11days

Second Dispatch: Total 80 days

Haseyama (43days)	Palau :	17 th of August, 2014 - 30 th of August, 2014	14days
	Yap :	31 st of August, 2014 - 9 th of September, 2014	10days
	Pohnpei :	10 th of September, 2014 - 21 st of September, 2014	12days
	Marshall :	22 nd of September, 2014 - 28 th of September, 2014	7days
Muranaka (37days)	Palau :	17 th of August, 2014 - 30 th of August, 2014	14days
	Yap :	31 st of August, 2014 - 13 th of September, 2014	14days
	Pohnpei :	14 th of September, 2014 - 22 nd of September, 2014	9days

Third Dispatch: Total 97 days

Haseyama (48days)	Marshall :	26 th of October - 14 th of November, 2014	20days
	Chuuk :	15 th of November, 2014 - 25 th of November, 2014	11days
	Pohnpei :	26 th of November, 2014 - 12 st of December, 2014	17days
Muranaka (49days)	Marshall :	26 th of October - 7 th of November, 2014	13days
	Chuuk :	8 th of November, 2014 - 24 th of November, 2014	17days
	Yap :	25 th of November, 2014 - 5 th of December, 2014	11days
	Palau:	6 th of December, 2014 - 13 th of December, 2014	8days

The Forth Dispatch: Total 106days

Haseyama (59days)	Marshall :	15 th of January, 2015 – 6 th of February, 2015	23days
	Kosrae:	7 th of February, 2015 – 13 th of February, 2015	7days
	Pohnpei :	14 th of February, 2015 – 4 th of March, 2015	19days
	Palau :	5 th of March, 2015 – 14 th of March, 2015	10days
Muranaka (47days)	Chuuk :	27 th of January, 2015 – 9 th of February, 2015	14days
	Yap :	10 th of February, 2015 – 27 th of February, 2015	18days
	Palau:	28 th of February, 2015 – 14 th of March, 2015	15days

The Fifth Dispatch: Total 97days

Haseyama (48days)	Kosrae :	19 th of April, 2015 – 1 st of May, 2015	13days
	Pohnpei:	2 nd of May, 2015 – 17 th of May, 2015	16days
	Marshall :	18 th of May, 2015 – 29 th of May, 2015	12days
	Chuuk :	30 th of May, 2015 – 5 th of June, 2015	7days
Muranaka (49days)	Yap :	18 th of April, 2015 – 7 th of May, 2015	20days
	Pohnpei :	8 th of May, 2015 – 15 th of May, 2015	8days
	Chuuk:	16 th of May, 2015 – 5 th of June, 2015	21days

Sixth Dispatch: Total 65days

Haseyama (29days)	Palau:	23 rd of August, 2015 – 25 th of August, 2015	3days
	Chuuk :	26 th of August, 2015 – 29 th of August, 2015	4days
	Pohnpei:	30 th of August, 2015 – 3 rd of September, 2015	11days
		15 th of September – 20 th of September, 2015	
	Marshall :	4 th of September, 2015 – 11 th of September, 2015	8days
	Kosrae :	12 th of September, 2015 – 14 th of September, 2015	3days
Muranaka (36days)	Palau :	26 th of July, 2015 – 25 th of August, 2015	31days
	Chuuk:	26 th of August, 2015 – 30 th of August, 2015	5days

Seventh Dispatch: Total 86days

Haseyama (49days)	Pohnpei:	1st of November, 2015 – 3rd of November, 2015	15days
		17th of November, 2015 – 20th of November, 2015	
		13th of December, 2015 - 20th of December, 2015	
	Marshall :	4 th of November, 2015 – 16 th of November, 2015	13days
	Chuuk :	21 th of November, 2015 – 29 th of November, 2015	9days
	Kosrae :	30 th of November, 2015 – 7 th of December, 2015	8days
	Palau	8 th of December, 2015 – 12 th of December, 2015	5days
	*Total was 50days but 1day was self-funded by Ex Research Institute Ltd.		
Muranaka (37days)	Yap :	7 th of November, 2015 – 17 th of November, 2015	11days
	Chuuk :	18 th of November, 2015 – 27 th of November, 2015	10days
	Palau	28 th of November, 2015 – 12 th of December, 2015	15days
	Pohnpei:	13 th of December, 2015 – 20 th of December, 2015	8days
	*Total was 44days but 7days were self-funded by Ex Research Institute Ltd.		

2.5 Policies of the Project

Policy 1: Capacity Development of the Counterparts

Based on the Project Design Matrix (PDM) and the Plan of Operation (PO), the Expert Team focused on the Capacity Development (CD) of the counterparts (C/Ps) so that C/Ps could identify the issues and propose appropriate solutions of Solid Waste Management (SWM) by themselves. Key approaches of CD included:

- To provide the C/Ps who have enough capacity and experience of SWM the opportunities to visit other country/states as instructors, that could further encourage their capacity and give impact to the C/Ps who receives the instructors;
- To adopt ideas of C/Ps into the activities or trainings regardless of the age or positions of the C/Ps, and provide C/Ps the opportunities to disseminate their activities and the outputs in the JCCs, other trainings and meetings so that their practical knowledge can be widely known and understood by other agencies in the government;
- To conduct periodical Capacity Assessment of the C/Ps for mutual understanding of the capacity development needs with the JICA Experts;
- To prioritize the activities that can bring larger positive impacts upon improvement of SWM and
- To assist C/Ps in finding out the solutions by themselves.

Policy 2: Development of the Self-Reliance of the C/Ps

Related to the Policy 1, increasing motivation and self-reliance of the C/Ps was the key factors to ensure the sustainability of the activities even after the end of the Project. The Project conducted the following approaches to implement the Policy.

- To encourage understanding of the C/Ps on their roles and responsibilities so that they can conduct the activities as their daily works.
- To support C/Ps in understanding the improvement of their works for their society and protection of the living environment.
- To integrate workshop components into the JCC to share good practices and issues of the project activities, that can contribute creation of common understanding among the JCC members on the project achievements and issues that the C/Ps were facing. Therefore, regular meetings such the JCC or FSM environmental conference should be continued even after the end of the Project.
- To establish the project monitoring system so that the C/Ps can realize the achievements of the Project by themselves.

Policy 3: Communication and Cooperation with Relevant Stakeholders

The JICA Expert Team have kept good communication with the following agencies during the project period.

Project office	To keep good communication with the Project Office by e-mail, television and telephone meetings, especially before preparing any trainings.
JICA Tokyo, FSM, Palau, Marshall Island	To keep communication by e-mail as well as TV or telephone meetings. To share information with JICA offices, especially with a Project Formulation Adviser of FSM.
SPREP	To share information by e-mail as well as TV or telephone meetings, especially about NSWMS and SSWMS.
Grant Assistance for Grassroots Projects (GGP)	To provide information to the embassy about the conditions of the equipment donated by GGP, and share information regarding collection compactors of Pohnpei for their efficient use.
JOCV JICA Senior Volunteer	To share information with JOCV and Senior Volunteers and cooperate as much as possible.
Joint Coordination Committee (JCC)	To hold JCC at the end of every Japanese fiscal year. In the case of FSM, JCC was held at States and National levels.
Internal assistance committee	To share the outputs and issues at the committee.
Other Project funded by Japanese Government	To share information and provide data with other projects or study teams funded by the Japanese Government. The Expert Team consulted with the Project Office and JICA offices for the coordination and corporation with other projects.
Management instruction survey/Termination survey	To share information with the survey teams. To collect data and support the teams for their site visits and interviews to the C/Ps on site.

Policy 4: Flexibility of the Project

Considering the progress, performance of the C/Ps and any other situations related to the Project, the JICA Expert Team flexibly improve the PDM and project activities based on the agreement with JICA and C/P agencies.

Policy 5: Prioritization of the Project Activities

The target islands of the Project consist of 7 throughout the three countries of the Micronesia region. It required the JICA Expert Team to travel and conduct the project activities efficiently within the limited time; therefore, based on the experience from the last three years, the JICA Expert Team divided the project activities into two, namely the activities that require technical advice by the Expert Team and activities that can be conducted under the initiative of C/Ps while the Expert Team monitors the progress and give advice when needed, as shown in the table below.

Country/State		Activities which requires technical advice by the Expert Team	Activities under the initiative of C/P while the Expert Team monitor the progress
FSM	OEEM	<ul style="list-style-type: none"> Development of a guideline for leachate monitoring 	<ul style="list-style-type: none"> Development of next NSWMS Holding JCC Documentation of good practices in FSM
	Kosrae		<ul style="list-style-type: none"> Progress management by the monitoring committee Planning next SSWMS Planning collection service Improvement of the landfill Environmental education, awareness at school <p>*Capacity and management level of Kosrae seems higher than other area, so most of the activities were conducted under the initiative of C/P.</p>
	Pohnpei	<ul style="list-style-type: none"> Planning of the collection service based on the cooperation between State government and District government Improvement of landfill Improvement of CDL system 	<ul style="list-style-type: none"> Monitoring the progress by the monitoring committee
	Chuuk	<ul style="list-style-type: none"> Planning a new landfill Planning and implementing awareness activity 	<ul style="list-style-type: none"> Development of the next SSWMS Management of the existing dumpsite Continuation of the collection service and expansion of the collection area
	Yap	<ul style="list-style-type: none"> Improvement of existing dumpsite Management of the new landfill Planning and conducting awareness activity and its evaluation survey 	<ul style="list-style-type: none"> Development of the next SSWMS
Palau		<ul style="list-style-type: none"> Planning a conceptional plan of a new landfill Planning of a closure plan of M-Dock landfill Implementing of awareness activity Preparation of in-country training 	<ul style="list-style-type: none"> Revision of NSWMP and its Action Plan Improvement of CDL
RMI		<ul style="list-style-type: none"> (Majuro)Progress Management by the Monitoring Committee (Ebeye)Improvement of Landfill (Ebeye)Planning of Action Plan 	<ul style="list-style-type: none"> (Majuro)Promotion of recycling and composting, and promoting recycling at schools (Ebeye)Improvement of collection service (Ebeye)Promotion of recycling (Ebeye)Education and awareness activity at schools

This approach all through the Project contributed to increase the efficiency of the Experts' advisory works while it also encouraged the self-reliance of C/Ps.

Policy 6: Allocation of the Experts

The Project assigned 2 (two) experts who have enough experience in providing technical assistance in the Micronesia region.

Although each expert had its own state/country responsible for conducting all the project activities, some activities were jointly conducted to maximize the efficiency of transferring the knowledge and experiences of them, for example, the large-scale activity such as the training of the local C/Ps on dumpsite rehabilitation in Ebeye to make the best of their expertise.

		SWM-Expert C Akira Haseyama		SWM-Expert D Risa Muranaka	
		Main State/Country	Cross-sectional activity(landfill management)	Main State/Country	Cross-sectional activity
FSM	Kosrae	◎	○		
	Pohnpei (including OEEM)	◎	○		○(CDL)
	Chuuk		○	◎	
	Yap		○	◎	
Palau			○	◎	
RMI	Majuro	◎			
	Ebeye	◎	○		○ (landfill)

Policy 7: Public Relations

The Expert Team supported C/Ps to invite reporters and provide information of seminars and workshops to them to be appealed in the newspaper. The Team also prepared articles and provided pictures for the J-PRISM newsletters in response to the requests from the Project Office.

For the public relations of the Project in Japan, the Expert Team provided the articles in a bulletin issued by the Japan Waste Management Consultants Association.

It also gave presentations in the seminar hosted by the Overseas Environmental Cooperation Center and Japan Waste Management Consultants Association in February 2016 to share the Project activities and outputs.

3 Project Outputs and Achievements

3.1 Achievements of the Outputs

The achievements of the Outputs of each State and Country evaluated in the final evaluation of the Project in August 2015 were summarized as follows. Some of the achievement levels were modified according to the updates of the activities after the time of the final evaluation.

a. OEEM of FSM

Output 1-1: The NSWMS is finalized		Mostly achieved
1-1-1 NSWMS is developed	【Fully achieved】 The NSWMS 2016-2020 was completed in May 2015 and distributed to the States with the official letter.	
1-1-2 Monitoring of the Action Plan is conducted once a year	【Mostly achieved】 OEEM monitored the Action Plan of the draft NSWMS by communicating with each state every quarter since 2009. The first monitoring of the officially endorsed NSWMS will be conducted at the end of 2015.	
Output 1-2: Information sharing of SWM is enhanced among states		Fully achieved
1-2-1 Set up a meeting for SWM at least once a year	【Fully achieved】 OEEM utilized JCC of this Project for annual information sharing with state-level stakeholders. Federal-level JCC participated by state-level stakeholders was first held in 2014 and second in 2015 to enhance communication between OEEM and states. State-level JCC in each state was participated by OEEM for information exchange.	
1-2-2 Document is distributed to 4 states	【Fully achieved】 “Good Practices for Solid Waste Management in the FSM 2015” was compiled under the Project and distributed to all states.	
1-2-3 Guidelines are developed and distributed to states.	【Fully achieved】 OEEM developed “Monitoring Guideline of the Leachate” in May 2015 and distributed to States.	

b. Kosrae State of FSM



Output 2-1a: The SSWMS in Kosrae is finalized Output 2-1b: Action plan is developed		Partly Achieved
2-1-1 SSWMS in Kosrae is submitted to the State for approval	【Fully achieved】 The SSWMS 2011-2015 was signed in 2011.	
2-1-2 The progress is evaluated according to the policy of SSWMS	【Mostly achieved】 Evaluation of progress was conducted in 2014 and 2015.	
2-1-3 Monitoring is conducted 3 times per year by Monitoring committee	【Partly achieved】 Monitoring committee meeting was held twice, one was in 2014 and the other was 2015.	
2-1-4 Progress report is prepared by Monitoring Committee	【Partly achieved】 KIRMA and DT&I submitted the SWM progress report every quarter to the Governor’s Office, and the contents of the report were partly related to the progress of the Action Plan of the SSWMS.	
Output 2-2: Collection of General Waste is improved		Fully Achieved
2-2-1 Improvement plan on Waste collection system in each municipality is drafted	【Fully achieved】 “The Improvement Plan on Waste Collection in Kosrae (Draft)” was prepared in May 2015.	
Output 2-3: Waste Disposal is improved		Fully Achieved

	<p>【Fully achieved】 Regular maintenance have been conducted since its commencement of operation in 2009: Landfill operation staff is on duty all the time, amount of collection is recorded (currently, measured by size of the truck), and soil covering is conducted every month.</p>
Output 2-4: Awareness Raising is improved	Fully Achieved
2-4-1 Educational material for 4R is developed and education for 4Rs is conducted in schools (2013-: For a pilot school, 2015-: Expand for other less than 3 schools)	<p>【Fully achieved】 Materials were developed mainly by KIRMA in 2012, and the number of targeted schools increased to four in 2015 as a result of J-PRISM. The materials developed are fully utilized by all the 6 schools in Kosrae now.</p>




c. Pohnpei State of FSM

Output 3-1: The SSWMS in Pohnpei is finalized	Partly Achieved
3-1-1 SSWMS in Pohnpei is submitted to the State for approval	<p>【Fully achieved】 The SSWMS titled “Clean Pohnpei 2014-2018” was signed by the State Governor in February 2014.</p>
3-1-2 Monitoring is conducted 3 times per year by Monitoring committee	<p>【Partially achieved】 Monitoring was conducted only once by EPA with assistance of the JICA Expert in July 2014.</p>
3-1-3 Progress report is prepared by Monitoring committee annually	<p>【Not achieved】 Progress report has not been issued yet.</p>
Output 3-2: Collection of General Waste is improved	Fully Achieved
3-2-1 Plan for improvement of waste collection including fee system, collection method and cooperation with multi municipality, is developed in Sokehs and Kitti, pilot project municipality	<p>【Fully achieved】 The new waste collection with the new compactor trucks which were donated by GGP was started in Sokehs and Kitti under assistance of the Expert.</p>
Output 3-3: Final Waste Disposal site is improved	Fully Achieved
3-3-1 Operation under Fukuoka method is introduced for existing dump site	<p>【Fully achieved】 The Fukuoka method was applied to the dumpsite in 2013 and leachate treatment was installed in 2014. It was observed that the improved area of the landfill was well managed except for lack of soil cover due to limited budget for proper operation of the dumpsite.</p>
Output 3-4: CDL system is improved	Partly achieved
3-4-1 The Recycle Center is operating at least once a month	<p>【Not achieved】 The Recycling center was opened 12 times during a total of 34 months period from the commencement of the CDL program in June 2012 to August 2015. The reason behind the above limited operation of recycling center was insufficient balance of the operation fund.</p>
3-4-2 The Recycling Law is amended	<p>【Not achieved】 The draft amendment of the Law was made several times between EPA and AG Office, but has not been finalized yet.</p>
3-4-3 Financial system on CDL is improved	<p>【Mostly achieved】 Since March 2015, EPA has collected and compiled financial data (e.g. amount of import and sales of redeemed cans) from DT&A. The data on breakdown of the revenue from the CDL is also made available.</p>

d. Chuuk State of FSM



Output 4-1: Capacity to prepare the State Solid Waste Management Strategy of Chuuk and Action Plan is developed		Mostly Achieved
4-1-1 Chuuk SSWMS is submitted to the State for approval	【Fully achieved】 The Chuuk Solid Waste Management Strategy (SSWMS) 2012-2016 and its Action Plan were approved by the State Government in 2012.	
4-1-2 Monitoring on the progress of Action Plan is conducted annually	【Mostly achieved】 Monitoring of the Action Plan was conducted twice (in Feb. 2014 and Feb. 2015). EPA and DT&PW planned to conduct the third monitoring in December 2015 without the help of the JICA Expert, but it has not yet been done (January, 2016). The average achievement rate of the Action Plan increased from 40% in 2014 to 48% in 2015.	
Output 4-2: Capacity to improve and manage the final disposal site is enhanced		Fully Achieved
4-2-1 Boundary of the existing dumpsite is identified and separated from other area	【Fully achieved】 In 2012, the boundary was identified through discussions with related parties. In 2013 and 2014, the improvement of the disposal site was conducted. The improvement works including construction of a dyke along the boundary to prevent the waste from spilling over the boundary. The waste has been compacted in the dyke after that. 	
4-2-2 Operation of compacting waste is conducted at least once a week	【Fully achieved】 Frequency of compacting increased from once a month in 2011 to twice a week in 2015. 	
4-2-3 Operation is recorded and submitted to PW and EPA	【Mostly Achieved】 Recording started in 2015 using a form prepared by DT&PW; however, the record is submitted to DT&PW but not to EPA. Note: At the time of the final evaluation, it was evaluated as “Partly Achieved”; however, the operator kept recording the operation and submitted to DT&PW for about 1 year. Therefore, although the record has not been shared with EPA, the degree of the achievement was changed to “Mostly Achieved.”	
Output 4-3: Capacity to improve the collection of general waste is enhanced		Mostly Achieved
4-3-1 Monthly collection record is submitted to PW and EPA	【Partly Achieved】 Although collection crews (DT&PW) kept collection record on their notebooks, they did not use the record form prepared by DT&PW, and did not submit the notebooks to DT&PW and EPA.	
4-3-2 More than 5 villages receive regular collection service	【Fully achieved】 Service areas of regular collection were expanded to 8 out of 10 villages through providing horn collection or waste bin collection services (The remaining two villages are inaccessible due to very bad road conditions).	
4-3-3 More than 10 workshops are conducted to improve the waste discharge of the people	【Fully achieved】 。 In 2015, EPA conducted totally 19 workshops in schools. Also they conducted clean-up in the town area with DT&PW, and installed several sign-boards on Littering Law.	

e. Yap State of FSM


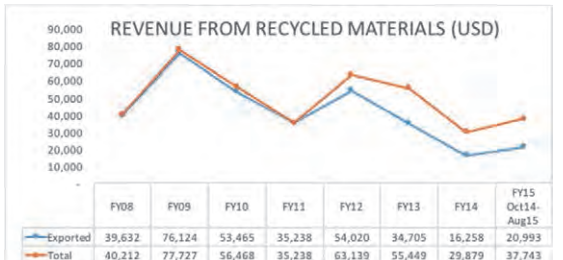
Output 5-1: Capacity to prepare the State Solid Waste Management Strategy of Yap State and Action Plan is developed.		Fully Achieved
5-1-1 Yap SSWMS is submitted to the State for approval	【Fully Achieved】 The Yap State Solid Waste Management Strategy (SSWMS) 2012-2017 was submitted to the State Governor in March 2014, and In November 2015, finally endorsed by the Governor.	
5-1-2 Action Plan is distributed to the stakeholders	【Fully Achieved】 The Action Plan was distributed to the relevant stakeholders when it was developed for their consultation, and its progress was also reported to the stakeholders at JCC in 2015.	
5-1-3 Monitoring on the progress of Action Plan is conducted annually	【Fully Achieved】 Monitoring of the Action Plan was conducted twice in June 2014 and February 2015 respectively.	
Output 5-2: Capacity to improve and manage the final disposal site is enhanced		Mostly Achieved.
5-2-1 New landfill design is developed	【Fully Achieved】 DPW&T prepared drawings of the new landfill, with technical input from EPA, JICA experts and JICA Senior Volunteers.	
5-2-2 More than 10 counterparts get certificate in the training of operation and maintenance of landfill	【Fully Achieved】 。 26 C/Ps who were from Palau (3), Pohnpei (2), Kosrae (2) and Yap (17) attended the Landfill Management Training (Regional training in 2013). 17 persons from Yap received the certificates. <div style="display: flex; justify-content: space-around; align-items: center;">    </div>	
5-2-3 The upgrade of the existing dumpsite to semi-aerobic is completed	【Mostly Achieved】 The existing dumpsite was partly rehabilitated. Improvement works such as compaction and installation of gas venting pipes and rain water drainage were carried out with funding from the Project. Due to breakdown of excavators of DPW&T, soil cover has not been conducted yet, but it will be completed by March 2016.	
5-2-4 Operation of new landfill is monitored by EPA monthly according to the new landfill management plan	【Fully Achieved】 EPA started monitoring the leachate in April 2015 according to the Landfill Operation and Maintenance Manual developed under this Project. Additionally EPA started monitoring the condition of the landfill regularly such as odor, compaction, security and segregation. DPW&T restarted calculating the amount (ton) of hauled waste based on the data of the number of garbage bags recorded at the landfill site.	
Output 5-3: Capacity to conduct awareness activities for SWM is raised		Mostly Achieved
5-3-1 More than 10 workshops are conducted at schools and communities using the awareness materials developed	【Fully Achieved】 Totally 20 workshops were held. Materials such as posters(2 types), stickers(1 type) and recycle bins were produced and installed in each schools by EPA and DPW&T.	
5-3-2 Awareness of SWM through a questionnaire result is raised by 25%	【Mostly Achieved】 The first questionnaire survey was conducted in June 2013 with the result of 28% of the intelligibility for Yap SWM, and the second survey was in November 2015 with the result of 43% intelligibility. Although the second survey result was not over 25% but showing 15% of improvement. Note: It was evaluated “Not achieved” in the final evaluation because the second survey had not been done yet, but it was planned to be conducted at the end of the Project and conducted in November 2015.	

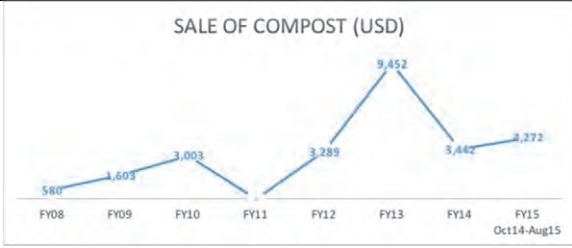
f. Palau

Output 1: Capacity to manage the beverage container deposit fee program (sustainable financing system) is enhanced.		Mostly Achieved																													
1-1 1) % of amount of containers redeemed out of imported beverage containers by the end of the project → 2) (Revised in Dec. 2015) SWM-BPW can regularly monitor redemption rate.	【Fully achieved】 1) Average of the redemption rate of all imported beverage containers in 2011-2015 was 89.76%. <table><tr><th>FY</th><th>Number of Imported</th><th>Number of Redeemed</th><th>Redemption rate (%)</th></tr><tr><td>2011</td><td>6,663,590</td><td>0</td><td>0.00%</td></tr><tr><td>2012</td><td>14,386,027</td><td>18,925,157</td><td>131.55%</td></tr><tr><td>2013</td><td>15,459,266</td><td>15,369,174</td><td>99.42%</td></tr><tr><td>2014</td><td>15,618,616</td><td>14,678,332</td><td>93.98%</td></tr><tr><td>2015</td><td>17,687,328</td><td>13,694,907</td><td>77.43%</td></tr><tr><td>total</td><td>69,814,827</td><td>62,667,570</td><td>89.76%</td></tr></table>			FY	Number of Imported	Number of Redeemed	Redemption rate (%)	2011	6,663,590	0	0.00%	2012	14,386,027	18,925,157	131.55%	2013	15,459,266	15,369,174	99.42%	2014	15,618,616	14,678,332	93.98%	2015	17,687,328	13,694,907	77.43%	total	69,814,827	62,667,570	89.76%
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2) SWM-BPW has been monitoring the number of containers and deposit from MOF and Koror State Government (KSG) monthly and issued the Annual Report of Container Deposit Legislation (CDL) twice. Note: It was recommended to modify the indicator to “SWM-BPW can regularly monitor redemption rate” in the final evaluation.																															
1-2 1) (Revised in March 2015) Amount of shipped off containers → 2) (Revised in Dec. 2015) SWM-BPW can regularly monitor the amount of shipped-off beverage containers.	【Mostly achieved】 1) The exact amount of shipped-off containers is not available, as the recycling company weighed the redeemed beverage containers together with the other recyclable metals at the time of the shipping out. Therefore, the total amount of beverage containers that are redeemed at the Redemption Center of Koror State and sold to the recycling company is used as the amount of the shipped off containers, which was from 2011 to 2015 was approx. 844 tons. <table><tr><th>FY</th><th>PET bottles (kg)</th><th>Aluminum can (kg)</th><th>Steel cans(kg)</th></tr><tr><td>2011</td><td>-</td><td>-</td><td>-</td></tr><tr><td>2012</td><td>66,660.50</td><td>125,562.60</td><td>8,020.80</td></tr><tr><td>2013</td><td>88,370.94</td><td>108,097.82</td><td>12,159.80</td></tr><tr><td>2014</td><td>89,636.50</td><td>126,667.00</td><td>13,305.50</td></tr><tr><td>2015</td><td>83,128.50</td><td>114,067.00</td><td>12,629.00</td></tr><tr><td>Total</td><td>327,796.44</td><td>474,394.42</td><td>46,115.10</td></tr></table>			FY	PET bottles (kg)	Aluminum can (kg)	Steel cans(kg)	2011	-	-	-	2012	66,660.50	125,562.60	8,020.80	2013	88,370.94	108,097.82	12,159.80	2014	89,636.50	126,667.00	13,305.50	2015	83,128.50	114,067.00	12,629.00	Total	327,796.44	474,394.42	46,115.10
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2) It was recommended to collect the exact amount of shipped-off containers from the recycling company. Note: It was recommended to modify the indicator to “SWM-BPW can regularly monitor the amount of shipped-off beverage containers.																															
Output 2: National Solid Waste Management Plan (NSWMP) is finalized and Action Plan is revised.		Fully Achieved																													
2-1 NSWMP is finalized	【Fully achieved】 National Solid Waste Management Plan (NSWMP) was endorsed by the Minister of Ministry of Public Infrastructure, Industries and Commerce (MPIIC) at the 1st JCC meeting in 2012. SWM-BPW held a workshop with SPREP and revised the Action Plan of the NSWMP. NSWMP is now under revision by the C/P of SWM-BPW. It is expected to be finalized by February 2016.																														
2-2 Action Plan is revised	【Fully achieved】 The Action Plan of NSWMP 2008-2012 was revised with SPREP in 2012, then and as mentioned above it was revised again in 2015.																														
Output 3: Capacity to conduct Awareness raising on 3R is enhanced.		Mostly Achieved																													
3-1 Materials are delivered to 50% of schools in the Earth day activity	【Fully achieved】 200 face towels, 50 T-shirts, 70 water bottles flowerpots made from waste tires were prepared and distributed to the participants in the Earth day event in 2014 and 2015. The target rate of 50% was obviously																														

	achieved as almost all schools participated in the Earth day event every year.
3-2 # of school presentations/ visits & conducted workshops	<p>【Mostly achieved】</p> <p>During the period from mid-2014 to the December 2015, 17 workshops were conducted (10 at elementary schools, 1 at high school, 2 at colleges, 2 for schoolteachers (at teacher's conference every summer). Although it did not reached the target number, it was observed that the awareness-raising activities has been more active after 2014.</p> <p>Note: The target number set by the Project was to conduct at least one workshop at every school in Palau excluding two outer island schools (22 schools in total, consisting of 16 elementary schools, 5 high schools and 1 college, including private schools) every year.</p>
Output 4: Capacity to manage the final landfill site is enhanced.	
4-1 A period of operation for M-Dock is extended for 3 years	<p>【Fully achieved】</p> <p>Before the J-PRISM, M-Dock landfill (the final disposal site in Koror) was estimated to be full in 2013.</p> <p>In 2012-2013, construction of dykes and other improvement works extended the period of operation for 3 years.</p> 
4-2 The existing closure plan for M-dock landfill is revised	<p>【Fully achieved】 Closure plan of the M-Dock was revised and finalized.</p> <p>Note: At the time of the final evaluation, it was evaluated as "Not achieved" because the activity was on going at the time of evaluation.</p>
4-3 Conceptual Plan of the waste disposal is developed.	<p>【Fully achieved】</p> <p>The basic conceptual plan (site layout plan and leachate treatment plan) of the new landfill site was developed. Also land survey to clarify the boundary of the site was conducted.</p>
Output 5: Training program on 3R/SWM is developed.	
5-1 Training manual/ materials is developed	<p>【Fully achieved】</p> <p>Three manuals for the 3R training were developed for the "Regional Training on Promotion of 3R in Palau" in 2013.</p> <p>1: CDL 2: Composting 3: SWM in Koror State</p> 
5-2 # of training conducted and # of participants	<p>【Mostly achieved】</p> <p>2 workshops were held;</p> <p>1) "Regional Training on Promotion of 3R in Palau" was conducted in November 2013, and a total of 22 persons attended (14 from FSM, 6 from Palau, 2 from Samoa).</p> <p>2) "In-country training for Waste Amount and Composition Survey (WACS)" was conducted in August 2015, and 21 persons received certificates.</p> <p>Note: It was evaluated "Mostly achieved" because no target number was set on the number of participants, but the Project planned to cover the Micronesia region for the first training and all states of Palau for the second training and the Project considered the number of trainees almost reached the expected level as it covered the Micronesia region except the Republic of Marshall Islands.</p>

g. Marshall Islands

Output 1: NSWMS is implemented.		Partly achieved																											
1-1 NSWMS and Action plan of Majuro is finalized	【Mostly achieved】 In September 2014, OEPPC submitted the draft National Solid Waste Management Strategy (NSWMS) (2014-2018) to the Minister in Assistance to the President, but it has not been submitted to the cabinet for approval yet																												
1-2 Implementation of Action plan is monitored and reviewed by the Monitoring Committee 3 times a year	【Partly achieved】 As NSWMS and the attached Action Plan have not been approved yet, there has not been an official Monitoring Committee yet																												
1-3 Progress report is issued annually	【Partly achieved】 The presentation made by the C/P for the monitoring in May 2015 can be regarded as a type of progress report, though it was not in the form of a report.																												
Output 2: Recycling system is improved in Majuro.		Mostly Achieved																											
2-1 Recycle products is Increased year by year	【Mostly achieved】 The number of the recycled aluminum cans was increased due to the contribution by daily activity of the SV. The number of recycled cans dropped in FY2014 due to breakdown of the pressing machine in December 2013. The operation resumed in October 2014, but the machine does not function at its full capacity.																												
 <table><caption>NO. OF ALUMINIUM CANS PURCHASED (USD)</caption><thead><tr><th>Fiscal Year</th><th>Amount (USD)</th></tr></thead><tbody><tr><td>FY08</td><td>21,455</td></tr><tr><td>FY09</td><td>509,968</td></tr><tr><td>FY10</td><td>363,240</td></tr><tr><td>FY11</td><td>1,382,196</td></tr><tr><td>FY12</td><td>2,266,622</td></tr><tr><td>FY13</td><td>343,573</td></tr><tr><td>FY14</td><td>537,303</td></tr><tr><td>FY15</td><td></td></tr></tbody></table>			Fiscal Year	Amount (USD)	FY08	21,455	FY09	509,968	FY10	363,240	FY11	1,382,196	FY12	2,266,622	FY13	343,573	FY14	537,303	FY15										
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2-2 # of collected and exported materials are increasing year by year	【Not achieved】 The revenue of exported recycle materials was decreased after FY2012. Main reason of the decreasing was that Sales from exports from recycled materials fluctuates due to external factors.																												
 <table><caption>REVENUE FROM RECYCLED MATERIALS (USD)</caption><thead><tr><th>Fiscal Year</th><th>Exported</th><th>Total</th></tr></thead><tbody><tr><td>FY08</td><td>39,632</td><td>40,212</td></tr><tr><td>FY09</td><td>76,124</td><td>77,727</td></tr><tr><td>FY10</td><td>53,465</td><td>56,468</td></tr><tr><td>FY11</td><td>35,238</td><td>35,238</td></tr><tr><td>FY12</td><td>54,020</td><td>63,139</td></tr><tr><td>FY13</td><td>34,705</td><td>55,449</td></tr><tr><td>FY14</td><td>16,258</td><td>29,879</td></tr><tr><td>FY15</td><td>20,993</td><td>37,743</td></tr></tbody></table>			Fiscal Year	Exported	Total	FY08	39,632	40,212	FY09	76,124	77,727	FY10	53,465	56,468	FY11	35,238	35,238	FY12	54,020	63,139	FY13	34,705	55,449	FY14	16,258	29,879	FY15	20,993	37,743
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Output 3: Composting system is improved in Majuro.		Mostly Achieved																											
3-1 Volume of compost production are increased in Majuro	【Mostly achieved】 The Volume of compost production was increased due to the contribution by daily activity of the SV. The sales dropped in FY2014 due to breakdown of the shredder machine during 2012-2013 (the sales did not suddenly drop as there were stockpiles).																												

	
<p>Output 4: School-based recycle system is introduced in Majuro.</p>	Mostly Achieved
4-1 Manual/material of awareness raising is developed	<p>【Mostly achieved】</p> <p>Materials (video and booklet) were developed in 2012 by C/P of EPA, with the help of MAWC and advice from the JICA Expert. However, the C/P who made these materials left EPA, and his successor no longer used them, because hardcopy of the booklet was all distributed and there was no additional printing. Instead, the successor used recycled materials and products as the tools for awareness-raising. He also plans to cooperate with Ministry of Education (MOE) in developing another booklet. MAWC still uses the video that the C/P showed at a high school and an elementary school for awareness activity in February 2015.</p>
4-2 Campaign activities are conducted on a regular schedule	<p>【Mostly achieved】</p> <p>EPA has conducted campaigns such as segregation programs, cleanups, summer schools, My Folk Campaign, and radio programs as the regular campaign activities.</p>
4-3 I-Recycle programs are implemented in over 80% of elementary schools in Majuro	<p>【Partly achieved】</p> <p>In 2011, the program named I-recycle was started, but it was later carried out individually by EPA and MAWC without close collaboration and coordination. The activities of EPA and MAWC needs to be combined under close collaboration and coordination.</p>
<p>Output 5: Solid waste management system is improved in Ebeye</p>	Mostly achieved.
5-1 Plan for improvement of waste collection is drafted	<p>【Fully achieved】</p> <p>The plan of improvement of waste collection including the instruction of the new fee collection system was drafted in November of 2014. The new waste collection with the new compactor truck and the distribution of the bins to residents was started in October of 2015.</p>
5-2 The burning in the open dumping decreased to 0 in Ebeye	<p>【Fully achieved】</p> <p>Since on-site instruction on improvement of the final disposal site was conducted in 2014, burning at the site has been stopped.</p>
5-3 The waste is located separately and adequately in dump site	<p>【Fully achieved】</p> <p>Since the above-mentioned instruction on the dumpsite, separation of metals and general waste has been practiced.</p>
5-4 Bulky waste collection is separated from the common household waste	<p>【Fully achieved】</p> <p>Since the above-mentioned instruction on the dumpsite, separation of the vehicles waste from general waste has been practiced.</p>
5-5 Education on 4R promotion is conducted for all school classroom	<p>【Fully achieved】</p> <p>EPA-Ebeye had already conducted awareness activities on solid waste and water quality for all classes of schools before the Project started. Under this Project, frequency of school visits increased from 1-2 times/quarter to every month.</p>
5-6 Teacher training on 4R promotion is conducted for all teachers in Ebeye	<p>【Fully achieved】</p> <p>54 teachers in 2013, 15 teachers in 2015 were respectively attended to the Teacher Training Programs in Ebeye.</p>
5-7 Plan for paper fuel is drafted	<p>【Mostly achieved】</p> <p>The Plan on paper fuel was drafted and it will be finalized by C/P.</p>

3.2 Achievements of the Project Purpose

a. FSM: OEEM, Koseae, Pohnpei, Chuuk and Yap States

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)		Mostly Achieved
1. Four (4) experts in the field of integrated solid waste management are listed in the SPREP inventory ¹	【Mostly achieved】 Five (5) C/Ps are listed as the trainers in J-PRISM's Pacific Islands Database of Capacity Development Activities (PIDOC) (4 from Yap: Ms. Christina G.K Fillmed, Mr. James Sarmog, Mr. Jesse Waayan, Mr. Manny Mendoza and 1 from Pohnpei: Mr. Charles Lohn).	
2. Improvement of State landfill in each state	【Fully achieved】 The state landfills were improved in all four states as follows: Kosrae: Operation and maintenance of the first Fukuoka method (semi-aerobic) landfill in FSM (constructed before J-PRISM) was improved with the training under J-PRISM. Pohnpei: Half of the existing dumpsite was rehabilitated to Fukuoka method landfill. Chuuk: The existing dumpsite was improved; preparation of the interim site (to be operational within this year) and the new landfill using Fukuoka method was supported by J-PRISM. Yap: A new landfill using Fukuoka method was constructed and the existing dumpsite was improved.	
3. Good practice developed from one state is shared with all the states of FSM	【Fully achieved】 OEEM developed a booklet "Good Practices for Solid Waste Management in the FSM 2015" and distributed to all states.	

b. Palau

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)		Mostly Achieved
Indicator1: 5 experts (Trainers) in the field of 3R/beverage container deposit fee program/ landfill operation are listed in the SPREP inventory	【Mostly achieved】 Three (4) C/P (2 from SWM-BPW: Mr. Calvin Ikesiil, Mr. Mengkur Rechelulk and 2 from SWM-KSG: Mr. John O. Ngiraked, Jr., Mr. Selby P. Etibek) are listed as the trainers in J-PRISM's Pacific Islands Database of Capacity Development Activities (PIDOC).	
Indicator2: % of amount of containers redeemed out of imported beverage containers maintained 90% or above.	【Fully achieved】 Average of the redemption rate from FY2011-FY2015 was 89.76 which was almost 90%. However, it should be noted that the redemption rate of over 90% from FY2011 to FY2014 was declined to 77.43% in FY2015. See Output Indicator 1-1	

¹ This indicator was not used as a direct measure of the Project Purpose for the following reasons: (i) while PIDOC, the existing database, is an inventory of SPREP, the persons listed are trainers certified by J-PRISM but not considered as officially certified trainers by SPREP; (ii) the target values are not valid as they had been determined before introduction of PIDOC (thus not consistent with the number of trainers listed in it). Accordingly, the degree of achievement of the Project Purpose was judged in a comprehensive manner with the other indicators and supplementary information (where necessary), while referring to this indicator as reference information.

c. Marshall Island

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)		Mostly Achieved
Indicator 1: Six (6) experts (Trainers) listed in the SPREP inventory	【Mostly achieved】 The two persons (1 from EPA and 1 from MAWC) are listed as trainers. The one from EPA resigned. The one from MAWC is active in awareness activities.	
Indicator 2: Good practices and experience are shared among Majuro and other Atoll Local Governments	【Mostly achieved】 The C/Ps were dispatched from Majuro to Ebeye in 2013 and 2014. A teacher training was held in Ebeye with dispatching the C/Ps from Majuro and Fiji.	

3.3 Recommendations for Achievement of the Overall Goal

a. FSM: OEEM, Koseae, Pohnnpei, Chuuk and Yap States

Overall Goal: Sustainable management of solid waste in the Pacific Region is enhanced	
Indicator1: Good practices developed from one state of FSM are implemented in other states and/or other island countries tackling with common issues	<p>[Current situation] There was no case that other States or islands introduced any good practices generated in FSM. Chuuk State has a plan to restart CDL which have been already implemented in the other three States.</p> <p>[Recommendation] In addition to promote communications between States under their initiatives, it is recommended to develop and issue newsletter regularly which OEEM can facilitate with States to share good practices and information of any SWM projects and other related activities of waste management in the region. Also these information can be shared through the internet which OEEM is currently using to contact with States.</p>
Indicator2: At least more than 2 trainings/workshops in the region which is conducted by facilitators/trainers from FSM	<p>[Current situation] In 2014, Yap C/P held a workshop to share their experience and knowledge in constructing a new landfill to Chuuk C/Ps in Yap.</p> <p>[Recommendation] It is recommended OEEM to plan and facilitate trainings. The theme of the trainings can be based on the requests of the States. This training can be organized within the FSM Environmental conference which is held biannually. The training should invite not only EPA staffs but also PW staffs.</p>

b. Palau

Overall Goal: Sustainable management of solid waste in the Pacific Region is enhanced	
Indicator1: Good practices conducted in Palau are implemented in other island countries tackling with common issues.	<p>[Current situation] One of the good practices in Palau is CDL, and the Project Office is now organizing the exchange program between C/Ps of Palau and Samoa to share CDL from Palau C/P and collection service from Samoa C/P in Feb. 2016.</p> <p>[Recommendation] It is recommended to continue this sharing of the experience of CDL with other island countries, and C/P can advertise and promote these good practices in international conference or workshops.</p> <p>Also on-going activities by KSG such as waste to oil and glass craft which is made from collected glass bottles under CDL project should be verified to share its advantages and disadvantage with other island countries which have similar issues.</p>

c. Marshall Island

Overall Goal: Sustainable management of solid waste in the Pacific Region is enhanced	
Indicator1: Good practices developed in Marshall Islands are implemented in other island countries tackling with common issues in three years after completion of the project.	<p>[Current situation] There was no good practice which were implemented in other countries yet. While, Paper fuel initiated in Majuro was introduced to Ebeye.</p> <p>[Recommendation] Good practices such as CDL, upgrading the facilities in the dumpsite, Paper Fuel, New Waste Collection Fee System in Ebeye, Clean School Program, OSH activities should be shared and transferred to other PICs after the success in RMI. The target year of the indicator is 2018.</p>
Indicator2: At least one training / workshop in the region which is conducted by facilitators/trainers from Marshall Islands	<p>[Current situation] Teachers Training was held and C/Ps of Majuro was sent to Ebeye as facilitators.</p> <p>[Recommendation] "The Regional Workshop on SWM 2018" is planned to take place in 2018. The planning team (OCS, MPW, MAWC, OEPPC, EPA and MAWC) will be organized to prepare these activities.</p>

4 Unique/Elaborated Approaches Taken and Lessons Learnt in the implementation of the Project

4.1 Elaborated/Improved Approach to decision makers and upper agency

a. Palau (data collection in CDL)

Situation at the beginning of the Project: The responsible agencies of Container Deposit Legislation (CDL) in Palau are MPIIC and MOF. At the beginning of the Project, data of deposit collected at the Palau Custom and balance of the Recycling Fund was not shared between Ministry of Finance (MOF) and Ministry of Public Infrastructure, Industries and Commerce (MPIIC).

Approach: C/Ps of Solid Waste Management of Bureau of Public Works (SWM-BPW) and the Expert visited the Minister of MPIIC to explain about CDL system and the issues on data collection that SWM-BPW was facing. After the Minister of MPIIC contacted the Minister of MOF to set a meeting, C/P and the Expert met the Minister of MOF to explain the system and issues. Later on, the MOF assigned one official responsible for CDL and started sharing the financial data of CDL with SWM-BPW.

Although the progress of the Project was previously reported to the decision makers of the country in JCCs, the Experts set the meeting with the decision makers individually for the discussions on specific issues in relation to implementation of the Project. Such activities contributed to strengthening the relationship between the decision makers and the field officers within the counterpart agencies.

b. Yap State of FSM (Clarification of the responsible agency of SWM and establishment of the SWM unit in DT&PW)

Situation at the beginning of the Project: The waste brought into the dumpsite was previously pushed by the bulldozer of Department of Public Works and Transportation (DPW&T) once a month on average though the law of Yap State Public Service Corporation (YSPSC) stated that the responsibility of waste collection and disposal is under YSPSC. The operators of the bulldozer from DPW&T sometimes complained by saying that it was not their responsibility and no unit or staff assigned to waste management in DPW&T.

Approach: Based on the consultation on the above issue with Project office and EPA, the Expert prepared a request letter to the State Governor to clarify the responsible agency in waste collection and operation of final disposal landfill. The State Governor was also invited to attend the landfill maintenance training conducted in Yap under the Project to enhance his understanding of waste management. The State Governor finally responded to the above request by declaring that the responsible agency of the SWM is DPW&T. Based on this declaration, DPW&T established a SWM unit with the appointment of the SWM Manager with 3 staff members.

c. Chuuk State of FSM (Improvement of the working condition)

Situation at the beginning of the Project: It was clearly provided that the responsible agency of the waste disposal was Department of Transportation and Public Works (DT&PW) in Chuuk SWM regulation.

However the actual situation was that except for the employment cost there was no budget allocated to waste management in DPW&T; while, EPA provided the fund for fuel for collection trucks and a bulldozer as well as for spare parts and waste bins. The working condition of waste collection crews were also very demanding in comparison with the salaries they are paid if considering the extreme weather on the island with heavy rain and broiling sun during providing the collection service.

Approach: As is the case with Yap, the Expert prepared a request letter with the Project office and sent to the State Governor twice to ask the allocation of budget for the waste management to DT&PW and improvement of the working condition of the collection crews. After that, with lots of efforts made by the Director of DT&PW, DT&PW secured some budget for fuel and pay raise of collection crews.

Raising the internal issues of the organization is of great difficulty for the organization itself. The third party assessment of such internal issues, in this case by the JICA Expert, is of great significance to recognize such issues and make real improvement based on the opinions (sometimes complaints) from field workers. Proper and timely response and actions to the opinions of field workers and officers have a great potential of increasing their motivation to work.

d. Ebeye, Marshal Islands (Improvement of SWM)

Situation at the beginning of the Project: In Ebeye, the limited number of C/Ps was assigned to SWM in the city. Although they well understood the method and process of the improvement, the needs of securing the budget and human resources were not well taken by the Mayor and top management of the city government. As a result, the shortage of manpower and budget remained unresolved including no allocation of increased staff and heavy equipment for dumpsite operation as well as shortage of budget for buying the fuel for SWM operations.

Approach: The Project held a workshop on waste collection and dumpsite management with the invitation of the City Mayor and senators to share the results of project activities. Since the workshop was attended by the City Mayor the C/Ps were eventually able to deliver their improvement plan and proposals to the Mayor. It became a good opportunity for the C/Ps to appeal themselves and directly deliver the opinions of the field workers in terms of increasing their confidence and motivations to work.

4.2 Pohnpei State of FSM (Internal Transfer/Retirement of C/P Members)

Issue: To secure proper human resources is of great difficulty in many developing countries. Any C/Ps has no exception of leaving its jobs sometimes without any prior notice. The Project also experienced such cases several times. In the case of Pohnpei State, the Director of EPA retired near the end of the Project in September 2015 while a key C/P also left his job for personal reasons. Although the retirement of the Director was announced beforehand (a few months before), the unexpected resignation of the above C/P confused his successor due to no official handover of the works before the resignation.

Approach: The activities which was originally planned before the resignation of the C/P were utilized as the learning opportunities of his successor on SWM. Since a workshop on improvement of waste collection was planned under the resigned C/P, the Project reconstructed the contents of the workshop so that the successor can learn the current status, issues, on-going activities, and coming schedule of the project activities. Municipal government officers who attended the workshop also helped providing lectures to the successors. A C/P from Pohnpei Waste Management Services (PWMS) gave a lecture on dumpsite management while a C/P from OEEM provided lectures on the strategic plan of SWM. JCC meeting was utilized as a training opportunity of the successor to learn his jobs through preparation of the presentation. Although the impacts of resignation of the core C/P were very tough, the accumulated technical knowledge among the remaining C/Ps was well transferred to the successors with minimum damages to the Project.

Lesson learnt: It is strongly recommended that the technical knowledge should be transferred not just to individual person but to the whole counterpart team. The situation under small number of C/Ps has risk on sustainability of the Project if they are internally transferred to different jobs and/or positions. The technical knowledge and information provided in the Project should be compiled into the teaching/training materials so that they can be utilized anytime to train the new assigned C/P in the case of personnel transfer and/or resignation/retirement of the current C/Ps.

4.3 Unique Characteristics of National and State regime of FSM

Current situation: Four States in FSM had high degree of autonomy while they were all different in their languages, characteristics of the people, and system/structure of the state government. Each state government has the responsibility to implement SWM. Different approach is required for each state as well national government. However, the length of the dispatch of the Experts allocated to one State was less than two months in a year, also the number of the JICA trainees secured for FSM is always one or two as one country.

In the structure of the Project, it was agreed in the R/D signed in 2010 that the Project Director was Director of OEEM and Project Managers were Directors of EPA or KIRMA in each State. While the actual responsible agency of SWM is usually Public Works.

Approach: First of all, in order to specify the activities of each State and OEEM, the initial PO was separated into 5, for 4 states and OEEM, which made it easy for C/Ps and Experts to check the progress of the activities of each State.

After the discussion with OEEM, it was agreed that OEEM continued the role as a facilitator with its focus on supporting the State government to strengthen solid waste management capacity and service levels. Thus, the PO of OEEM was revised to meet this objective. For example, the PO included the activity to develop a national guideline of leachate monitoring and share good practices of the States. In accordance with the revised PO, C/P of OEEM visited the states to understand the current situation and issues of SWM. It also invited State representatives in the national JCC meetings twice.

5 The Federal Government, FSM

5.1 The Outline of the Activities of OEEM

5.1.1 Expert Dispatch Schedule

Total: 138days

Dispatch	Date	Days	Dispatched Experts
1 st :	2 nd of July, 2014- 13 th of July, 2014	12days	Haseyama
	2 nd of July, 2014- 12 th of July, 2014	11days	Muranaka
2 nd :	10 th of September, 2014- 21 st of September,2014	12days	Haseyama
	14 th of September, 2014- 22 nd of September,2014	9days	Muranaka
3 rd :	27 th of November, 2014- 13 th of December, 2014	17days	Haseyama
4 th :	14 th of February, 2015- 4 th of March, 2015	19days	Haseyama
5 th :	2 nd of May, 2015 - 17 th of May, 2015	16day	Haseyama
	8 th of May, 2015 - 15 th of May, 2015	8day	Muranaka
6 th :	30 th of August, 2015– 3 rd of September, 2015	5days	Haseyama
	15 th of September, 2015– 20 th of September, 2015	6days	Haseyama
7 th :	1 st of November, 2015 – 3 rd of November,2015	3days	Haseyama
	17 th of November, 2015 – 20 th of November, 2015	4days	Haseyama
	13 th of December, 2015 - 20 th of December,2015	8days	Haseyama
	13 th of December, 2015 - 20 th of December,2015	8days	Muranaka

5.1.2 Counterpart Organizations

Office of Environment and Emergency Management (OEEM)

5.1.3 Counterpart Members

Organization	Title	Name
OEEM	Director	Andrew R. Yatilman
	Program Manager	Cindy Ehemmes
	Sustainable Development Planner	Patti Pedrus

5.1.4 Activities and Outputs

The progress of the activities and its achievements from May 2014 to January 2016 are summarized in accordance with the PO and agreed indicators in next table.

Outputs/ Indicators	Achievement by FY 2013	Activity/ Progress						
		1 st dispatch	2 nd dispatch	3 rd dispatch	4 th dispatch	5 th dispatch	6 th dispatch	7 th dispatch
Output1-1: The NSWMS in FSM is finalized.	Due to the federal system of FSM, the SWM strategy was developed by the State first, and the SSWMS of Yap State has not yet been approved by the State Government; therefore, the NSWMS has not been finalized yet. From the previous project from 2011 to 2013, the capacity of the OEM to coordinate the 4 States has been developed.	a) Monitoring the Progress of the NSWMS The SSWMS of Yap State was submitted to the State Governor; however, it has not yet been endorsed. The NSWMS can be endorsed by the President only after all SSWMS of the States is endorsed. b) Support for Developing a Next NSWMS/ Revising the Existing NSWMS The procedure to develop the next NSWMS (2016-2020) was discussed, and agreed to share it with SPREP.	a) Monitoring the Progress of the NSWMS There is no progress in the endorsement because of the same reason as before. b) Support for Developing a Next NSWMS/ Revising the Existing NSWMS (planned in 2015)	a) Monitoring the Progress of the NSWMS (No activities, because the main C/P was out of Island for attending a training in Japan.) b) Support for Developing a Next NSWMS/ Revising the Existing NSWMS (planned in 2015)	a) Monitoring the Progress of the NSWMS The 4 th JCC meeting was held and the progress of the activities were shared in the JCC. b) Support for Developing a Next NSWMS/ Revising the Existing NSWMS It was discussed and agreed to delete this activity "1-6 Draft the next NSWMS for the year 2016-2020," from the PO in the 4 th JCC, because the existing NSWMS (2011-2015) has not been yet endorsed and it was modified as NSWMS (2016-2020) with updating some information and activities.	a) Monitoring the Progress of the NSWMS The NSWMS (2011-2015) was modified as NSWMS (2015-2020), and finalized. The NSWMS was distributed to PW and EPA/KIRMA of four States with official letters.	a) Monitoring the Progress of the NSWMS The activity results were monitored through the final evaluation survey.	a) Monitoring the Progress of the NSWMS No specific activities were conducted.
Indicator1-1-1: NSWMS is developed.	The SSWMS of Yap State has not yet been endorsed by the State Government, therefore, the developed NSWMS has not been finalized yet.					【Achieved】 The NSWMS (2015-2020) was finalized and distributed to States with official letters.		
Indicator1-1-2: Monitoring of the Action Plan is conducted once a year				The activity results were reported in the 4 th JCC meeting.				【Mostly Achieved】 The activity results were reported by States in the 5 th JCC meeting.

Outputs/ Indicators	Achievement by FY 2013	Activity/ Progress					7 th dispatch
		1 st dispatch	2 nd dispatch	3 rd dispatch	4 th dispatch	5 th dispatch	6 th dispatch
Information sharing of SWM is enhanced among states. Output1-2:	OEEM hold a National level of JCC in February 2014 to share the activities between the National and state governments. The capacity and the motivation of C/P of OEEM and the presence of OEEM have been improved in the discussion of SWM.	c) Promoting Information sharing of SWM and good practices It was agreed that OEEM monitors the progress of the Action Plan of each State once a year also develops a Good Practice Booklet of FSM by collecting good practices from each States. d) Support for Preparing a Guideline for the Leachate Monitoring It was agreed to develop a guideline of monitoring the leachate which is one of the main issues in the management of the landfill in all States.	c) Promoting Information sharing of SWM and good practices The Booklet was drafted. OEEM needs more information to update. d) Support for Preparing a Guideline for the Leachate Monitoring The C/P drafted the guideline. The C/P still needs to discuss with States to finalize the guideline. The monitoring methods and parameters will be discussed in a JICA training in Nov. 2014 in Japan.	c) Promoting Information sharing of SWM and good practices The C/P keeps collecting information of the good practices from each States. d) Support for Preparing a Guideline for the Leachate Monitoring (The C/P of OEEM was attending a JICA training in Japan to develop the guideline in November)	c) Promoting Information sharing of SWM and good practices The C/P of OEEM participated in Yap and Chuuk States JCC. d) Support for Preparing a Guideline for the Leachate Monitoring The C/P of OEEM is finalizing the Leachate monitoring guideline.	c) Promoting Information sharing of SWM and good practices The good practices booklet was finalized and delivered to PWs and EPAs/KIRMA of four states. d) Support for Preparing a Guideline for the Leachate Monitoring The Guideline of the Leachate Monitoring was completed and delivered to PWs and EPAs/KIRMA of four states.	c) Promoting Information sharing of SWM and good practices The 5 th JCC meeting was held and the progress of the activities were shared in the JCC. d) Support for Preparing a Guideline for the Leachate Monitoring (completed)
Indicator1-2-1: Set up a meeting for SWM at least once year.	In Feb. 2014, National JCC was held and representatives from 4 States participated in the JCC. (Planned in 2014)				In March 2015, National JCC was held and representatives from Pohnpei State participated in the JCC.		【Fully Achieved】 The 5 th JCC meeting was held and latest information was shared among States and stakeholders.
Indicator1-2-2: Document is distributed to 4 states.	(Planned in 2014)		The Good Practice Booklet was drafted.			【Fully Achieved】 The good practice booklet was finalized and delivered to PWs and EPAs/KIRMA of four states.	
Indicator1-2-3: Guideline developed and distributed to States	(Planned in 2014)		The guideline of monitoring leachate was drafted.			【Fully Achieved】 The Guideline of the Leachate Monitoring was finalized and delivered to PWs and EPAs/KIRMA of four states.	

5.2 Activity Report of Each Output

5.2.1 Output1-1: The NSWMS in FSM is finalized

a. Activity of the First Dispatch (from 2nd to 13th of July, 2014)

It was explained by the C/Ps of OEEM that the National Strategy could not be endorsed by the President unless all State Strategies are endorsed.

It was agreed that OEEM would look for good practices of SWM from four States to develop a Good Practice Booklet of FSM, also kept monitoring the activities of the Action Plan of each State. It was also explained by the Director of OEEM that OEEM was just an administrative office for States and could not give advice to or control the State activities.

b. Activities of the Fourth Dispatch (from 15th of February to 4th of March, 2015)

In the original PO, two National Solid Waste Management Strategies (NSWMSs) were planned to be developed, namely NSWMS (2011-2015) in 2011 and NSWMS (2016-2020) in 2015. However, due to the delay of the endorsement on NSWMSs at State level, the endorsement of the developed NSWMS (2011-2015) had been also delayed to 2015. Therefore, it was agreed in the Fourth JCC that the drafted NSWMS (2011-2015) was modified to NSWMS (2015-2020) by updating the data and activities in the NSWMS, and the activity 1-6 “Draft the next NSWMS for the year 2016-2020” was deleted from the PO.

c. Activities of the Fifth Dispatch (from 2nd to 17th of May, 2015)

The NSWMS (2015-2020) was officially issued by OEEM and distributed to all States of FSM and other stakeholders in May, 2015.



Cover of NSWMS

5.2.2 Output1-2: Information sharing of SWM is enhanced among states

a. Activities of the First Dispatch (from 2nd to 13th of July, 2014)

It was discussed and agreed that OEEM would promote sharing information among States and developing a guideline for the leachate management in 2014 and 2015. For the leachate guideline, the C/P of OEEM will have an opportunity to participate in a water management training in Japan in November which is planned by JICA FSM Office. The Expert Team will also continue to assist the development of the guideline.

b. Activities of the Second Dispatch (from 10th to 22nd of September, 2014)

b.1. Preparation of a Good Practice Booklet

The C/P drafted a Good Practice Booklet which collected good activities of SWM from four States. There are four headings; waste collection, landfill management, awareness and CDL. Good practices of each theme selected by the C/P were summarized. The Expert Team gave advices and some additional information while the C/P continues to collect more information from each State to finalize it.

b.2. Preparation of the monitoring guideline of the leachate

The C/P of the OEEM started to collect information on the leachate monitoring from each State though the C/P needed more basic knowledge and understanding on the water monitoring.

In order to develop a guideline for the leachate monitoring, the C/P needs to discuss with State, so it was advised by the Expert Team to discuss with a representative from each State in the training in November. The C/P and the Expert Team keep contacting for sharing the progress.

c. Activities of the Fourth Dispatch (from 15th of February to 4th of March, 2015)

c.1. Visit to Chuuk State (from 3rd to 5th of February)

Two C/Ps from OEEM visited Chuuk State to participate in the Chuuk State JCC. They also observed SWM activities to finalize the Good Practice Booklet while following up the leachate monitoring. This is the first trial that a C/P from OEEM joined State JCC, which was proposed and agreed in the Third National JCC for the OEEM C/Ps to understand the situation of the SWM of the States. All cost of this trip was covered by OEEM.

In the Chuuk JCC, the C/Ps of OEEM shared the information about some new projects and activities of SWM and explained how OEEM could assist States in this area. In the next day, the C/Ps observed the collection service by following a collection compactor truck for a half day with the JICA Expert, and visited the existing dumpsite and proposed sites for a new landfill. Furthermore, the C/Ps discussed with EPA staffs who participated in the Leachate Monitoring Training in Japan to check the monitoring kits and monitoring points.



JCC in Chuuk



Observing the collection service



Meeting with Director of DT&PW



Discussion with Mr. Herbert on the leachate monitoring

c.2. Visit to Yap State (from 24th to 28th of February)

The C/P of OEEM, Ms. Patti Pedrus visited Yap State to join the JCC and observed SWM activities such as a recycling company and a storage of chemical waste. Through this visit, the C/Ps understood the situation, on-going activities and remaining issues of SWM in States. This kind of visit should be continued even after the Project.



Storehouse (Waste oil containers)



Storehouse (chemical waste)

c.3. Development of the leachate monitoring guideline

In the Water and Sanitation Management Training conducted in Okinawa in November 2014 under the arrangement of the JICA FSM office, the National leachate monitoring guideline was developed. It provides some basic monitoring parameters to each State. In addition to these parameters, each State can select a few additional parameters.

Table 5-1: Leachate monitoring parameters

parameter to test	Pohnpei	Kosrae	Chuuk	Yap
COD	✓ paper packtest kit for COD	✓ paper packtest kit for COD	✓ paper packtest kit for COD	✓ paper packtest kit for COD
Ammonia	✓ paper packtest kit for			
Nitrate, Nitrite	✓ paper packtest kit for			
DO	✓			
Temp	✓ Hanna Instruments HI 9828, Calibration	✓ Hanna Instruments HI 9828, Calibration	✓ Hanna Instruments HI 9828, Calibration	✓ Hanna Instruments HI 9828, Calibration
PH	✓ Solution-Hanna Instruments HO 9828-25, 500ml	✓ Solution-Hanna Instruments HO 9828-25, 500ml	✓ Solution-Hanna Instruments HO 9828-25, 500ml	✓ Solution-Hanna Instruments HO 9828-25, 500ml
TDS	✓	✓	✓	✓
Turbidity	✓	✓	✓	✓
SS			✓	✓
Ventilation Pipe Temp	✓ Digital Infrared Thermometer	✓ Digital Infrared Thermometer		
Transparency	✓ Transparency Meter	✓ Transparency Meter	Transparency Meter	Transparency Meter
PCB	Outsourcing	✓ L2000 DX Analyzer		✓ outsource
Coliform	✓ they have equips	✓ they have equips	✓ they have equips	✓ they have equips
Mercury	✓ Outsourcing	✓ outsource		✓ outsource
Cadmium	Outsourcing	✓ outsource		
Hexane	Outsourcing	✓ outsource		
BOD	Outsourcing			
Boron	Outsourcing			
Flourine	Outsourcing			
Lead				✓ outsource

d. Activities of the Fifth Dispatch (2nd to 17th of May, 2015)

The JICA Expert Team assisted the C/Ps in editing both the Good Practice Booklet and the Monitoring Guideline of the Leachate during the fourth and fifth dispatch. OEEM finalized the both materials in May 2015. They were officially issued and distributed to States and other stakeholders.



The Good Practice Booklet



The Leachate Monitoring Guideline

5.2.3 Other activities related to SWM

This section reported the activities related to SWM but not included in the PO of the J-PRISM including JCCs and Capacity Assessments.

a. Activities of the Fourth Dispatch (from 15th of February to 4th of March, 2015)

a.1. The Fourth National level JCC

The 4th National level of JCC was held on 4th of March, 2015 at OEEM. Some representatives from the National Government, OEEM, Pohnpei State, SPREP and other stakeholders attended the meeting.

The progress of the activities of Chuuk and Yap States were reported by Ms. Patti who participated in both the JCCs in two States before the National JCC. The activities of Kosrae were reported by the JICA Expert, and the activities of Pohnpei were reported by the C/Ps of Pohnpei State, and the JCC members understood the achievements of each State.

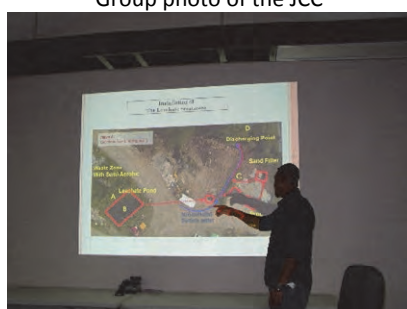
It was agreed in the JCC on the modification of some indicators of the PO of Chuuk and Pohnpei States and deletion of the activity 1-6 “Draft the next NSWMS for the year 2016-2020” from the PO of OEEM, because the existing NSWMS (2011-2015) was modified as NSWMS (2015-2020) with update of some information and activities described in the NSWMS (2011-2015)



Group photo of the JCC



Discussion in the JCC



Presentation in the JCC



Site visit (dumpsite in Pohnpei)

b. Activities of the Sixth Dispatch (from 30th of August to 4th of September, 2015, 15th – 19th of September, 2015)

The Final Evaluation Survey was conducted in August through September, 2015. The activity results were monitored and evaluated through the survey. The issues identified through the survey were shared to the stakeholders.

c. Activities of the Seventh Dispatch (from 1st to 3rd of November, 2015, from 17th to 20th of November, 2015, and from 13th to 20th of December, 2015)

c.1. The Fifth National level JCC

The 5th national level JCC was held on 17th of December, 2015 at OEEM. Some representatives from the National Government, OEEM, EPA/KIRMA and PW directors of States and other stakeholders attended the meeting. EPA/KIRMA/PW Directors reported the progress of the activities of each State.

Outlined discussion points were;

- ✓ Continue sharing information on good practices through a newsletter and or websites with strengthened communication network between the states and OEEM.
- ✓ Continue including waste management agenda in the sessions during Environmental Conferences and EPA Directors Meetings.
- ✓ Consider implementing segregation of waste at household level.
- ✓ Share State Action Plans with OEEM for policy making decision purposes and coordination for addressing the gaps.
- ✓ It was agreed to utilize the Action Plan to be implemented as the next activity after the end of the Project
- ✓ Establish leachate monitoring activities in accordance with the Leachate Monitoring Guidelines



Group photo of the JCC



Discussion in the JCC

6 Kosrae State, the Federated States of Micronesia

6.1 The Outline of the Activities of Kosrae State

6.1.1 Expert Dispatch Schedule

Total: 37 days

Dispatch	Date	Days	Dispatched Expert
1 st :	(No dispatch)		
2 nd :	22 nd of September, 2014 – 26 th of September, 2014	5days	Haseyama
3 rd :	(No dispatch)		
4 th :	7 th of February, 2015 – 14 th of February, 2015	8days	Haseyama
5 th :	19 th of April, 2015 – 1 st of May, 2015	13days	Haseyama
6 th :	12 th of September, 2015 – 14 th of September, 2015	3days	Haseyama
7 th :	30 th of November, 2015 – 7 th of December, 2015	8days	Haseyama

6.1.2 Counterpart Organizations

Kosrae Island Resources Management Authority (KIRMA)

Department of Transport and Infrastructure (DT&I)

6.1.3 Counterpart Members

Organization	Title	Name	Remarks
KIRMA	Director	Robert H. Jackson	
DT&I	Director	Weston Luckymis	
KIRMA	Inspector	Kiobu K.Luey	
	Environmental Education Coordinator	Likiak A. Melander	
DT&I	Project Inspector	Hairom Livaie	
DOE	Science Specialist	Lipton Tilfas	DOE is not C/P agency but a collaborating agency

6.1.4 Activities and Outputs

The progress of the activities and its achievements from May 2014 to January 2016 are summarized in accordance with the PO and agreed indicators in next table.

Outputs/ Indicators	Achievement by FY 2013	Activity/ Progress							Activity Plan after the termination of J-PRISM
		1 st dispatch	2 nd dispatch	3 rd dispatch	4 th Dispatch	5 th dispatch	6 th dispatch	7 th dispatch	
Output2-1: a. The SSWMS in Kosrae is finalized b. Action plan is developed.	The SSWMS and its Action Plan were finalized in 2011.	(No dispatch)	e)Support for Developing the Next SSWMS/ Revising the Existing SSWMS and Conducting Waste Survey (Revising the current SSWMS will be scheduled in 2015.) f)Support for the Monitoring the Action Plan The first monitoring activity was conducted in the C/P meeting.	(No dispatch)	e)Support for Developing the Next SSWMS/ Revising the Existing SSWMS and Conducting Waste Survey The way to revise the SSWMS was discussed at the JCC meeting.	e)Support for Developing the Next SSWMS/ Revising the Existing SSWMS and Conducting Waste Survey The process to revise the SSWMS was discussed with the C/Ps but C/Ps proposed extending the term of current SSWMS instead of its revision. This issue was reported to OEEM and OEEM will assist in building consensus to revise the SSWMS.	e)Support for Developing the Next SSWMS/ Revising the Existing SSWMS and Conducting Waste Survey The 2 nd monitoring committee was conducted. The review of the SSWMS was discussed.	e)Support for Developing the Next SSWMS/ Revising the Existing SSWMS and Conducting Waste Survey The 5 th JCC meeting was conducted.	Continue annual meeting as the post JCC meeting.
	Indicator 2-1-1: SSWMS in Kosrae is submitted to the State Government for its approval.								
	Indicator 2-1-2: The progress is evaluated according to the policy of SSWMS	Planned in 2014	The first monitoring activity was conducted in the C/P meeting on 24th of September.	The result of monitoring was reported in the JCC meeting.			【 Mostly Achieved 】 The 2 nd monitoring committee was conducted.		
	Indicator 2-1-3: Monitoring is conducted 3 times per year by Monitoring committee.	Planned in 2014	The first monitoring activity was conducted in the C/P meeting on 24th of September.				【Partly Achieved】 The 2 nd monitoring committee was conducted.		
Indicator 2-1-4: Progress report is prepared by Monitoring committee annually.	Planned in 2014	The Progress report hasn't been prepared yet. This report will be drafted in 2014.					【Partly Achieved】 Official report was not submitted but quarterly reports were submitted to Governor's office.		
Output2-2: Collection of General Waste is improved.	Two Japanese second-handed compacter trucks were donated through GGP and two municipalities have provided waste collection service to the residents.		g)Support for Improvement of Waste Collection Service One compactor truck has been broken down and currently under repair.		As the result of the JCC, the responsible organization was changed from DT&I to KIRMA.	KIRMA conducted a small workshop on improvement of the waste collection system.			Update and Implement the plan of waste collection in Kosrae;

Indicator 2-2:	Improvement plan on waste collection system in each municipality is drafted.	Improvement plan is still at the planning stage and not officially approved by the State government.				Improvement plan is still at the planning stage and not officially approved by the State government.			【Fully Achieved】 The plan of improvement on waste collection was drafted in the workshop.			
Output2-3:	Waste Disposal is improved.	The landfill site has been improved by implementing the Fukuoka method in 2009.				h)Support for Improvement of Landfill Landfill site has been operated with good maintenance and the leachate recirculation system was installed.			Landfill management has been conducted properly.	Landfill site was monitored by the monitoring committee.	The landfill survey was conducted in December, 2015.	Continue good management on the landfill site.
Indicator 2-3:	Operation and maintenance of landfill is regularly conducted.	Some improvement activities such as installation of gas venting pipes, leachate recirculation system and others were implemented.				【Fully Achieved】 It was observed that installed gas venting pipes, leachate recirculation system were operated properly.						
Putput2-4:	Awareness Raising is improved	A booklet for environmental education and awareness were developed and school community workshops have been conducted.				i)Support for Environmental Education and Awareness Program. School activities on environmental education has been conducted continuously by teachers in the Pilot school.	KIRMA has the environmental education and awareness activities properly.	KIRMA conducted the Earth day campaign on waste minimization and 4R promotion.	KIRMA conducted the Earth day campaign on waste minimization and 4R promotion.	KIRMA conducted the Earth day campaign on waste minimization and 4R promotion.		Continue Awareness on 4Rs promotion
Indicator 2-4:	Educational materials for 4R are developed and education for 4Rs is conducted in schools. (2013-: For a pilot school, 2015-: Expand for other 3 schools)	School project at Sansric Elementary school, the teacher training and classroom activities were launched in 2013.				School activities on environmental education has been conducted continuously by teachers in Pilot school.	One more model school, Lelu elm. School has been added to the pilot schools.		【Fully Achieved】 The materials developed are fully utilized by all 6 schools in Kosrae			

6.2 Activity Report of Each Output

6.2.1 Output2-1 : The SSWMS in Kosrae is finalized, Action Plan is Developed

a. Activity of the Second Dispatch (from 22nd to 26th of September, 2014)

C/P meeting was held to monitor the Action Plan on 24th of September, 2014.

It was explained that the State Government developed the Kosrae State Strategic Development Plan (SDP) and the SDP includes the indicators on SWM in the environmental sector. It is preferred to be referred when the Kosrae State Solid Waste Management Strategy² (SSWMS) is revised in 2015 to meet the same direction between the SSWMS and the SDP.

As the results of the Monitoring of the Action Plan, some activities were modified since the actual implementation was difficult. The results of the monitoring were shown as bellow.

Table 6-1: The summary of the monitoring on the Action Plan (September,2014)

Action		Situation as of September 2014	Progress (% complete)
1	Conduct a gap analysis of institutional arrangements and make recommendations	The first gap analysis was conducted in 2011.	50
2	Conduct a gap analysis of existing solid waste management and draft appropriate legislation	The first gap analysis was conducted in 2011.	50
3	Integrate legislation into public programs for awareness and compliance education	The first gap analysis was conducted in 2011.	50
4	Develop and deliver a training program/workshop for enforcers of the legislation	Some government staffs attended several training program.	50
5	Evaluate the application of cost recovery measures: tipping fee at Tofol landfill, user fees for trash collection system (when implemented), environmental levy on all visitors, excise taxes on imported goods, etc.		To be modified
6	Prioritize solid waste management into KIRMA budget to fund Plan implementation	On planning	25
7	Waste stream analysis done at least every 2 years	J-AWARE has been conducted annually.	100
8	Establish a database (e.g. using Microsoft Excel, Access, etc.) for storing and analyzing waste information (requires computer & software)	A Computer on database is needed.	0
9	Develop a program of training on waste stream analysis and data collection and analysis	Training of staff on data accumulation is needed.	25
10	Identify mechanism to ensure monitoring of the implementation of the SWMP (e.g. establish a taskforce, monthly report and inspection, etc.)	The stakeholder meeting has been formulated but it need to be support.	25
11	Expand recycling program to include derelict vehicles and e-waste.	Under process of amendment of state regulations.	50
12	Consider options for applying Extended Producer Responsibility in Kosrae.		To be modified
13	Promote private sector involvement in recycling activities by providing information and appropriate incentives.		To be modified

² The actual name of the plan is State Solid Waste Management Plan

Action		Situation as of September 2014	Progress (% complete)
14	Promote backyard composting as a waste management technique.		To be modified
15	Develop a waste collection guideline for all municipalities.	Still in the planning stage	25
16	Implement the waste collection plan developed in Appendix 3.	Collection trucks have been allocated at 4 municipalities.	50
17	Develop and implement landfill plans for: - Closure of dumpsites in Malem, Utwe, and Tafunsak. - expansion of Tofol landfill to operate according to guidelines for semi-aerobic landfill - Monitoring and maintenance of Tofol landfill	Illegal dumpsites are still in use.	75
18	Evaluate application of tipping fee for Tofol landfill and user fees for collection system,		To be modified
19	Continue school based activities such as contests, clean ups, etc.		100
20	Improve and enhance ongoing communication strategy for SWM which will identify and use best communication methods and tools (e.g. posters, ads, community groups, community meetings, etc.) to achieve the objectives of this SWMP)	The booklet was developed. The environmental education at the pilot project school has been launched.	75
21	Develop a position for Solid Waste Management in KIRMA, develop TOR and fill the position	No activity yet.	0
22	Develop an appropriate, yearly solid waste management training program for Kosrae	No activity yet.	0

No.	Action	25	50	75	100
1	Gap analysis of institutional arrangements and make recommendations	<div></div>	<div></div>		
2	Gap analysis of existing solid waste management and draft appropriate legislation	<div></div>	<div></div>		
3	Integrate legislation into public programs for awareness and compliance education	<div></div>	<div></div>		
4	Develop and deliver a training program/workshop for enforcers of the legislation	<div></div>	<div></div>		
5	Evaluate the application of cost recovery measures	To be modified			
6	Prioritize solid waste management into KIRMA budget to fund Plan implementation	<div></div>			
7	Waste stream analysis done at least every 2 years	<div></div>	<div></div>	<div></div>	<div></div>
8	Establish a database for storing and analyzing waste information (requires computer & software)	0			
9	Develop a program of training on waste stream analysis and data collection and analysis	<div></div>			
10	Identify mechanism to ensure monitoring of the implementation of the SWMP	<div></div>			
11	Expand recycling program to include derelict vehicles and e-waste.	<div></div>	<div></div>		
12	Consider options for applying Extended Producer Responsibility in Kosrae.	To be modified			
13	Private sector involvement in recycling activities by providing information and appropriate incentives.	To be modified			
14	Backyard composting as a waste management technique.	To be modified			
15	Develop a waste collection guideline for all municipalities.	<div></div>			
16	Implement the waste collection plan developed in Appendix 3.	<div></div>	<div></div>		
17	Develop and implement landfill plans for:	<div></div>	<div></div>	<div></div>	
18	Evaluate application of tipping fee for Tofol landfill and user fees for collection system,	To be modified			
19	Continue school based activities such as contests, clean ups, etc.	<div></div>	<div></div>	<div></div>	<div></div>
20	Improve and enhance ongoing communication strategy for SWM	<div></div>	<div></div>	<div></div>	
21	Develop a position for Solid Waste Management in KIRMA, develop TOR and fill the position	0			
22	Develop an appropriate, yearly solid waste management training program for Kosrae	0			

Figure 6-1: The chart of the results on the monitoring of the action plan (September, 2014)

b. Activity of the Fourth Dispatch (from 7th to 14th of February, 2015)

The process to revise the SSWMS was discussed at the 4th state level JCC meeting. JICA Expert advised that the Kosrae SDP was a proper reference to be reflected to the revised SSWMS, because SDP includes similar strategic long term plan on the SWM. As the result of the discussions in the JCC meeting, revising the SSWMS was scheduled in the activities in 2015.

Also, the result of monitoring of the activities in 2014 was reported in the JCC meeting, it was recommended in the JCC meeting to analyse and consider the monitoring results.

Table 6-2: (ref.) The Environmental targets and activities discribed in the SDP (SWM sector)

Result	Activities	Cost
Effective waste management is achieved	Kosrae Solid Waste Management Plan adopted, funded and implemented	\$240,000
	Collection service for all municipalities established and maintained	\$200,000
	Illegal dumpsites are closed and rehabilitated	\$100,000
	Importation of single-use, non-biodegradable plastic bags and Styrofoam banned	\$2,000
	Recycling Program legislation amended to include other recycling items, cardboard, etc.	\$1,000
	Recycling Program to include other recyclable items, i.e. Cardboards, etc. expanded	\$2,000
	Solid Waste collection service and management of Tofol landfill privatized	\$200,000
	Waste Water Management Plan developed	\$5,000
	Watershed protected areas are established	TBD
	Enforcement of environmental laws i.e. Pollution and Littering Regulations, etc., strengthened	\$4,000
	Scrap/bulky waste is regulated	\$1,000
	Littering law is amended to include private-land, illegal dumpsites and enforced	\$2,000
	Regulations on discharge and disposal of chemicals on air, land, marine and water sources are reviewed and enforced	\$2,000
	Pigpen regulation is developed and fully enforced	\$3,000
	Policy to establish buffer zones for development near rivers, coasts, and water sources enforced	\$2,000
	Capacity developed and monitoring programs for water quality established for freshwater and marine areas	\$15,000
	Comprehensive awareness programs of the 4 R's - Refuse, Reduce, Reuse and Recycle developed, undertaken and maintained	\$5,000

(Kosrae State Strategic Development Plan 2014 - 2023)

c. Activity of the Fifth Dispatch (from 19th of April to 1st of May, 2015)

The Director of KIRMA proposed to extend the term of current SSWMS from 2015 to 2016 or 2017 instead of revising the SSWMS in 2015. The reasons which he said were the activities that were not finished would be implemented for the next few years and the consideration to secure financial background would be required. He strongly recommended his proposal to the JICA Expert. Regarding this issue, Expert reported to OEEM. OEEM recommended KIRMA to revise the SSWMS in accordance with the original plan in 2015, also proposed to dispatch the Director of KIRMA to a workshop on new Regional Strategy to be organized by SPREP in July of 2015. OEEM will provide some assistance such as the travel fee or other necessary arrangements for KIRMA. OEEM will continue to discuss about the revision of the SSWMS with Director of KIRMA.

The Waste Amount and Composition Survey (WACS) was conducted in Kosrae State in cooperation with municipal governments. The Waste generation weight with volume and waste composition were studied in the survey.



Sampling under cooperation of the municipalities



Scale the weight and volume



Segregation the waste



Scale the categorized wastes

Generation Rate: 0.700 lbs/day/person = 0.318 kg/day/person

- Sampling: 20 households in Kosrae State
- Survey schedule: April 25 – April 30 (Sampling: April 27 – April 30 4days)

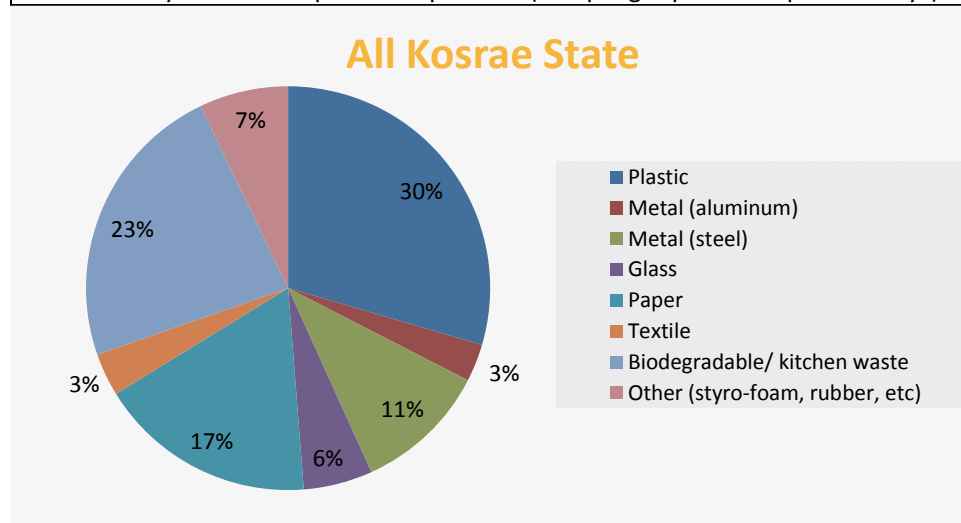


Figure 6-2: The Summary of the result of WACS in Kosrae State

d. Activity of the Sixth Dispatch (from 12th to 14th of September, 2015)

Director of KIRMA attended to the regional strategy workshop which organized by SPREP and the suggestion to KIRMA by OEEM helped to make consensus on the full scale revision of the SSWMS in 2016 with reviewing the current SSWMS in 2015. The new SSWMS will be aligned to the new regional strategy. SPREP will support the revision of the SSWMS in 2016.

The final evaluation report pointed out that the evaluation was “Partially Achieved” in the output 2-1 because the monitoring committee was held only once but the indicator was “Three times a year”. It was suggested that continuously conducting the monitoring committee is needed for the proper project management.

The 2nd monitoring committee was held on the 14th of September, 2015. The Action Plan was monitored in the meeting. The activities to be reviewed and to be added were identified by the C/Ps. Committee members were KIRMA, DT&I and Mayors of municipal governments. Full scale revision of the SSWMS will be conducted in 2016 while the review of the current SSWMS was conducted in 2015. The new SSWMS will be aligned to the new regional strategy. SPREP will support the revision of the SSWMS in 2016.

No.	Action	25	50	75	100
1	Gap analysis of institutional arrangements and make recommendations	■	■		
2	Gap analysis of existing solid waste management and draft appropriate legislation	■	■		
3	Integrate legislation into public programs for awareness and compliance education	■	■		
4	Develop and deliver a training program/workshop for enforcers of the legislation	■	■		
5	Evaluate the application of cost recovery measures	■	■	■	■
6	Prioritize solid waste management into KIRMA budget to fund Plan implementation	■			
7	Waste stream analysis done at least every 2 years	■	■	■	■
8	Establish a database for storing and analyzing waste information (requires computer & software)	0			
9	Develop a program of training on waste stream analysis and data collection and analysis	■			
10	Identify mechanism to ensure monitoring of the implementation of the SWMP	■			
11	Expand recycling program to include derelict vehicles and e-waste.	■	■		
12	Consider options for applying Extended Producer Responsibility in Kosrae.	■	■	■	■
13	Private sector involvement in recycling activities by providing information and appropriate incentives.	■	■	■	■
14	Backyard composting as a waste management technique.	To be modified			
15	Develop a waste collection guideline for all municipalities.	■			
16	Implement the waste collection plan developed in Appendix 3.	■	■		
17	Develop and implement landfill plans for:	■	■	■	
18	Evaluate application of tipping fee for Tofol landfill and user fees for collection system,	To be modified			
19	Continue school based activities such as contests, clean ups, etc.	■	■	■	■
20	Improve and enhance ongoing communication strategy for SWM	■	■	■	
21	Develop a position for Solid Waste Management in KIRMA, develop TOR and fill the position	0			
22	Develop an appropriate, yearly solid waste management training program for Kosrae	0			

Figure 6-3: The chart of summary of the monitoring on the action plans

Table 6-3: UPDATES of the result of the Action Plan:

No.5 Evaluate the application of cost recovery measures >>>Completed
Cost Recovery Measures were reflected to the amendment of CDL system.

No.12 Consider options for applying Extended Producer Responsibility in Kosrae. >>>completed
The concept of EPR was reflected to the amendment of CDL system particularly for imported cars.

No.13 Private Sector involvement in recycling activities by providing information and appropriate incentives.
>>> completed. Micronesia Eco and a Chinese scrap metal company were already involved.

Actions to be removed from the revised SWMS

No.14 Backyard composting as a waste management technique.
It seems this action is not suitable to the cultural background in Kosrae.
Instead of the above mentioned, school composting will be implemented as the actions on school environmental education.

No.18 Evaluate application of tipping fee for Tofol landfill and user fees for collection system,
Collection fee system in municipalities has been introduced already instead of the landfill tipping fee. Collection fee is much better than landfill tipping fee in Kosrae. The tipping fee may be considered after privatizing the landfill site.

Seeking/Waiting Funds

No.8 Establish a database for storing and analyzing waste information (requires computer & software)

No.21 Develop a position for Solid Waste Management in KIRMA, develop TOR and fill the position

No.22 Develop an appropriate, yearly solid waste management training program for Kosrae

Additional activities in accordance with “The State Strategic Development Plan (2014-2023)”

- 3.1 Kosrae Solid Waste Management Plan adopted, funded and implemented
- 3.1.1 Collection service for all municipalities established and maintained
- 3.1.2 Illegal dumpsites are closed and rehabilitated
- 3.1.3 Importation of single-use, non-biodegradable plastic bags and Styrofoam’s banned
- 3.1.4 Recycling Program legislation amended to include other recycling items, cardboard, etc.
- 3.1.5 Recycling Program to include other recyclable items, i.e. Cardboards, etc. expanded
- 3.1.6 Solid Waste collection service and management of Tofol landfill privatized
- 3.3 Enforcement of environmental laws i.e. Pollution and Littering Regulations, etc., strengthened
- 3.3.1 Scrap/bulky waste is regulated
- 3.3.2 Littering law is amended to include private-land, illegal dumpsites and enforced
- 3.4 Comprehensive awareness programs of the 4 R's - Refuse, Reduce, Reuse and Recycle developed, undertaken and maintained



The 2nd monitoring committee



Site inspection by the committee members

Table 6-4: The Result of the landfill site inspection (Summary of the Check List)

No	Item	Evaluation
1	Approach Road	Good Still in good condition
2	Gate & Inspection	Very good
3	Record Log	Date, time, type of vehicle, type of waste and etc. has been recorded on the logbook.
4	Littering/Odor/Fly Breaching	Very little impact Good maintenance
5	Cover Soil	Cover soil was conducted periodically.
6	Compaction	Compaction was conducted periodically. But compaction is not conducted for this few days due to no fuel o equipment.
7	Condition of the Bulldozer	Mechanically good. No fuel now. Waiting Budget.
8	Gas Venting Pipes	Working properly. No damaged.
9	Leachate Pipe	Working properly. No damaged. Not submerged.
10	Leachate Pond	Good Not damaged
11	Leachate (Color, Odor)	Color: Green The Leachate Recirculation is recommended.
12	Leachate Monitoring Log	Conducted monthly. The last result (August, 2015) shows about 13-20 mg/L-COD.



The log book at the site



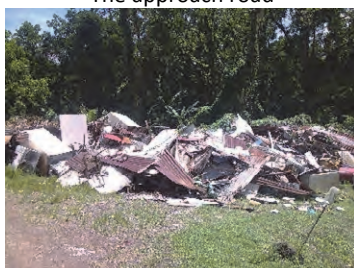
The approach road



The landfill area



The bulldozer



Segregating Scrap Metals



Segregating Green Waste



The gate Control



The leachate Pond



The scene of the dumping



The sign board



The management house



The border fence

e. Activity of the Seventh Dispatch (from 30th of November to 7th of December, 2015)

The activities were monitored in the 5th State level JCC meeting held on 4th of December, 2015. (Refer to “Other activities related in SWM”.)

6.2.2 Output2-2: Collection of General Waste is improved

a. Activity of the Second Dispatch (from 22nd to 26th of September, 2014)

Two compactor trucks had been in operation in Kosrae, but one of them was waiting for the repair since last February, 2014. Unfortunately illegal dumping was relapsed in Tafunsak since the compactor truck covering this area was broken down. It was observed that DT&I was just waiting for the repair of the compactor truck without taking any alternative measures to continue the waste collection service such as using other available vehicles. Formulation of the waste collection plan by the municipal governments under assistance of DT&I was also retarded. Repairing the compactor truck was completed around December of 2014.



Compactor truck under repair



The Illegal dumpsite at Tafunsak

b. Activity of the Fifth Dispatch (from 19th of April to 1st of May, 2015)

A small workshop on waste collection was held on 22nd of April, 2015, Municipal Mayors or their representatives attended this workshop.



Workshop Day 1 (April 23rd)



Workshop Day 2 (May 1st)

Some information on waste collection system in Kosrae was updated as bellow.

Table 6-5: The summary of the waste collection systems in Kosrae State

Municipality	Tafunsak	Lelu	Malem	Utwe
Legislation/ regulation/ Ordinance	Enacted	Enacted	Enacted	Not yet
Supervisor	Mayor	Mayor	Mayor	Mayor
Collection Vehicle	One compactor Truck	One compactor Truck	One flatbed Truck	One flatbed Truck
Bin/Bag	State distributed Aluminum bins to household. The bins were donated by Japan GGP fund.			
Method	On demand	On demand	On demand	On demand
Budget	Collection fee is separate from the general budget in municipal government.			
Collection Fee	4USD/month	3USD/month	4USD/month, 10USD/6months 20USD/Year Residents can choose	2USD/1Trip
Maintenance/Mechanic	Car Maintenance has been provided by DT&I.			

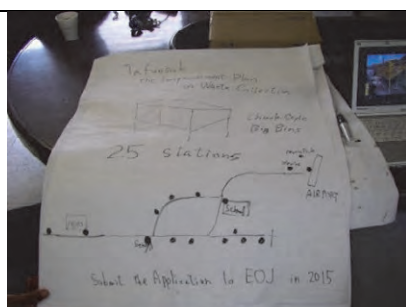
As the output of the workshop, following improvement plan was drafted, and further detail will be discussed to finalize the improvement plan.

■ **To set up the sub-stations and collection bins to improve collection system and to minimize the illegal dumpsites**

New sub-stations will be set up at each municipal area and the big bins which are to be shared for about 10 households like Chuuk will be installed. The bins will be located at the public spaces such as schools, Churches and in front of big shops. Bins will be designed in accordance with the Waste Bins installed in Chuuk KIRMA will get further information and advice on design of the bins under the cooperation of Chuuk EPA. Each Municipal Government drafted their conceptual Plan.

■ **Sustainable Operation on waste collection**

Issue on non-sustainable financing at the each municipal government was found out through the workshop. Although it is very challenge, The Municipal governments and Kosrae State government will continue to improve for sustainable financing.



The basic improvement plans drafted



(Reference Photo) Waste Bin in Chuuk

6.2.3 Output2-3: Waste Disposal is improved.

a. Activity of the Second Dispatch (from 22nd to 26th of September, 2014)

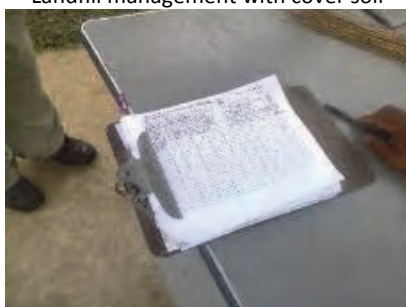
The management of the landfill site has been conducted properly. Some improvement works were conducted such as installation of a leachate recirculation system in March, 2014. A portable weighing scale unit was not yet repaired after it was damaged in March 2014 by rough riding by drivers. In-coming waste is recorded continuously, and other good management such as adequate landfill operation, covering soil have been conducted as well which are the good practices in Kosrae.



Landfill management with cover soil



Good management of the leachate



Recording of in-coming trucks



Gate inspection

b. Activity of the Fifth Dispatch (from 19th of April to 1st of May, 2015)

As the result of the site observation, the management of the landfill site has been conducted properly. In-coming waste has been recorded continuously, and other good management such as periodical compaction of the waste, pushing the waste, adequate equipment operations, covering soil, leachate monitoring and so on have been conducted.



Landfill site at May of 2015



A Bulldozer for the compaction

c. Activity of the Sixth Dispatch (from 12th to 14th of September, 2015)

The landfill site was monitored by the monitoring committee members. The committee members checked the landfill site and the check list was filled in. (Refer to “4.2.1 Output2-1 : The SSWMS in Kosrae is finalized, Action Plan is Developed.”)

d. Activity of the Seventh Dispatch (from 30th of November to 7th of December, 2015)

The lifespan survey of the landfill site was conducted on 2nd of December, 2015. C/Ps of KIRMA and DT&I attended the survey. The ground level of the landfill layer was measured by using a rule tape and a level meter. The current level was compared with the planned level on the blueprint. After the field activity and calculation, remaining capacity volume and life span were estimated.

As the results, remaining capacity volume is 7,078 cubic meters and remaining lifespan is 11.3 years. The landfill site operation was started in 2008 and the total lifespan was estimated for about 18 years. This result is shorter than the original plan of lifespan by 20 -25 years meaning that the efforts of waste minimization are still needed and this result should be reflected to the planning of the waste minimization.

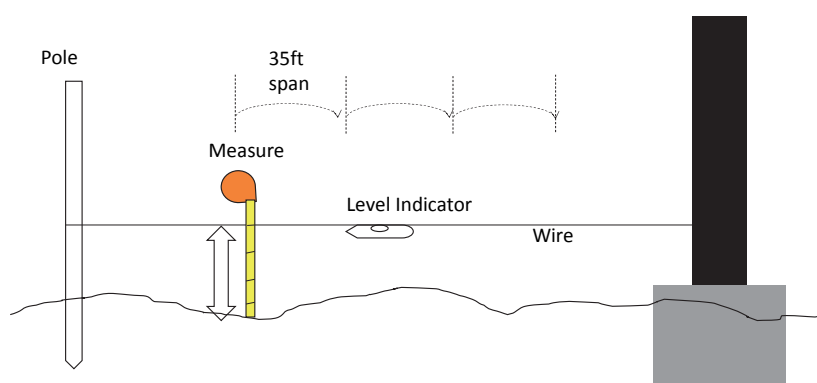
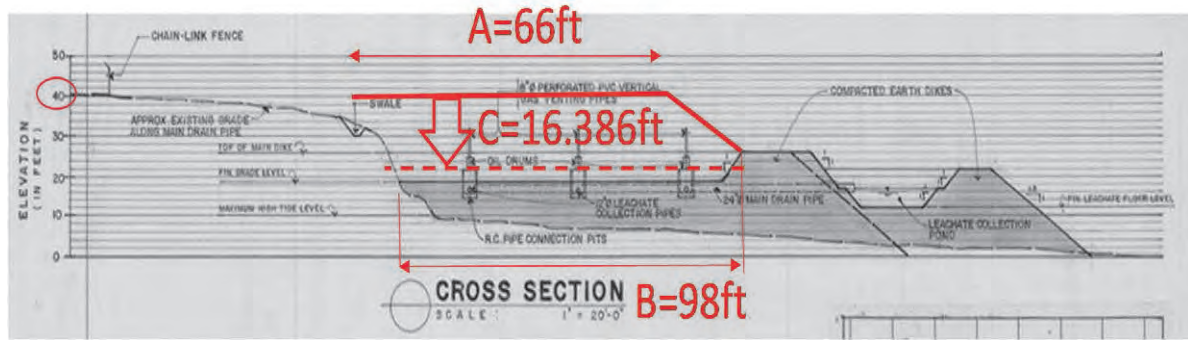


Figure 6-4: The method to measure the level height of the landfill site



Land survey for lifespan calculation



Remaining Capacity: $(A + B) \times C/2 \times D$ $D: 186\text{ft}$ length
 $= 249,919$ cubic feet $= 7,078$ cubic meter (m^3)

-- Estimated life span (The case study)

Planned weekly waste volume: $12 \text{ m}^3 = \text{daily } 1.714 \text{ m}^3$
 $(2 \text{ m}^3 \text{ capacity compactor} \times 6 \text{ loads / week})$

$7,078 \text{ m}^3 / 1.714 \text{ m}^3/\text{day} = 4,129 \text{ days} = 11.3 \text{ years}$

Figure 6-5: The lifespan survey of the Kosrae Landfill site

6.2.4 Output2-4: Awareness Raising is improved

a. Activity of the Second Dispatch (from 22nd to 26th of September, 2014)

KIRMA has been conducting the activities of environmental education and public awareness raising. Recycling activities and the Eco-club activities related to the Output 2-4 have been conducted at Sansric elementary school which is a pilot school.



Recycling Bins decollated by students
(Sansric E.S.)



A booklet which provided by J-PRISM
(Sansric E.S.)

b. Activity of the Fifth Dispatch (from 19th of April to 1st of May, 2015)

KIRMA continued conducting activities of environmental education and public awareness-raising. The recycling activities and the Eco-club activities also continued at Sansric elementary school. Additionally, the environmental education has been launched at another elementary school, Lelu Elementary School. A school workshop was conducted in November, 2014 and recycle bins have been installed at the school. Recyclable cans and plastic bottles were collected at the school.

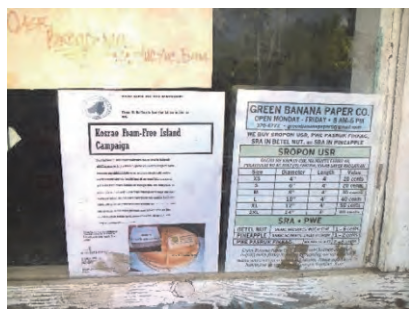
“The Kosrae Foam-Free Island” campaign was conducted by KIRMA under cooperation and donation of Micronesia Eco, the private recycling company, on the Earth day, 2015. Micronesia Eco has donated to KIRMA the biodegradable products such as 250 hinged lunch-boxes 100% sugar cane, bamboo plates and Areca plates made in Kosrae. The products were used instead of plastic foam products. Also awareness posters written in Kosraean language were posted at public spaces. KIRMA gave those biodegradable lunch-boxes/plates to all the takeout food shops and restaurants around Tofol and Lelu together with the posters and invited them to stop using plastic foam products at least on the Earth Day.



Recycling activity at the elementary school (Lelu E.S.)



Environmental education at the classroom (Sansric E.S.)



Posters of "Kosrae Foam-Free Island" campaign



Recycling activities at Utwe municipality



Environmental Education on Bio-degradable materials in Lelu Elementary School



c. Activity of the Seventh Dispatch (from 30th of November to 7th of December, 2015)

After the workshop on environmental education in October of 2013, teachers in Sansric elementary school, one of the pilot schools on environmental education, have conducted the environmental education in classroom continuously. Also environmental club activity has been conducted at the school under the leadership of the science teachers. It was observed that good efforts on environmental education were conducted in the classroom and club activities. Students have already understood the meaning of 4Rs. Awareness and education are kind of good ways to promote waste minimization, and it was observed that activities in Kosrae on the awareness/education could be good practices and good reference in other Pacific Island Countries (PICs).



Environmental education by a science teacher at Sansric Elementary School



6.2.5 Other Activities related to SWM

This section reported the activities related to SWM but not included in the PO of the J-PRISM including JCCs and Capacity Assessments.

a. Activity of the Fourth Dispatch (from 7th to 14th of February, 2015)

The 4th JCC meeting was held on 13th of February, 2015. The C/Ps provided presentations on the Outputs and Activities described in PO and then explained the progress and achievements in Kosrae state during the fourth year of J-PRISM.

- ✓ Although it was determined at the last JCC to hold the monitoring committee three times annually, in fact the monitoring meeting was conducted only once on 24th of September, 2014. It was observed that the monitoring activity was not implemented well. It was recommended to analyze and consider the reasons to improve for the next steps.
- ✓ “Kosrae Environment Sector Log Frame: 2014 – 2023” was established and the log frame covers the period from 2014 to 2023. The Log Frame includes the output “Effective waste management is achieved” and the output is quite similar to the SSWMS. The Log Frame will be good reference to revise the current SWMS.
- ✓ DT&I reported the current issues of the waste collection system that were informed by municipalities.
- ✓ KIRMA shared the results of the training program on water quality management. KIRMA will plan the monitoring method on the Leachate at Lelu landfill site in accordance with the Leachate Management and Monitoring Plan drafted in the training program.
- ✓ KIRMA and DOE reported awareness-raising activities on 4R promotion in schools. One elementary school was selected as a pilot school in 2013. The 4R promotion activities were expanded to another elementary schools in 2014. Expansion to another elementary schools will be scheduled in 2015 as well. Some video and presentation materials were newly developed.
- ✓ The Waste Survey was scheduled to be conducted in 2015.

Key-points of discussions in the JCC were;

- ✓ All stakeholder acknowledged the importance of the monitoring activities. KIRMA promised that the Monitoring Committee would be held three times in 2015.
- ✓ Revising the current SWMS is important activity in 2015. The SWMS will be revised in accordance with “Kosrae Environment Sector Log Frame: 2014 – 2023”.



The presentation at the JCC meeting

- ✓ The technical assistance on the activity 2-2-3 “Draft the improvement plan on waste collection” would be mainly facilitated by KIRMA. DT&I would assist KIRMA on this activity.

b. Activity of the Seventh Dispatch (from 30th of November to 7th of December, 2015)

b.1. JCC

The 5th State level JCC meeting was held in 4th of December, 2015. C/Ps of KIRMA and DT&I attended the meeting. Activity results on SWM were reported by C/Ps. The results of the final evaluation survey and some identified issues in the survey were explained to C/Ps.

At the end of the meeting, it was agreed among C/Ps that the Action Plans would be implemented continuously by Kosrae State after the termination of J-PRISM. Prioritized activities are (1) Continue annual meeting as the post JCC meeting; (2) Improve waste collection in Kosrae; (3) Continue awareness activities on 4Rs promotion and (4) Continue good management at the landfill site.



The 5th State level JCC meeting in Kosrae State

b.2. Capacity Assessment

Capacity Assessment was conducted through interviews with C/Ps. Further improvement in the landfill site and activities on promotion of 4Rs can increase the score in the awareness/promote 3R and landfill. However, it was understood that the critical budget situation affected the result of the assessment.

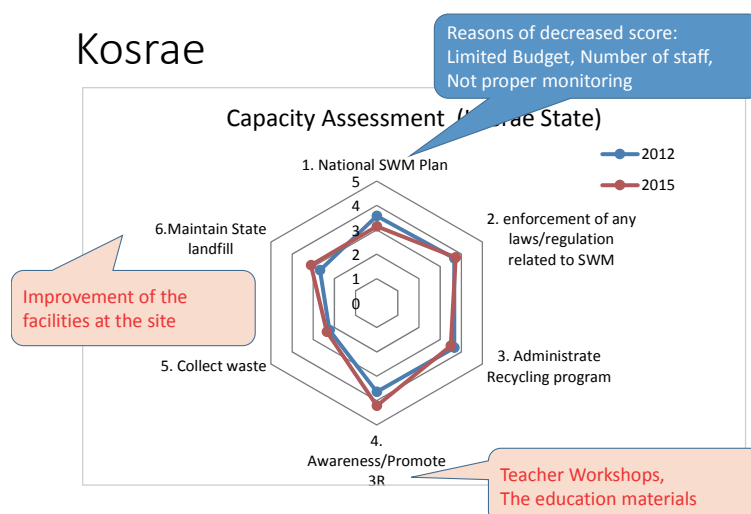


Figure 6-6: The results of the Capacity Assessment in Kosrae

-
- ✓ **SSWMS:** Revising SSWMS was scheduled in 2016. The financial mechanism such as collection/tipping fee systems should be considered as the measures against the insufficient budget.
 - ✓ **Legislation:** It would be effective to establish legislations and implement activities described in the SDP.
 - ✓ **Recycling:** It would be effective to maintain the CDL and to include more items to be recycled.
 - ✓ **Environmental education/awareness:** It would be effective to continue the on-going education/awareness activities in schools and communities.
 - ✓ **Waste collection:** It would be effective to enhance the responsibility of the State Government in developing improvement plan of the waste collection while keeping the basic responsibility of the municipal governments to provide waste collection services.
 - ✓ **Landfill site:** It would be a good practice in PICs if Kosrae keeps the good management level at the landfill site.

7 Pohnpei State, the Federated States of Micronesia

7.1 The Outline of the Activities in Pohnpei State

7.1.1 Expert Dispatch Schedule

Total: 138days

Dispatch	Date	Days	Dispatched Experts
1 st :	2 nd of July, 2014- 13 th of July, 2014	12days	Haseyama
	2 nd of July, 2014- 12 th of July, 2014	11days	Muranaka
2 nd :	10 th of September, 2014- 21 st of September, 2014	12days	Haseyama
	14 th of September, 2014- 22 nd of September, 2014	9days	Muranaka
3 rd :	27 th of November, 2014- 13 th of December, 2014	17days	Haseyama
4 th :	14 th of February, 2015- 4 th of March, 2015	19days	Haseyama
5 th :	2 nd of May, 2015 - 17 th of May, 2015	16day	Haseyama
	8 th of May, 2015 - 15 th of May, 2015	8day	Muranaka
6 th :	30 th of August, 2015- 3 rd of September, 2015	5days	Haseyama
	15 th of September, 2015- 20 th of September, 2015	6days	Haseyama
7 th :	1 st of November, 2015 - 3 rd of November, 2015	3days	Haseyama
	17 th of November, 2015 - 20 th of November, 2015	4days	Haseyama
	13 th of December, 2015 - 20 th of December, 2015	8days	Haseyama
	13 th of December, 2015 - 20 th of December, 2015	8days	Muranaka

7.1.2 Counterpart Organizations

Environment Protection Agency (EPA)

Division of Transportation and Infrastructure (T&I)

7.1.3 Counterpart Members

The list of counterparts in Pohnpei was updated frequently. Mr. Albert Roby, the Director of EPA retired in September of 2015. Mr. Henry Susaia has been an acting director of EPA from October of 2015. New EPA director will be assigned after inauguration of the New Mayor of State. Mr. Charles Loan resigned in September of 2015. Mr. Nerson Henry, the inspector of T&I passed away in August of 2015. New successors, Bradmurry Soram, Alexes Clinton Etse, Rusty Calros (EPA) and Peterson Anson (T&I) were newly joined to J-PRISM.

Organization	Title	Name	Remarks
EPA	Director	Albert Roby	Retired in September, 2015
	Acting Director	Henry Susaia	Assigned in October, 2015
	Specialist	Charles Lohn	Resigned in September, 2015
	Specialist	Joseph Victor	C/P from May, 2015
		Bradmurry Soram	C/P from October, 2015
		Alexes Clinton Etse	C/P from October, 2015
		Rusty Cakros	C/P from October, 2015
T&I	Administrator	Fedrico Primo	Retired in 2015
	Acting Administrator	Ricky Leben	Assigned after 2015
	Inspector	Nerson Henry Jr.	Passed away in August, 2015
	GIS specialist	Peterson Anson	C/P from August, 2015
PWMS		Pius Yalppy	PWMS is not C/P agency but a collaborating agency

7.1.4 Activities and Outputs

The progress of the activities and its achievements from May 2014 to January 2016 are summarized in accordance with the PO and agreed indicators in next table.

Outputs/ Indicators		Achievement by FY 2013	Activity/ Progress					7 th dispatch	
			1 st dispatch	2 nd dispatch	3 rd dispatch	4 th Dispatch	5 th dispatch	6 th dispatch	
Output 3-1:	a. The SSWMS in Pohnpei is finalized.	The SSWMS named "Clean Pohnpei" was finalized in February of 2014.	j) Support for Developing the Next SSWMS/ Revising the Existing SSWMS and Conducting Waste Survey	j) Support for Developing the Next SSWMS/ Revising the Existing SSWMS and Conducting Waste Survey	j) Support for Developing the Next SSWMS/ Revising the Existing SSWMS and Conducting Waste Survey	j) Support for Developing the Next SSWMS/ Revising the Existing SSWMS and Conducting Waste Survey	j) Support for Developing the Next SSWMS/ Revising the Existing SSWMS and Conducting Waste Survey	k) Support for Monitoring the Action Plan	The monitoring results were reported in the JCC meeting.
	b. Action plan is developed.		Schedule on revising the SSWMS and a waste survey was confirmed.	No specific activity conducted.	No specific activity conducted.	Deleting the activity "3-1-3 Draft the next SSWMS for the year 2016-2020." from PO was agreed in the 4th JCC meeting, because The drafted NSWMS covers 2014 – 2018.	The waste survey was conducted. But the survey was suspended due to Tropical Storm Attacking after 2 days survey.	The monitoring of activities was updated.	
			k) Support for Monitoring the Action Plan	k) Support for Monitoring the Action Plan	k) Support for Monitoring the Action Plan	k) Support for Monitoring the Action Plan	k) Support for Monitoring the Action Plan		
			The first monitoring was conducted.	No specific activity conducted.	No specific activity conducted.	The Results of monitoring were reported in the JCC.	The monitoring of activities was updated.		
Indicator 3-1-1 :	SSWMS in Pohnpei is submitted to the State for approval.		【Fully Achieved】						
Indicator 3-1-2 :	Monitoring is conducted 3 times per year by Monitoring committee.	Planned in 2014	The first monitoring was conducted.						【Partially Achieved】 The progress of the Action Plan was reported in the JCC meeting.
Indicator 3-1-3 :	Progress report is prepared by Monitoring committee annually.	Planned in 2014	Progress report was not prepared yet.	Progress report was not drafted and prepared yet.					【Not Achieved】
Output 3-2:	Collection of General Waste is improved.	Each municipality provides waste collection service but there are gaps in the capacities of waste collection as follows. 1 municipality has compacter trucks. 3 municipalities have flatbed trucks 2 municipalities have no waste collection service	l) Support for Improvement of Waste Collection	l) Support for Improvement of Waste Collection	l) Support for Improvement of Waste Collection	l) Support for Improvement of Waste Collection	l) Support for Improvement of Waste Collection	l) Support for Improvement of Waste Collection	
			Pilot project on improvement of waste collection in Sokehs and Kitti was planned and scheduled.	Progress was monitored.	Issues on waste collection was discussed, and EPA and 3 municipalities agreed the policy to improve waste collection.	The MOU between EPA and municipal governments on waste collection was endorsed.	The new waste collection vehicles were coming to Pohnpei State		

Indicator 3-2:	A Pilot project on improvement of waste collection is launched in Sokehs and Kittu.	Discussion among EPA, Sokehs and Kittu has started from February 2014. The detail plan will be discussed in 2014.	Planning process	m) Support for Improvement of Existing Dumpsite Schedule to improve the leachate treatment in 2014 was planned.	m) Support for Improvement of Existing Dumpsite Leachate treatment system was improved.	m) Support for Improvement of Existing Dumpsite Leachate treatment system was improved. (Continuing of activity in 2nd dispatch)	m) Support for Improvement of Existing Dumpsite Proper management has been continued.	m) Support for Improvement of Existing Dumpsite The construction of 2nd Cell was supported by JICA.	m) Support for Improvement of Existing Dumpsite Proper management has been continued.	m) Support for Improvement of Existing Dumpsite The 2nd cell improvement was conducted..	【Fully Achieved】 The new waste collection service was started in Sokehs and Kittu.
Output 3-3:	Final Disposal landfill site is improved.	Pilot project to introduce Fukuoka-method was successfully conducted in 2013. C/Ps continue the improvement work under their ownership.			【Fully Achieved】 Leachate treatment system was installed.						
Indicator 3-3:	Operation under Fukuoka method is introduced for existing dumpsite.	One waste cell has been improved by introducing Fukuoka method.									
Output 3-4:	CDL system is improved. *CDL: Container Deposit Legislation	CDL system was launched in 2012 and has been operated. 3 C/Ps attended the 3R training hold in Palau in 2013.	n) Support for Improvement of CDL system The progress of the Action Plan drafted in the 3R training in Palau in 2013 was monitored and necessary advice was provided.	n) Support for Improvement of CDL system The progress of the Action Plan was monitored and the issues on financial data management was discussed.	n) Support for Improvement of CDL system Issues of the CDL was discussed, and Lt. Governor, Chief of Finance and Director of EPA agreed to share the financial data between DT&A and EPA monthly.	n) Support for Improvement of CDL system The data from DT&A was analyzed and identified issues were discussed.	n) Support for Improvement of CDL system The data from DT&A was analyzed and issues were reported in the JCC meeting.				
Indicator 3-4-1	CDL system is operated without unintentional stop.	Planned in 2014									【Not Achieved】 Actually CDL operation was opened several times in a year.
Indicator 3-4-2	The Recycling Law is amended.	Planned in 2014									【Partially Achieved】 Draft of amendment was submitted to AG office but still not amended.
Indicator 3-4-3	Financial system on CDL is improved.	Planned in 2014									【Mostly Achieved】 The data was shared with DT&A and is still in analyzing stage

7.2 Activity Report of Each Output

7.2.1 Output3-1 : The SSWMS in Pohnpei is finalized. Action plan is developed

a. Activity of the First Dispatch (from 2nd to 13th of July, 2014)

“Clean Pohnpei, A Solid Waste Management Strategic Plan for Pohnpei State 2014-2018” was endorsed by the Governor and issued officially. Monitoring the Action Plan was scheduled in 2014 and 2015. Development of the monitoring system and data collection to feed-back and revise the Action Plan should be prioritized.

The first monitoring of the Action Plan was conducted by a C/P of EPA. The monitoring sheet is attached below.

Table 7-1: The activities of the Action Plan and its monitored progress

	Action	Situation as of July 2014	Progress (% complete)
1	Conduct a gap analysis of institutional arrangement (including policies, legislation) and make recommendations	Not yet Width meeting	10-15%
2	Integrate legal obligations into public awareness programs	Public awareness is implemented	50%
3	Develop and deliver a training program/workshop for enforcers of the legislation	On planning stage	50%
4	Educate public on collection service	On planning stage in Sokehs and kitti	50%
5	Implement reliable, user-pay collection service	Kolonia: Implementation stage Sokehs: Planning stage	25-50%
6	Improve tracking of the resources that support SWM across the various agencies in Pohnpei	On planning stage	50%
7	Develop and put forward a proposal to implement a financing mechanism such as visitor levy applied to departure tax (similar to Palau)	Proposal stage Proposed before	25%
8	Allocate more resources (funding, human resources) to waste management in EPA budget & planning	Decreasing year by year	0%
9	Conduct a detailed waste stream analysis at least every 5 years using standard methods	The first waste stream was drafted in 2011.	75%
10	Establish a database (e.g. using Microsoft Excel, Access, etc.) for storing and analyzing waste information (requires computer & software)	On planning stage	75%
11	Improve monitoring of import and export data for recyclables	To be improved in 2014 - 2015	25-50%
12	Divert and isolate green waste from landfill by establishing and encouraging mulching or composting, first at source (households), and then at the disposal site	Separated in dumpsite	75%
13	Provide economic incentives to encourage local and community-based recycling and waste reduction. (For example: provide space and equipment for scrap metal recycling; provide tax breaks/reductions to encourage private sector involvement in recycling; provide start-up grants, implement advanced disposal fees for appliances, vehicles, etc.)	Only CDL has been launched.	50%
14	Expand the deposit-refund program to other items including PET, glass, cardboard, tires (may need to secure additional funding support and conduct awareness)	Planning stage	25%
15	Establish segregation of waste at the household level	On planning stage	25%
16	Improve data monitoring of imports and recyclables		50%
17	Improve access of outer islands to the deposit refund program	Not yet.	0%

	Action	Situation as of July 2014	Progress (% complete)
18	Conduct institutional review to identify best arrangements for waste collection (same as Action No. 1)	On planning stage	50%
19	Design and implement a waste collection system	Special working in Sokehs and Kittu	50%
20	Implement Dekehtik dumpsite improvement program comprising: - Waste diversion (expansion in recycling program, promotion of composting) - Guidelines for salvaging - Actions for waste oil disposal & reduction (see "Waste Oil" Priority Area)	Fukuoka method and leachate treatment have been introduced.	50%
21	Improve record keeping on Dekehtik dumpsite	Started in 2013	25%
22	Cease use of existing littering sites through combination of awareness, improvement in collection service, and enforcement of littering law	Awareness activities have been launched.	25%
23	Complete design and construction of new semi aerobic landfill	Improvement of Dekehtik dumpsite has been implemented.	25%
24	Identify and secure revenue sources for operation of new landfill which may include user charges	On planning stage	25%
25	Investigate the feasibility of on-island recycling of waste oil, such as by re-refining of waste oil and use as boiler fuel	This action will be supported by SPREP.	25%
26	Conduct seminar with Chamber of Commerce and others on potential business opportunities in recycling of e-wastes, waste oil and tires	No activity yet	0%
27	Improve storage and incineration to be consistent with standard best practices and obligations under Stockholm Convention on POPs	No activity yet	0%
28	Identify Australian public sector organization to submit application for technical assistance to AusAid Pacific Public Sector Linkages Program (PSLP)	No activity yet	0%
29	Develop and implement a cross-training plan in conjunction with other responsible institutions to ensure that other officers receive appropriate training in waste management issues	No activity yet	0%

b. Activity of the Fourth Dispatch (from 15th of February to 4th of March, 2015)

The 4th State level JCC meeting was held on 27th of February, 2015. The results of the activities were reported in the JCC meeting. It was agreed in the JCC to delete the activity 1-6 "Draft the next SSWMS for the year 2016-2020" from PO, because the Solid Waste Management Strategic Plan for Pohnpei State which was endorsed by the Governor in February of 2014 covers the term from 2014 to 2018.

c. Activity of the Fifth Dispatch (from 2nd to 17th of May, 2015)

c.1. Monitoring of the Action plan

The Action Plan was monitored and updated in May, 2015.

Table 7-2: The updated monitoring results of progress in Pohnpei State

Action		Situation as of July 2014	Progress (% complete)
18	Conduct institutional review to identify best arrangements for waste collection (same as Action No. 1)		50%--->75%
19	Design and implement a waste collection system	Special working in Sokehs and Kitti	50%--->75%
20	Implement Dekehtik dumpsite improvement program comprising: - Waste diversion (expansion in recycling program, promotion of composting) - Guidelines for salvaging - Actions for waste oil disposal & reduction (see "Waste Oil" Priority Area)	- Waste diversion (expansion in recycling program, promotion of composting) Yes - Guidelines for salvaging Not yet - Actions for waste oil disposal & reduction (see "Waste Oil" Priority Area) Supported by SPREP.	50%--->65%
21	Improve record keeping on Dekehtik dumpsite		25%--->75%
22	Cease use of existing littering sites through combination of awareness, improvement in collection service, and enforcement of littering law	New littering law has been implemented by Sokehs M.G. Also it has been supported by EPA.	25%--->50%
23	Complete design and construction of new semi-aerobic landfill >> Complete to plan on improvement at Deketik Dumpsite	Improvement Plan was drafted. Construction of the 2nd Cell was started.	25%--->50%
29	Develop and implement a cross-training plan in conjunction with other responsible institutions to ensure that other officers receive appropriate training in waste management issues	Some staff members attended to JICA trainings.	0%--->50%

c.2. Waste amount and composition survey (WACS)

The waste amount and composition survey (WACS) was conducted by EPA and staffs from three municipal governments (Kolonias, Sokehs and Kitti). The survey was conducted for only two days, because the survey was suspended after the tropical storm Dolphin attacked Pohnpei on 10th of May, 2015. The survey will be restarted after the cleanup activities of storm debris.



The workshop to prepare the survey



Sampling at a family in Kolonia



Sampling at a family in Sokehs



Scaling



The waste segregation



The waste segregation

The interim report of the 2 days survey is as follow.

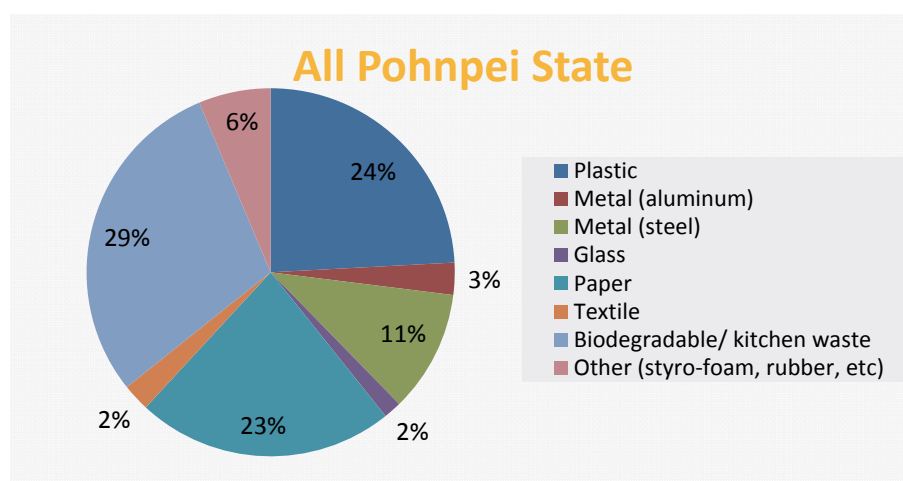


Figure 7-1: The Summary of the result of WACS in Pohnpei State

(Tentative calculation on only two days before suspending due to the tropical storm)

d. Activities of the Sixth Dispatch (from 30th of August to 4th of September, 2015, and from 15th to 19th of September, 2015)

The result of the final evaluation survey pointed out that monitoring activities were not done fully. Monitoring is very important activities to evaluate the results of the Action Plan and to consider countermeasures as the management of the Project. It is important to improve the presence of T&I in SWM especially in the proactive monitoring activities. Monitoring result is shown in the table below.

Action		Situation as of July 2014	Progress (% complete)
18	Conduct institutional review to identify best arrangements for waste collection (same as Action No. 1)		50%>75%
19	Design and implement a waste collection system	Special working in Sokehs and Kitt - Compactor truck arrived in Sokehs - Preparing stage to introduce the prepaid bag system	50%>75%
20	Implement Dekehtik dumpsite improvement program comprising: - Waste diversion (expansion in recycling program, promotion of composting) - Guidelines for salvaging - Actions for waste oil disposal & reduction (see "Waste Oil" Priority Area)	- Waste diversion (expansion in recycling program, promotion of composting) Yes - Guidelines for salvaging Not yet - Actions for waste oil disposal & reduction (see "Waste Oil" Priority Area) Supported by SPREP	50%>65%
21	Improve record keeping on Dekehtik dumpsite		25%>75%
22	Cease use of existing littering sites through combination of awareness, improvement in collection service, and enforcement of littering law	New littering law has been implemented by Sokehs M.G. Also it has been supported by EPA	25%>50%
23	Complete design and construction of new semi aerobic landfill -> Complete to plan on improvement at Deketik Dumpsite	Improvement Plan has been drafted. Construction of the 2nd Cell has been started,	25%>50%
29	Develop and implement a cross-training plan in conjunction with other responsible institutions to ensure that other officers receive appropriate training in waste management issues	Some staffs attended JICA training	0%>50%>75%

e. Activities of the Seventh Dispatch (from 1st to 3rd of November, 2015, from 17th to 20th of November, 2015 and from 13th to 20th of December, 2015)

The results of monitoring the Action Plan were reported in the JCC meeting. A graphical chart of the monitoring results was created by C/Ps.

Table 7-3: The results of the monitoring on the Action Plan

No.	Action	25	50	75	100
1	Conduct a gap analysis of institutional arrangement (including policies, legislation) and make recommendations	<div></div>			
2	Integrate legal obligations into public awareness programs	<div></div>	<div></div>		
3	Develop and deliver a training program/workshop for enforcers of the legislation	<div></div>	<div></div>		
4	Educate public on collection service	<div></div>	<div></div>	<div></div>	
5	Implement reliable, user-pay collection service	<div></div>	<div></div>		
6	Improve tracking of the resources that support SWM across the various agencies in Pohnpei	<div></div>	<div></div>		
7	Develop and put forward a proposal to implement a financing mechanism such as visitor levy applied to departure tax (similar to Palau)	<div></div>			
8	Allocate more resources (funding, human resources) to waste management in EPA budget & planning	0			
9	Conduct a detailed waste stream analysis at least every 5 years using standard methods	<div></div>	<div></div>	<div></div>	
10	Establish a database (e.g. using Microsoft Excel, Access, etc) for storing and analyzing waste information (requires computer & software)	<div></div>	<div></div>	<div></div>	
11	Improve monitoring of import and export data for recyclables	<div></div>	<div></div>		
12	Divert and isolate green waste from landfill by establishing and encouraging mulching or composting, first at source (households), and then at the disposal site	<div></div>	<div></div>	<div></div>	
13	Provide economic incentives to encourage local and community-based recycling and waste reduction. (For example: provide space and equipment for scrap metal recycling; provide tax breaks/reductions to encourage private sector involvement in recycling; provide start-up grants, implement advanced disposal fees for appliances, vehicles, etc)	<div></div>	<div></div>		
14	Expand the deposit-refund program to other items including PET, glass, cardboard, tires (may need to secure additional funding support and conduct awareness)	<div></div>			
15	Establish segregation of waste at the household level	<div></div>			
16	Improve data monitoring of imports and recyclables	<div></div>	<div></div>		
17	Improve access of outer islands to the deposit refund program	0			
18	Conduct institutional review to identify best arrangements for waste collection (same as Action No. 1)	<div></div>	<div></div>	<div></div>	
19	Design and implement a waste collection system	<div></div>	<div></div>	<div></div>	
20	Implement Dekehtik dumpsite improvement program comprising:	<div></div>	<div></div>		
21	Improve record keeping on Dekehtik dumpsite	<div></div>	<div></div>	<div></div>	
22	Cease use of existing littering sites through combination of awareness, improvement in collection service, and enforcement of littering law	<div></div>	<div></div>		
23	Complete to plan on improvement at Deketik Dumpsite	<div></div>	<div></div>		
24	Identify and secure revenue sources for operation of landfill/Dumpsite which may include user charges	<div></div>			
25	Investigate the feasibility of on-island recycling of waste oil, such as by re-refining of waste oil and use as boiler fuel	<div></div>			
26	Conduct seminar with Chamber of Commerce and others on potential business opportunities in recycling of e-wastes, waste oil and tires	0			
27	Improve storage and incineration to be consistent with standard best practices and obligations under Stockholm Convention on POPs	0			
28	Identify Australian public sector organization to submit application for technical assistance to AusAid Pacific Public Sector Linkages Program (PSLP)	0			
29	Develop and implement a cross-training plan in conjunction with other responsible institutions to ensure that other officers receive appropriate training in waste management issues	<div></div>	<div></div>		

7.2.2 Output3-2: Collection of General Waste is improved

a. Activity of the First Dispatch (from 2nd to 13th of July, 2014)

Each municipality provides the waste collection service in Pohnpei. Therefore, each municipality wants to secure their own collection vehicles for their waste collection service from their own traditional mind of self-respect and sense of independency that made the barrier against introducing the efficient area-wide collection in cooperation with several municipalities.

In spite of the above situation, EPA encouraged these municipalities to improve the waste collection, which will be initiated from two municipalities; Sokehs and Kitti from 2015. These municipalities have a plan to introduce a new waste collection system in parallel with introduction of new compactor trucks which will be donated through Grassroots Human Security Project (GGP).

JICA Expert Team visited the Sokehs municipality hall and discussed about improvement method of waste collection. Sokehs municipality already developed their own improvement plan of waste collection. Outline of the improvement plan was shown as bellow.

- ✓ Changing waste collection method from Door-to-Door which is popular method in Pohnpei State to a Community collection stations.
- ✓ Introducing “Fee Collection system” and “Prepaid bag system”. The representative of the Sokehs municipality said that the municipality would collect waste only in the prepaid bags.
- ✓ The collected fee will be managed by the municipal government, and it will be utilized for the management and maintenance of the waste collection service.

JICA Expert Team gave some advice on this plan to develop an adequate management system in the municipal government because the financial management of the new waste collection system is not easy, especially under limited number of staffs.

Sokehs and Kitti municipalities were finalizing the application to the GGP for the waste collection trucks.

b. Activity of the Second Dispatch (from 10th to 21st of September, 2014)

The stakeholder meeting was held among EPA, Kolonia, Sokehs and Kitti municipalities on 8th of December, 2014. Updated status of the waste collection system was summarized as bellow.

Table 7-4: Statas of waste collection in Pohnpei (September of 2014)

	Kolonia	Sokehs	Kitti
Waste collection plan	Only schedule and sections have been planned.	Plan was updated on Oct, 2014.	Under developing
Legislation/ regulation/ Ordinance	Town ordinance has been enacted.	Ban illegal dumping Nothing on new waste collection	None
Supervisor	Mr. Benito Dannis, PW of Kolonia Gov.	Mr. Yoma Edward, chief of PW, Sokehs Gov.	Rainer Gilmede, Chief of PW, Kitti
Collection Vehicle	2 compactors & 1 dump trick	1 compactor & 1 dump trick	1 compactor
Bin/Bag	2 Drums for household * Prepaid bag was under consideration	Residents can choose drum or prepaid bag.	Any style is possible
Method	House to House 3 times a month	Depends on area, house to house or community pick up station	Community pick up station (30 stations) Twice or 3 times a month
Budget	Not separated from PW budget	Not separated from PW budget	Not separated from PW budget
Collection Fee	5 USD/month Pay at town hall	5 USD/month or Prepaid bag	None
Maintenance/Mechanic	One part time mechanic	2 mechanics	2 mechanics

As a result of the meeting, EPA and municipalities (Kolonia, Sokhes and Kitti) agreed to conduct the following activities.

- ✓ Formulation of the Technical Committee to improve the waste collection among EPA and municipalities of Kolonia, Sokehs and Kitti. The committee meeting is scheduled to be held twice in January, 2014.
- ✓ Information and good practices will be shared among the stakeholders, and any issues will be discussed and solved in the Technical Committee. In particular, experience and knowledge of Kolonia municipal government which has experience of the operation of the waste collection should be shared with other municipalities.
- ✓ Good maintenance of the vehicles is important, and the knowledge, experience and resources should be shared among the stakeholders by developing cooperation among the stakeholders.

c. Activity of the Fourth Dispatch (from 15th of February to 4th of March, 2015)

Based on the agreement among EPA and municipal governments of Kolonia, Sokehs and Kitti on improvement of the waste collection made in December of 2014, they signed on the Minutes of Understanding (MOU) on developing a cooperative framework on the improvement of waste collection service in the 4th State level JCC meeting. The purpose of this MOU is to establish cooperative and financial arrangements among KTG, SMG, KMG, and EPA for the implementation and management of solid waste collection services and provision of maintenance service on the vehicles.



The Mayors and representatives of municipal governments with the MOU

d. Activity of the Fifth Dispatch (from 2nd to 17th of May, 2015)

Kolonia municipal government introduced the Pre-Paid Bag waste collection system from March, 2015. The waste collection fee system was already introduced in Kolonia before. Introducing the pre-paid bag system will change the way to pay the fee. The residents can choose either paying by cash to the government or buying the pre-paid bags. Pre-paid bag has been sold at 5 USD/ (set with 20 bags). It is very interesting trial to improve the waste collection system in Pacific Island Countries.

Both Sokehs and Kitti municipal governments have been preparing to introduce new waste collection system with the new waste collection vehicles donated through GGP. A compactor truck and a dump truck arrived in Sokehs in May, 2015. Sokehs will launch the new waste collection system soon. Another compactor truck to Kitti was not arrived yet, which will be arriving soon.

The workshop on improvement of waste collection for municipal government officers was planned, but it was postponed to the next dispatch term of the Expert due to the tropical storm Dolphin.



The Prepaid bag system has been starting in Kolonia, Pohnpei.



A compactor truck and a dump truck have been arrived in Sokehs, Pohnpei.

e. Activities of the Sixth Dispatch (from 30th of August to 4th of September and from 15th to 19th of September, 2015)

Preparation of the new waste collection service in Sokehs and Kittu is in progress. A compactor truck and a dump truck were arrived in Sokehs, but the new collection service was not started yet because the preparation of the pre-paid bag was not finalized in the municipal government. Staffs of Sokehs municipal government said that new waste collection service would start in October this year. A new truck was not arrived in Kittu.

Originally a workshop on improvement of waste collection was planned in September, but it was postponed to November because there were cleanup activities in throughout Pohnpei in September.



The Compactor truck in Sokehs

For the reference, “Trash King” a private company launched a private business to pick waste from households and businesses in Pohnpei.



The compactor truck which operated by a private company

f. Activities of the Seventh Dispatch (from 1st to 3rd of November, from 17th to 20th of November, and from 13th to 20th of December, 2015)

A workshop on waste collection was held on 19th of November, 2015. The purpose of the workshop was to share good experience, practice and knowledge among municipal governments in Pohnpei State. Municipal governments reported the current status of waste collection. The status of the waste collection in Pohnpei was updated and shared with stakeholders. Pre-paid bag system initiated in Kolonia can be a good practice for other PICs. Also, the MOU made among the municipal governments to collaborate in the improvement of the collection service was updated with newly including two municipal governments of Nett and U under arrangement of EPA.

Table 7-5: Status of the waste collection in municipalities (November of 2015)

	Kolonia	Sokehs	Kitti	Nett	U
Waste collection plan	Only schedule and sections have been planned.	Plan was updated on Oct, 2014.	Under developing	Not yet	Not yet
Legislation/ regulation/ Ordinance	Town ordinance has been enacted.	Ban illegal dumping Nothing on new waste collection	None		
Supervisor	Mr. Benito Dannis, PW of Kolonia Gov.	Chief of PW, Sokehs	Chief of PW, Kitti	Chief of PW, Nett	Chief of PW, U
Collection Vehicle	2 compactors & 1 dump truck	1 compactor & 1 dump truck	1 compactor	A flat Bed (A compactor is planned)	A flat Bed (A compactor is planned)
Bin/Bag	2 Drums for household Prepaid bag was under consideration	Residents can choose drum or prepaid bag.	Any style is possible	Any style is possible	Any style is possible
Method	House to House 3 times a month	Depends on area, house to house or community pick up station	Community pick up station (30 stations) Twice or 3 times a month	House to House	House to House
Budget	Not separated from PW budget	Not separated from PW budget	Not separated from PW budget	Not separated from PW budget	Not separated from PW budget
Collection Fee	5 USD/month or Prepaid Bag	\$5/month or Prepaid bag	Monthly rate: \$5/household \$10/business \$20/special offer	3 USD/month	5 USD/once
Maintenance/Mechanic	One part time mechanic	2 mechanics	2 mechanics	Private Business	Private Business



Workshop on waste collection

7.2.3 Output3-3: Final Waste Disposal site is improved

a. Activity of the First Dispatch (from 2nd to 13th of July, 2014)

a.1. Current progress of the dumpsite

A Pilot Project on improvement of the landfill to the semi-aerobic landfill site was conducted successfully in June, 2014. After the Pilot Project, further improvements at the landfill were conducted under the initiative of the C/Ps. Total area of improved cell was almost 6,000 cubic meters (30m×70m×3m depth).

One year after the Pilot Project, a half of the improved cell was filled up with the waste. It was expected that the remaining capacity of the new cell would be another one year in accordance with visual observation.

3,000 cubic meters per year means

Daily volume of waste is $3,000 / 365 \approx 8.22$ cubic meters per day (After compaction base)

This is a reference figure because it does not include the wastes disposed at different cells.

It was observed that gas venting pipes were functioning properly and no damage observed because the operators of the heavy equipment operated carefully to avoid damaging the gas venting pipes. A compactor had some mechanical problems; therefore compaction of the waste layer was not done well from the last two months. Although the compactor was not in good condition, the waste layer was leveled. The mechanical problem of compactor was occurred at transmission system and PWMS was waiting for the parts for the repairing. It was concerned that the compactor nearly reaches the end of its life. PWMS purchased a middle size excavator in July, 2014, which could further improve the condition of the site.

The photos of the landfill site are attached bellow.



22nd of July 2013
(After the pilot project)



18th of November, 2013



27th of February, 2014



4th of July, 2014



Gate of the dumpsite



Signboard to inform the pilot project has been installed in front of a leachate pond.



Quality of the leachate has been improved. Color of the leachate has been changed from dark black to green. A leachate recirculation pump was installed.



The dumpsite on 4th of July, 2014



No compaction since the compactor is under repaired for two months. Maintenance of the equipment is one of the big issues on the operation.



Flowerpots which were made from waste tires were lined along the main road in front of the dumpsite. This activity is one of the environmental education under JOCV. Elementary school students painted the tires for the decoration and planted flowers.

a.2. Issues on organizational arrangements

Organizational relationship on the management of the dumpsite is shown as bellow.

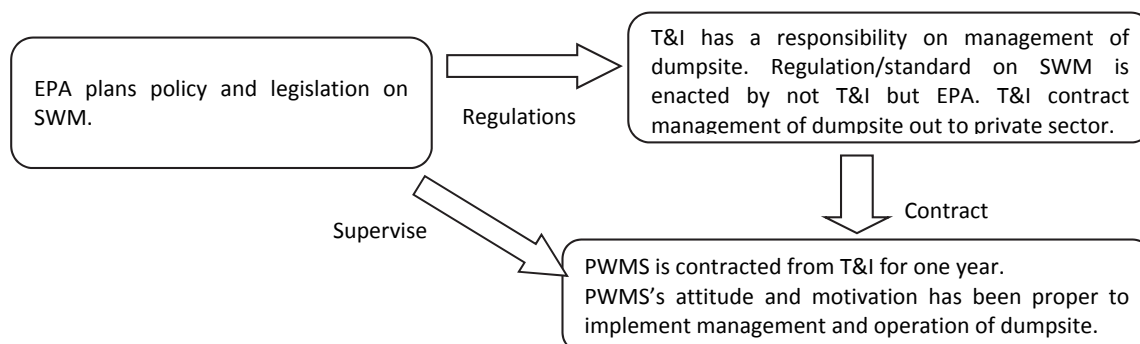


Figure 7-2: Institutional arrangement of the SWM in Pohnpei State

EPA is one of the main implementing agencies of SWM in Pohnpei, although the C/Ps do not have much knowledge of civil engineering. On the other hand, C/Ps of T&I have knowledge of the civil engineering while do not have enough knowledge of SWM. Also PWMS is a key player of SWM in Pohnpei. Developing good team work among EPA, T&I and PWMS is recommended for implementing the project activities as scheduled.

There is no SWM division in T&I, and an inspector named Nerson Henry works for SWM as his additional task from his original job; therefore, his working time for the SWM was not secured enough. Additionally, involvement of T&I in SWM as a responsible organization was not adequate. One reason of this institutional issues is that the Administrator of T&I had been hospitalized for a long time.

PWMS is a private company contracted on yearly basis with T&I. Their motivation in the SWM is very high. The staffs of the PWMS understood the essence of the Fukuoka method and operate the landfill site properly. Working with a responsible private companies is recommended and effective in the improvement of the SWM.

a.3. Plan on improvement of leachate treatment

EPA and the PWMS were planning to install a leachate treatment system based on the system of Tafaigata landfill in Samoa. One year after the Pilot Project, C/Ps proposed to conduct intermediate soil over on the landfill layer. Their proposal was appropriate and effective for improvement of the landfill site. Actualization of the idea of the C/P is effective for their capacity development. This improvement work will be implemented in September, 2014 funded by J-PRISM in purchasing gravel, crushed rock, cover soil and other materials with technical support by the Expert.

b. Activity of the Second Dispatch (from 10th to 21st of September, 2014)

b.1. Update on dumpsite management

The appropriate management and operation have been implemented at the landfill after the last visit of the Expert. It was observed that the remaining capacity of the new cell was decreasing. In the new cell, the waste was piled up since the compactor was under repair and not operated for a few months. It was concerned that the failure of the compactor was one of the reasons to stagnate the operation and management of the dumpsite.



12th of September, 2014



Aeration of the leachate pond by using recirculation pump



PWMS purchased an excavator



Recording at the gate of the dumpsite was started.

b.2. Support to install leachate treatment

Fukuoka method was applied to the landfill site under assistance of J-PRISM, and the leachate recirculation system was also installed in order to further improve the management and operation of the landfill site. The concept of leachate treatment system was decided through discussions with C/Ps.

Treatment process was composed of two steps, namely gravel filter bed and one sand bed filter.

The layout was decided in accordance with the above mentioned concept, which was determined under ownership of C/Ps. The C/Ps, with their high motivation, conducted the fieldwork with a small excavator prepared by PWMS. Some cost the works was provided by the Project.

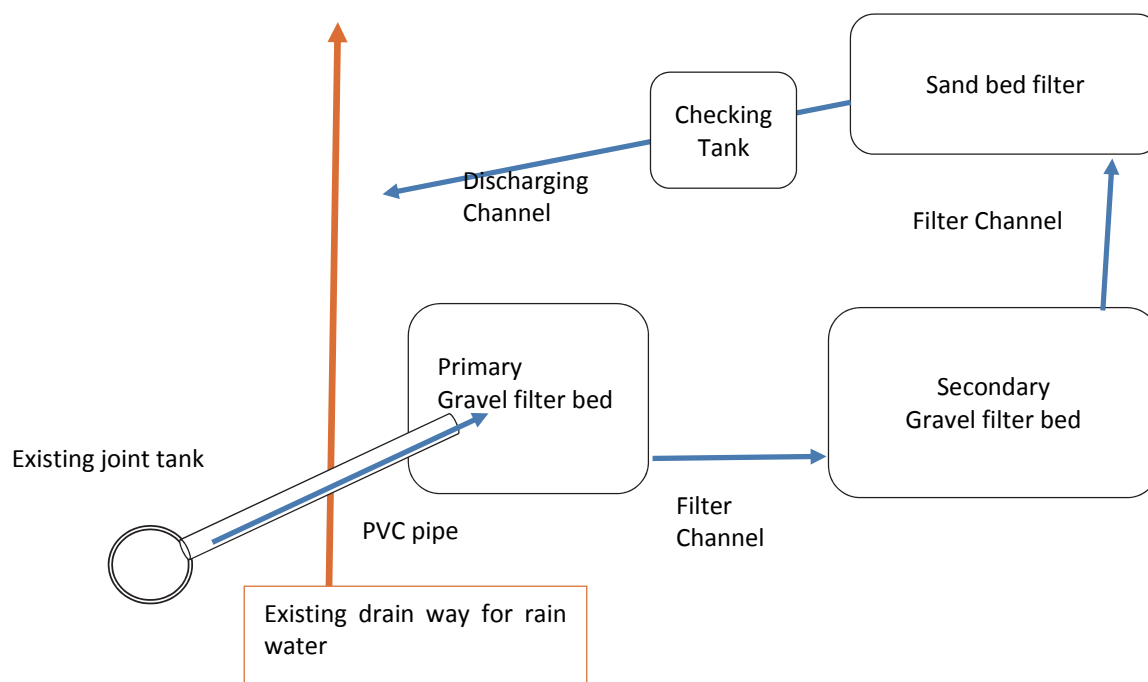


Figure 7-3: Outline of the treatment plan



Before installation



Digging the site



Installed pipes



Installation of the gravel bed



Gravel filter bed



Sand bed filter



Improvement of leachate treatment (September, 2014)

c. Activity of the Third Dispatch (from 26th of November to 10th of December, 2014)

Some additional improvements were observed at the landfill site. The leachate treatment facility was operated well and the leachate ran into the system, filtered and drained out to the outside of the landfill site. Some improvement cost for filter materials (gravel and crushed rock) and electric parts to install underground wiring for the leachate recirculation pump was provided by the Project.



A filter process by using empty drum has been added to the facility.



Instruction of underground wiring for the leachate recirculation pumps



The joint box for wiring of the leachate recirculation pump



The PWMS installed cocks for the leachate recirculation



The dumpsite (View from the leachate treatment area)

d. Activity of the Fourth Dispatch (from 15th of February to 4th of March, 2015)

PWMS drafted the improvement plan of the landfill site. The plan included the construction of the 2nd cell in the area with the Fukuoka method. The experience and technical knowledge learnt through the Pilot project in 2013 was utilized in the plan. JICA supported construction of the 2nd cell in February, 2015. A land survey and basic plan of the 2nd cell were conducted under the ownership of C/Ps. JICA supported the improvement such as providing the rental fee of an excavator and a bulldozer. The improvement works were conducted for 6 days in February, 2015 and a part of the 2nd cell was constructed.

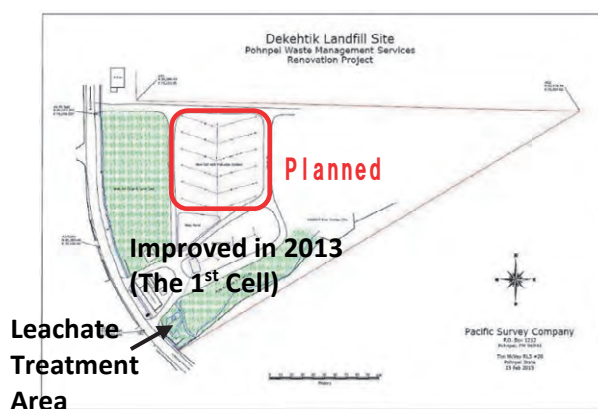


Figure 7-4: The Improvement plan of the site (Drafted by PWMS)



The land survey before improvement



Identified the border of the sections



Before improvement (February 18)



After improvement (February 27)



The Day 6 (February 26) Cutting by an excavator



The Day 6 (February 26) Pushing by a bulldozer

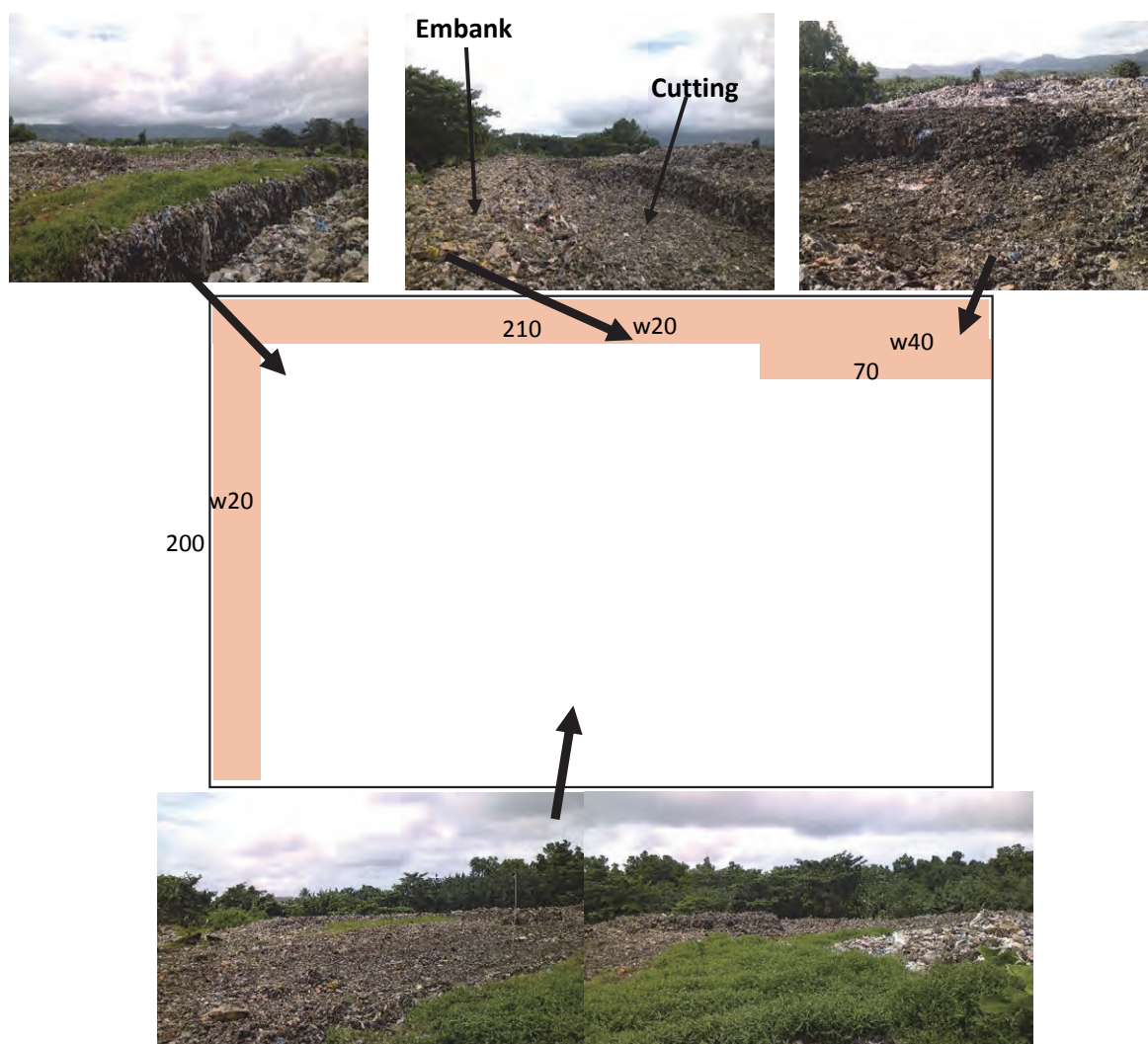
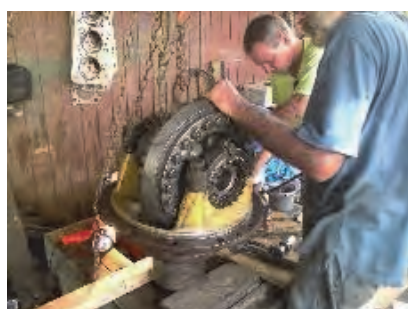


Figure 7-5: The result of construction of the 2nd cell at the dumpsite

e. Activity of the Fifth Dispatch (from 2nd to 17th of May, 2015)

It was observed that operation and management of the landfill site were properly conducted continuously after the rehabilitation conducted in June, 2013. A compactor at the dumpsite was under repair due to its transmission trouble but the spare parts arrived and the repair works were started in May, 2015. PWMS will restart the compaction of the waste layer in middle of June, 2015.



Repairing the transmission parts of the compactor



The leachate treatment facility



View of the dumpsite with proper management



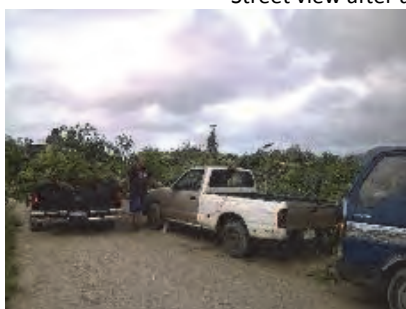
Compaction has not been conducted for about 1 year.
It will be restarted after the compacter is repaired.

✓ After Tropical Storm “Dolphin”

The tropical storm Dolphin attacked Pohnpei on the 10th of May, 2015. After the tropical storm, a great amount of green waste was generated and transported to the landfill site. The landfill site was able to accept the green waste because the segregation zone for green waste was prepared after the rehabilitation works. PWMS planned to secure a chipper for shredding the green waste to reduce the volume of green waste.



Street view after attack of the tropical Storm Dolphin



Dumpsite with many green waste after attack of the tropical storm Dolphin



The Green waste yard at the dumpsite

f. Activities of the Sixth Dispatch (from 30th of August to 4th of September and from 15th to 19th of September, 2015)

After the pilot project in 2013 and installation of the leachate treatment in 2014, proper operation and management was conducted continuously by PWMS.

The 2nd cell was excavated partially from February of 2015. The plan of the 2nd cell and its time schedule were drafted by C/Ps as shown in below. Fortunately, one excavator was donated to EPA by Japan’s Non-Project Grant Aid. Since T&I could not secure the budget for the dumpsite improvement due to the limited State budget, a part of the excavation of the 2nd cell was supported by J-PRISM. After the discussions between JICA Expert and C/Ps, it was decided that the fuel for the excavator would be provided by the Project

from November of 2015 to the end of January of 2016 and the improvement works would be continued under ownership of the State government after the end of the Project.



View of the dumpsite



Leachate treatment

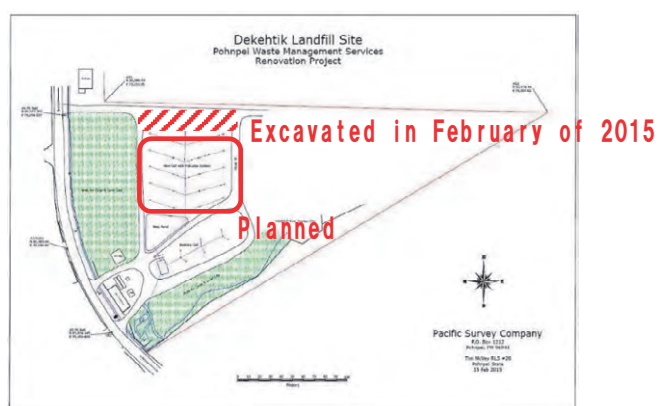


Figure 7-6: The Layout plan of the 2nd cell

Table 7-6: The Time frame of the 2nd Cell

Process/Year	2015	2016	2017
Excavation			
Formation			
Removing the Oil drums			
Leachate Pond			
Gas Venting & Leachate Pipes			
Approach Roads			
Finalization			
Start the disposing			

: Supported by J-PRISM budget

g. Activities of the Seventh Dispatch (from 1st to 3rd of November, from 17th to 20th of November, and 13th to 20th of December, 2015)

The 2nd cell construction was conducted from November of 2015 to January of 2016. As the purpose of the project activities is not limited to construction works but also capacity development, the submission of weekly progress report from C/Ps to Expert was required to supervise the progress of improvement. Also EPA, T&I and PWMS composed the supervise team and the team conducted supervision, monitoring and reporting the progress to JICA Expert weekly. After submission of the report, the Expert looked over the report, made comments and provide advice for the improvement.

The dumpsite improvement works were conducted properly since November under supervision by the supervise team. The supervise team held the meetings with site inspections, filled the check-list and produced the weekly progress report to submit to JICA expert. The fuel was provided after receiving comments from JICA experts.



Team meeting of the supervisors
(Filling the Check list)



Site Inspection



Excavation



After excavation



Diesel fuel for the improvement
(4th of November)



Diesel fuel for the improvement
(20th of November)

Visible change was observed at the site and closely 50% of excavation was completed by the end of January, 2016.



18th of November, 2015



14th of December, 2015



Site Inspection (14th of December)



The Project of the Consultant Office
The Weekly Report of the Progress on the Implementation
Operation

From: ... To: ...
To: JICA ...
To: JICA ...

Category	Item	Unit	Quantity	Remarks
Construction Work	Excavation	m ³		
	Backfill	m ³		
	Gravel	m ³		
	Other			
Material	Gravel	m ³		
	Other			
	Gravel	m ³		
	Other			

Remarks:

- Extended Work of excavation is completed up to this.
- Construction work is in progress.
- Material is being stored in the site.

Photo (Working Site) - Photograph

By: ... Date: ...

Example of the weekly report which submitted by C/P

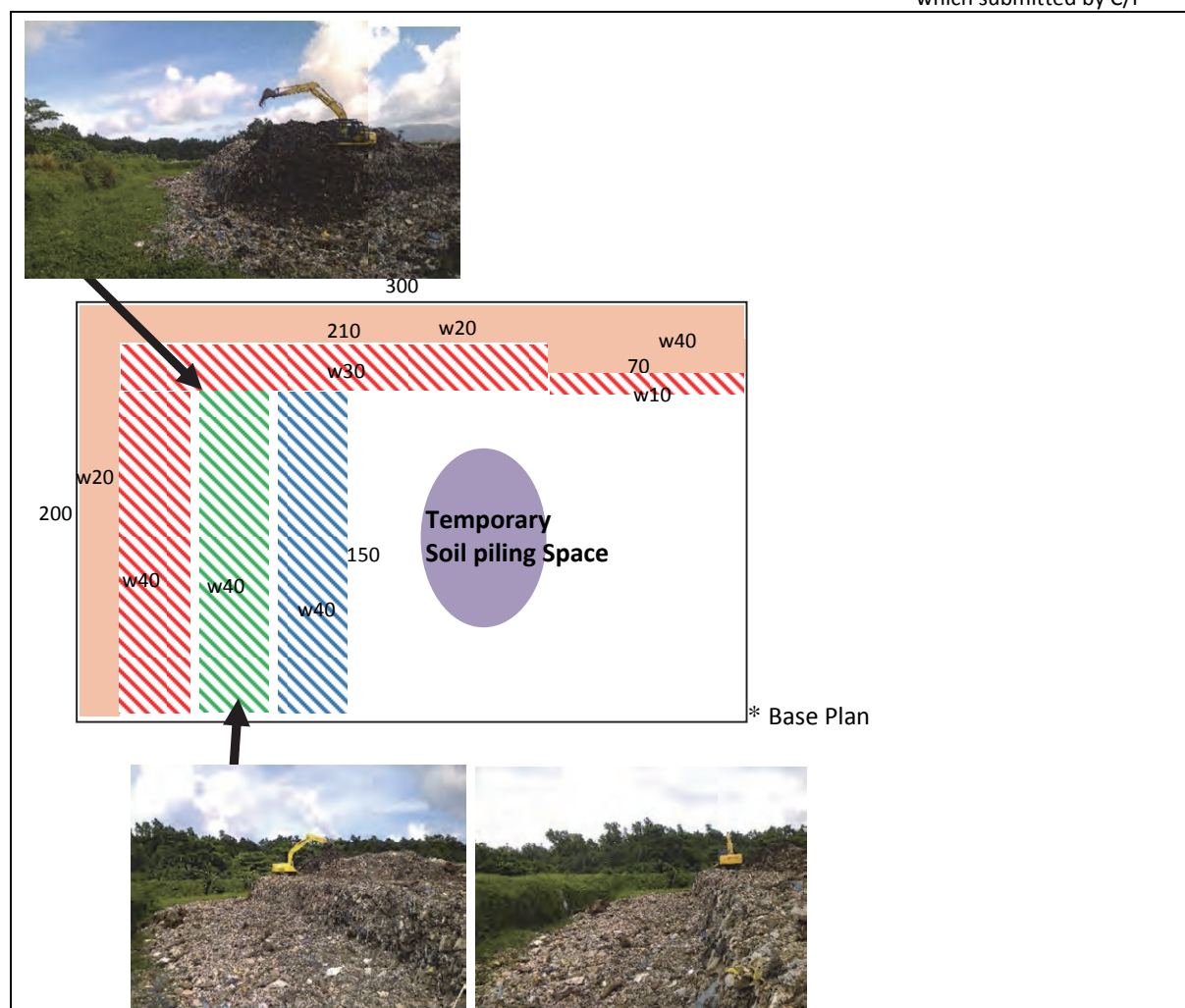


Figure 7-7: Base Plan and Status of the 2nd Cell (14th of December)

7.2.4 Output3-4: CDL system is improved.

a. Activity of the First Dispatch (from 2nd to 13th of July, 2014)

CDL program in Pohnpei was not stable in terms of the finance. The program was managed by EPA staffs who were assisting CDL besides their main tasks by radio announcement to the public about the disclosure of data on the redemption center, controlling the customers, issuing receipts and data recording. Hamagawa Japan Overseas Cooperation Volunteers (JOCV) played a key role in the CDL system especially on data management of the containers.

Since “CDL system is improved” was added to PO in JCC meeting in February 2014, the Director of EPA assigned Mr. Henry Susaia as a C/P of this activity.

During this dispatch of the Expert Team, EPA was under an audit due to the loss of the sales proceeds of the exported containers last year.

As the first step to improve the CDL, the Expert discussed and interviewed with C/Ps and some main issues were identified;

- ✓ Structure of CDL: There were several organizations involved in the CDL in Pohnpei, which made the controlling and monitoring the CDL complicated.
- ✓ Involvement of EPA: According to the law, EPA has many responsibilities and tasks in the CDL such as counting and recording the containers at the redemption centers, financial management, and exporting the containers. On the other hand, the two municipalities which operate the Recycling Centers only compacted and stored the containers.
- ✓ Target item: The objective of the CDL is to collect and export the items which do not have enough value to export. However, the aluminium can which was collected under the CDL program of Pohnpei had enough value to be exported. Therefore, it was recommended to include other items such as PET bottles and glass bottles that have low values.
- ✓ Collecting the deposit: CDL act said “the deposit shall be collected at the first sale point of the can,” which is the main reason that the number of redeemed container is always higher than the number of container that paid the deposit.
- ✓ Management of the Finance: The financial data such as the import, export, redeemed, sales proceeds, and operation cost between DT&A and EPA was not well shared.
- ✓ DT&A: There is no staffs in charge of financial management of the CDL in DT&A.

After above discussions, it was agreed with C/P of EPA to start improving the financial records as the first prioritized issue.

However, due to the internal issues of DT&A, JICA Expert Team and EPA C/Ps could not meet Director of DT&A. Instead, the Expert team and C/P set a meeting with a Lieutenant Governor, Marcelo K. Peterson who was one of the key persons in the development of the CDL in Pohnpei.

After the C/P explained the current situation and issues, the Lieutenant Governor promised to talk to DT&A to start sharing the data and assigning a responsible staff for financial data management. He also agreed to support providing the data of the actual number of the cans imported to understand the difference between the number of imported cans and the number of cans whose deposit were collected.

The following figure shows the flow of the CDL program.

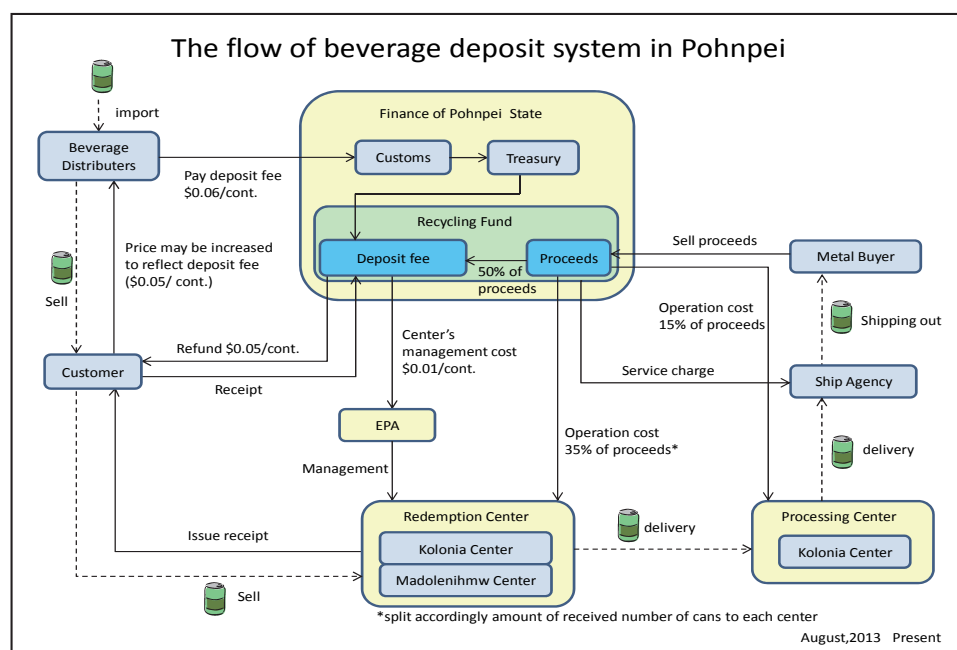


Figure 7-8: Flow of the current CDL program in Pohnpei State (Aug. 2013)

b. Activity of the Second Dispatch (from 14th to 22nd of September, 2014)

The Expert Team monitored the progress of each issue discussed in the first dispatch.

- ✓ Structure of CDL: One part of the system shown in the above flow diagram was updated; the shipping agency was removed from the flow after the loss of sales proceeds last year and EPA found a new buyer by itself.
- ✓ Management of the Fianance: According to the C/P of EPA, not only the Director of DT&A, who participated in the “3R Regional Trainig in Palau” conducted in 2013, but also other staffs in DT&A resigned due to their poor finanacial management in the Department; therefore, EPA needed to restart explaing to new staffs in DT&A.

- ✓ Management of the Finance: EPA and DT&A still kept data of CDL separately and never shared each other, which made it difficult to understand the financial situation and to identify the problems. Both organizations should use the same format which includes all the financial and container data to understand the situation of the CDL.
- ✓ Collection of the deposit: The collection point of the deposit was modified in August 2014. The existing law allows to collect the deposit at the first sale point of the containers, and it was changed to the point when the importers receive the cans they imported. It was encouraged by the Lieutenant Governor to DT&A to change the system, and DT&A requested importers to declare the deposit in the different form from the general import declaration form to collect deposits separately. Because of this modification, the amount of the collected deposit would be increased significantly; however, it should be noted that the collection point was still not at the entry point of the State. Therefore, there may be still some cans which do not pay the deposits. EPA needs to keep encouraging the Legislature to amend the law to change the collection point of the deposit.

The following figure shows the updated CDL flow.

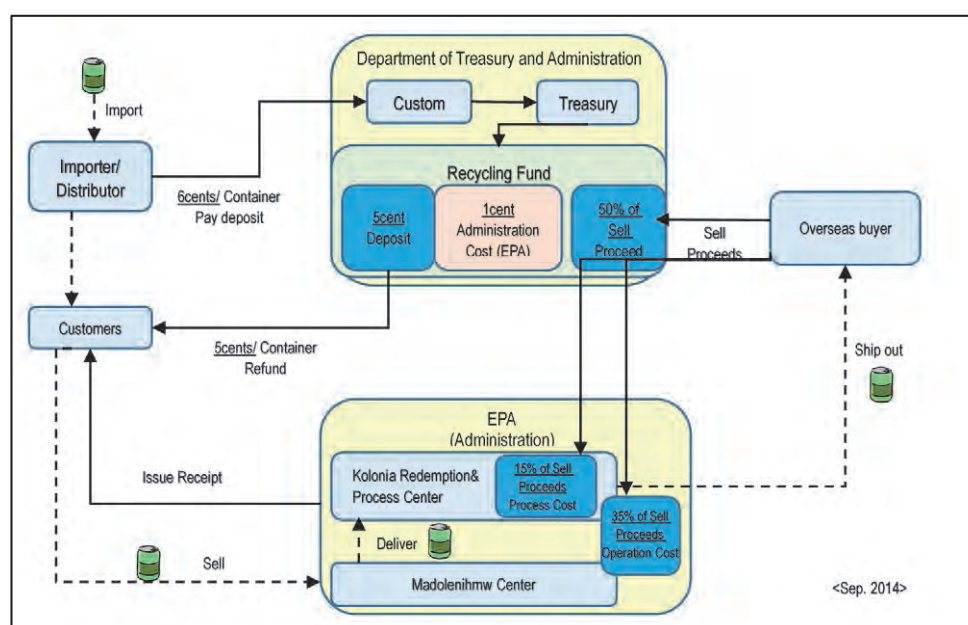


Figure 7-9: Flow of the CDL revised in Sep. 2014

The format to record the data of the finance and the container developed by the C/P of EPA with assistance of JICA Expert was presented to an officer of the Division of Finance of DT&A to fill in. However, it was requested by the Director of DT&A to submit an official letter to share the data.

In order to improve the financial management, the two organizations should work together closely on the data management, which could start from making an agreement between the two Directors to cooperate. Also it is necessary to include the Director of DT&A in JCC members.

Table 7-7: Data table

	INN AA	INN		OUT			INN		OUT		Only information for EPA		
		A	D	B	F	G	H	I	J	E	C	(D-a)	(D-b)
	# of imported aluminum cans at the importing point	# of alum. cans whose deposit is paid by the importers to the Custom office	Amount (\$) of collected deposit monthly	# of redeemed aluminum cans at the Redemption center	Amount of Refund (\$) based on the receipt issued by EPA	Amount of Refund (\$) paid from Finance to the customers	Amount (\$) of Revenue from sold aluminum cans sent by buyers	Operation cost (\$) sent to Kolonia and Madolenihmw	Financial balance of the Recycling Fund		Tons (ton/bts) of exported aluminum cans	Amount (\$) of collected deposit for refund	Amount (\$) of collected deposit for Administration cost
			Ax0.06		Bx0.05				D-G+H-I			Ax0.05	Ax0.01
Data Available Source	Tax and Revenue	Tax and Revenue	EPA	EPA	Office of Finance	Office of Finance / (EPA)	Office of Finance / (EPA)	Office of Finance / (EPA)	Office of Finance	EPA			
June, 2012			0						0			0	0
July, 2012			0						0			0	0
Aug, 2012			0						0			0	0
Sep, 2012			0						0			0	0
Oct, 2012			0						0			0	0
Nov, 2012			0						0			0	0
Dec, 2012			0						0			0	0
Jan, 2013			0						0			0	0
Feb, 2013			0						0			0	0
Mar, 2013			0						0			0	0
Apr, 2013			0						0			0	0
May, 2013			0						0			0	0
June, 2013			0						0			0	0
July, 2013			0						0			0	0
Aug, 2013			0						0			0	0
Sep, 2013			0						0			0	0
Oct, 2013			0						0			0	0
Nov, 2013			0						0			0	0

c. Activity of the Third Dispatch (from 26th of November to 10th of December, 2014)

A meeting among Director of EPA, Lieutenant Governor, Chief of finance and the Expert was held on 10th of December, 2014. The issues of the CDL were discussed and it was agreed in the meeting that the financial data of the CDL would be shared between DT&A and EPA monthly. The Director of EPA proposed to amend the law of the CDL to include more recyclable items such as car batteries and plastic PET bottles. The draft of the amendment of the CDL will be submitted to the legislature of Pohnpei State by EPA soon. The Expert Team will monitor the progress of the data sharing and amendment of the law in the next dispatch.

d. Activity of the Fourth Dispatch (from 14th of February to 4th of March, 2015)

The activity results on improvement of the CDL system in 2014 was reported in the 4th State level JCC meeting. There was no major progress on the improvement of CDL system after the previous meeting with DT&A on December of 2014, but EPA drafted the amendment of the law of the CDL. The draft was under discussions among the officers in State government. The improvement activities of the CDL system could not be conducted sufficiently during this dispatch, because the Director of EPA was off.

e. Activities of the Fifth Dispatch (from 2nd to 17th of May, 2015)

e.1. Monitoring the CDL

Director of EPA shared some progress of the activities on the CDL program.

- The legislature drafted a bill to amend the existing law of the CDL in December 2014. However, the two amendments described in the bill were not exactly the same as what the EPA Director requested to the legislature. EPA needed to continuously explain the points of amendments to the legislature.

Table 7-8: Points of the amendment drafted by the legislature

	Exsiting law	Points of amendments
1. Collecting the deposit	The deposit fee shall attach at time of the first sale in Pohnpei	All the beverages in individual beverage containers shall be caluculated based on related bills of lading
2. Items	Aluminium cans of 24 once or less	Aluminum cans plus plasstic water bottles of 24 once or less and car batteries

- It was proposed by the EPA Director to add a C/P in this activities to improve the CDL, who was Mr. Joseph Victor, an Environmental Specialist of EPA. Therefore, there are two C/Ps in this Output.
- DT&A updated and shared the financial data of the CDL with EPA.

Based on the above financial data submitted by the DT&A, the JICA Expert analyzed the CDL program comparing with the data of CDL in Yap State and discussed points with the C/Ps.

✓ **Balance of the imported and recycled cans**

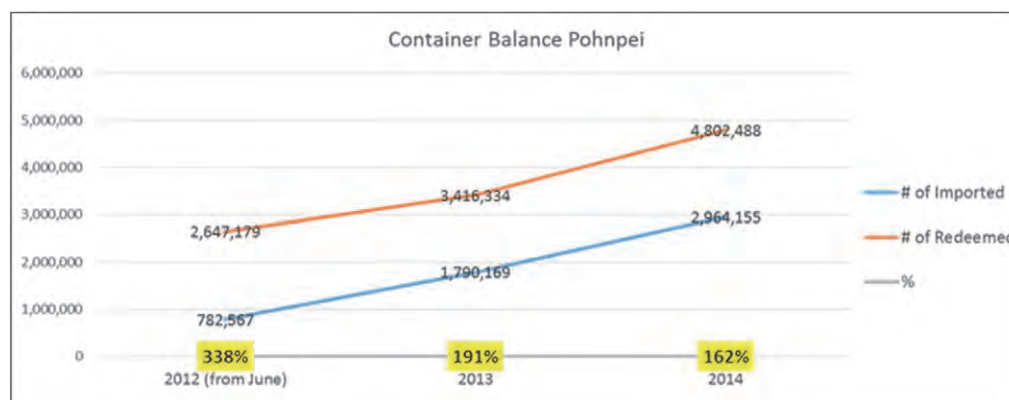


Figure 7-10: Volume of the imported and recycled (redeemed) cans (Pohnpei)

*It should be noted that in the case of Pohnpei State, the deposit of aluminium cans is collected at the time of the first sale of the cans, but not at the time of the import at the port; therefore, “volume of the import” means the volume of cans whose deposit was collected, but not exactly imported volume.

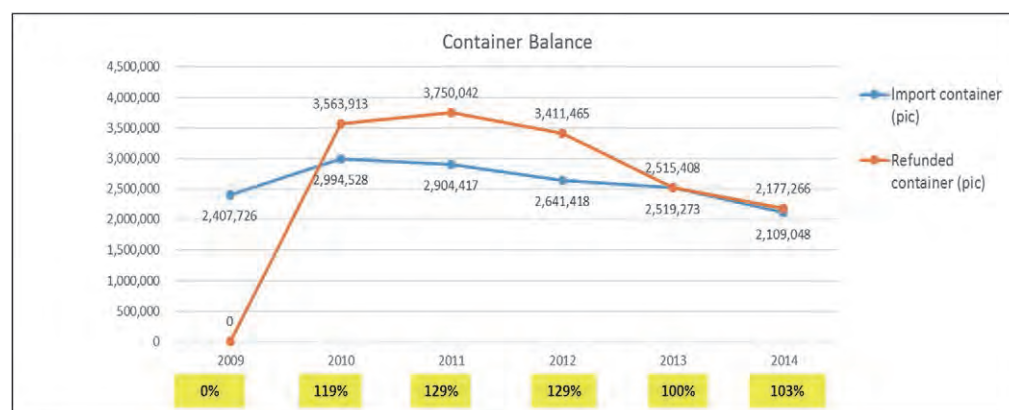


Figure 7-11: Volume of the imported and recycled cans (Yap)

The above two figures show the balance of the imported and redeemed aluminium cans in Pohnpei and Yap, indicating the high recovering ratio of cans in Pohnpei with 338% in 2012, 191% in 2013 and 162% in 2014, in comparison with Yap by 100-129%.

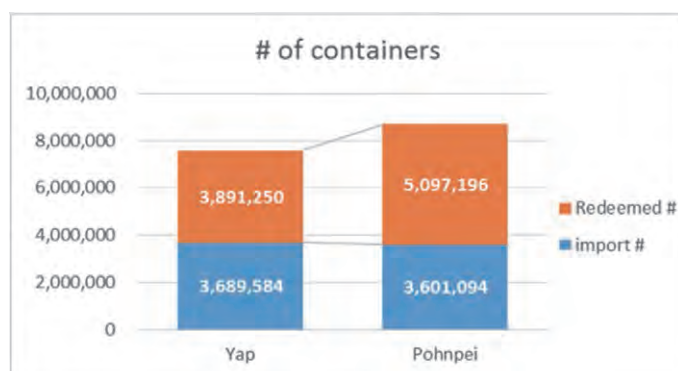


Figure 7-12: Volume of the Imported and recycled cans in two States (Oct. 2012-Sep.2014)

The left figure showed the total amount of imported and redeemed cans in Yap and Pohnpei.

Comparing the volume of the recycled (redeemed) cans, with considering the population of Pohnpei with 34,000 and Yap with 7,400 respectively, the volume of imported cans in Pohnpei should be much higher than Yap. The data indicated that there

were many cans of which the deposits were not collected but redeemed.

✓ Number of the recycled cans

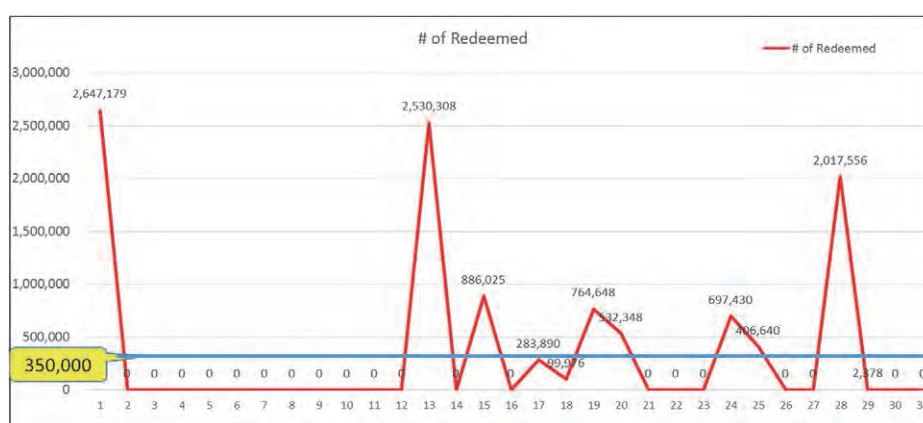


Figure 7-13: Volume of the recycled cans

The figure above shows the trend of monthly volume of the recycled cans. There are two Recycling Operation Centers in Pohnpei operated by two municipalities. They opened the Centers for 11 months of the totally 31 months from the beginning of the CDL program and collected 10,868,000 of aluminium cans by May 2015. They collected sometimes over 2 million of cans in one month.

The figure above also shows 35,000 cans/month is a kind of bench mark of sustainable monthly operation meaning that monthly acceptable capacity would be set by 30,000 to 35,000 cans to stabilize the balance of finance and open the Centers regularly.

e.2. Revision of the data sheet

Through the discussions on the data above with the new C/P, the data sheet was revised to understand the flow of cans and deposit in detail.

Table 7-9: Revised data sheet

	Containers			Money											
	A	B	C	D	E-a	E-b	F	G-a	G-b		H	I-a	I-b	J	K
	# of alum. cans whose deposit is paid by the importers	# of redeemed aluminum cans at the Redemption center	Total containers exported	Amount (\$) of collected deposit	Amount of Refund (\$) based on the receipt issued by EPA	Amount of Refund (\$) paid from Finance to the customers	Administration cost (\$)for EPA	Expenditure from Fund- <u>Shipping cost</u> (\$) (warfare, handling, shipping cost)	Expenditure from Fund-(-\$) (Fuel, materials, travel, safety gears, sationally, others)		Amount (\$) of Revenue from sold aluminum cans	Operation cost (\$) paid to Kolonia	Operation cost (\$) paid to Madolenihmw	Balance of the Recycling Fund < for Administration>	Balance of the Recycling Fund
	(pieces)	(pieces)	(tons)	(US\$) Ax0.06	(US\$) Bx0.05	(US\$)	(US\$) Ax0.01	(US\$)	(US\$)		(US\$)	(US\$)	(US\$)	(US\$) F-Ga-Gb	(US\$) Ea+H-Ia-Ib
Data Source	Office of Finance	EPA	EPA	Office of Finance	EPA	Office of Finance	Office of Finance	Office of Finance	Office of Finance	Select	Office of Finance / EPA	Office of Finance / EPA	Office of Finance / EPA	Office of Finance	Office of Finance
June, 2012															
July, 2012															
Aug. 2012															
Sep. 2012															

e.3. Development of a Recommendation paper

Next activities were discussed with C/Ps and compiled into a Recommendation Paper ver.2.

Table 7-10: The recommendation paper ver.2

Priority/ When	Activities recommended
Very High/Now	1. To amend the existing law to collect the deposit at the entry of the State (port)
Very High/Now	2. EPA and DT&A should share the finance data monthly, and EPA should understand the overall flow of the deposit and cans every month.
High/Now	<p>3. To separate the account of the Recycling Fund into two accounts; one for the refund and the other for the administration of EPA because now the all deposit is deposited in one account, which became unclear the available amount of the administration and refund resulting in misusing the administration cost for the refund.</p> <p>The following flow is proposed to manage the Recycling Fund.</p> <pre> graph TD H[H Revenue from sold can] --> K[K <Refund account>] D[Deposit D \$0.06] --> J[J <Admin. account>] K -- 50% --> L[L-a, L-b operation cost] K -- 50% deposit --> E[E-a Refund to customers] J -- F Admin. \$0.01 --> G[Ga shipping cost] J --> Hb[Gb Administration cost] </pre>
Middle/Now	4. To open the Recycling Centers every month by limiting the number of receiving cans.
High/Future	5. To include more items in the program, especially the items which does not have value in the recycling market such as PET bottles. However, these new items should be included in the CDL program after the existing system is improved and stable.
High/Future	6. To change the payment system of the operation cost to Centers when the new items are included. Currently a part of the revenue of the sold cans is diverted to the operation cost, and the revenue is enough to pay the operation cost due to the high value of the aluminum cans but the revenue of low value items such as PET bottles will not be enough to pay the operation cost.
High/Future	7. To contract out the all operation and management to a private company in the future because currently EPA staffs collect cans, record the data, export the cans and report the activities requiring many EPA staffs to spend their working time in the CDL.

After the Recommendation Paper was finalized, it will be shared with the legislature, DT&A and the embassy of Japan in FSM.

f. Activities of the Sixth Dispatch (from 30th of August to 4th of September, and from 15th to 19th of September, 2015)

There was no major progress in the Output 3-4. JICA Expert reminded the recommendations made in the previous dispatch to the C/Ps.

g. Activities of the Seventh Dispatch (from 1st to 3rd of November, from 17th to 20th of November and from 13th of December to 20th of December, 2015)

In accordance with information from C/P, the financial data of the CDL was provided from DT&A, and the summary of the collected data was shared in the 5th JCC meeting. However, some data were not consistent with other data. Therefore, the detail analysis on the financial data was required.

Summary of the financial data calculated by the C/P from June 2012 to September 2015 is;

- ✓ Deposit fee: \$483,279.27
- ✓ Refund Amount: \$402,732.73
- ✓ Total sales profit from the shipped materials is(7times shipments)= \$167,567.82

The Recycling Center in Kolonia town was opened for two days, on 17th and 18th of December, 2015. One of the indicators of this Output was “The recycle center is open once a month.” However, actually this indicator could not be achieved. A plenty of cans were collected in these two days, because the operation day was very limited in a year and many residents brought stocked cans. It is important to operate the Recycling Center sustainably and monthly with the proper financial management.



The view of operation of the Recycling Center (18th of December)

7.2.5 Other activities related to SWM

This section reported the activities related to SWM but not included in the PO of the J-PRISM including JCCs and Capacity Assessments.

a. Activity of the Fourth Dispatch (from 15th of February to 4th of March, 2015)

a.1. 4th State JCC

The 4th State level JCC meeting was held on 27th of February, 2015. The results of the activities were reported in the JCC meeting.

b. Activities of the Seventh Dispatch (from 1st to 3rd of November, from 17th to 20th of November and 13th to 20th of December, 2015)

b.1. 5th State JCC

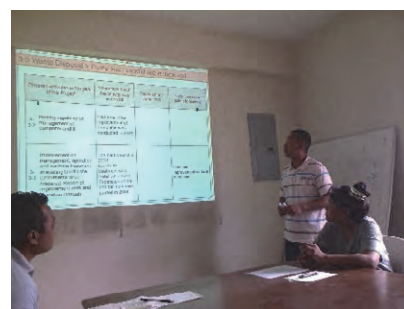
The 5th State level JCC in Pohnpei was held on 15th of December, 2015. C/P of EPA, T&I and Municipal governments attended in the meeting. The new personnel of C/Ps delivered a presentation and reported the activity results of the Project.

Main discussion points were;

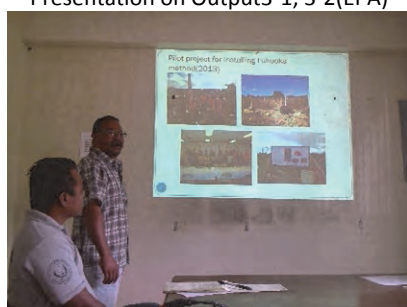
- ✓ The results of the Final Evaluation Survey were explained and discussed: Outputs 3-2 and 3-2 were fully achieved while Outputs 3-1 and 3-4 were partly achieved. Weak points and recommendations were identified and discussed with the C/Ps for the follow-up actions during the remaining period of the project and even after the project.
- ✓ The Action Plan of the State Solid Waste Management Plan should be implemented and monitored by the Pohnpei State after the end of the Project.
- ✓ Key activities after the end of the Project were; (1) To continue stakeholder meetings like the JCC to share good practices of SWM (Responsible Person: The Director of EPA); (2) To develop and implement the plan to improve waste collection in Sokehs, Kitti, Nett and U (Responsible Person: Mr. Brad Soram and the new specialist of EPA); (3). To continue improvement works on the rehabilitation of Cell No.2 (Responsible Person: The Administrator of T&I and PWMS); and (4) To share information and data between DT&A and EPA, Amendment of the Recycling Law and improvement of financial system of CDL (Responsible Person: Mr. Joseph Victor, EPA).
- ✓ The State Government, particularly T&I is responsible for planning, managing and securing budget for on-going activities as well as monitoring the landfill improvement works



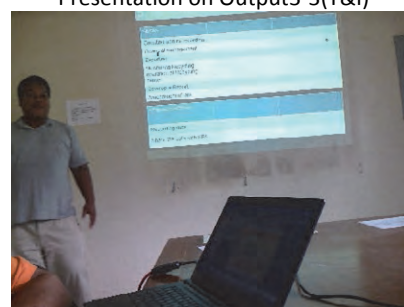
Presentation on Output3-1, 3-2(EPA)



Presentation on Output3-3(T&I)



Presentation on Output3-3(PWMS)



Presentation on Output3-4(EPA)

b.2. Capacity Assessment

Capacity Assessment was conducted through interviews with C/Ps. Introduction of the new waste collection and improvement of the landfill site helped improving the score of waste collection and landfill. However, the critical budget situation, institutional arrangements and retirement/resignation of C/Ps members affected the assessment. Since the new personal C/Ps just started working in the SWM activities, their individual scores of the assessment were still low. However, it is expected to improve because they have high motivation to learn about SWM.

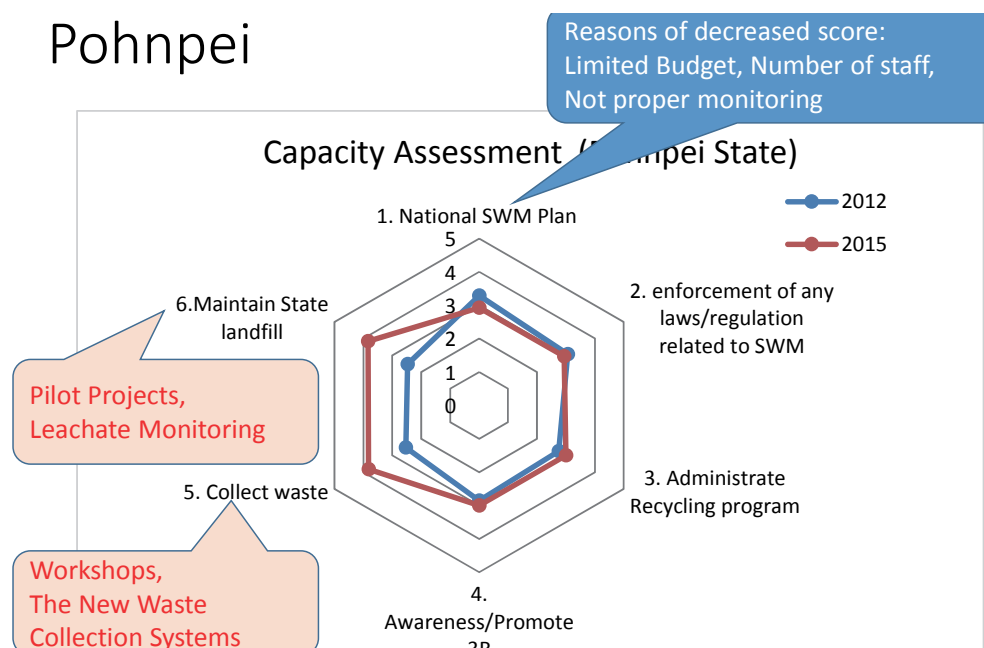


Figure 7-14: Chart of the Capacity Assessment in Pohnpei

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- ✓ **SSWMS:** Periodical monitoring on the Action Plan is effective to understand and manage the progress.
It is important to conduct monitoring regularly.
 - ✓ **Legislation:** It is recommended to enhance the relationship between EPA and other State government agencies to proceed amendment of the law on the CDL.
 - ✓ **Recycling:** It is urgently recommended to maintain the operation and financial balance of CDL.
 - ✓ **Environmental education/Awareness:** It is effective to conduct the on-going education/awareness activities in schools/communities continuously.
 - ✓ **Waste collection:** It is effective to enhance the role of the State government to promote mutual cooperation on waste collection among the Municipal governments, while keeping the basic scheme that the municipal governments provide waste collection services.
 - ✓ **Dumpsite Management:** It is recommended to enhance the presence of T&I in the landfill management especially in the construction of the 2nd cell at the landfill.

8 Chuuk State, the Federated States of Micronesia

8.1 Outline of the activities in Chuuk State

8.1.1 Expert Dispatch Schedule

Total: 109 days

Dispatch	Date	Days	Dispatched Expert
1 st :	11 th of July, 2014 – 23 rd of July, 2014	(11 days)	Muranaka
2 nd :	(No dispatch but received C/Ps in Yap)	—	—
3 rd :	8 th of Nov., 2014 – 24 th of Nov., 2014	(17 days)	Muranaka
	15 th of Nov, 2014 – 25 th of Nov, 2014	(11 days)	Haseyama
4 th :	27 th of Jan, 2015 – 9 th of Feb, 2015	(14 days)	Muranaka
5 th :	16 th of May, 2015 – 5 th of June, 2015	(21days)	Muranaka
	30 th of May, 2015 – 5 th of June, 2015	(7days)	Haseyama
6 th :	26 th of August, 2015 – 30 th of August, 2015	(5days)	Muranaka
	26 th of August, 2015 – 29 th of August, 2015	(4days)	Haseyama
7 th :	18 th of Nov. 2015 – 27 th of Nov. 2015	(10days)	Muranaka
	21 st of Nov. 2015 – 29 th of Nov. 2015	(9days)	Haseyama

8.1.2 Counterpart organization

Environmental Protection Agency (EPA)

Department of Transportation and Public Work (DT&PW)

8.1.3 Counterpart Members

Organization	Title	Name	Note
EPA	Executive Director	Ismael Mikel	
EPA	Deputy Director	Jason Saeson Poll	
EPA	Manager of SWM	Jack H. Sham	
EPA	Environmental Educator	Dayson Marar	added as C/P from Nov. 2014
DT&PW	(Director)	(Jonny Killion)	Passed away in Apr.2014
DT&PW	Director	Tos Nakayama	July-Sep, 2014: Consultant of DT&PW After October, 2014: Director
DT&PW	Assistant chief	Joanes Risin	
DT&PW	Operator	John Michael Newo	

8.1.4 Activities and Outputs

The progress of the activities and their achievements from May 2014 to January 2016 are summarized in accordance with the PO and agreed indicators in next table.

Outputs/ Indicators	Achievement by FY2013	Activities/ Progress					7 th Dispatch
		1 st Dispatch	2 nd Dispatch	3 rd Dispatch	4 th Dispatch	5 th Dispatch	6 th Dispatch
Output 4-1: Capacity to prepare the State Solid Waste Management Strategy of Chuuk and Action plan is developed.	The SSWMS was developed and approved by the State Government.	O) Support for Developing a Next SSWMS/ Revising the Existing SSWMS and Conducting Waste Survey PDCA cycle was explained to C/Ps to utilize the Action Plan. P) Support for Monitoring the Action Plan (Activity planned in Mar. 2015)	(No Dispatch)	O) Support for Developing a Next SSWMS/ Revising the Existing SSWMS and Conducting Waste Survey (Developing the next strategy is planned in 2015) P) Support for Monitoring the Action Plan Monitoring the Action Plan was announced to conduct in the fourth dispatch in the next JCC.	O) Support for Developing a Next SSWMS/ Revising the Existing SSWMS and Conducting Waste Survey After the discussion with C/P, it was agreed that the SSWMS won't be revised in 2015 except for updating the data. P) Support for Monitoring the Action Plan Action Plan was monitored (2 nd time) with C/Ps.	O) Support for Developing a Next SSWMS/ Revising the Existing SSWMS and Conducting Waste Survey Waste Amount and Composition Survey was conducted, and its result was shared and discussed among C/Ps of EPA and DT&PW. P) Support for Monitoring the Action Plan	O) Support for Developing a Next SSWMS/ Revising the Existing SSWMS and Conducting Waste Survey No specific activity was conducted. P) Support for Monitoring the Action Plan No specific activity was conducted.
Indicator 4-1-1: Chuuk SSWMS is submitted to the State for approval	【Fully Achieved】 The SSWMS was developed in 2012 and approved by the State Governor.						
Indicator 4-1-2: Monitoring on the progress of Action Plan is conducted annually	The Action Plan was monitored by the C/Ps in Jan 2014. Next monitoring will be conducted in Jan-Feb of 2015.				Action Plan was monitored in Feb. 2015.		【Mostly Achieved】 The third monitoring will be conducted in Dec. 2015.

Output 4-2: Capacity to improve and manage the final disposal site is enhanced	The existing dumpsite was rehabilitated from 2012 to 2013. A maintenance training of access roads was held in Feb. 2014. Operation at the dumpsite has been improved after the rehabilitation of the dumpsite; compaction at the dumpsite by a bulldozer is regularly conducted.	q) Support for Monitoring the Operation of the Existing Dumpsite Daily operation was monitored and some issues of the operation were discussed with C/Ps. r) Providing Guidance and Advice on the Construction of a New Landfill Plan of the Study Tour was finalized.	r) Providing Guidance and Advice on the Construction of a New Landfill Study Tour was conducted in Yap State to share the experience and knowledge regarding design and construction of a new landfill	q) Support for Monitoring the Operation of the Existing Dumpsite Additional rehabilitation was conducted at the dumpsite. Management issues at the dumpsite was discussed. r) Providing Guidance and Advice on the Construction of a New Landfill A meeting was held among concerned agencies to discuss about a new landfill and developed the Activity Schedule.	q) Support for Monitoring the Operation of the Existing Dumpsite Conditions and operations of the existing dumpsite were monitored. r) Providing Guidance and Advice on the Construction of a New Landfill Progress of the discussions on new landfill was limited due to typhoon. Considering the limited remaining capacity of the existing site, an interim site (Marina Dumpsite) was identified and its operation method was discussed.	q) Support for Monitoring the Operation of the Existing Dumpsite It was advised by the Experts on the compaction at the landfill site. r) Providing Guidance and Advice on the Construction of a New Landfill The progress of the new landfill was monitored. The maintenance method at the Marina Dumpsite was explained to the C/Ps.	q) Support for Monitoring the Operation of the Existing Dumpsite The dumpsite has not well maintained. One of the reasons is the breakdown of the bulldozer. DPW&T needs to provide allocate another heavy equipment while it is under repair. r) Providing Guidance and Advice on the Construction of a New Landfill The operation method of the Marina Dumpsite was revised and explained to the C/Ps again.
Indicator 4-2-1: Boundary of the existing dumpsite is identified and separated from other area.	【Fully Achieved】 The boundary of the dumpsite was identified with the landowner and land management office. The dumpsite was enclosed by dyke to separate the dumpsite and other area.						
Indicator 4-2-2: Operation of compacting waste is conducted at least once a week.	【Fully Achieved】 Frequency of the compaction was increased from once a month (in 2011) to once a week (in Feb. 2014).	The frequency of the compaction was increased to twice a week in July, 2014.	The frequency of the compaction (twice a week) has been continued in Nov, 2014.	The bulldozer was under repair for a few months and wheel loader moves the waste once a week in Jan, 2015.	The compaction of the landfill has been conducted 2-3/week and is recorded.		The operation of the compaction has been conducted except for three weeks in early Nov. due to the mechanical problem of the bulldozer.
Indicator 4-2-3: Operation is recorded and submitted to PW and EPA.	The operation is recorded by an operator and the record sheets are submitted to EPA; however, when the sheets run out, recording of operation was also stopped.		Under the responsibility of the Director of DT&PW, recording the operation will be restarted.	The operation has been recorded from Dec, 2014.	The operation has been recorded and reported to the main offices of DT&PW.		【Mostly Achieved】 The operation record has been submitted to DT&PW, but not yet to EPA.

Output 4-3: Capacity to improve the collection of general waste is enhanced.	Time and Motion Study was conducted and issues of the collection service were identified and collection plan was developed. Pilot Project of Horn Collection has been launched and continued to expand the collection area.	s) Support for Monitoring the Operation of the Collection Service Discussions among collection crews, Dep. Director of DT&PW and EPA staffs were made to share the current collection services and their issues. t) Support for Planning and Implementation of the Awareness-Raising Activities to Improve the Collection Service Awareness-raising activity plan was drafted to encourage the proper use of the Waste Bin.	s) Support for Monitoring the Operation of the Collection Service Collection service was monitored on schedule properly. The salaries of collection crews were increased after the crews received special award from J-PRISM. t) Support for Planning and Implementation of the Awareness-Raising Activities to Improve the Collection Service Based on the survey above, the awareness-raising activity plan was finalized and EPA staff has started the activities.	s) Support for Monitoring the Operation of the Collection Service Collection service was monitored. t) Support for Planning and Implementation of the Awareness-Raising Activities to Improve the Collection Service Some leaflets were distributed to communities to inform about the Yellow Bins. Clean-up was conducted by DT&PW, EPA, Public Health, NGO and two private companies in downtown area.	s) Support for Monitoring the Operation of the Collection Service Collection service was continued with a 2ton-compact truck due to the mechanical problem on 4ton-truck. t) Support for Planning and Implementation of the Awareness-Raising Activities to Improve the Collection Service The C/P who is in charge of the awareness activities was overseas. Experts visited a school to monitor the awareness activities conducted by JOCV.	s) Support for Monitoring the Operation of the Collection Service Collection service was continued. t) Support for Planning and Implementation of the Awareness-Raising Activities to Improve the Collection Service The operation record has not been submitted yet.
Indicator 4-3-1: Monthly collection record is submitted to PW and EPA.	Operation is recorded by the collection crews and the record sheets were submitted to EPA from 2012; however, when the sheets were run out, the crews didn't keep record on the sheet			The collection crew records the operation but it has not been submitted to DT&PW. DT&PW needs to understand the daily operation of collection service; collection area, fuel and problems regularly.		【Partly Achieved】 The operation record has not been submitted yet.
Indicator 4-3-2: More than 5 villages receive regular collection service.	【Fully Achieved】 Collection service to residents has started from 2012 after two collection compactors were donated by GGP and Yellow Waste Bins were installed by EPA, covering 7 villages out of total 10 villages in Feb. 2014.		The Yellow Bins were additionally installed, which totally installed in 8 villages by Feb. 2015.			
Indicator 4-3-3: More than 10 workshops are conducted to improve the waste discharge of the people.					【Fully Achieved】 EPA totally conducted 14 workshops.	EPA additionally conducted 5 workshops. Totally conducted 19 workshops.

8.2 Activity Reports of Each Output

8.2.1 Output 4-1: Capacity to prepare the State Solid Waste Management Strategy of Chuuk and Action plan is developed

a. Activity of the first Dispatch (from 13th to 23rd of July, 2014)

Unfortunately, Director of DT&PW, Jonny Killion passed away in April 2014 while the Deputy Director was transferred to another organization. Instead, a new Director and a consultant were assigned in DT&PW. The Expert met the consultant, Mr. Tos Nakayama³ during this dispatch. He is an engineer with working experience in a private construction company and used to be a Director of DT&PW about 10 years ago. The C/P of EPA and Expert explained the Project scheme and activities of PO and he agreed to work together on the Project.

As for the implementation and monitoring of the Action Plan of the Chuuk State Solid Waste Management Strategy (SSWMS), C/Ps of DT&PW and EPA performed their daily works and solve the problems occurred during the daily works well while the activities planned in the Action Plan was not implemented yet. Therefore, the Expert explained this point to the Directors of EPA and DT&PW and asked all other C/Ps to prioritize and implement the activities of the Action Plan.

Next monitoring of the Action Plan was set in February-March, 2015.

b. Activities of the Fourth dispatch (from 27th of January, 2015 to 9th of February, 2015)

b.1. Monitoring on Action Plan (2nd time)

The Action Plan of the SSWMS was monitored by C/Ps of EPA and DT&PW with JICA Expert.

Some modifications shown in the following table were made in the first monitoring conducted in February 2014 and there was no modification during this time.

Table 8-1: Progress of each activity of the Action Plan

Action		Responsibility	Situation as of January 2015	Progress (% complete)
1. Reduce, Reuse, Recycle (3Rs)				
1-1.	Strengthen baseline data on waste generation through dumpsite waste characterization study and broader waste generation study at source (household, commercial, institutional)	EPA &PW	There is no additional survey conducted in 2014.	75%
1-2.	Amend Environmental Improvement Tax (EIT) to include all aluminum cans, plastic bottles, glass bottles, and lead acid batteries, with flexibility for further additions as necessary.	Legislature	There is no progress on this activity. It is necessary to explain and discuss with AG office and Legislature.	25%
1-3.	Implement recommendations of the 2005 UNDP Recycling Feasibility Study report to re-start the recycling program. (deleted)	EPA	-	-
1-4.	Provide financial and technical support to COM-FSM CRE to implement and expand community composting and segregation program	EPA	There is no additional activity with COM in 2014.	50%
1-5.	Implement community composting and segregation program to promote diversion of organic waste and local reuse projects. Coordinate with EPA and J-PRISM project to select a pilot community if necessary. (deleted)	COM-CRE	-	-

³ Mr. Tos Nakayama became a Director of DT&PW from October 2014.

Action		Responsibility	Situation as of January 2015	Progress (% complete)
1-6.	Ban plastic shopping bags and encourage "Bring Your Own Bag" (using experience of Kosrae and Pohnpei States). A reusable bag sewing initiative can be started in selected communities to provide alternatives to plastic bags and income for residents. First reusable bag can be provided for free, while subsequent bags incur a charge.	EPA, AG office (SPREP)	The information of Ban on Plastic Bag was submitted to Legislature by referring to the law of Yap State.	25%
2. Waste Collection				
2-1.	Implement a pilot user-pay program for waste collection in the same community targeted for the J-PRISM house-to-house collection pilot project. For example, this could be based on the prepaid pay-as-you-throw garbage bag system. Conduct awareness to the commercial sectors to bring their own waste to the dumpsite	EPA, PW	There is no planning and implementation.	0%
2-2.	Fabricate and install additional waste collection bins with the involvement of the communities. Bins can be clustered (1 bin for about 10 households) with each household sharing responsibility for moving trash to the bins.	EPA, DT&I	2 waste bins were additionally installed in 2014.	75%
2-3.	Conduct more public awareness on the use of collection bins (e.g. rubbish to be put out only on collection day. For this, the rubbish must be taken away on collection day)	EPA, PW	Continue Radio announcement.	75%
2-4.	Conduct a pilot project utilizing puncture-proof tires for waste collection and disposal vehicles and equipment. Potential supplies for these tires can be found on the worldwide web. For example: www.bearcat.com.au/index.php www.polycil.co.uk www.americanindustrialtire.com/foamfilled.htm (deleted)	EPA, State Departments	-	-
2-5.	Partner with the private recycler to implement a collection service for bulky waste	EPA/ Chinese company	Report to the recycling company about the bulky waste to be collected.	75%
3. Waste Disposal				
3-1.	Purchase the land on which the existing dump is located	EPA	The State Government made an agreement to pay the land rent fee to the landowner.	50%
3-2.	Rehabilitate the existing dumpsite to a more sanitary disposal site consistent with the Fukuoka method and which allows for segregation on site (e.g. bulky waste, organic waste, recyclables)	EPA, PW	The dumpsite was rehabilitated again in 2014. Segregation of the waste has not started yet.	75%
3-3.	Undertake the assessment of local cost and benefit of solid waste management as evidence for politicians to prioritize waste management in Chuuk.	EPA, DT&I	Analysis of cost-benefit completed in FY 2013. The cost of SWM per person was \$8/person/year.	100%
3-4.	Seek further financial support to rehabilitate and upgrade the dumpsite and secure future disposal site. Possible sources of support include Chuuk's sister state in China – Guan Dong Province	EPA, State Departments	The dumpsite was rehabilitated by receiving financial support from JICA (J-PRISM) and budget from EPA and DT&PW.	75%
4. Sustainable Financing				
4-1.	Develop a proposal to implement various financing mechanism including environmental levy (e-tax) on all goods, diving fee for hotels, dive companies, etc.	EPA, State Departments	No activity	0%
4-2.	Establish endowment fund to provide support for State solid waste management programs.	EPA, State Departments,	No activity	0%
4-3.	Implement user charges on all government departments for waste collection and disposal services	EPA, State Departments	No activity	25%
5. Education and Awareness				
5-1.	Integrate waste management topics into the school curriculum	EPA, DOE	The waste management was included in the school curriculum.	75%
5-2.	Each Department has a school visit program related to their work. Strengthen this existing school visits program through better collaboration with agencies (sharing information, basic solid waste awareness for other agencies, facilitating field visits, etc.).	ALL State Departments, EPA	There was school visits, but mainly talking about climate change. Survey was conducted at schools about waste issues.	50%
5-3.	Develop MOUs and partner (deleted) Work with Chuuk Women Council, Chuuk Youth Council, Chuuk Conservation Society, NGOs, church groups, and municipal and village leaders to raise awareness of good solid waste management practices.	EPA	Clean up with youth group and schools were conducted.	75%
5-4.	Conduct an annual Clean and Healthy Chuuk Day coinciding with Sanitation Month (either State or Municipal) (deleted)	EPA, Sanitation		

Action		Responsibility	Situation as of January 2015	Progress (% complete)
5-5.	Enhance print, media, and radio programs on solid waste management.	EPA, State Departments	Radio announcement and installation of the signboards are ongoing.	75%
5-6.	Make solid waste management the focus of Chuuk Environment Day. This will coincide with SPREP's Clean Pacific Campaign	EPA, PW, State Departments	EPA set a booth to explain about the environmental issues including SWM.	75%
6. Institutional Arrangement				
6-1.	Implement recommendations of the Institutional Review Report. (deleted)	EPA, OEEM	Dept. of Transportation, Division of Public Works Took over roles of SWM management in Chuuk.	75%
7. Medical Waste Management				
7-1.	Retrain technical staff in the operation of the incinerators	Health Services, EPA	Training of Staff is a monthly exercise by the maintenance Chief	50%
7-2.	Develop guidelines for operation (PPE for staff, segregation, etc)	Health Services, EPA	Annual Hazmat training is attended by the Chief of Maintenance.	75%
7-3.	Form a joint inspection team to conduct spot inspections of the incinerator. Team should include EPA, Health Services, Sanitation	Health Services, EPA, Sanitation	Quarterly inspection is done by EPA and Sanitation on Incinerators	75%
7-4.	Secure the incinerator area with fencing and lockable gate, and relocate medical waste temporary storage to the secured area.	Health Services, EPA, DT&I	Incinerators have been secured by fence and a building to house the equipment (incinerators)	100%
7-5.	Provide guidance to the private clinic on disposal of medical waste and require disposal through high-temperature incineration	EPA, Health Services,	Guidance needs to be reviewed by health Technicians.	50%
7-6.	Develop a long-term medical waste management policy (to cover waste from embalming, body parts, cremation)	Health Services, EPA	Still in planning stage	25%
7-7.	Construct temporary storage facilities for e-wastes	EPA, State Departments	No activity	0%
7-8.	Develop and implement an extended producer (also importer, distributor & retailer) responsibility scheme for sustained collection and disposal of e-wastes	EPA, State Departments	No activity	0%
8. Waste Oil Management				
8-1.	Improve the storage facility for waste oil at CPUC to ensure better environment protection.	EPA, State Departments	Additional storage tanks added to Chuuk Power Plant facility.	50%
8-2.	Undertake an audit of Thorfin's waste oil disposal method to identify room for improvement to minimize environmental impacts	EPA, State Departments, Thorfin	No activity	0%
8-3.	Develop and implement an extended producer (also importer, distributor & retailer) responsibility scheme to support the sustained reuse or recycling of all waste oil.	EPA, State Departments	NO Activity	0%

Based on the monitoring sheet above, the following table was made to show the summary of the achievement level of each category of 2014 and 2015.

Table 8-2: Summary of the Achievement level of the Activities

Major Items (# of activities)	Achievement level (%) (Feb, 2014)						Achievement level (%) (Feb, 2015)					
	0	25	50	75	100	Ave. of achievement	0	25	50	75	100	Ave. of achievement
1.Reduce, Reuse, Recycle (3Rs) (4)	1	1	1	1		37		2	1	1		44
2.Waste collection (4)	1			3		56	1				3	75
3.Waste disposal (4)		1	1	1	1	63			1	2	1	75
4.Sustainable financing (3)	2	1				8	2	1				8
5.Education and Awareness (5)			1	4		70			1	4		70
6. Institutional Arrangements (1)												
7.Medical Waste Management (8)	4		3	1		28	2	1	2	2	1	48
8. Waste Oil Management (3)	2		1			17	2		1			17
Total # of activities	10	3	8	10	1	40	7	4	6	9	5	48

From the above table, it can be seen that there were some progress in Waste collection, Waste disposal and Medical waste management while there was no progress in Sustainable financing and Waste oil management.

c. Activities of the Fifth Dispatch (from 16th of May, 2015 to 5th of June, 2015)

c.1. Waste Amount and Composition Survey (WACS)

WACS was conducted from 21st of May for 8 days. The outline and results of the WACS are shown below.

✓ Purpose

- To identify the trend of the waste generation for the evaluation of the effectiveness of the on-going project activities
- To plan the future waste collection service
- To develop the current waste stream
- To estimate the remaining capacity of the existing dumpsite
- To identify the potential waste items to minimize

✓ Planning

The WACS was planned by C/Ps of EPA and DT&PW with the JICA Expert based on the time availability and capacity of C/Ps in reference to the WACS conducted in 2011⁴ and a WHO guideline⁵.

In the composition survey it was decided to separate the waste into 12 categories based on the interests of the C/Ps.

⁴ JAWARE1: conducted under initiatives of JOCV and SV in FSM in 2011.

⁵ Guides for Municipal Solid Waste Management in Pacific Island Countries (1996)

Table 8-3: Plan of the WACS

	JAWARE1 (2011)	WHO Guideline	2015 (this time)
Number of target households	20	50-100	20
Number of survey days	7	8	8
Discard first waste	No	Yes	Yes
Frequency of collecting bag	Every other day	Every day	Every other day
Category of waste composition survey	7	9	12
	Paper	Paper	Paper
			Cardboard
	Plastic	Plastic	Plastic
			Form
	Glass	Glass/ ceramic	Glass
	Metal (Aluminum)	Metals	Aluminum
	Metal (steel)		Steel
			Tin
			Other metal (gas canister)
	Biodegradable	Vegetable/ putrescible	Garden waste/ Kitchen waste
		Grass/leaves/wood	
	Textiles	Textiles	Textiles
		Leather/ rubber	
	Other	Miscellaneous	Other

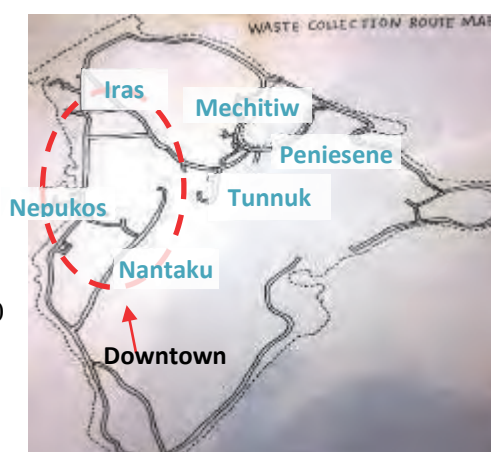
✓ Sampling

Totally 20 households were selected as samples for the survey; 10 from down town area and 10 from north area of Weno.

Table 8-4: Sampling area

Category	Down Town area	North villages
Village name (#)	Nantaku-2 Nepukos-3 Iras-5	Peniesene-2 Tunnuk-2 Mechitiw-6

It took about 2 hours to collect all garbage bags from 20 household due to unpaved and bad road conditions in Weno.



✓ Result of the Survey

- Waste Generation: from the data collected in the survey, it was estimated that the daily per capita waste generation was 0.33lb/person/day (150g)

Population (A)	(census 2010)	13,856
Generation (B)	lb/capita/day	0.32
+ Recyclable items I	lb/capita/day	0.007
Generation Total (D=B+C)	lb/capita/day	0.33
Generation in island (E=DxA)	lb/day	4,550
Generation in island	t/day	2.1

B: Average of the waste generation: 0.32 lb/capita/day (=0.145kg).

C: Recyclable items: 0.007lb/capita/day (3g) of recyclable items. From the questionnaire to households, 9 households answered that they kept aluminum cans and PET bottles to sell, though it was small amount.

D: The average of the generation amount (B+C): 0.33 lb/capita/day (0.149kg)

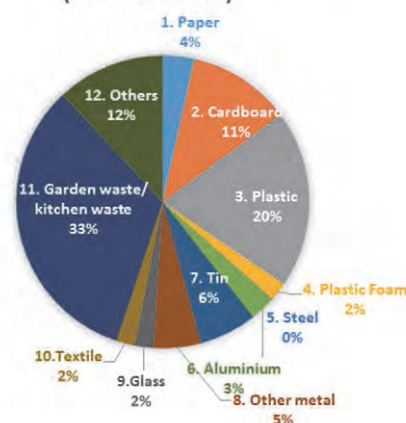
E: The total household waste generation in Weno excluding other islands (DxA): 4,550lb/day (2.1t).

■ Waste composition (Weight)

Type of material	Rate (%)
1. Paper	3.5%
2. Cardboard	11.4%
3. Plastic	19.7%
4. Plastic Foam	2.0%
5. Steel	0.0%
6. Aluminium	2.9%
7. Tin	6.4%
8. Other metal	5.2%
9. Glass	2.1%
10. Textile	2.0%
11. Garden waste/ kitchen waste	32.9%
12. Others	12.0%
Total waste weight (lb)	100%

*0.007lb isn't included in the above data

COMPOSITION (WEIGH %) (CHUUK IN 2015)

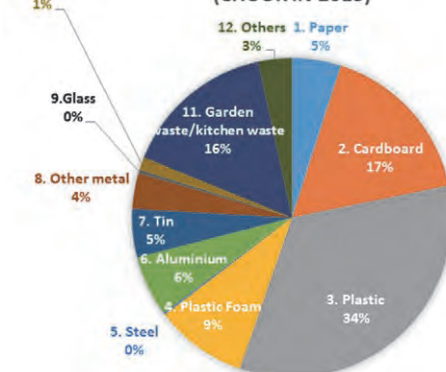


■ Waste composition (Volume)

Type of material	Rate (%)
1. Paper	4.95%
2. Cardboard	16.84%
3. Plastic	33.52%
4. Plastic Foam	9.33%
5. Steel	0.17%
6. Aluminium	6.19%
7. Tin	4.87%
8. Other metal	3.63%
9. Glass	0.35%
10. Textile	1.32%
11. Garden waste/kitchen waste	15.44%
12. Others	3.39%
Total waste volume(gallon)	100.0%

*0.07lb isn't included in the above data

COMPOSITION (VOLUME %) (CHUUK IN 2015)



✓ Findings from the analysis of the result

The survey results were analyzed and discussed with C/Ps of EPA and DT&PW.

Purpose 1. To identify the trend of waste generation

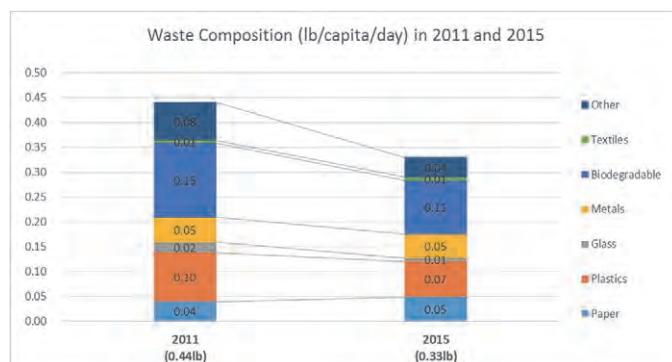


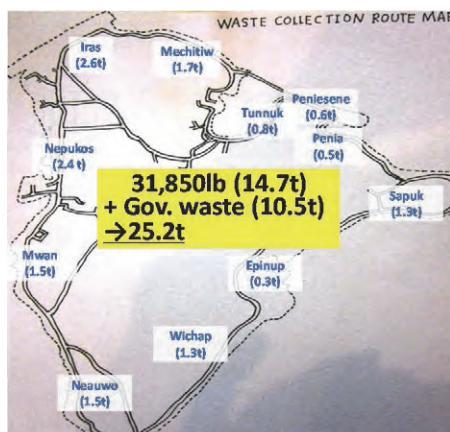
Figure 8-1: Waste composition in 2011 and 2015

The waste generation amount (0.33lb/capita/day) is less than the result of the last survey in 2011 (0.44lb). The reason can be considered that the survey method was slightly different in two WACS. For example, some households put old waste which was generated in the houses long time before in the garbage bags provided by the survey team and that old

waste was included as the daily waste in the previous survey. Also, the WACS in 2011 included the data of the waste from the first survey day, which is usually generated heavier than the following days. WACS conducted in 2015 excluded the waste from the first day.

Purpose 2. To plan the future waste collection service

The survey result can be utilized to plan waste collection service. The following figure shows the weekly waste generation amount in each village.



Weekly Waste Generation

Currently DT&PW collects daily waste from households and government buildings through the waste bins installed in 8 villages and horn collection which is a type of house to house collection.

If DT&PW collects all the household waste (2.1t/day) and government waste (1.5t/day⁶), the total waste amount which DT&PW has to collect is 25.2ton every week on average.

From the above calculation, it could be assumed that;

- If DT&PW collects waste with a 2tonne compacter truck (load capacity is 1.5ton/trip), it requires 17 trips per week, requiring 4 trips per day (17trips/ 5working days=3.4trips)
- If DT&PW collects waste with a 4tonne compacter truck (load capacity 3.0ton/trip), it requires 9 trips per week, requiring 2 trips per day (9trips/ 5working days=1.8 trips)

Considering the current road condition in Weno and limited number of collection crews in DT&PW, providing 4 trips/day is not easy; therefore, it could be recommended to utilize 4tonne compacter truck as much as possible or create a subsidiary collection team when the collection area is expanded to all villages in the future.

⁶ The data estimated in JAWARE3 (2013)

Purpose 3. To develop a Waste Stream

Based on the result of WACS and interviews to households, the waste stream was developed as follows.

A: Household waste generation: 2.1t/day
B: Other than household waste: 5.1t/day (J-AWARE3 in 2013)
C: Total waste: 7.2t/day (A+B)
D: Self disposal at home: 1.6t (interview)
E: Discharge to Yellow Bin or Horn collection: 2.5t/day (interview)
F: Transport to the public landfill (self-hauling): 1.6t/day (interview)
G: Discharge waste: 4.1t (E+F)
H: Illegal dumping: 0.9t/day (interview)
I: Burring: 0.6t/day (interview)
J: Disposal amount at Public landfill: 4.1t/day (E+F)
K: Recycling at discharge point: 0.0t/day (Interview)

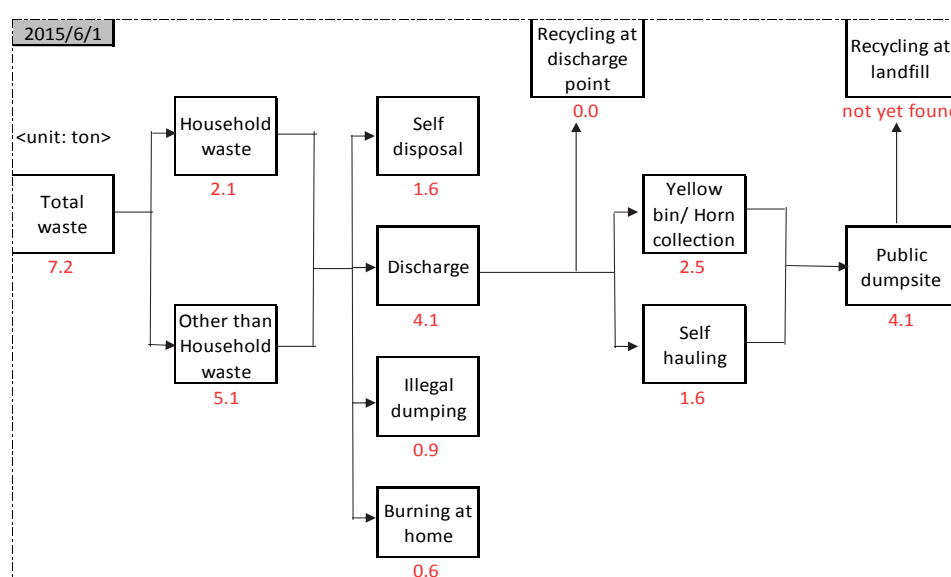


Figure 8-2: Waste Stream 2015

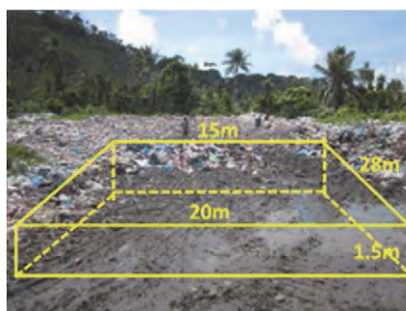
Purpose 4. To estimate the remaining capacity of the dumpsite

Based on the above estimation, remaining volume of the dumpsite and compaction ratio of waste were measured at the existing dumpsite with C/Ps, and the remaining life of the existing dumpsite was estimated; approximately 4 months.

Average amount of daily final disposal: 4.1t
Yearly waste disposal: 1,465t
Volume of Yearly waste disposal: 14,650m³ (density: 0.1t/ m³)
Remaining volume of disposal site: 730 m³ *
Compaction ratio of waste at the site: 5.4 (0.07kg/L→0.38kg/L)
Remaining life of the site: 4 months

*The top height of waste is limited to under 1.8 meters (6 feet) in accordance with the agreement with a land owner.

Although it is an estimation, EPA and DT&PW should take it seriously and start preparing a new landfill.



Measuring remaining volume at dumpsite



Measuring compaction ratio at dumpsite

Purpose 5. To identify the potential items for waste minimization

Currently there is no major 4R program to reduce the waste in Chuuk except for recycling activities by a Chinese private company. The result of the WACS showed that the biggest volume from the household waste was plastic (34%), cardboard (17%) and biodegradable waste (16%) and the volume of plastic form was higher than other States.

It is recommended that Chuuk State should plan its own waste reduction program such as CDL. Although the C/Ps tried to promote communication and sharing information with the recycling company, it was informed that the recycling company has been suspended of its operation since December 2014.



Explanation of the survey and interview to the households



Segregation of waste



Segregation of waste



Measuring the weight

d. Activities of the Seventh Dispatch (from 18th to 27th of November, 2015)

d.1. Monitoring the Action Plan

As for the monitoring the Action Plan, EPA and DT&PW conducted the monitoring twice in January 2014 and February 2015. In the Final Evaluation Survey of the Project conducted in August 2015, the Indicator 4-1-1 “Monitoring on the progress of Action Plan is conducted annually” was evaluated as “Mostly achieved,” and it was agreed to conduct the third monitoring in December 2015 by C/Ps themselves.

8.2.2 Output4-2: Capacity to improve and manage the final disposal site is enhanced

a. Activity of the First Dispatch (from 13th to 23rd of July, 2014)

a.1. Monitoring the existing dumpsite

The pushing and compaction of waste at the existing dumpsite were conducted twice a week with a bulldozer. The frequency of the operation was increased from 2011 with once a week. On the other hand, there were some remaining issues in the management of the dumpsite;

- ✓ Control of the incoming waste; there is no staff allocated at the dumpsite and the people can dispose any kinds of waste. Approximately 500 sets of expired beer cans were disposed during this dispatch causing offensive order from the dumpsite.
- ✓ Approach road; the approach road was rehabilitated last year; however, the top soil covering the approach road was removed because of the operation with the bulldozer. It is required to add more cover soil on the approach road regularly as a part of the daily maintenance.



Existing dumpsite

The Expert advised on the compaction work, and planned with C/Ps to improve the approach road in the next dispatch.

a.2. Assistance to proceed new landfill construction

It was informed by the C/Ps of EPA that there was not much progress in a new landfill project after reaching an agreement on the land between the landowners and EPA. EPA sent a request letter to SPREP through OEEM to ask assistance to conduct the EIA on the site, but EPA did not received any reply.

In the last JCC held in February 2014, it was agreed that although the Project could not assist designing of the new landfill, the Project would provide Chuuk C/Ps an opportunity to visit other States/ Countries that have experience and knowledge of designing and constructing a new landfill to see the landfill and learn skills from them. Therefore, the Expert met with Chief of the Planning office and Director of DT&PW to hear their request and select the staffs to send.

b. Activity of the Second Dispatch (No dispatch, but received C/Ps in Yap State)

Study Trip was conducted in Yap State on 8th and 9th of September 2014. The outline and summary report of the Study Trip are shown below.

- ✓ Purpose of the Study Trip
 - Chuuk engineers visited the new landfill site in Yap State which Fukuoka Method was adopted.
 - Chuuk engineers learned Fukuoka Method (semi-aerobic landfill) and its designing process from Yap engineers.

- Both Chuuk and Yap engineers exchanged their ideas, experience, and learned from the past projects.

✓ Chuuk side/ Trainees

Name	Organization	Title
Mr. Krescio BILLY	Planning office, Department of Administrative Services	Consultant
Mr. Roseller VINLUAN	Planning office, Department of Administrative Services	Engineer
Mr. Tos NAKAYAMA	Dept. of Transportation and Public Works	Deputy Director
Mr. Curtis Sos *the all travel cost was paid by Chuuk Government	Sanitation office, Dept. of Public Health	Chief

✓ Yap side/ Trainers

Name (o:Main trainer)	Organization	Title
Mr. Mano Maleichog	DPW&T	Deputy Director of DPW&T
Mr. James Sarmog o	DPW&T	Chief of Contracts & Engineering
Mr. Manny Mendoza o	DPW&T	Engineer of Contracts & Engineering
Mr. Jesse Waayan o	DPW&T	Manager of SWM
Ms. Christina Fillmed o	EPA	Director of EPA
Mr. Peter Fattamag	EPA	Pollution Control Specialist
Mr. Joe Fanafal	EPA	Pollution Control Specialist

✓ J-PRISM side/Facilitators

Name	Organization	Title
Mr. Akira Haseyama	J-PRISM	Expert
Ms. Risa Muranaka	J-PRISM	Expert

✓ Schedule of the Study Trip

6/ Sep.	SAT	16:20 departure from Chuuk 17:55 arrival at Guam (UA154) 20:25 departure from Guam 22:05 arrival at Yap (UA185)
7/ Sep.	SUN	-
8/ Sep.	MON	9:00: Opening 9:15-10:00: Session Fukuoka Method (Haseyama) 10:00-11:00: Site Visit to Landfill (DPW&T, EPA) 11:00-13:00: Lunch Break 13:00-14:00: Process of Designing (James and Manny) 14:00-15:00: Process of Construction (James and Manny)
9/ Sep.	TUE	9:00-9:30: EIA (Christina and Haseyama) 9:30-10:00: Finance (Christina) 10:00-10:30: Case Study (Haseyama) 10:30-11:30: Operation at Yap Landfill (Jesse) 11:30-13:00: Lunch Break 13:00-15:00: Discussion (All) 15:00-15:30: Review and Closing
10/ Sep.	WED	1:35 departure from Yap 3:02 arrival at Guam (UA186) 9:20 departure from Guam 11:08 arrival at Chuuk (UA 155)



Site Visit at landfill
(guided by Yap DPW&T and EPA)



Site Visit at landfill
(guided by Yap DPW&T and EPA)



Session of Planning and Designing
(conducted by James and Manny of DPW&T)



Session of Operation and Operation Manual
(conducted by Jesse of DPW&T)



Certificate ceremony (by Deputy Director of DPW&T)

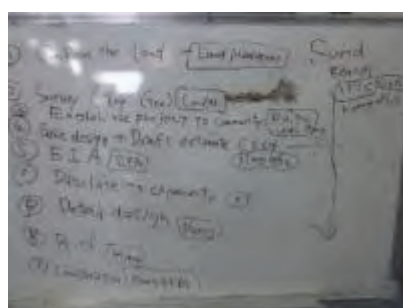


Group photos

During the discussion, some rough drawings of the new landfill for Chuuk were made and a basic procedure of planning including EIA was drafted.



Drawing of the new landfill



Main procedure to construct a new landfill

The study trip was composed of lectures, site visit, discussions and practical trainings, then the trainees were able to have good idea on the designing of the landfill.

In order to evaluate the study trip, the trainees filled in a questionnaire prepared by the JICA Expert. The result of the evaluation is shown in the following table.

Table 8-5: Summary of the evaluation of the Study Trip

(1)	Coverage	incomplete	just right	too broad
			4	
(2)	Level	too elementary	just right	too advanced
			3	1
(3)	Time Allocation			
	1) Lectures	too little	just right	too much
			4	
	2) Site Visit	too little	just right	too much
			3	1
(4)	Intensity	too leisurely	just right	too hard
			4	
(5)	Duration	too short	just right	too long
			4	
(6)	Comments	It was well coordinated training and will be very useful in Chuuk for all aspects of Landfill project. It was very excellent training but it is very challenging for Chuuk. This is my first time to study about the landfill, and it is new but I learned a lot. (engineers) I will make use of this experience after I go back to Chuuk and start working on it.(DT&PW) We thank to Yap members for sharing all the detail information of the construction of the landfill including survey, designing, specification and bidding with Chuuk side.		

c. Activity of the third dispatch (from 8th to 25th of November, 2014)

c.1. Monitoring the existing dumpsite

After the rehabilitation works conducted in 2013, there were still issues in the maintenance of the dumpsite. After the discussion with C/Ps of DT&PW and EPA, some improvement activities were decided to conduct during this dispatch.

✓ **Compaction and making a cell**

It was observed that the waste disposed inside of the dumpsite was not compacted well and some waste were scattered in the dumpsite. The waste was compacted and pushed to make a cell. It reduced the volume of waste and improved the visual impact of the dumpsite.

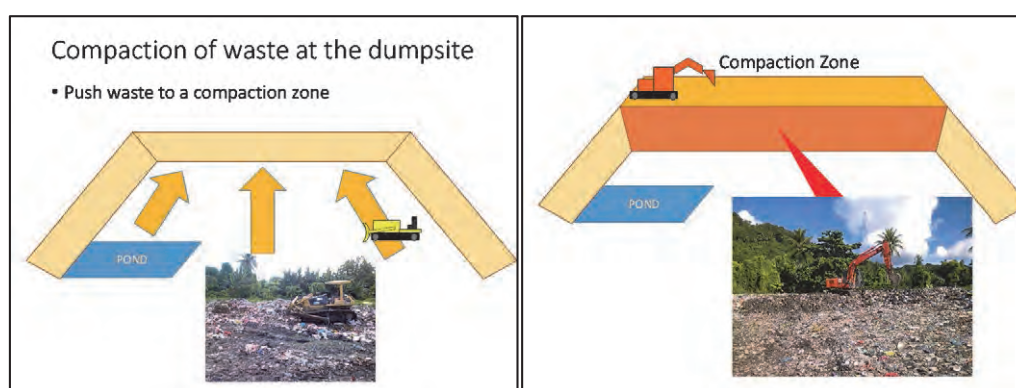


Figure 8-3: Outline of compaction work



Before compaction



Compaction by bulldozer



After compaction of waste

✓ Clean-up the leachate pond

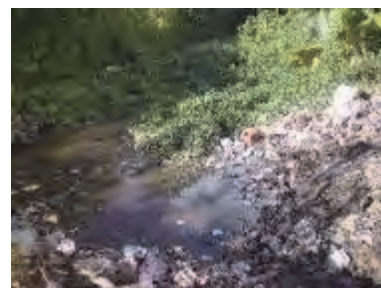
A small hole was made through excavation works to use as a leachate pond during the last rehabilitation activities. However, some waste were thrown into the pond to fill it up. The leachate pond is one of processes to treat the leachate; therefore, it is important to keep the pond in a good condition. The excavator removed the waste from the pond.



Before clean up



Clean up



After clean up

✓ Installation of the leachate pipe

As the dumpsite is naturally wetland, the wet and muddy condition of the dumpsite disturbed unloading the waste from the vehicles and the people dumped their waste at the entrance of the dumpsite. Later, these waste was pushed by the bulldozer but it removed the top soil of the approach road so that it made the ground soil of the entrance area soft and loose.

One leachate pipe was installed between the leachate pond and wet area. After the installation of the pipe, it was observed that leachate was caught by the pipes and drained out to the pond.



Wet area in the dumpsite



Installation of pipes and rocks



New leachate pipe

✓ Rehabilitation of the approach road inside the dumpsite

After the installation of the leachate pipe, the approach road was covered with the coral sand. In order to maintain the good condition of the approach road, it is required to allocate a staff to lead vehicles to the dumping spot and control the unloading waste. As a temporal countermeasure, the Expert advised to install sign boards inside the dumpsite to show the dumping spot.



Rehabilitation of the approach road

✓ Clean up the illegal dumping points along the access road

A few illegal dumping points were identified near the dumpsite because the road condition was very bad near the dumpsite and the people dumped the waste before reaching the dumpsite. The waste at 2 illegal dumping points were removed during the rehabilitation works. EPA prepared and installed sign boards at the illegal dumping points.



Before cleaning up



Clean up the place



The sign board prepared by EPA

Although the condition of the dumpsite was improved again, it was required to keep providing good maintenance and operation regularly, and the Expert Team gave some recommendations on the management;

✓ Installing sign boards to lead the vehicles

✓ To keep maintaining the leachate pond

✓ Cleaning up the illegal dumping points as soon as it is identified

✓ Installing sign boards to prevent illegal dumping

✓ Rehabilitation and maintenance of the access road with “Do-nou” method introduced in the training in last February

- ✓ Allocation of the full-time management staff(s) at the dumpsite
- ✓ Making a cell after compaction work by the excavator at least once a month

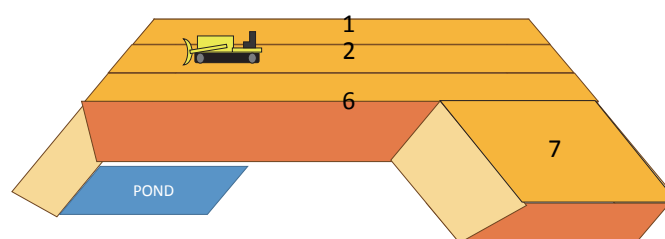


Figure 8-4: Example of making cells in the dumpsite

c.2. Assistance on the new landfill

It was reported by C/P and engineers who participated in Yap Study Trip that the progress of the new landfill was limited, and since the first proposed site was wetland and small, constructing the landfill at the proposed site might be difficult considering its environmental impact and the size. Therefore, after several discussion with EPA and DT&PW, it was agreed to find another optional sites before starting the Initial-EIA on the first proposed site.

Since EPA resumed finding additional potential sites, it was required to share the information and progress with all other concerned agencies. Then, EPA arranged a meeting with DT&PW, Planning Office and the Expert Team and discussed the process and developed an activity schedule and identified the responsible agencies of each activities. DT&PW Director would share the schedule with other agencies which could not attend the meeting such as Land Management and Land Commission.

Table 8-6: Tentative schedule of the construction of the new landfill in Chuuk State

NEW LANDFILL (updated in Nov.2014)			Activity to Start	Agency in charge	2014												2015												2016												2017													
					11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12												
1	Find optional sites	1	Decide minimum requirement of the new site (size, area)	EPA, (PW, land management)																																																		
		2	Make a agreement to conduct Initial-EIA with land owners	EPA, (PW, land management)																																																		
2	Conduct Initial-EIA	1	Land survey (topography, road way)	Land Management																																																		
		2	Develop conceptional Plan (design, each advantage/disadvantage, accessibility at each sites should be identified).	Planning office																																																		
		3	Conduct Initial-EIA	EPA																																																		
		4	Disclosure the Initial-EIA results to the Public	EPA																																																		
		5	Public consultation/hearing	All agencies																																																		
		6	Develop a final report of Initial-EIA	EPA																																																		
3	Conduct Main-EIA at the most prioritized site	1	EPA Board select the site to conduct a Main-EIA	EPA Board																																																		
		2	Decide minimum requirements of Main-EIA	EPA																																																		
		3	Find out agency to conduct EIA (contract out to private company)	EPA																																																		
		4	Conduct Main-EIA	(private company)																																																		
		5	Public consultation/hearing	All agencies																																																		
		6	Develop a final report of Main-EIA	(private company)																																																		
4	Designing	1	Develop a detail design based on recommendation described in Main-EIA report.	Planning office																																																		
5	Bidding	1	Pre-Bidding process	Planning office																																																		
		2	Bidding process	Planning office																																																		
6	Construction	1	Supervise the construction (process monitoring, design specification)	Planning office																																																		

d. Activities of the Fourth Dispatch (from 27th of January to 9th of February, 2015)

d.1. Monitoring the condition of the existing dumpsite

The condition of the existing dumpsite was monitored.

The bulldozer had a mechanical trouble for several months and a wheel loader pushed the waste instead of the bulldozer; therefore, the waste was not compacted well. Also the fence which was pushed down by the heavy equipment was not repaired.



Dumpsite in Feb, 2015

On the other hand, there were some improvements; three (3) sign boards “No Dumping here” were installed at the entrance of the access road to the dumpsite and inside the dumpsite. Also the operation was recorded and the data showed that there were compacting operations for 7 times in December 2014.



Sign board at the entrance of the access road to the dumpsite



Sign boards installed in the dumpsite

Working record
(Dec, 2014)

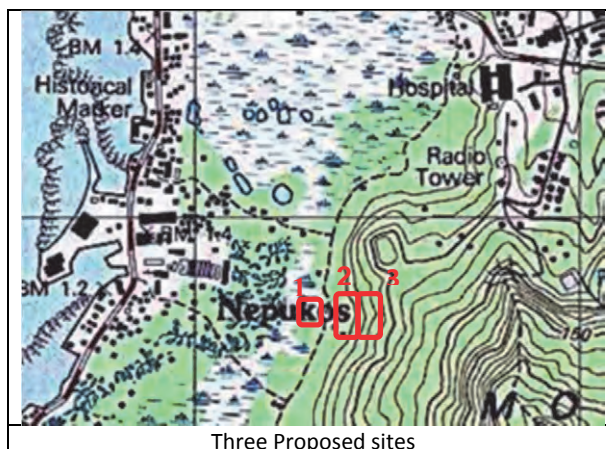
It was discussed and agreed with Director of DT&PW that in order to provide good maintenance on the new landfill in the future, DT&PW should improve the operation level at the existing dumpsite as follows;

- Allocating a full-time staff at the dumpsite
- Allocating an excavator at the dumpsite once a month to move waste and make a waste cell
- Rehabilitating the access road with cover soil

d.2. Assistance on the new landfill construction

The third proposed site was identified which was just next to the first proposed site. It seems that both second and third proposed sites were hard soil compared to the first proposed site where was wetland, and this area was reclaimed when landslide occurred 10 year ago.

Because the boundary between second and third proposed sites was not clearly identified, the site was inspected by landowners, the community leader, staffs from EPA and Land Management Office to find the boundary. However, the area was covered with bushes and the boundary could not be founded.



Three Proposed sites

Therefore, it was agreed that the members would find the boundary and conduct land survey afterward.



The second and third candidate sites



Site inspection with EPA Deputy director, landowners and community leader

e. Activities of the Fifth Dispatch (from 16th of May to 5th of June, 2015)

e.1. Monitoring the condition of the existing dumpsite

The compaction of the waste by a bulldozer was conducted 2 to 3 times per week and the waste was well compacted. On the other hand, broken fence was not rebuilt while no staff of DPW&T was allocated as well.

It was explained by the Director of the DT&PW that there was no staff in DT&PW who was willing to stay at the dumpsite due to its remote location without any utility such as electricity and water.

Considering the limited remaining capacity of the existing dumpsite with about a half year, it was agreed with EPA and DT&PW that DT&PW would focus on the operation of waste compaction and completion of the final cover soil, rather than rebuilding the fence and allocating the staffs.

e.2. Monitoring the progress of a new landfill

The land survey (identifying size and developing a contour map) was not yet conducted due to typhoon Maysak and death of a surveyor of Land Management.

Considering the limited remaining capacity of the existing dumpsite, EPA proposed to use the marina area as an interim landfill site, which was surrounded by seawall of tetra pots and sand dyke.

The site was the only option to dispose the waste by the construction of the new landfill; therefore, the Expert Team explained the points of the preparation to use and reclaim this area from the technical, legal and social aspects.

- Referring to the design and maintenance of the case of Kilibati
- Construction of dumping stage, installation of float fence to keep the dumped waste in a limited surface area of the water
- Leachate treatment such as aeration, recirculation and monitoring, and other environmental protection measures
- Consensus building with neighbors, installation of a fence to prevent waste from flying to the neighborhoods.

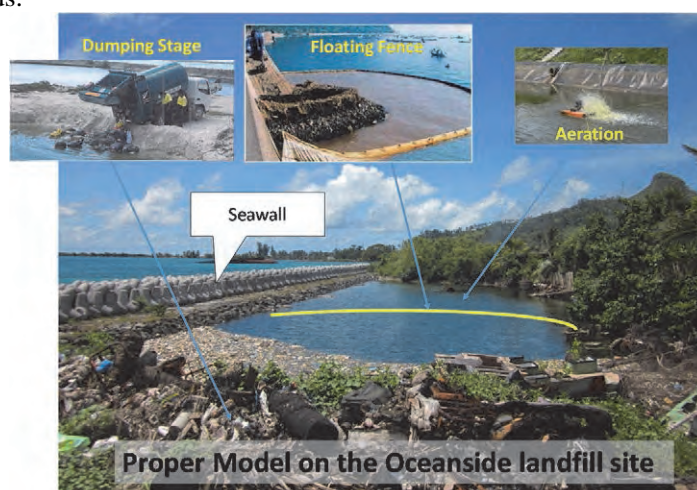


Figure 8-5: An example of use of marina are

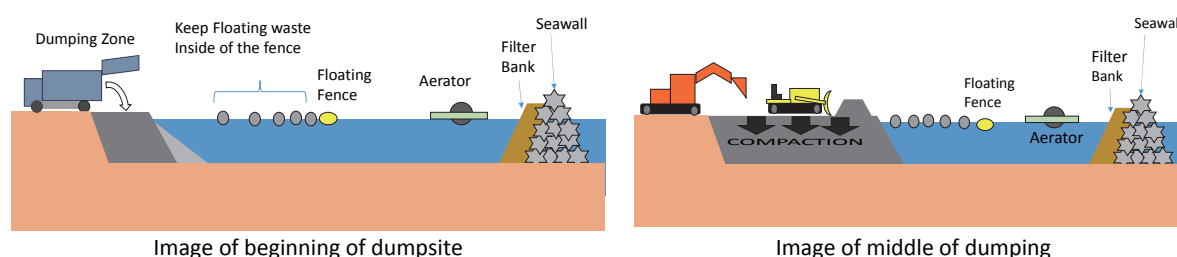


Figure 8-6: An example of the management

C/P of EPA explained the idea and operation plan to use the marina area as a dumpsite to the State Governor and the Governor agreed to use the site, so based on the advice from the Experts EPA would prepare the site to start its operation within a year.

f. Activities of the Sixth Dispatch (from 26th to 30th of August, 2015)

f.1. Monitoring the conditions of the existing dumpsite

The compaction has been conducted irregularly due to the mechanical problem of the bulldozer. The bulldozer was fixed when the Experts arrived at Chuuk and an excavator was also available, then the dumpsite was reshaped with the two heavy machines under the instruction of the Experts and leachate pipe covered by the waste was dredged.

The bulldozer and excavator helped the efficiency of the operation with the strength of each machine. The fuel cost of the operation was covered by DT&PW.



Shaping the dumpsite

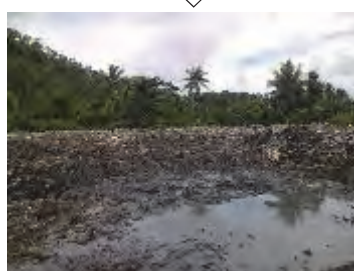


Compaction



Transferring the waste

The following pictures are before and after the operation.



It was heavy rain for a week before this operation. During the landfill operation, it was observed that lots of rain water was retained not only inside of the dumpsite but also all around the area, meaning that the water level around the area is quite high and there is no meaning to drain the water and leachate out from the dumpsite especially during the rainy season. Taking counter-measures such as extra filling of the approach road could be the only measure. Also the shortage of dump trucks in DT&PW made the operations and other small rehabilitations difficult and slow.

f.2. Monitoring the progress of the Interim Site (Marina Dumpsite)

As reported in the 2nd Progress Report, the remaining capacity of the dumpsite has been decreased rapidly after the typhoon hit in March 2015 and it would be expected to be full by the end of 2015.

Although the Marina Dumpsite has not yet been opened officially, some amount of waste has been delivered to the Marina Dumpsite because the operation at the existing dumpsite was disturbed due to the malfunction of the bulldozer and waste was piled up at the entrance of the existing dumpsite. Delivering the waste to the marina area before the completing its preparation wasn't preferable solution; however, considering the limited number and condition of the heavy equipment, it was unavoidable to start utilizing the Marina Dumpsite area.

Director of the DT&PW explained that they opened the Marina Dumpsite temporarily and they would push and compact the piled waste with a new arrived excavator.



Waste piled up in front of the Marina dumpsite

f.3. Monitoring the progress of the new landfill

Engineers of the Planning Office explained that they needed a contour map to start designing the landfill; however the land survey has not been done yet.

The land survey was planned to be conducted by a surveyor of the Land Management Office, but the surveyor passed away and there was no capable surveyors in Chuuk neither in private sector nor government. Therefore, DT&PW is now planning to request the National Government, Department of Transportation, Communications & Infrastructure (TC&I) to send their surveyors to Chuuk.



New landfill site visit by the Final Evaluation Team

As to the Environmental Impact Assessment (EIA), there isn't capacity to conduct the EIA by C/Ps themselves also SPREP could only introduce some companies or consultants to conduct EIA; therefore, EPA needs to consult with Project Management Unit (PMU) to allocate some money for EIA from the budget that was saved for the new landfill construction under the US compact money.

f.4. Others (a new excavator)

Three new excavators were donated by the Grass-roots human security project, and one of them was designated to be used at the Marina Dumpsite.



New excavator

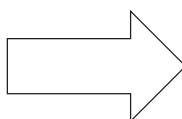
g. Activities of the Seventh Dispatch (from 18th to 29th of November, 2015)

g.1. Monitoring the condition of the existing dumpsite

The condition of the existing dumpsite was not good due to the limited landfill operation because of the malfunction of the bulldozer. The bulldozer was fixed when the Experts arrived and pushed some waste, but some problems were found in the hydraulic pressure soon after it started the operation. The Director of the DT&PW explained that the Department already requested replacement of some spare parts and would send alternative excavator to the site until the bulldozer was repaired.



Before the compaction (22nd of Nov.)



After the compaction (25th of Nov)
The bulldozer was broken down after the compaction

The following pictures show the dumpsite from 2011.



No boundary of the dumpsite but a bulldozer pushed waste once a month (July 2011)



The frequency of the compaction was increased to twice a month (march, 2013)



Rehabilitation of the dumpsite (boundary, dyke, fence and approach road were prepared) (July 2013)



7months after the rehabilitation works (February, 2014)





(July 2014)



(November, 2014)



The fence was broken and it has not been repaired
(Jan, 2015)



After typhoon Maysak
(May, 2015)



(November 2015)

g.2. Monitoring the condition of the Marina Dumpsite

As to the Marina Dumpsite, the basic operation and maintenance plan were developed by C/Ps and JICA Experts and some measurement for the power line was done with staffs of DT&PW. Also it was advised by the Expert to the C/Ps to explain the neighborhood households about the plan to use the site.

Table 8-7: Operation Plan of the Marina Dumpsite (draft)

Official opening (tentative):	January 2016
Opening date:	MON-SAT *close SUN
Opening hour:	8AM-4PM
Non-acceptable waste:	Used oil, Lead Batteries, Chemicals, Pesticides, Insecticides, medical waste (Only after Incineration and hazardous/toxic substances are removed.) and Liquid waste (Sludge, Sewer)
Security:	DT&PW staff
Log: by security	Name, time, what category (home, restaurant, Gov. etc.)
Operation	Pushing and compaction: Every day Soil cover: once a week
Leachate monitoring	COD, pH (EPA) monthly

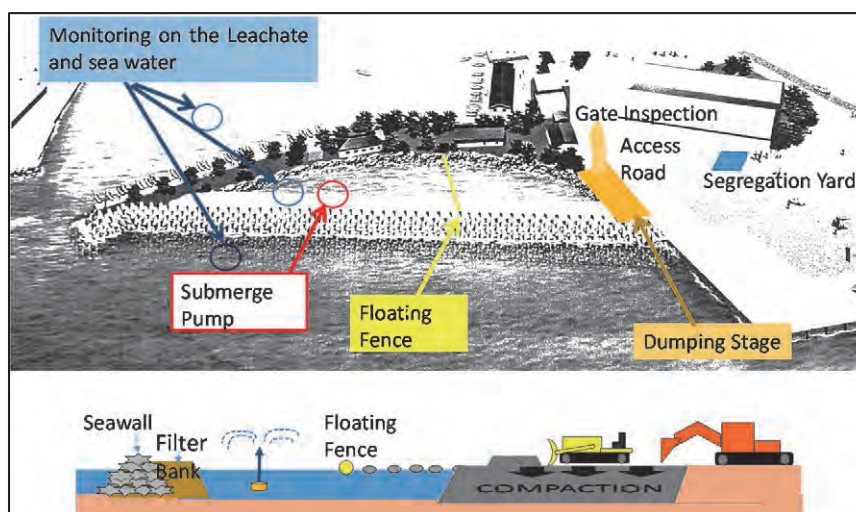


Figure 8-7: Facility Plan of the Marina Dumpsite

It was observed that there were some water flow between the enclosed areas with tetrapod and bank installed and the outside; therefore, it was advised to install sand bags or filling with coral sands to block the water flow, which could be also function as filtering the leachate.



Marina dumpsite

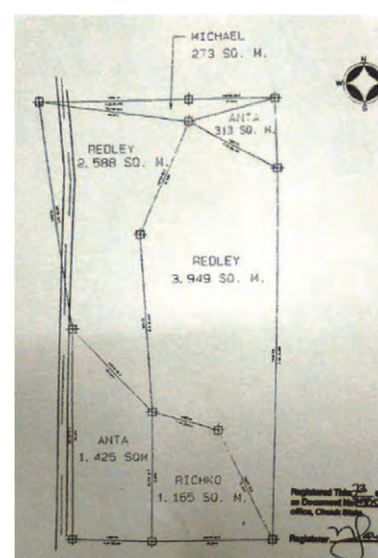


Measurement of the site

g.3. Monitoring the progress of the new landfill

The topographic survey of the site has not yet been conducted except for clarifying the boundary. The proposed site was about 9,700m² and there are four different land owners within the site.

The request of sending the surveyors from TC&I to develop the contour map of the site has not yet been made. There was also no progress of EIA. Communication between concerned agencies including SPREP should be well maintained.



Size and land owners of the site

8.2.3 Output 4-3: Capacity to improve the collection of general waste is enhanced

a. Activity of the First Dispatch (from 13th to 23rd of July, 2014)

a.1. Monitoring of the Collection Operation

Current collection service and its issue were discussed among the Deputy Director of DT&PW, collection crews, C/P of EPA, Nagata JOCV and the Expert;

- ✓ Collection crews followed the scheduled collection area and date.
- ✓ 4tonne compactor truck got a hole at the bottom of the body, then the collection crews use 2tonne compactor truck. 4tonne compactor truck will be repaired soon.
- ✓ Yellow Waste Bin located installed for the residents in the market area was filled up very fast and some unfitted waste was scattered around the Waste Bins. This was because that some private companies and shops near the market used the Bins though the Littering Law provided that business entities must transport and dispose their waste by themselves, meaning that the law was not well enforced by the Public, the Public safety and EPA.
- ✓ Instead of its hard work of the collection crews, their working condition especially their salaries were still very low (\$1.25/hour and \$1.75/hour).
- ✓ According to DT&PW, the Government would not increase the budget for the waste management in DT&PW in the next Fiscal Year.

Considering the above points, the following actions were raised to be taken in the meeting;

- ✓ The Project will prepare a letter to a new Director of DT&PW with CC to the State Governor for requesting to reconsider the budge of DT&PW for the waste management and improvement of working condition of the collection crews. →this letter was prepared and send in July, 2014.
- ✓ EPA will prepare a letter to shops and other business owners for disseminating about the Littering Law providing that business entities must transport and dispose their waste under their responsibility rather than disposing them at the Bins → the letters were prepared by EPA and submitted to owners of the major shops and businesses, also first citation letter to fine on the use of Waste Bins by a private company was prepared by EPA in November 2014.

a.2. Drafted Awareness-raising activity plan

As awareness activity was added in the PO of Chuuk State in the last JCC to improve the behavior of the public in the use of the Waste Bins, the awareness-raising activity plan was drafted by C/Ps of DT&PW, C/Ps of EPA, Nagata JOCV and the Expert. This draft plan will be finalized after a new EPA staff who is in charge

of environmental awareness activities, Mr. Dayson Marar who was participating in a JICA training at that time returned from Japan in August.

Table 8-8: The drafted plan of the awareness activities

Target	Goal	Activity
Business entity	Business entity stop using yellow waste bins and transport and dispose their own waste by themselves.	a) Develop and distribute leaflets toward business entities, Chamber of Commerce, Public Safety and Weno Municipality b) Radio announcement c) Put sticker on waste bins
Residents	Improve the behavior of residents on how to use the bins	a) Develop and distribute leaflet toward Chuuk Women's Councils and leaders of the town b) Radio announcement
	Inform about recyclable items to the residents	c) Conduct workshops

b. Activity of the Third Dispatch (from 8th to 25th of November, 2014)

b.1. Monitoring of the Collection Operation

The collection crews, Mr. Friden Ewen and Mr. Henning Narruhn were given a Special Award in the 4th J-PRISM Steering Committee for their good performance in the collection work.



Friden Ewen



Henning Narruhn

With their efforts and support from EPA and DPW&T, collection service has been improved undoubtedly in the last few years resulting in less scattering of the waste in the town area. Maintenance on the Waste Bins is constantly required and conducted by EPA, and two Bins were under repair during this dispatch.

The map shows the collection area from 2012.

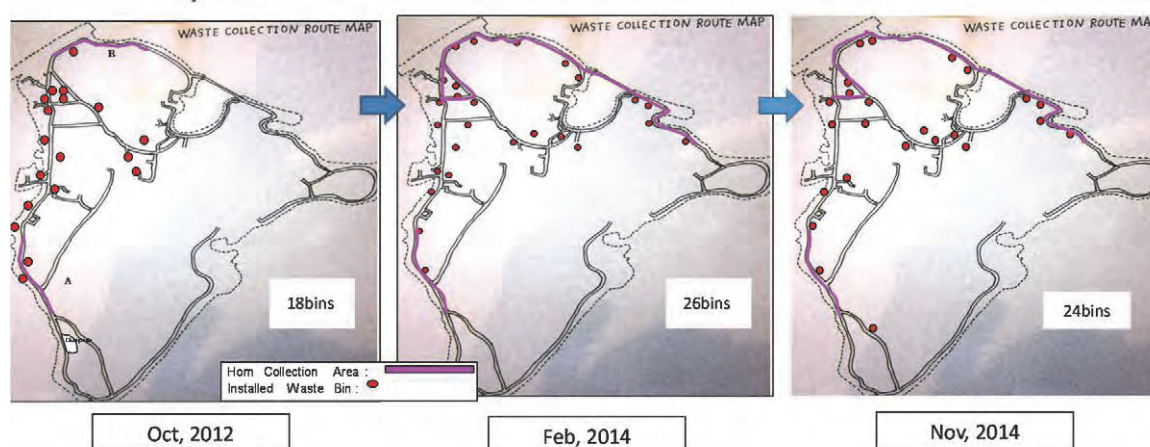


Figure 8-8: Collection area of Chuuk State

While, a few remaining issues were addressed and advised to improve by the Expert;

- ✓ Safety gears: EPA sometimes provides safety gears to the collection crews, however the crews often used thin plastic gloves which were usually used for medical operation; therefore, at least proper gloves should be provided to them regularly and also have enough stocks.
- ✓ Log of the collection operation: monitoring the collection service was not well recorded. →The monitoring sheet was revised by Director of DT&PW and the Expert to resume the monitoring.



Improper grove

b.2. Finalizing Awareness-raising Activity Plan

Based on the draft awareness activity plan, official letters to business entities were prepared and submitted by EPA to each business owners to remind the law providing the responsibility of the business owners to transport their own waste and stop using the Waste Bins.



Survey on the collection service

In order to finalize the draft Action Plan, a simple survey to identify the issues during the collection operation was conducted by following the collection trucks, and the following issues were identified on the use of the Waste Bins.

- ✓ Some waste which should not be disposed in the Waste Bins were identified



Metal and bulky waste



wood waste



Bulky waste



Green waste



E-waste (computer)

These types of waste were explained to the residents not to bring to the Waste Bins when EPA installed the Bins; however, some residents did not follow the rule.

✓ Some illegal dumping



Illegal dumping near the dumpsite



Illegal dumping near the dumpsite



Waste where Waste Bin was removed

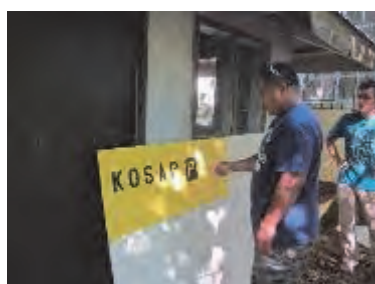
The above two illegal dumping spots were identified near the dumpsite, and the picture on the right was at the corner of the market area where one Waste Bin was installed before but removed from the request of the land owner, but some people still brought and left the waste at this corner rather than taking it to another Bins near the market.

Considering the above situation, the draft awareness-raising activity plan was finalized by C/Ps and the Expert.

Table 8-9: Finalized awareness-raising plan

Target	Goal	Activity	Schedule	Budget
Business entity	Stop business entity using the Waste Bins and illegal dumping.	d) Develop and distribute letter to business owners to stop using the waste bins.	Prepared and Distributed in Aug-Nov, 2014	-
		e) Radio announcement (once a week)	The content was already prepared	-
Residents	Improve how the residents use the Waste Bins.	f) Workshop (8 villages, 2 college, 11 primary)	Start from Jan, 2015	-
	Inform more about waste issues in Chuuk.	g) Radio announcement (once a week)	The content was already prepared	-
		h) Sign boards (4 sign boards)	Two sign boards were developed	Paint by J-PRISM
		i) Recycling bins (all 21 school: one bin/school)	Start from Jan, 2015	Wire and Tools by EPA

EPA staffs prepared some sign boards and installed at the illegal dumping points.



Preparation of Sign boards



Sign board installed at the dumpsite



Sign board installed near the market

c. Activities of the Fourth Dispatch (from 27th of January to 9th of February, 2015)

c.1. Monitoring collection service

The collection service was continuously provided with its operation records. Furthermore, it was told by the Director of DT&PW that the salaries of the collection were slightly increased after the collection crews received the award from J-PRISM and SPREP.



People waiting compacter truck on Horn collection day



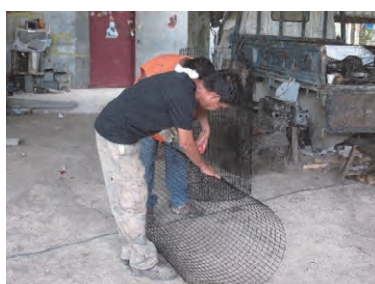
Kids taking garbage bin to the compacter truck on Horn collection day

Collection record (October, 2014)

c.2. Monitoring awareness-raising activities

Progress of awareness-raising activities were shared by C/P.

- Radio announcement was continued to inform collection schedule and how to use waste bins.
- 3 sign boards to warn illegal dumping and littering were installed and totally 7 sign boards were installed.
- After installing the sign boards, there was no illegal dumping found at the site where the waste was dumped illegally.
- EPA started making Recycling Bins for schools.
- Workshops was not yet held at schools and communities.
- Awareness-raising materials will be developed by the C/P.



Making Recycling Bins



Near the dumpsite where illegal dumping was identified and a sign board was installed



New sign board installed near the airport

d. Activities of the Fifth Dispatch (from 16th of May to 5th of June, 2015)

d.1. Monitoring the progress of the awareness-raising activities

As the C/P who was in charge of awareness-raising attended the JICA training in Japan in May, the progress of the awareness-raising activities were shared by Deputy Director of EPA that the C/P and Nagata JOCV conducted school workshops for promoting recycling as follows.

Table 8-10: Awareness-Raising activities conducted by EPA

Month	Schools visited	Contents of the workshop
Feb.	Elementary (1) High school (1)	Installing 2 recycling bins and explaining how to use them
Mar.	Elementary (1)	Same as above
Apr.	Elementary (1)	Same as above

There was one recycling company in Weno but closed since December 2014. EPA needed to monitor the situation of the company because its impact on the recycling system in Chuuk might be big.

d.2. Distribution of leaflet during Waste Survey

Through the interviews to households during the WACS, it was found that some households did not use Waste Bins and disposed the waste behind their houses in front of the ocean. One of the reasons of no-use of the Bins was that they used the waste as landfilling material at the coastal area. However, the landfilled waste was not covered by soil, so the many waste was flown to the ocean. Other reason was the laziness of the residents to bring their waste to the Bin even it took only 3 minutes. Also some households thought that only households where the Bin was installed could use the Bin. Therefore, during the WACS to collect garbage bags from households, EPA, DT&PW, JOCV and the Expert distributed leaflets in some villages to promote the proper use of Bins. EPA needed to conduct further awareness-raising activities on collection service.



Backyard of house



improper landfilling with waste



Staff of DT&PW explained how to use Bin



Flier of how to use Bin

d.3. Clean-up campaign

On the 2nd of June, a clean-up campaign was conducted in the downtown area of Weno to clean up the scattered waste after the typhoon. C/Ps of EPA and the Expert announced to some government offices, NGO and the public about the clean-up to promote public participation.

There were about 20-30 people participated in the Clean-up from DT&PW, EPA, CWC (Chuuk Women's Council), Public Health, private companies and JICA. Approximately 90 bags of waste were collected.



Clean-up on street



Clean-up near coast



Grass cutting on street



Clean-up in market area

It was shared by the President of CWC that CWC had been conducting awareness-raising activities from this year with their focus on communities and schools. It was agreed that CWC and EPA would work closely in the awareness activities.

e. Activities of the Seventh Dispatch (from 18th to 27th of November, 2015)

e.1. Monitoring the operation and recording the collection operation

The DT&PW continued the waste collection service but the collection crews did not record the operation. DT&PW checked the operation through their verbal report and visual check on the collection bins and garbage bags on the road.

One of the issues in the collection service is securing the safety of the crews. The collection crews still wear thin plastic gloves. It was advised by the JICA Expert to provide the safety gloves regularly and also check them if they wear the proper gloves.

e.2. Monitoring the awareness-raising activities

The progress was shared by the JOCV since the C/P of EPA was out of the island. There were several workshops conducted from September at Saramem Chuuk school, Berea Christian school, Mwan Elementary school, Iras Demo school and Mechitiw elementary school. The topics were general information about waste in Chuuk and segregation of waste.

Additionally the JOCV and C/P have conducted the school program called “eco-club” at a few selected high schools, where they provided monthly workshops with different waste theme.



Workshop at elementary school
conducted by JOCV

8.2.4 Other activities related to SWM

This section reported the activities related to SWM but not included in the PO of the J-PRISM including JCCs and Capacity Assessments.

a. Activities of the Fourth Dispatch (from 27th of January to 9th of February, 2015)

a.1. Fourth State JCC

The Fourth State JCC was held on 4th of February 2015 and 25 peoples from 15 different agencies participated in the JCC including 2 staffs from OEEM as representatives from the National Government for the first time.

The JCC started with an award ceremony, in which two collection crews of DT&PW received Special Award in the Fourth SPREP Steering Committee, later on C/P gave a presentation of the progress report of the Project. In the JCC, one indicator was added “4-3-3 *More than 10 workshops are conducted to improve the waste discharge of the people.*” in the Output4-3 to improve the awareness-raising activities and evaluate the on-going awareness-raising activities as well.



JCC
(Award ceremony of collection crews)



Discussion in JCC



Presentation by Deputy Director of
EPA

b. Activities of the Sixth Dispatch (from 26th to 30th of August, 2015)

b.1. Assistance in the final evaluation

The Final Evaluation Team visited Chuuk from 26th to 28th of August and C/Ps and the Experts showed the team the Project sites and shared the project activities.

c. Activities of the Seventh Dispatch (18th to 27th of November, 2015)

c.1. Fifth State JCC

The Fifth State JCC was held on the 25th of November 2015 and 22 peoples from 10 different agencies participated in the JCC.

The Director of DT&PW delivered a presentation of the progress of J-PRISM and activity plan from 2016. Then, representatives of the each agencies reported their activities related to waste such as starting the enforcement of Littering Law by the Public Safety and awareness activities by NGO, and all participants agreed to continue the meeting to discuss about waste issues annually even after the Project.

Some points discussed in the JCC were summarized as follows.

- ✓ Unachieved indicator:
 - Indicator4-1-2: Monitoring Action Plan will be conducted in December 2015
 - Indicator 4-2-3: DT&PW share the operation record with EPA
 - Indicator 4-3-1: The collection crews record the daily operation and submit the sheet to DT&PW and share with EPA
- ✓ Continuous Activities:
 - Operate the Marina Dumpsite
 - Close the existing Dumpsite
 - Conduct more awareness activities
- ✓ New Target Activities from 2016
 - New landfill sites (1-3): Designing, EIA and construction
 - Recycling Program: deposit program (targeting aluminum cans, PET bottles, glass bottles, vehicles, electronic appliances etc.)
 - Establish the Plastic and Foam products Ban law
 - Monitoring the households for the proper disposal of their waste (by Sanitation Office)



Progress report by Director of DT&PW



Group photo

c.2. Capacity Assessment

Capacity assessment was conducted on institutions and individuals. Due to typhoon and public holidays, there were only five working days secured during this dispatch for the Expert; therefore, the individual capacity assessment was conducted only with three C/Ps. The following charts show the results of the institutional capacity assessment.

- Target agencies: DT&PW,EPA
- Conducted: three times (1st: June, 2012, 2nd: January 2014 and 3rd: November 2015)

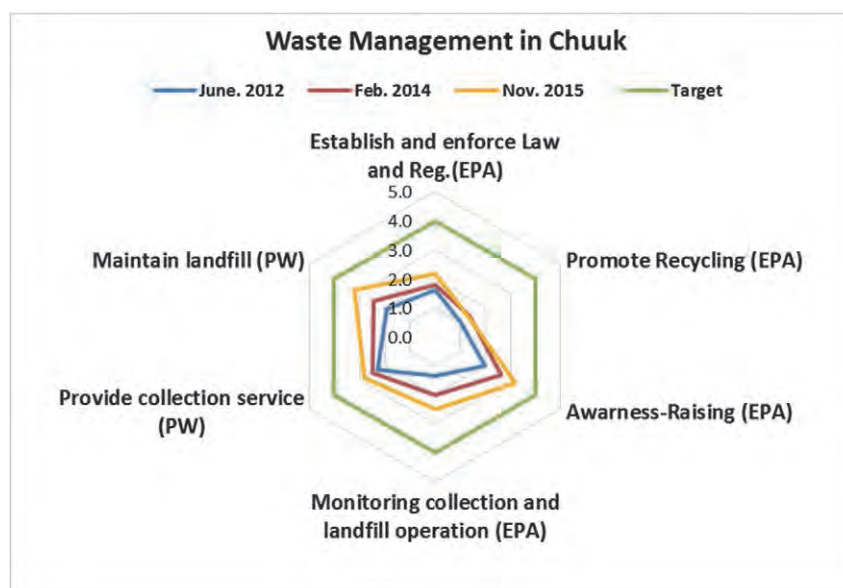


Figure 8-9: Chart of the capacity assessment (Chuuk)

Some improved points and recommendations of each category are summarized as follows.

- ✓ **Establish and enforce Law and Reg. (EPA):** EPA hired a lawyer, however establishment of new regulations such as banning the plastic bags and revising the SWM regulation have not been started yet. *It is expected that EPA will establish or revise necessary laws and regulation for SWM by referring to other States and studying by themselves. Enforcement can be improved through collaboration with the Public Safety as well.*
- ✓ **Promote Recycling (EPA):** After the Chinese private recycling company closed down its operation, all the recycling activities went down. *Establishing the recycling program under the Government should be planned rather than just waiting for any private recycling company to come.*
- ✓ **Awareness-raising (EPA):** School workshops were conducted by EPA staffs with JOCV, but not enough. *Chuuk State needs further awareness activities based on close collaboration with the sector of Education.*
- ✓ **Monitoring collection and landfill operation (EPA):** When any problem occurred, EPA and DT&PW shared the information. *EPA can monitor the collection activity systematically (e.g. developing the check list) rather than just waiting for their reports of problems.*
- ✓ **Provide Collection service (DT&PW):** Collection crews of DT&PW provide regular collection services. *Good maintenance and securing necessary tools and spare parts for the collection compacter truck are very important to continue the services.*
- ✓ **Maintain landfill (DT&PW):** Existing dumpsite is operated regularly with operation records. DT&PW received a new excavator from the Embassy of Japan for its operation at the Marina Dumpsite. *Planning and implementing good maintenance on the heavy equipment is essential to continue the maintenance.*

9 Yap State, the Federated States of Micronesia

9.1 Outline of the activities in Yap State

9.1.1 Dispatch schedule

Total: 107 days

Dispatch	Date	Days	Dispatched Experts
1 st :	10th of June, 2014 – 20th of June, 2014	(11days)	Haseyama, Muranaka
2 nd :	31st of Aug 2014 – 9th of Sep. 2014	(10days)	Haseyama
	31st of Aug, 2014 – 14th of Sep. 2014	(14days)	Muranaka
3 rd :	25th of Nov, 2014 – 5th of Dec, 2014	(11days)	Muranaka
4 th :	10th of Feb, 2015 – 27th of Feb, 2015	(19days)	Muranaka
5 th :	18th of Apr, 2015 – 7th of May, 2015	(20days)	Muranaka
6 th :	the dispatch was canceled due to the flight cancel		
7 th :	7 th of Nov, 2015 – 17 th of Nov. 2015	(11days)	Muranaka

9.1.2 Counterpart organizations

Environmental Protection Agency (EPA)

Department of Public Works and Transportation (DPW&T)

9.1.3 Counterpart Members

Organization	Title	Name
DPW&T	Director	Vincent Figir
	Deputy Director	Manuel Maleichog
	Refuse collection program manager	Jesse Waayan
	Chief of Contracts & Engineering	James Sarmog
	Civil Engineer	Manolo Mendoza
EPA	Executive Director	Christina Fillmed
	Pollution Control Specialist	Petter P Fattamag
	Pollution Control Specialist	Joe Fanafal

9.1.4 Activities and Outputs

The progress of the activities and their achievements from May 2014 to January 2016 are summarized in accordance with the PO and agreed indicators in the next table.

Outputs/Indicators	Output/achievement by FY 2013	Activities/ Progress				
		1 st dispatch	2 nd dispatch	3 rd dispatch	4 th dispatch	5 th Dispatch
Output 5-1: Capacity to prepare the State Solid Waste Management Strategy of Yap State and Action Plan is developed.	The SSWMS was developed not yet endorsed.	u) Monitoring the update regarding the approval of the SSWMS by the State Government The strategy was submitted to the State Government in Mar. 2014 and waiting for its endorsement. V) Support for Developing the Next SSWMS/Revising the Existing SSWMS and Conducting Waste Survey (planned in 2017) w) Support for Monitoring the Action Plan Monitoring the Action Plan was conducted by EPA and DPW&T, and some activities were revised.	u) Monitoring the update regarding the approval of the SSWMS by the State Government It hasn't been endorsed by the State Governor yet. V) Support for Developing the Next SSWMS/Revising the Existing SSWMS and Conducting Waste Survey (planned in 2017) w) Support for Monitoring the Action Plan (next monitoring is in Feb. 2015)	u) Monitoring the update regarding the approval of the SSWMS by the State Government There is no update about the endorsement. V) Support for Developing the Next SSWMS/Revising the Existing SSWMS and Conducting Waste Survey (planned in 2017) w) Support for Monitoring the Action Plan (next monitoring is in Feb. 2015 in JCC)	u) Monitoring the update regarding the approval of the SSWMS by the State Government EPA explained the SSWMS to the new governor who was inaugurated in Jan, 2015 and waiting for his approval. V) Support for Developing the Next SSWMS/Revising the Existing SSWMS and Conducting Waste Survey (planned in 2017) w) Support for Monitoring the Action Plan Second monitoring on Action Plan was conducted in Feb. 2015.	u) Monitoring the update regarding the approval of the SSWMS by the State Government It hasn't been endorsed yet. V) Support for Developing the Next SSWMS/Revising the Existing SSWMS and Conducting Waste Survey (planned in 2016) w) Support for Monitoring the Action Plan (completed)
						u) Monitoring the update regarding the approval of the SSWMS by the State Government The SSWMS was approved and endorsed by the State Governor in Nov. 2015. V) Support for Developing the Next SSWMS/Revising the Existing SSWMS and Conducting Waste Survey (next revision was planned in 2016) w) Support for Monitoring the Action Plan (the monitoring was conducted twice as planned and next monitoring will be in early 2016)
Indicator 5-1-1: Yap SSWMS is submitted to the State for approval	The SSWMS was developed but it was not submitted to the Government of Yap State yet.	【Fully Achieved】 The Strategy was submitted to the State Government in March 2014; though it has not been endorsed yet.				
Indicator 5-1-2: Action Plan is distributed to the stakeholders	The Action Plan was developed but it has not been distributed to the stakeholders yet.	After the discussion with Director of EPA, instead of distributing the Action Plan, C/P will report the progress of Action Plan in the next JCC to the stakeholders.		【Fully Achieved】 The Action Plan and its progress were reported to the stakeholders in JCC.		
Indicator 5-1-3: Monitoring on the progress of Action Plan is conducted annually	Monitoring of the Action Plan has not been conducted yet.	First monitoring of the Action Plan was conducted in June 2014.		【Fully Achieved】 The second monitoring of the Action Plan was conducted.		

Output 5-2: Capacity to improve and manage the final disposal site is enhanced.	A landfill training was conducted in 2013 in Yap and C/Ps from all four States of FSM and Palau participated in the training. A new landfill was constructed with financial support of US, IMF and GGP. An operation manual of the new landfill was drafted.	X) Support for Rehabilitating the Existing Dumpsite The rehabilitation plan of the existing dumpsite was finalized after a discussion with DPW&T and EPA, and partial rehabilitation works has been launched by DPW&T. Y) Providing Guidance and Advice on the Operation of a New Landfill and Existing Landfill Monitoring items, points, frequency and discharge standard of the leachate were determined. Z) Support for Finalizing the Operation Manual of the landfill The operation manual (draft) was finalized after the discussion with EPA and DPW&T.	X) Support for Rehabilitating the Existing Dumpsite The rehabilitation has been slowly implemented. DPW&T sent a proposal to the US Compact for funding the rehabilitation of the dumpsite. Y) Providing Guidance and Advice on the Operation of a New Landfill and Existing Landfill C/Ps of EPA started monitoring the leachate at the existing dumpsite. Z) Support for Finalizing the Operation Manual of the landfill The manual was slightly modified according to the situation and finalized.	X) Support for Rehabilitating the Existing Dumpsite Since the proposal to US Compact wasn't approved, it was agreed to rehabilitate it partially under J-PRISM in Feb. 2015, and rehabilitation plan was revised based on the budget and concept of J-PRISM. Y) Providing Guidance and Advice on the Operation of a New Landfill and Existing Landfill The new landfill hasn't been opened yet. The approach road was almost completed. A monitoring sheet for land condition/operation was developed by EPA. Z) Support for Finalizing the Operation Manual of the landfill (completed)	X) Support for Rehabilitating the Existing Dumpsite The existing dumpsite was rehabilitated. Y) Providing Guidance and Advice on the Operation of a New Landfill and Existing Landfill DPW&T has had mechanical troubles on their heavy equipment. Monitoring the leachate was advised to the EPA staffs. Z) Support for Finalizing the Operation Manual of the landfill (completed)	X) Support for Rehabilitating the Existing Dumpsite The remaining rehabilitation work has not been completed yet due to mechanical issues. DPW&T will complete final soil cover when the equipment is ready. Y) Providing Guidance and Advice on the Operation of a New Landfill and Existing Landfill Leachate was monitored with EPA. Z) Support for Finalizing the Operation Manual of the landfill (completed)	X) Support for the Rehabilitating Existing Dumpsite DPW&T needs to complete the final soil cover and install the protection fence around the gas venting pipes. Y) Providing Guidance and Advice on the Operation of a New Landfill and Existing Landfill DPW&T restarted the data input of incoming waste to the landfill and landfill operation was improved. EPA continues monitoring of the leachate and landfill condition. Z) Support for Finalizing the Operation Manual of the landfill (completed)
Indicator 5-2-1: New landfill design is developed.	【Fully Achieved】 Design of the new landfill was developed by the engineers of DPW&T.						
Indicator 5-2-2: More than 10 counterparts get certificate in the training of operation and maintenance of landfill	【Fully Achieved】 Totally 17 staffs from Yap received certifications in the landfill operation/maintenance training in February 2013 held in Yap.						
Indicator 5-2-3: The upgrade of the existing dumpsite to semi-aerobic is completed.	Planned in 2014.	The rehabilitation plan was finalized, and forming the mountain of the waste into a cell.	The rainwater drainage was made around the existing dumpsite.	Approach road was almost competed. The rehabilitation plan was revised.	The existing dumpsite was partially rehabilitated.		【Mostly Achieved】 Soil cover was not completed and it was planned to be completed by March 2016.

Indicator 5-2-4: Operation of new landfill is monitored by EPA monthly according to the new landfill management plan	Planned in 2014.	Leachate monitoring parameters and method were developed by EPA. Monitoring kits aren't available in FSM, and EPA needs to find the trading company to import the monitoring kits.	aa) Support for the Implementing Awareness Activities According to the new awareness-raising plan, a set of presentation materials for high school was made by EPA and DPW&T, and a new poster was designed by EPA and printed out.	aa) Support for the Implementing Awareness Activities 4 workshops at high schools were conducted. EPA secured 2,200 "My Bags" to distribute. "May Bag Campaign" was drafted.	A monitoring sheet was developed by EPA to monitor the landfill condition. (Two EPA staffs are attending the JICA training in Japan for leachate monitoring.)	Monitoring method were discussed and revised with staffs who participated in JICA training in Okinawa.	Leachate wasn't monitored in March 2014; therefore it was monitored with EPA staffs as data of April.	【Fully Achieved】 EPA continued monitoring of the leachate and condition of the dumpsite.
Output 5-3: Capacity to conduct awareness activities for SWM is raised.	The 1 st series of awareness-raising activities started in 2013 and finished in April 2014. They included development and distribution of posters, sticker, and recycling bins to schools and other public areas. C/P conducted several workshops at schools. A public hearing was conducted to understand the public behavior of handling waste.	aa) Support for the Implementing Awareness Activities 2 nd phase of awareness-raising activities was planned.	aa) Support for the Implementing Awareness Activities	aa) Support for the Implementing Awareness Activities	aa) Support for the Implementing Awareness Activities	aa) Support for the Implementing Awareness Activities	aa) Support for the Implementing Awareness Activities	aa) Support for the Implementing Awareness Activities
Indicator 5-3-1: More than 10 workshops are conducted at schools and communities using the awareness materials developed	Workshops were conducted at 9 schools and 1 community by Feb. 2014	【Fully Achieved】 3 more workshops were conducted; therefore, <u>totally 13 workshops</u> were conducted by the end of June 2014.		Additional 4 workshops at high schools were conducted, so <u>totally 17 workshops</u> were conducted.			Additionally 1 workshop was conducted at COM, and <u>totally 18 workshops</u> were conducted.	Additionally 2 workshops at a community and a college were conducted and <u>totally 20 workshops</u> has been conducted so far.
Indicator 5-3-2: Awareness of SWM through a questionnaire result is raised by 25%	A Public hearing was conducted in 2013. Same survey will be conducted at the end of the 2015 to evaluate the activities conducted by EPA.							【Mostly Achieved】 Second hearing was conducted showing the improvement of accuracy rate in the questionnaire by 15%; although it didn't achieve the target % of 25, it got some results.

9.2 Activity Reports of Each Output

9.2.1 Output 5-1 : Capacity to prepare the State Solid Waste Management Strategy of Yap State and Action Plan is developed

a. Activity of the First Dispatch (from 10th to 20th of June, 2014)

a.1. Monitoring the State Strategy

The Yap State Solid Waste Management Strategy (SSWMS) was submitted to the State Government after the last JCC in February 2014, but was not endorsed by the Governor yet.

Although C/Ps were still waiting for the endorsement by the Governor, EPA started implementing some activities of the Action Plan of the Strategy.

a.2. Monitoring the Action Plan

The progress of the Action Plan was monitored and revised by EPA, DPW&T and the Expert, then some activities were revised based on the current situation. The result of the monitoring sheet is attached below.

The Action Plan should be monitored regularly by C/Ps, and the Deputy Director of DPW&T is responsible for the monitoring and submitting the sheet to OEEM.

* shows the activities which were prioritized to be conduct in this year.

Table 9-1: Activities of the Action Plan and its monitored progress

	Action	Responsibility	Situation as of June 2014	Progress (complete)
1-1	Maintain collection of baseline data on waste generation, composition, dump site, and recycling	EPA & DPWT	Generation surveys were conducted. Recycling data was collected. Incoming waste data was not collected from 2013, which needed a staff at PW to do.	50%
1-2	Assess and formalize roles and responsibilities for waste management	EPA & DPWT	The State government designated PW as an implementation agency for SWM. The YSPSC law was not amended but it was not the responsibility of EPA and PW.	75%
1-3	Create and fill SWM positions within EPA and DPWT	EPA & DPWT	PW secured 2 staffs (1manager and 1operator). EPA needs 1 staff for SWM, but the request was not approved by the Government.	50%
2-1 *	Review and implement legislation and institutional arrangements for solid & hazardous waste management dumpsite operation (modified)	EPA & DPWT	The operation manual was developed, needs to finalize.	25%
2-2	EPA and PWT designated as fulltime waste management enforcement officers	EPA & DPWT	PW secured 2 staffs (1manager and 1operator). EPA needs 1 staff for SWM, but the request was not approved by the Government.	25%
2-3	Secure additional legal support to develop and adopt institutional measures for improved framework	EPA & DPWT	EPA secured one lawyer, but needs to develop regulation for hazardous waste and landfill operation.	25%
3-1	Conduct secondary characterization of plastics, as per composition survey(deleted)	EPA	It is not necessary to conduct.	
3-2 *	Undertake assessment and improvement, including additional categories of recyclables, to the Recycling Program	EPA & DPWT	Amendment of the Recycling law was submitted to the Government for their response.	50%
3-3	Improve access of neighboring islands to the Recycling Program(deleted)	EPA	EPA contacted some companies and organizations to plan the collection from the outer island, but it did not happen. (this activity will be postponed to after 2017)	
3-4	Improve data monitoring of imports and recyclables	EPA	The balance became clear, but still needs to find the reason why the imports is lower than redeemed.	50%
3-5	Develop compost and mulching program	EPA, PW, Agriculture	No activity. It needs to discuss with Agriculture department first.	0%

Action		Responsibility	Situation as of June 2014	Progress (complete)
4-1	Expand the collection service through closure of dump sites and expansion of service	EPA, DPWT	The planning of collection service to expand the collection area started to be discussed but not so detail.	25%
4-2	Review and improve contract terms and arrangements for possible improvement to service and provider	DPWT, YSG	The discussion was made but needs further planning.	25%
4-3	Conduct prepaid garbage bag pilot through collection service	EPA, DPWT	The discussion was started.	25%
4-4	Repair collection truck to assist with collection service(deleted)	DPWT	Deleted due to low feasibility	
5-1	Improved awareness at households & communities for general segregation	EPA, DPWT	Awareness workshops were conducted at more than 10 schools.	50%
5-2	Finalize design and secure funding for improvement of public dump site	DPWT	It was completed at the new landfill.	100%
6-1	Develop an extended producer (also importer, distributor & retailer) responsibility program to support the sustained reuse, recycling, or disposal of all waste oil and tires. This may involve making importers and retailers responsible for safe disposal, or imposing a disposal fee on imported oil and tires, or implement a deposit-refund scheme.	EPA, SWDMG	Waste Oil project started under PACWASTE. It is expected to continue.	25%
			There was no activity for the waste tire. It needs to start the possible method to export or reuse them.	0%
6-	Investigate the feasibility of on-island disposal of waste oil and tires by incineration and implement if feasible.	EPA	Waste Oil project started under PACWASTE. It is expected to continue.	25%
			There is no activity for the waste tire. It needs to start the possible method to export or reuse them.	0%
6-3	Develop a collection program for waste oil from small generators to eliminate poor disposal practices such as dumping in drains.	SWDMG	Waste Oil project started under PACWASTE. It is expected to continue.	0%
6-4	Undertake an audit of Throfin's waste oil disposal process to identify room for improvement and minimize environmental impacts(deleted)	EPA	Deleted due to no collection of waste oil by Throfin anymore.	-
7-1	Expand the waste recycling program to include other types of wastes	EPA	Amendment of the Recycling law was submitted to the Government.	50%
7-2	Implement a pre-paid garbage bag waste collection system (pay-as-you-throw)	EPA, DPWT	It needs to develop a plan under PW with a collection company.	0%
7-3 *	Improved tracking of finances/funding that support SWM in Yap	EPA	The discussion was made in 2013. PW needs to collect information and clarify the balance for the collection service	25%
7-4	Develop and put forward a proposal to implement a financing mechanism such as visitor levy applied to departure tax (similar to Palau), or environmental tax on selected imported goods.	SWDMG	Survey was conducted at the airport to the passengers, but only few tourists showed the willingness to pay for waste. Find the possibility to allocate some % to the waste activity from the departure fee.	25%
8-1	Integrate waste management topics into the school curriculum and provide appropriate training to teachers(deleted) Develop materials for school and communities	EPA, DOE	Revised due to low feasibility	0%
8-2	Establish relationships and provide support to civil society groups who are able to assist with raising awareness of good solid waste management practices (e.g. women's groups and church groups)	SWDMG	EPA provided information to CHC and it can be distributed more information to these organizations.	25%
8-3	Undertake awareness sessions with other government agencies to schools and communities. (modified)	SWDMG	12 school visits were conducted.	50%
8-4	Make waste management the focus of Yap Environment Week 2012 to coincide with SPREP's Clean Pacific campaign(deleted)	EPA	Deleted due to no activity with SPREP Clean Pacific Campaign.	-
9-1	Employ a full-time Waste Management Officer in Yap State EPA & DPWT to coordinate all waste-related activities(deleted)	EPA, DPWT	Deleted due its duplication with Activity2-2.	-
9-2	Identify Australian public sector organization to submit application for assistance to AusAid Pacific Public Sector Linkages Program (PSLP) (deleted)	EPA	Deleted due to no possibility to work together at this moment.	-
9-3	Develop and implement a cross-training plan in conjunction with other responsible institutions to ensure that other officers receive appropriate training in waste management issues.	EPA, DPWT	Some staffs from EPA and PW participated in the training conducted by JICA and SPREP.	50%

The following table shows the summary of the achievement level of each category. It shows that “5. Waste Disposal” and “1. Institutional Arrangements” had over 50% of achievement; while, “2. Policy, Legislation and Enforcement,” “4. Waste Collection,” “6. waste oil & tires” and “7. Sustainable financing” were less than 25%.

Table 9-2: Achievement levels of the Action Plan by the categories

Major Activity Category (total number of activities)	Achievement Level (%)					Average of achievement
	0	25	50	75	100	
1. Institutional Arrangements (3)			2	1		58
2. Policy, Legislation and Enforcement (3)		3				25
3. Refuse, Reduce, Reuse, Recycle (4Rs) (3)	1		2			33
4. Waste Collection (3)		3				25
5. Waste Disposal (2)			1		1	75
6. waste oil & tires (5)	3	2				10
7. Sustainable Financing (4)	1	2	1			25
8. EDUCATION & Awareness (3)		1	1	1		50
9. Capacity building (1)			1			50

b. Activity of the Third Dispatch (from 25th of November to 5th of December, 2014)

b.1. Monitoring the State Strategy

The SSWMS was not endorsed yet, and EPA needed to remind the Governor of it. It was informed by the C/Ps that the term of the current Governor would be ended in December 2015.

It was agreed with EPA and DPW&T to monitor the Action Plan and report the result to the stakeholders in the next JCC in February 2015.

c. Activities of the Fourth Dispatch (from 10th to 27th of February, 2015)

c.1. Monitoring the State Strategy

It was reported by the C/P that EPA explained about the SSWMS to a new State Governor who took his post in January 2015 and asked him to review and endorse it.

c.2. Monitoring the Action Plan

The Action Plan was monitored by C/Ps of EPA, DPW&T and the JICA Expert. The following table shows the result of the monitoring.

Table 9-3: Progress of the activities of the Action Plan

Action		Responsibility	Situation as of Feb. 2015	Progress (% complete)
1. Institutional Arrangements				
1-1.	Maintain collection of baseline data on waste generation, composition, dump site, and recycling	EPA & DPWT	Mainly Recycling Program data has been updated, however Incoming Waste Data is not yet updated	50%
1-2.	Assess and formalize roles and responsibilities for waste management	EPA & DPWT	Status remained the same as last update.	75%
1-3.	Create and fill SWM positions within EPA and DPWT	EPA & DPWT	DPWT secured 1 SWM Coordinator, with plans to hire 2 more positions for SWM. EPA did not secure SWM personnel to assist yet.	75%
2. Policy, Legislation and Enforcement				

Action		Responsibility	Situation as of Feb. 2015	Progress (% complete)
2-1	Review and implement legislation and institutional arrangements for dumpsite operation	EPA & DPWT	Other SWM regulations and legislation regarding Landfill operation not yet compiled and drafted.	25%
2-2	EPA and PWT designated as fulltime waste management enforcement officers	EPA & DPWT	Status remained the same as last update	25%
2-3	Secure additional legal support to develop and adopt institutional measures for improved framework	EPA & DPWT	Regulations for hazardous waste was under drafting; however the regulations on landfill operation were are not yet drafted.	50%
3. Refuse, Reduce, Reuse, Recycle (4Rs)				
3-2	Undertake assessment and improvement, including additional categories of recyclables, to the Recycling Program	EPA & DPWT	Completed assessment of new categories to the Program.	100%
3-4	Improve data monitoring of imports and recyclables	EPA	Import quantities was confirmed by Division of Tax and Revenue, using spreadsheet generated by Finance	75%
3-5	Develop compost and mulching program	EPA, PW, Agriculture		0%
4. Waste Collection				
4-1	Expand the collection service through closure of dump sites and expansion of service	EPA, DPWT	Pilot project planned in collaboration with EH/Sanitation office for expansion of collection targeting two communities	25%
4-2	Review and improve contract terms and arrangements for possible improvement to service and provider	DPWT, YSG	No progress yet to improve collection terms via contract of waste collector	25%
4-3	Conduct prepaid garbage bag pilot through collection service	EPA, DPWT	Prepaid garbage bag pilot yet to be finalized and implemented with waste collector	25%
5. Waste Disposal				
5-1	Improved awareness at households & communities for general segregation	EPA, DPWT	Awareness workshops were conducted for the total of 12 schools to date; with only remaining school being the College of Micronesia. Visits to communities also being planned	50%
5-2	Finalize design and secure funding for improvement of public dump site	DPWT	Completed in 2014	100%
6. waste oil & tires				
6-1	Develop an extended producer (also importer, distributor & retailer) responsibility program to support the sustained reuse, recycling, or disposal of all waste oil and tires. This may involve making importers and retailers responsible for safe disposal, or imposing a disposal fee on imported oil and tires, or implement a deposit-refund scheme.	EPA, SWDMG	<Waste oil> Waste oil containers quantity of 8 with 133 capacity of 250 gallon each have been secured via SPREP for use with collection.	25%
			<waste tire> No progress yet in relation to the plans on segregation, collection, and reuse of waste tires	0%
6-2	Investigate the feasibility of on-island disposal of waste oil and tires by incineration and implement if feasible.	EPA	<waste oil> Waste oil survey completed via SPREP consultant; however, no practical treatment measures yet figured.	25%
			<Waste tire> Status remained the same.	0%
6-3	Develop a collection program for waste oil from small generators to eliminate poor disposal practices such as dumping in drains.	SWDMG	Program was in the process of development to assist private auto mechanic shops and others similar to make sure of waste oil containers secured via SPREP	25%
7. Sustainable Financing				
7-1	Expand the waste recycling program to include other types of wastes	EPA	Amendment to the current Recycling Regulations was endorsed by administration, but not yet in effect; working to confirm recycling program balance currently before filing and implementation of new categories to the program	50%
7-2	Implement a pre-paid garbage bag waste collection system (pay-as-you-throw)	EPA, DPWT	No progress yet on this, plan not yet finalized for prepaid program with waste collector	0%
7-3	Improved tracking of finances/funding that support SWM in Yap	EPA	PW did not yet secure information from YSPSPC regarding payments that support the Refuse and collection program	25%
7-4	Develop and put forward a proposal to implement a financing mechanism such as visitor levy applied to departure tax (similar to Palau), or environmental tax on selected imported goods.	SWDMG	Proposal to draft plan for green fee or tax was to be revised as it would not be possible via AGO opinion	25%
8. EDUCATION & Awareness				
8-1	Develop materials for school and communities	EPA, DOE	Some materials developed for schools and communities including posters and pamphlets regarding SWM	50%
8-2	Establish relationships and provide support to civil society groups who are able to assist with raising awareness of good solid waste management practices (e.g. women's groups and church groups)	SWDMG	EPA shared SWM information and pamphlet with CHC to be used as part of their awareness activities within communities and health councils	25%

Action		Responsibility	Situation as of Feb. 2015	Progress (% complete)
8-3.	Undertake awareness sessions to schools and communities,	SWDMG	12 school visits were conducted	50%
9. Capacity building				
9-3.	Develop and implement a cross-training plan in conjunction with other responsible institutions to ensure that other officers receive appropriate training in waste management issues.	EPA, DPWT	Cross training conducted with Chuuk State representatives for landfill site improvement	75%

Based on the above monitoring, the achievement level of each category is summarized in the following table in comparison with the achievement level in 2014.

Table 9-4: Progress of the Action Plan by the categories in 2014 and 2015

Major items (# of activities)	Achievement level (%) June 2014						Achievement level (%) February 2015					
	0	25	50	75	100	Ave. of achievement	0	25	50	75	100	Ave. of achievement
1. Institutional arrangement (3)			2	1		58			1	2		67
2. Policy, Legislation and Enforcement (3)		3				25		2	1			33
3. 3. Refuse, Reduce, Reuse, Recycle (4Rs) (3)	1		2			33	1			1	1	58
4. Waste Collection (3)		3				25		3				25
5. Waste Disposal (2)			1		1	75			1		1	75
6. Waste tires & Oils (5)	3	2				10	2	3				15
7. Sustainable Financing (4)	1	2	1			25	1	2	1			25
8. Education and Awareness (3)	1	1	1			25		1	2			42
9. Capacity building (1)			1			50				1		75
Total	6	11	8	1	1	39	4	11	6	4	2	46

It can be seen that most of the categories made some progress and the total achievement level was increased. On the other hand, “Waste collection,” “Waste tires & Oils,” and “Sustainable Financing” had no progress, which required to be started.

From the Action Plan above, three activities were selected and highlighted in the JCC;

- **Waste collection:** Current collection area provided by the DPW&T is only downtown area (Colonia) in Yap. There was a plan to start a pilot project in two communities by collaborating with the Office of Environmental Health and Sanitation. Pre-paid bag system will be also considered to be addressed.
- **CDL:** The number of redeemed containers compared to the imported containers is still high; therefore, it is required to identify the reasons and find the solutions through the discussions among EPA, Office of Administrative Services and the Recycling Company. Please refer to “Other Activities related to SWM.”
- **Law and Regulation:** Several laws and regulations related to SWM were developed from 2013 as listed in the following table.

Table 9-5: Law and regulations developed from 2013 to 2015

Year	Law and Regulations	Main Objectives
2013&2014	Plastic Bag Ban Law and Reg.	It totally bans all stores to distribute plastic bags.
2015	Recycling Regulation (Amended) * it has not been enforced yet.	It adds more items in the existing CDL system.
2015	Prohibition of burning inorganic waste * a part of Burning Regulations	It bans burning inorganic waste such as plastic and tires.
2015	Transport Vessel Regulations	It regulates disposal of waste generated from ships.

d. Activities of the Fifth Dispatch (from 18th of April to 7th of May, 2015)

d.1. Waste Amount and Composition Survey (WACS)

WACS was conducted from 23rd of April for 8 days. The outline and its results are as follows:

✓ **Purpose**

- To identify the trend of the waste generation in comparison with the past survey results
- To develop a waste stream
- To identify the potential waste items so as to minimize the waste

✓ **Planning**

WACS was planned by C/Ps of EPA and DPW&T with the Expert based on the time availability and capacity of staffs with referring to the surveys conducted in 2009 and 2011⁷ and a WHO guideline named “Guides for municipal solid waste management in pacific island countries.”

14 categories were selected for the composition survey based on the interests of the C/Ps and the ongoing waste minimization activities of Yap State such as Recycling Program and Ban of Plastic Bags to evaluate the effectiveness of these activities.

⁷ J-AWARE1 which was initiated JOCV and SV conducted in 2011

Table 9-6: Plan of the WACS

	2009	2011	WHO Guide	2015
Number of target households	14	20	50-100	20
Number of survey days	11	7	8	8
Discard first waste	No	No	Yes	Yes
Frequency of collection of bag	Every other day	Every other day	Every day	Every day
Category of waste composition survey	9	7	9	14
	Paper	Paper	Paper	Paper
				Cardboard
	Plastics	Plastic	Plastic	Plastic bag
				Recyclable Plastic containers (food/beverage)
				Form
				Other plastic
	Glass	Glass	Glass/ ceramic	Glass
	Metals	Metal (Aluminum)	Metals	Aluminum
		Metal (steel)		Steel
				Tin
				Other metal (gas canister)
	Biodegradable	Biodegradable	Vegetable/ putrescible	Garden waste/ Kitchen waste
			Grass/leaves/wood	
	Textiles	Textiles	Textiles	Textiles
			Leather/ rubber	
	Hazardous			
	Construction & Demolition			
	Other	Other	Miscellaneous	Other

✓ Sampling

Totally 20 households were selected as samples of the WACS from three different categorized area, which were categorized by the C/Ps based on the difference of the size, social and economic levels.

Table 9-7: Categories of the municipalities

	Category of Area		
	A	B	C
Characteristic	Town area	municipality with population of over 500	municipality with population of under 500
Municipality	Welony, Rull	Gagil, Tomil, Maap	Gilman, Kanifag, Fanif, Dalipebenau, Rumung
Total Population	3,097	2,878	1,453
Number of sample households	10	5	5

✓ Results of Survey

- **Waste Generation:** It was found that the waste generation amount was slightly different among the three categorized areas, and the average of daily per capita waste generation was 0.47lb (210g).

Category of Area		A	B	C
	Population	3,097	2,878	1,453
Generation	lb/capita/day	0.59	0.34	0.26
+ Recyclable items	lb/capita/day	0.07	0.07	0.07
Generation Total	lb/capita/day	0.67	0.41	0.34
Sub Total	lb/day	2,062	1,188	492
Total	lb/day	3,742 (1.7ton)		

Average of the waste generation of the above three categories: (a) 0.4 lb/capita/day (185g).

Recyclable items: (b) 0.07lb/capita/day (35g) of recyclable items. From the interviews to the households, most of them keep recyclable items such as plastic PET bottles, aluminum cans and glass bottles at home for its refund.

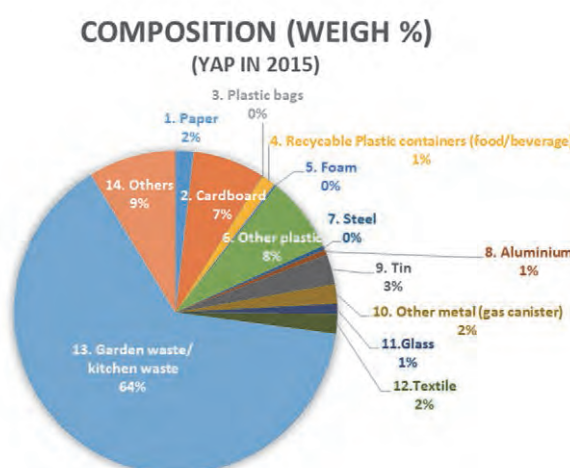
The average of the waste generation: (c)=a+b 0.47 lb/capita/day (0.21kg)

The total household waste generation in Yap excluding outer islands: 3,742lb/day (1.7t).

■ Waste composition (Weight)

Type of material (Weigh %)	Rate (%)
1. Paper	1.8%
2. Cardboard	7.2%
3. Plastic bags	0.1%
4. Recyclable Plastic containers * (food/beverage)	1.4%
5. Foam	0.2%
6. Other plastic	7.6%
7. Steel	0.4%
8. Aluminum*	0.5%
9. Tin	3.0%
10. Other metal (gas canister)	1.9%
11. Glass*	1.0%
12. Textile	2.0%
13. Garden waste/ kitchen waste	64.1%
14. Others	8.8%

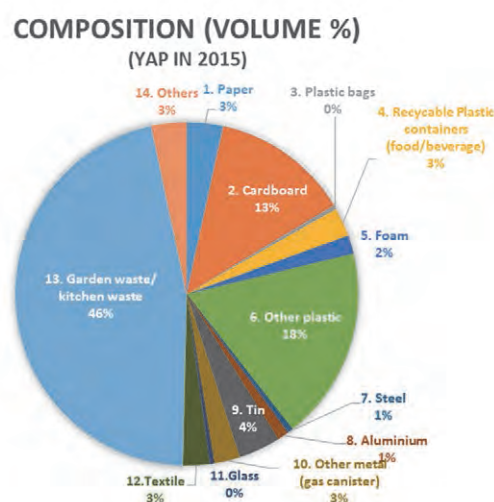
*0.07lb isn't included in the above data



■ Waste composition (Volume)

Type of material (Volume %)	Rate (%)
1. Paper	3.43%
2. Cardboard	12.96%
3. Plastic bags	0.40%
4. Recyclable Plastic containers* (food/beverage)	2.71%
5. Foam	1.74%
6. Other plastic	18.19%
7. Steel	0.52%
8. Aluminum*	1.11%
9. Tin	3.93%
10. Other metal (gas canister)	2.45%
11. Glass*	0.41%
12. Textile	2.52%
13. Garden waste/ kitchen waste	46.31%
14. Others	3.32%

*0.07lb isn't included in the above data



✓ Findings from the analysis of the survey results

Purpose 1. To identify the trend of the waste generation

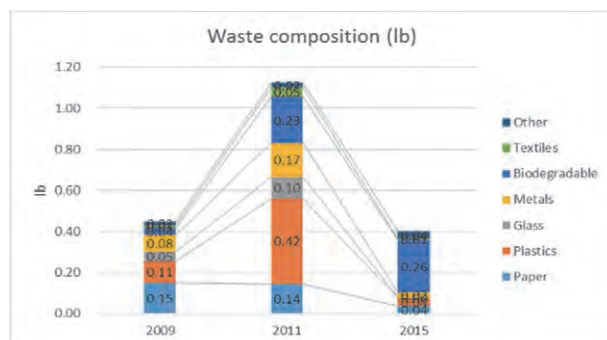


Figure 9-1: Waste composition (2009, 2011 and 2015)

The waste generation amount (0.47lb/capita/day) was lower than the result of the previous survey conducted in 2011 (1.12lb). The reason can be considered that methods of the survey was slightly different.

It was explained by the C/Ps that in the previous survey there were some old waste in the garbage bags found during the survey which seemed to be

generated far before the survey by the households and that old waste were included in the data of the daily waste.

The reason of high ratio of Garden/Kitchen waste is that survey team provided two bags to each households every day, one for the general waste and the other for the Garden/Kitchen waste for the surveyors to segregate the waste easily. Providing 2 separate bags might encourage the households to collect more garden waste that resulted in increasing the amount of “Garden/Kitchen waste”.

Purpose 2. To develop a waste stream

Based on the result of WACS and interviews to households, the current waste stream was developed.

- A: Household waste generation: 1.7t/day
- B: Other than household waste: 3.3t/day (from J-AWARE3 in 2013)
- C: Total waste: 5.0t/day (A+B)
- D: Self disposal at home: 0.8t (from interview)
- E: Discharge to collection service: 1.5t/day (interview)
- F: Transport to the public landfill: 2.2t/day (interview)
- G: Transport to the community dumpsite: 0.2t/day (interview)
- H: Self-hauling: 2.4t/day (F+G)
- I: Illegal dumping/ Burring: 0.4t/day (interview)
- J: Disposal amount at Public landfill: 3.7t/day (H+E-G)
- K: Recycling at discharge point: 0.3t/day (Interview)
- L: Discharge waste: 4.2t/day (K+E+H)

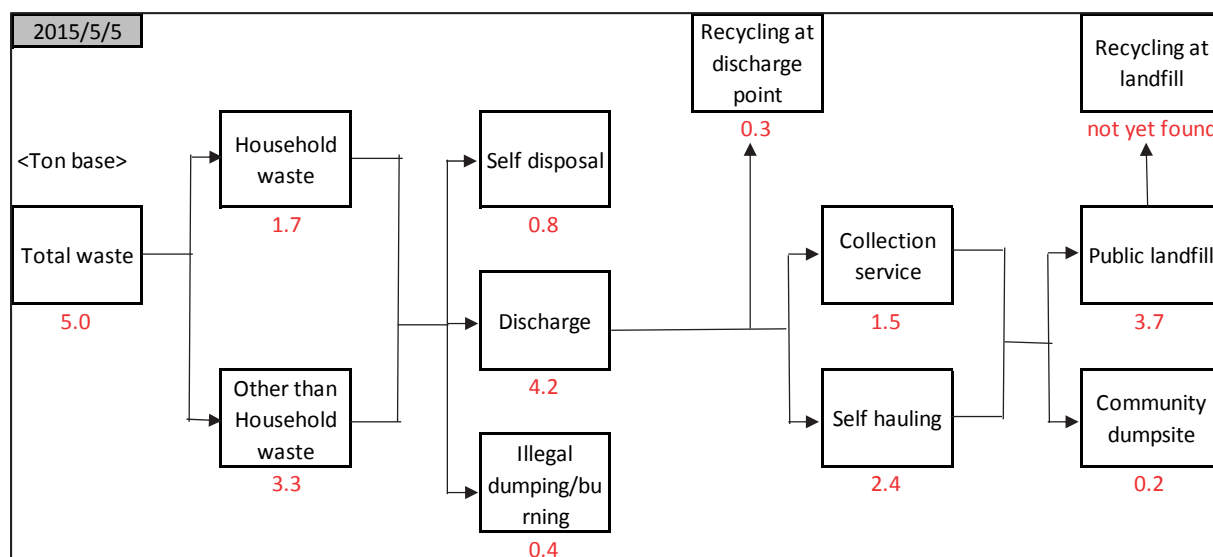


Figure 9-2: Waste Stream in 2015

Purpose 3. To identify the potential items to minimize the waste

There are a few on-going activities to minimize the waste in Yap such as; 1) Recycling Program (CDL: Pet bottles, Aluminum cans, glass bottles and food oil PET bottles), 2) Recycling Program (CDL: in the process to include vehicles, lead batteries and food cans in the existing CDL item) and 3) Ban on distributing plastic shopping bags. In addition to the above activities, if all the Garden/Kitchen waste were properly treated at the households such as through composting and feeding dogs and pigs rather than transported to the landfill, it can be reduced by 55% of total household waste in the volume.

From the result of survey, plastic (18% of the total volume), cardboard (13%), and paper gas canister and clothes have higher volume ratio and can be the potential item to be minimized through applying safe and proper treatment methods.



Explaining the survey and interviews to the household



Manual Segregation of WACS

Weighing the waste

e. Activities of the Seventh Dispatch (from 7th to 17th of November, 2015)

e.1. Endorsement of the SSWMS

The Yap SSWMS was officially endorsed by the State Governor in November 2015 finally.

The term of the current SSWMS is from 2012 to 2017, and it was expected to revise in 2016. The EPA and DPW&T agreed to monitor the progress of the Action Plan of the SSWMS in early 2016.

9.2.2 Output 5-2: Capacity to improve and manage the final disposal site is enhanced

a. Activity of the First Dispatch (from 10th to 20th of June, 2014)

a.1. Improvement of the existing dumpsite

As a part of the improvement works at the existing dumpsite, the mountain of the waste was shaped based on the improvement plan developed by the engineers of DPW&T. As for the new landfill, it was not opened yet because the approach road to the waste cell in the new landfill was too steep for vehicles to go down and the dumping area did not have enough space for the vehicles to turn around. Also it was observed that a large amount of leachate flowed into the leachate pond and inside the landfill cell due to no installation of rainwater drainage. The main reason of the delay of the rehabilitation might be that one excavator purchased for the landfill operation was used for road maintenance and no heavy equipment for the landfill.

Taking the issues above into account, the dumpsite rehabilitation plan was finalized among DPW&T, EPA and the Experts. Once some heavy machines become available to use at the site, DPW&T would start preparing the access road and dumping stage and continuing to shape the waste at the existing dumpsite. The rehabilitation works will be continued as follows;

- ✓ The rehabilitation works such as formation of dyke and digging drainage will be done by DPW&T.
- ✓ The rehabilitation works such as installation of leachate collection pipes and concrete rainwater drainage will be outsourced.
- ✓ The budget for the rehabilitation was proposed to the US (Compact Money) and if all the budget was secured from the US Compact Money, all the rehabilitation cost would be covered by Yap side.

From the observation of the rehabilitation works at the existing dumpsite, the following suggestions were made by the Expert to the C/Ps;

- ✓ Supervisor of the landfill of DPW&T needs to be at the site more frequently to give direction to the operators of the heavy equipment and to check the operation.
- ✓ Close communication between the supervisor and the operators is a key for the next rehabilitation.



Waste cell formed at the existing dumpsite



Formation of the approach road and dumping stage

a.2. Finalization of the Operation Manual

Operation Manual drafted by DPW&T, EPA and the Expert last year was finalized. This Manual can be revised and updated anytime to reflect the situation of the site.



Figure 9-3: 2 Slides from the Operation Manual

The monitoring parameters, frequency, sampling points of leachate in the Manual were developed by EPA C/Ps and JICA Experts.

Initially, the leachate monitoring plan was planned to develop after OEEM developed a FSM leachate monitoring guideline; however, there was a request from C/Ps to start monitoring when the new landfill was opened. Therefore it was agreed to make the Yap original leachate monitoring plan first and it would be revised when the FSM monitoring guideline was finalized.

The monitoring plan is shown in the following table. EPA needs to find a dealer to import the pack test kits.

Through monitoring the leachate it can check the condition of the waste layer inside the landfill and environmental impact on surrounding area. Then, two monitoring points were selected.

Leachate Monitoring	
Monitoring parameters	COD, pH, temperature, color, smell
Monitoring frequency	Once a month
Monitoring points	<p>(1) To check the condition of the landfill • • • outlet of the leachate collection pipes</p> <p>(2) To check the impact on the environment • • • outlet of the sand filter (treatment system) or wetland*</p> <p>* if access to the wetland is accessible</p>

b. Activity of the Second Dispatch (from 31st of August to 14th of September, 2014)

There was not much progress at the new landfill since it took a couple of months for DPW&T to allocate the excavator at the site. The access road and dumping stage were not built yet while the rainwater drainage was built on the side of the existing dumpsite by the excavator after August. The drainage seemed to reduce the amount of leachate as well as prevent its overflow due to excess inflow of rainwater into the leachate pond.

The budget for dumpsite rehabilitation proposed to the US Compact Money was not approved yet.



Rain drainage which could prevent overflow at the leachate pond



Leachate Pond with full of rain water



The existing dumpsite



Formation of the cell

b.1. Monitoring the leachate

Under a Waste Water Pilot Project supported by University of Guam, a COD monitoring analyzer was donated to EPA and EPA staffs started monitoring the leachate at the new landfill area. Since the waste was not hauled into the new landfill yet, the value result of COD was same as the level of rainwater.

Therefore, EPA staffs and the Experts collected samples from the 2 points in the existing dumpsite; 1) new disposal area and 2) old disposal area. COD was higher in the new disposal area (540mg/L of COD) than the old disposal area most probably because the waste at the old disposal area was naturally stabilized.

EPA staffs will continue to monitor the COD monthly at the existing dumpsite and starts monitoring at the new landfill when it starts receiving the waste.

c. Activity of the Third Dispatch (from 25th of November to 5th of December, 2014)

c.1. New landfill

Although the new landfill was not opened yet, the approach road was prepared and the mountain of the waste between the new landfill and the existing dumpsite was shaped with terraced slope.



Prepared dumping stage

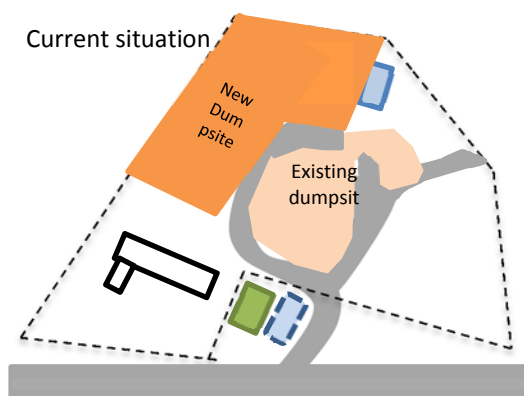


waste shaped with terraced slope

c.2. Improving the existing dumpsite

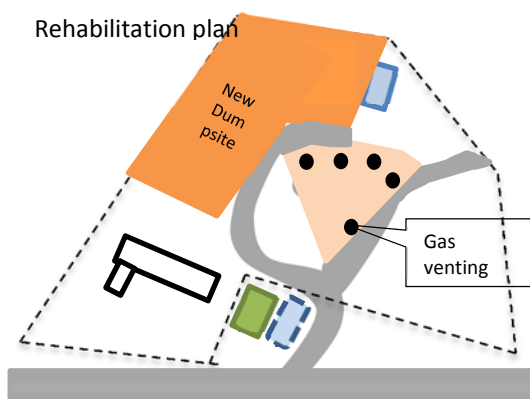
As to the rehabilitation of the existing dumpsite, the proposal was not approved. Therefore, it was agreed among C/Ps of DT&PW and EPA and the Expert to conduct some rehabilitate works under the J-PRISM in February 2015.

In order to match the available budget and the purpose of the J-PRISM, the rehabilitation plan was revised by prioritizing the activities and downscaling the required budget and works so that the C/Ps could implement them by themselves.



The Existing dumpsite:

- ✓ It is open dumpsite.
- ✓ It is maintained by an excavator, but only when it works.



Rehabilitation Plan:

- ✓ To reduce the height of the waste mountain by spreading the waste into a layer-----by only DT&PW by Feb. 2015
- ✓ To cover the waste with any available materials-----by DPW&T and J-PRISM in Feb. 2015
- ✓ To install gas venting pipes----- by DPW&T and J-PRISM in Feb. 2015
- ✓ (To install leachate collection pipes if still necessary)-----by only DPW&T after Feb, 2015

In order to rehabilitate the dumpsite, a request was made by the Expert to DPW&T to open the new landfill by the time of the beginning of the rehabilitation.

As a part of the indicators of PO, a monitoring form to check the operation and condition of the dumpsite/landfill sites was drafted referring to 'Ebeye Landfill site Survey Report' which EPA Ebeye developed before.

EPA staff was monitoring the condition of the dumpsite/landfill and reported identified issues to DPW&T verbally before. The drafted check list combined his check points and check items referred from the Ebeye check sheet with the data of the leachate monitoring. After EPA staffs fill in the form it will be shared with DPW&T.

Monitoring for developed by EPA

d. Activities of the Fourth Dispatch (from 10th to 27th of February, 2015)

d.1. Rehabilitation of the Existing Dumpsite

Based on the rehabilitation plan developed during the last dispatch, the rehabilitation works were commenced.

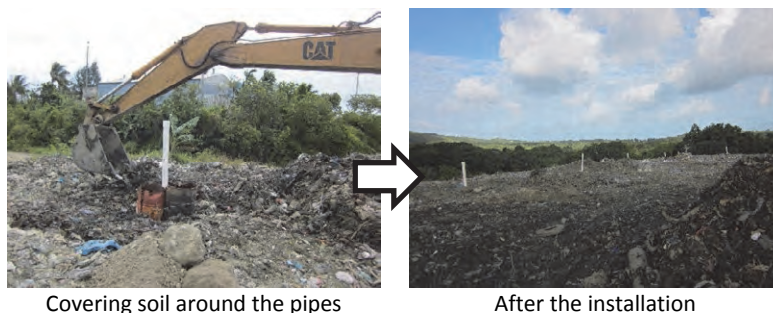
For these rehabilitation works, the new landfill site was opened and started receiving the waste. Therefore, the actual works included not only the rehabilitation, but also the closure of the existing dumpsite.

DPW&T operators started the works with leveling of the waste with slope and digging the ditch around the existing dumpsite.



7 gas venting pipes were installed.





Final soil cover and installation of protection fence of the gas venting pipes were not carried out due to the time-consuming to transport the cover soil from a distant community as well as the malfunction of the dump truck during the operation. The remaining works will be completed by DPW&T.



The total cost of the rehabilitation works was US\$6,361.68.

Table 9-8: Rehabilitation cost of the existing dumpsite

Items	Quantity	Unit	Unit Price (US\$)	Total (US\$)
Pipe	8	pieces	135.00	1,080.00
Coral sand	402	cu/yard	10.00	4,020.00
Wood Auger Bit	1	piece	14.10	14.10
Tie wire	3	lbs	1.60	4.8
Tie wire	10	lbs	1.44	14.40
Glove	7	pieces	2.00	14.00
Cement	15	bags	10.25	153.75
Gravel	1	cu/yard	237.00	237.00
Rebar	5	pieces	4.95	24.75
Caution tape	1	piece	7.88	7.88
Rent Dump truck	15	hours	55.00	825.00
Total				6,395.68
After Discount (cash pay)				6,341.68

During the works, it was observed that the manager of the DPW&T who was the supervisor of the rehabilitation works gave clear direction to the staffs and controlled the schedule and operation. He well understood the system of the semi-aerobic landfill operation (Fukuoka Method).

On the other hand, allocation of the heavy equipment and operators of the heavy equipment were not made as scheduled sometimes. The staff management and procurement of heavy equipment in DPW&T seemed not well handled. Timely procurement of the heavy equipment at the landfill and maintenance of the equipment was the remaining issues even after the rehabilitation.

d.2. Monitoring

In the JICA training in Okinawa conducted in November 2014, leachate monitoring guideline was drafted as a National guideline with the minimum monitoring parameters and discharge standards. Each State decided the monitoring parameters based on this guideline. Monitoring kits and equipment will be donated through embassy of Japan afterwards.

Monitoring items selected by the EPA staffs who participated in the training are;

- Monthly: COD, pH, Transparency and Temperature
- Yearly: PCB, Mercury and Lead

With the rehabilitation of the existing dumpsite, leachate monitoring points were moved while new monitoring points were set. In addition, EPA staffs started monitoring the gas temperature at the outlet of gas venting pipes.



Monitoring gas temperature

e. Activities of the Fifth Dispatch (from 18th of April to 7th of May, 2015)

e.1. Monitoring the condition of old dumpsite

Soil cover at the existing dumpsite (old dumpsite) was not completed yet due to mechanical trouble of all heavy equipment of DPW&T including a dump truck, an excavator and a wheel loader. Cover materials were not yet transported to the site either.

C/Ps of DPW&T understood the importance of the soil cover and it would be done when the above heavy equipment are repaired.

After the Director Vincent Figir retired, the Government was looking for the candidates of the new Director. The appointment of new Director will be made before the next dispatch of the Expert.

e.2. Monitoring the operation at new landfill

The new landfill was opened in February 2015, and 2 cells inside the landfill was filled up with waste. One broken excavator was not yet repaired while one old excavator was operated at the site instead although, it was too old to push and compact the waste. EPA also pointed out the frequent absence of a security at the landfill which was supposed to be at the site from 8AM to 7PAM.

EPA was working on drafting a regulation called Solid Waste Management Regulation based on the Landfill Operation Manual developed in J-PRISM to regulate the daily operation and specify the heavy equipment to be allocated at the landfill. The Expert gave some comments on the draft, but it still needed comments from DPW&T considering the enforcement of the proposed regulation.



New landfill



Operation at new landfill



Leachate pond

e.3. Monitoring leachate

Leachate monitoring was not conducted in March; therefore, leachate sampling and monitoring were conducted by EPA staffs and the Expert.



As COD pack test kits was not available at that time, and EPA staff used COD analyzer.

The result of the monitoring is shown below. This was the first monitoring after the new landfill was opened.

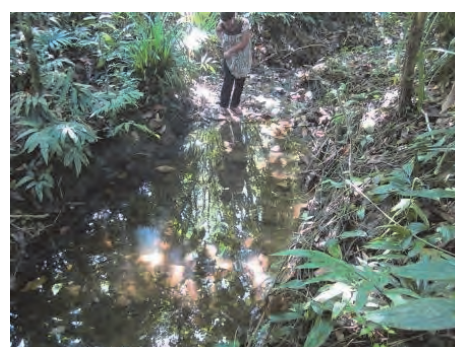
Sampling Point 1: leachate at the discharge point of leachate collection pipe: 120mg/L

Sampling Point 2: confluence of stream and leachate from new and old landfills: 60mg/L

Sampling Point 3: 500m downstream of Sampling Point 2: 20mg/L

The data showed that the wetland and vegetation around the new landfill site were functioning as natural treatment.

It was planned that EPA would report the result of monitoring to DPW&T when COD level at sampling point 2 is over 100mg/L so that, DPW&T closes the bulb to stop discharging the leachate and continue recirculation of the leachate while covering the waste with any available materials as counter measures.



C/P collecting a sample from Point 2

f. Activities of the Seventh Dispatch (from 7th to 17th of November, 2015)

f.1. Establishment of the Solid Waste Management Regulation

“Solid Waste Management Regulation” was enacted. It regulates both of the public landfill and community dumpsites operation and waste collection.

f.2. Monitoring the condition of the landfill

Based on the SWM regulation, DPW&T and EPA enhanced the monitoring level on the management of the landfill.

- Leachate monitoring (on-going)
- Landfill operation/condition monitoring (on-going)
- Incoming waste amount data (restarted)
- Landfill maintenance record

✓ Leachate monitoring (by EPA)

EPA continues the leachate monitoring. The result of the monitoring showed that there were big gaps in the monthly result of COD. This was due to that EPA used two different monitoring methods, namely pack test and a COD analyzer. The pack test adopts COD (Mn) while the analyzer may adopt COD(Cr) from the difference of monitoring standard between Japan and USA. EPA decided to use only pack test for COD monitoring based on the leachate monitoring guideline of FSM. Then, the Expert advised to record which method was used for the monitoring and showed how to use the pack test again.

The monitoring results in 2015 are shown in the following table.

Table 9-9: Data of the leachate monitoring

DATE	TIME	WEATHER	TEMPERATURE	COD (under 100 mg/L)			pH (between 5-9)			Transparency			Pack Test / COD
				Leachate Pond	River Side	Mangrove Area	Leachate Pond	River Side	Mangrove Area	Leachate Pond	River Side	Mangrove Area	
10/22/15	3:10 PM	see remarks	80°F	20mg/L	5mg/L	20mg/L	12	7	8				Pack Test
01/23/15	1:30 PM			16mg/L									
04/22/15	2:00 PM	Sunny	87°F	190mg/L	99mg/L	20mg/L							
05/27/15	10:15 AM			172mg/L	177mg/L	68mg/L							
06/09/15	9:10 AM	Cloudy Day	80°F	32mg/L	7mg/L	12mg/L	6.2						
08/11/15	12:20 PM	Rainy		139mg/L	127mg/L	79mg/L							
09/23/15	2:28 PM	Cloudy Day	80°F	10 mg/L	3mg/L	5mg/L	8	6	8	46	50	50+	
10/22/15	3:10 PM	Sunny,Windy	88°F	20mg/L	5mg/L	20mg/L	12	7	8				
11/13/15	10:30 AM	Sunny	90°F	35mg/L	5mg/L	7mg/L	8	7	8				Pack Test

✓ Landfill operation/condition monitoring (by EPA)

The operation such as segregation, compaction, recirculation of leachate and presence or absence of the security and the condition such as odor and pest are regularly monitored and recorded by the EPA staff. The summary of monitoring table developed by the C/P shows that there were still many activities which were not properly conducted.

Table 9-10: Landfill operation/condition monitoring sheet

DATE	TIME	SEGREGATION			WASTE PROPERLY DESIGNATED			SOIL COVERAGE			SECURITY PRESENCE			WATER CIRCULATION		
		NOT PROPER	PROPER	SEVERE	NOT PROPER	PROPER	SEVERE	NOT PROPER	PROPER	SEVERE	NOT PROPER	PROPER	SEVERE	NOT PROPER	PROPER	SEVERE
04/22/15	2:00 PM	J			J			J			J					
04/29/15	8:35 AM	J			J		J	J			J			J		
05/13/15	3:30 PM	J				J		J			J			J		
05/27/15	2:30 PM	J			J			J			J			J		
06/11/15	10:30 AM	J			J			J			J					
06/17/15	8:30 AM			J			J			J	J			J		
06/25/15	11:30 AM			J			J			J			J			
07/09/15	11:00 AM	J		J			J			J	J					J
07/14/15	11:00 AM	J		J	J		J	J		J	J		J			J
07/22/15	1:00 PM	J			J			J			J					
07/29/15	10:30 AM				J			J			J					
08/13/15	10:15 AM			J			J			J			J			
09/14/15	3:00 PM	J			J			J			J					J
09/23/15	2:30 PM	J			J			J			J					
09/30/15	11:00 AM	J			J			J			J					
10/20/15	9:23 AM			J			J			J			J			
10/30/15	11:00 AM			J			J			J			J			J

✓ Incoming waste amount data (by DPW&T)

The incoming waste data had been quantified since 2011 by EPA staff under assistance of the Expert. Although the data had been recorded on a paper form at the landfill, compiling and calculating the data into Excel sheet was suspended since 2013 when the responsibility of compiling was transferred to DPW&T. After SWM unit of DPW&T secured one new staff in November 2015, the data from 2013 was filed into the electronic database and incoming waste amount was quantified.

The table below shows the monthly incoming waste amount in 2015.

Note: The data was collected only during the working hours and the waste transported after the working hours were not included in this data.

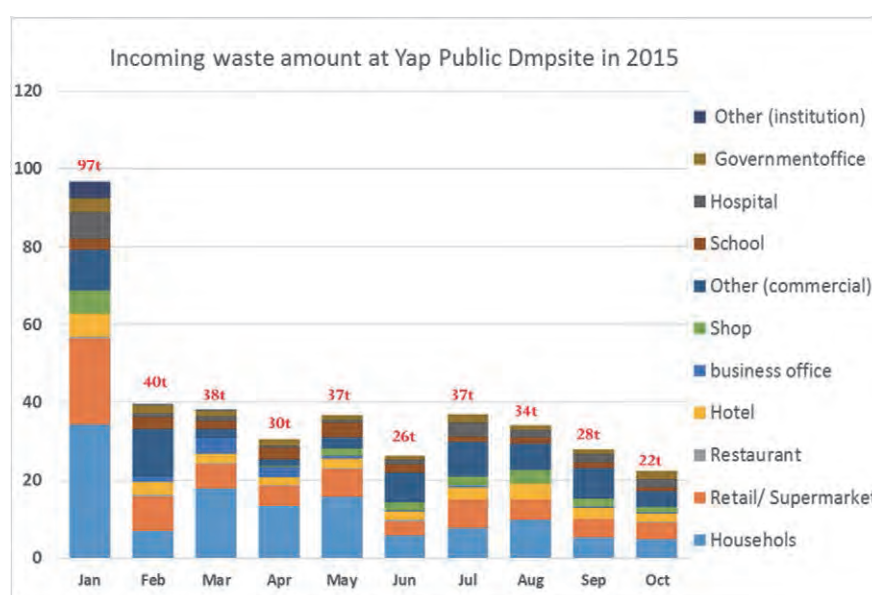


Figure 9-4: Monthly hauled waste amount at Yap Landfill in 2015

✓ **Landfill maintenance record (by DPW&T)**

There is a maintenance check list in the Operation Manual of the landfill but it was not recorded yet. It was advised to monitor the condition of the landfill by DPW&T staffs themselves besides EPA.

Table 9-11: Check sheet of the condition of the maintenance of the landfill

Once a Week Check List			
Date: _____		Repaired by: _____	
Items	Check Mark (1-2-3)	Conditions	What to check
Facility			
1. Cleaning & Hauling			Cutting Grass & Collecting Garbage all around the facility
2. Dike			Check for damage and repair
3. Slope Formation			Check for damage and repair
4. Rain Drainage			Check for clogging and open, make sure no clogging. Keep drainage free from debris and plantation
5. Leachate Pond			Check for damage and repair and check level of leachate. Make sure leachate does not reach the over flow level
6. Access Road			Check for pot holes and repair. Make sure no pot holes, also not muddy and well compacted
7. Gas Venting Pipe			Check for air and temperature and damage to repair and prepare materials for extension, make sure gas vent is properly install vertically secured
8. Leachate Pipe			Check for damage and repair, also make sure leachate is flowing properly
9. Coverage Materials			Check coverage materials enough for three month
10. Pump& valve			Check to make sure all valve tightly close after been used, clean pump

9.2.3 Output 5-3: Capacity to conduct awareness activities for SWM is raised.

a. Activity of the First Dispatch (from 10th to 20th of June, 2014)

The first phase of the awareness activity conducted in 2013 was reviewed by EPA and DPW&T with the Expert and the achievement and issues identified in the first phase were discussed for the next phase;

- ✓ EPA and DPW&T conducted workshops at all the primary schools except for Rumung which was on a remote island.
- ✓ EPA developed and distributed posters, stickers and recycling bins to schools and some public spaces.
- ✓ The school workshops were very effective and some schools requested to continue more workshops; therefore, C/Ps would like to continue the school workshops.
- ✓ As the information materials, poster is the most effective while, brochures were not issued because the EPA staffs could not secure enough time to develop it. Therefore, the Project should focus on developing posters in the next phase.

After the above review, the contents of the 2nd awareness-raising activities from June 2014 to the end of 2015 were discussed and planned as shown in the table below.

Table 9-12: Second phase of the awareness-raising activity plan of Yap State

Activities	Target	Budget
1. School Workshops	High schools(4) College(1) community (3)	Fuel: to visit is covered by EPA
2. Study Tour to the landfill and Recycling center	Elementary schools and High schools	School or Department of Education
3. Prepare materials (Poster)	Schools	J-PRISM
4. Prepare materials (my bag)	Community	My bags were requested to OEEM

b. Activity of the Second Dispatch (from 31st of August to 14th of September, 2014)

School workshops at high schools and College were not started yet due to the school holidays in July and August, and C/Ps proposed to postpone the Site Visit of school students until the opening of new landfill. It was finally agreed that EPA staffs would concentrate on providing the school workshops, and some workshops were scheduled in September.

Although a teaching material (presentation) for elementary school students was previously developed, there was an idea to make the materials for specifically for high school students. The C/Ps of EPA and DPW&T with the Expert prepared the teaching material for high schools based on the presentation for the elementary schools.

In addition, a new poster was designed by C/P of EPA while the printing cost (100pieces) was covered by the Project.



2nd Poster



Slides of the Presentation

c. Activity of the Third Dispatch (from 25th of November to 5th of December, 2014)

There were some progress in the awareness-raising activities from the previous dispatch of the Expert as follows:

- ✓ Workshops: 4 workshops at high schools were completed, but not yet at the College.
- ✓ 2,200 pieces of My Bag were donated through assistance of OEEM.

Since there were some complains from the public on ban the plastic bags from its inconvenience during the shopping, EPA was planning to promote the My Bag and the promotion campaign was planned.

- ✓ Campaign month is March 2015 for 1 month
- ✓ Promotion by EPA: Radio announcement, distributing posters and leaflets with My Bags
- ✓ In order to encourage the public to reuse My Bag continuously, EPA will plan to provide some incentives to the users such as raffle or token during the campaign with the Chamber of Commerce and shops

EPA will consult with the Chamber of Commerce and some shops on how to distribute or how to sell the 2,200 pieces of May Bag.



My Bag

d. Activities of the Fourth Dispatch (from 10th to 27th of February, 2015)

d.1. Launching of My Bag Campaign

My bag campaign called “Green Bag Promotion and Raffle” was launched in February 2015. EPA advertised the promotion and invited shops to collaborate in the promotion through radio announcement, then three shops participated in the promotion.

These shops set a raffle box and gave a raffle ticket to the customers who brought their My Bag for shopping during the promotion term. EPA collected these boxes at the end of the promotion day and held a raffle event on a Yap Day, on 1st of March.



Flayer of Campaign

The system of distributing the bags was; EPA sold the bags to the three shops at \$0.5 each and the shops sold the bag to the customers at \$0.75 each. The proceeds of bags (\$0.5) was collected by EPA and used for a prize of the raffle, and \$0.25 became the profit of the stores. 2,000 pieces of bags were totally sold at three shops.

After launching the promotion, it was observed that many people carried bags in town and in shops.

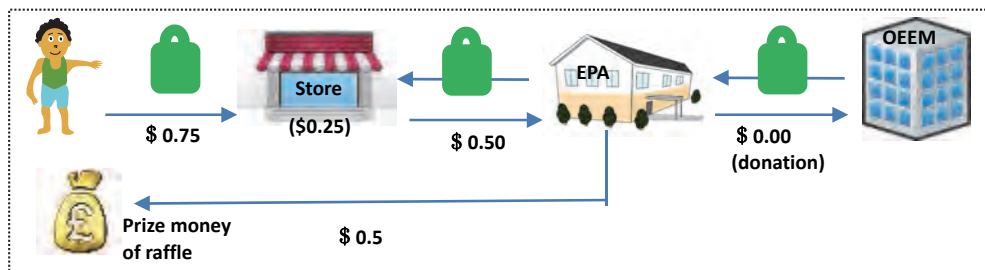


Figure 9-5: Distribution System of My Bags

d.2. Other awareness-raising activity

Community and schools workshops previously scheduled were not conducted yet due to the request to postpone by schools. EPA rearranged the schedule of some workshops to be held in March while planning the site visits by the school students.

e. Activities of the Fifth Dispatch (from 18th of April to 7th of May, 2015)

It was reported by the C/Ps that the school workshops schedule were cancelled again, and no workshop was conducted after the fourth dispatch of the Expert. Also the site visit of students to the new landfill was also cancelled since the management condition of landfill site was poor due to the malfunction of the heavy equipment.



Workshop at COM

During this dispatch, C/Ps of EPA and DT&PW held a workshop at College of Micronesia. The presentation was clear and understandable. The C/Ps will continue the workshops at schools and communities.

f. Activities of the Seventh Dispatch (from 7th to 17th of November, 2015)

f.1. Post public hearing on the awareness-raising

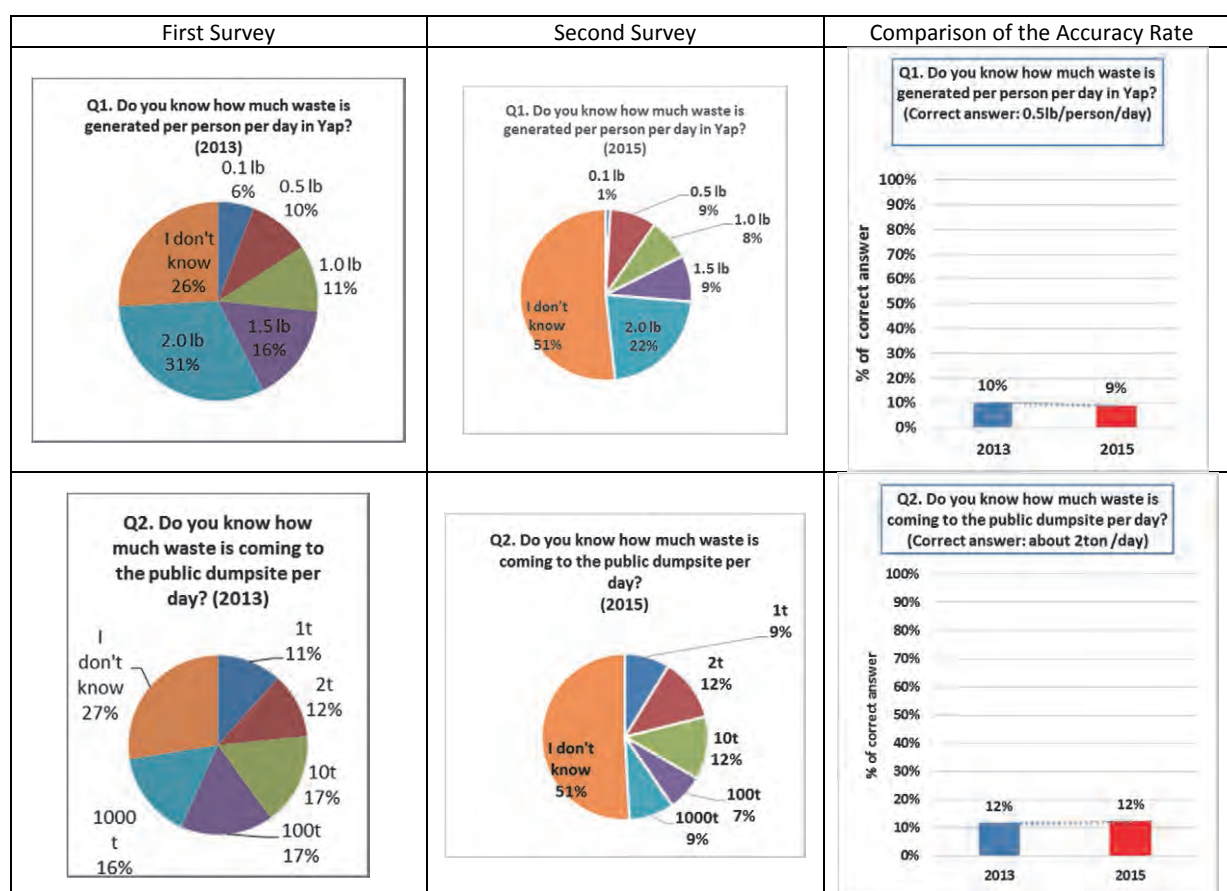
In order to evaluate the effectiveness of the awareness-raising activities conducted under the Project and to assess the public understanding of the waste issues, the 2nd public hearing was conducted as a post survey. Since there were not enough available staffs in EPA in early November, it was decided to conduct in late November by C/Ps themselves and the Expert only explained the method of the public hearing.

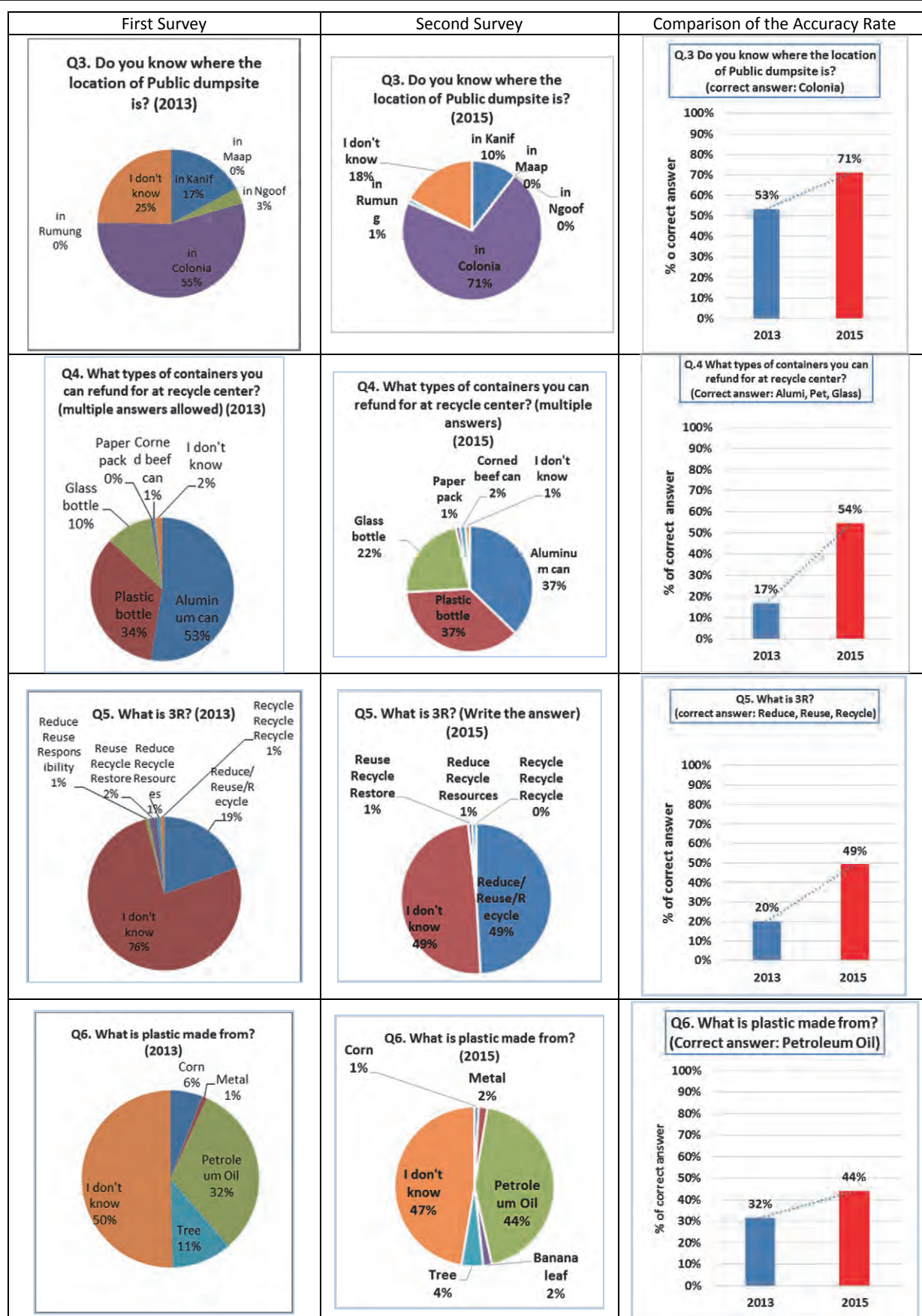
The result of the second public hearing showed that the accuracy rate of the questionnaire was increased by 15% compared to the first one conducted in June 2013. Although it didn't meet the target rate with 25% increase, there were some improvements in the understanding of waste issues by the Public.

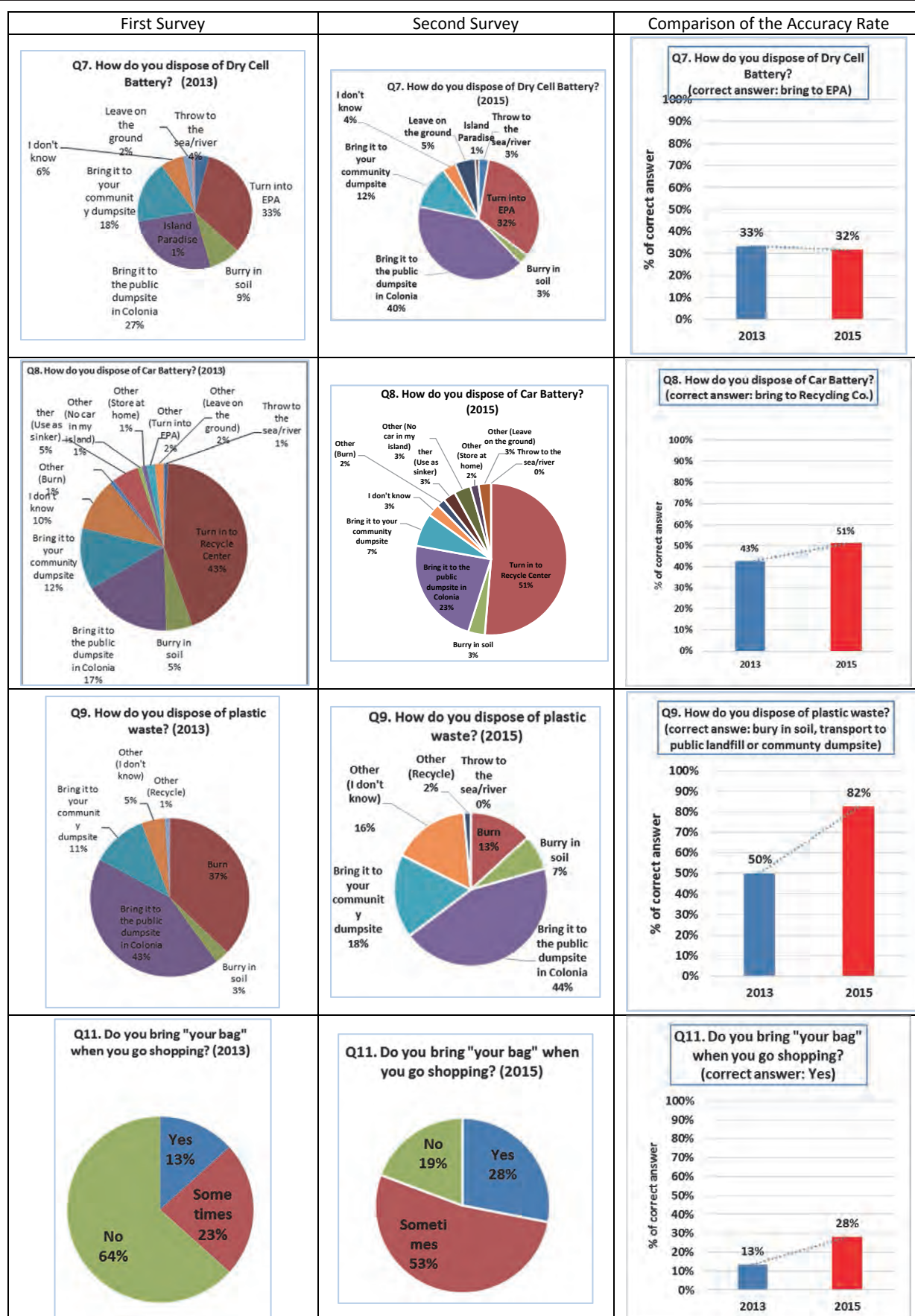
	Number of Respondents	Percentage of the Accuracy rate (Target is to increase by 15% from the first hearing with 53%)
First: June 2013	120	28%
Second: Nov. 2015	114	43%

The results of the each question answered in the first and second hearings are shown below.

Table 9-13: Summary of the Public Hearing in Yap







From the survey, it was understood that “location of the landfill,” “Target items under the CDL,” “What is 3R,” “disposal of plastic waste,” “material of plastic” and “bring My Bag” increased the accuracy rate; while, “individual waste generation amount,” “waste generation amount in the island” and “disposal method of the dry cells and lead battery” were not improved. It could be considered that the proper disposal method of batteries was not well established yet and recognized by the Public and the concept of “waste generation by one person” was not well explained in the workshops.

9.2.4 Other activities related to SWM

This section reports the activities related to SWM but not included in the PO of the J-PRISM including JCCs and Capacity Assessments.

a. Activity of the First Dispatch (from 10th to 20th of June, 2014)

a.1. Proposal to amend the regulation on CDL

EPA submitted the amendment of the Regulation on CDL to the office of Attorney General. The amendments made were to add three items in the current CDL regulation, namely motor vehicles, lead acid battery and tin or aluminum cans from canned goods. If this amendments passed, Yap CDL would be the most advanced one to work as the model case of the CDL in the Pacific Region.

Table 9-14: Target items and its deposit (US\$)

	Target items	Deposit amount
Current target items	beverage container made from aluminum	\$0.06
	glass beverage container	\$0.06
	beverage container made from PET	\$0.06
	cooking oil container made from PET	\$0.06
Proposed target items	tin or aluminum can from canned goods	\$0.06
	motor vehicle (Except some items)	\$75.00
	lead acid battery	\$4.00

a.2. Ban on plastic bags

Yap State Legislature passed the 'Plastic Bag Ban' law in May of 2013 proposed by EPA. Subsequently Plastic Bag Regulations was drafted and in March 2014. The regulation also detailed that a 4 month grace-period was given to the retailers so that they could follow the requirements such as prohibition of importing plastic bags, showing signboards of this regulation and levying a surcharge of 25c per bag given.

After full implementation of this regulation, it was clearly observed that the plastic shopping bags were rarely seen while most of the shops used paper bags instead of plastic ones.

The above two laws were listed in the Action Plan of the SSWMS. Since EPA hired an Australian lawyer under Australian volunteer program, many laws and regulations related to the environment were revised and/or formulated.

b. Activity of the Second Dispatch (from 1st of August to 14th of September, 2014)

b.1. CDL

Although improvement activities of the CDL was not included in the PO of Yap State, the Expert joined a meeting to discuss the CDL system with staffs of EPA and Division of Tax and Revenue for identifying the solution to the issue on the shortage of fund arising from the imbalance between the number of redeemed containers and imported ones. The summary of the discussions are:

- ✓ Aluminum cans: The number of the redeemed cans exceeded the number of imported cans every year since the beginning of the system. The shortage of the refund was covered by the deposit collected from the other types of beverage containers and deposits collected before the launching of the CDL for a year. Then the total balance of the Recycling Fund came out with positive figure.
- ✓ PET bottles: The redemption rate of the PET bottles toward the imported bottles is about 70%. Sometimes the number of PET bottles imported by some shops showed only 9 or 20 pieces in one shipment, which is far from the actual number of PET bottles sold to the customers in shops. The meeting suggested that the number of PET bottle imports should be checked by the Division of Tax.
- ✓ Recycling company: The meeting suggested that EPA should regularly check the operation of the Recycling Company that collected, compacted, baled, and sent the recyclable containers. It was shared that there was that staffs of the Recycling Company refused to buy PET-made cooking oil containers or bought non-target items due to their misunderstanding on the CDL system before. Now all the staffs understood the system well. As a responsible agency of CDL, however, EPA should monitor their operations regularly.
- ✓ Data management: The records of the CDL program reported by EPA and Division of Finance were different in the number of redeemed containers while the original records submitted by the Recycling Company were already discarded at that time. Therefore, two organizations spent time to check all the records one by one and they found out that there was lack of data in the records of EPA. Therefore, two agencies decided to follow the records of the Division of Finance as the base data at this moment.
- ✓ Considering the above issues, both organizations agreed to postpone amendment of the current CDL regulation until the financial issues are solved.

It was observed that although there were some issues in the CDL program, EPA could identify the issues and respond quickly through communication with Division of Finance and Division of Tax and Revenue. The EPA staffs said that data was smoothly shared among agencies after the Regional 3R Training in Palau.

The flow of the number of containers and the finance from the beginning of the program in 2009 until the end of August 2014 are shown as below.

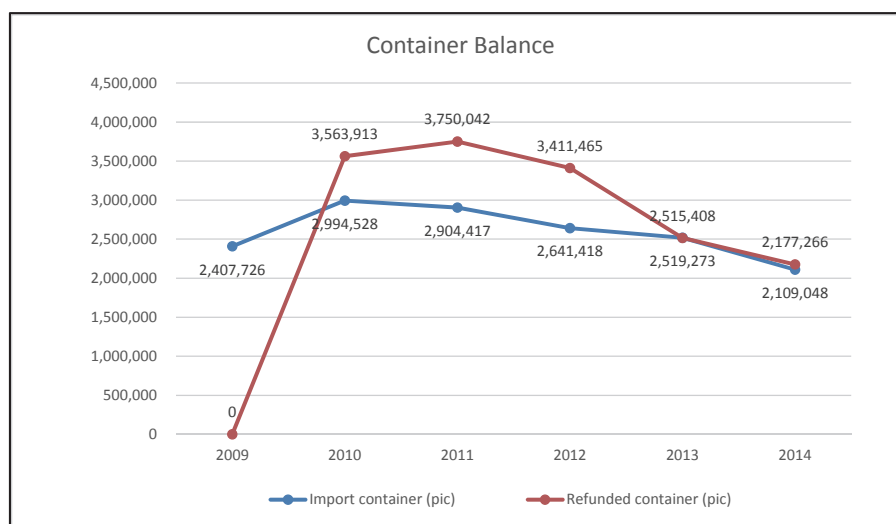


Figure 9-6: Balance of the imported and redeemed containers

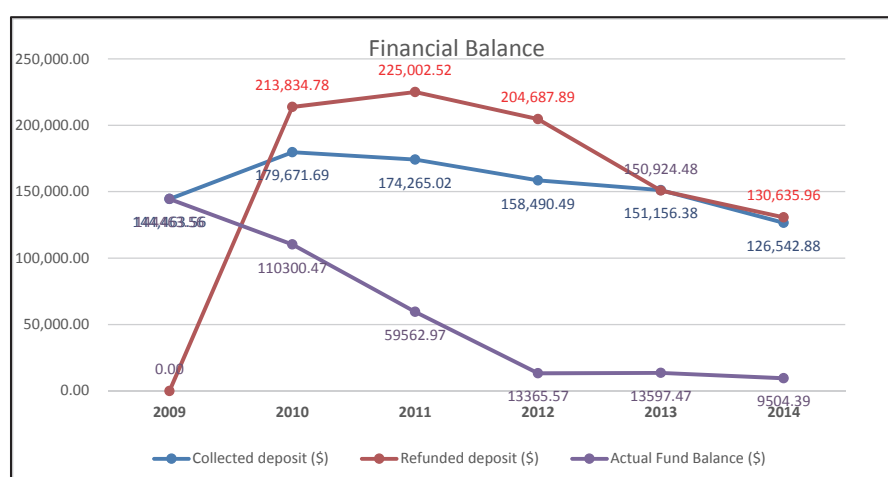


Figure 9-7: Financial balance of the CDL

*the above data is the total amount of aluminum can, PET bottles, PET made cooking oil containers and glass bottles.

b.2. Study Trip to landfill by Chuuk engineers

A Study Trip was conducted in September 2014, inviting C/Ps and engineers from Chuuk State. Yap C/Ps showed the new landfill and delivered some presentations and lectures based on their experience and knowledge. Please refer to the activity report of Chuuk State for more detail.

c. Activities of the Fourth Dispatch (from 10th to 27th of February, 2015)

c.1. Fourth State JCC

The State JCC was held on 26th of February 2015. There were 17 participants. Director of EPA gave a presentation about the project progress and showed monitoring results of the Action Plan.

In the presentation, it was reported that the rehabilitation of the existing dumpsite and opening of the new landfill were delayed for about one year but they could catch up by the time of this JCC. Also most of the

indicators of PO was achieved. As to the project activities in 2015, it was agreed to continue managing the landfill site and conducting a waste survey as well as public hearing as a part of the awareness-raising activities.

After the JCC, the participants visited the landfill site where Deputy Director of DPW&T made a declaration of opening the new landfill.



JCC



Site Visit after JCC (landfill)



First throw of waste at a new landfill by Deputy Director of DPW&T

c.2. Monitoring CDL

The number of redeemed containers still exceeded the number of imported container.

EPA shared the situation and discussed with the Recycling Company, and they decided to review the counting method of the containers at the Recycling Company.

The following table shows the balance of the containers and finance from 2009 to January 2015.t

Table 9-15: Balance of the import volume and recycled volume of containers

	TOTAL IMPORTS:	TOTAL DEPOSIT / REVENUE:	TOTAL ITEMS RECYCLED:	TOTAL EXPENDITURES:	Recovery rate = Recycled/Imports
2009	2,407,726	\$144,463.56	0	\$0.00	0%
2010	2,994,528	\$179,671.69	2,705,923	\$213,834.78	90%
2011	2,904,417	\$174,265.02	3,188,380	\$225,002.52	110%
2012	2,641,418	\$158,490.49	3,413,380	\$204,687.89	129%
2013	2,519,273	\$151,156.38	2,515,288	\$150,924.48	100%
2014	2,393,470	\$143,608.20	2,559,955	\$149,171.88	107%
2015	796,718	\$47,803.08	1,138,624	\$54,839.04	143%
Total	16,657,550	\$999,458	15,521,550	\$998,461	(Ave.) 93%

At the beginning of the CDL Program, the number of containers was counted manually at the Recycling Company; then a counting cage made of wire was introduced to roughly estimate that the one full cage with PET bottles was regarded to contain 300 bottles while one full cage with aluminum cans contained 500 cans.

EPA and the Recycling Company checked the counting of cage if there was any difference between the actual number and the estimated number of one full cage by filling up the cage with containers and counting the containers for several times. They found that there were 455, 511, 450, 455 and 480 of aluminum can in one cage and the average of the cans in one full cage was 470. PET bottles were also less than 300 bottles in one

case. Therefore, EPA and the Recycling Company decided to continue checking these numbers for more few days.

d. Activities of the Fifth Dispatch (from 18th of April to 7th of May, 2015)

d.1. Drafting a pilot project of the collection service

Although improvement of the collection service was not included in the PO, in the fourth JCC it was recognized the needs to improve the collection services and C/Ps of EPA and DPW&T started the discussions.

- Issues of the current collection service: One private collection company collected waste but only covered the town area (Colonia) with their two old trucks. One of the reasons for this limited coverage was that DPW&T was able to make a contract with the collection company only for 9 months because the budget of the collection service is funded by the US compact money of which the account was required to be closed every fiscal year. Under this condition, the collection company hesitated to invest in new vehicles for expansion of its services. Also since the collection service was not free, many residents preferred to transport their waste to the landfill or dispose of within their property area rather than paying the fee.
- Drafted plan: As a pilot project, EPA and DPW&T will select two municipalities, identify the collection points and estimate the fee of the collection service through discussions with the communities. The frequency of the collection service started from twice a month.

Table 9-16: Drafted activity schedule of the pilot project

Waste Collection Station (May.2015)			Activity	Agency in charge	2015												2016											
					5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12				
1	Arrengement with community	1	Receive agreement to participate in Pilot Project	DPW&T,EPA																								
		2	Estimate the collection fee to collect from community	DPW&T,EPA																								
		3	Meeting with community members to discuss the explain the Program	DPW&T,EPA																								
		4	Site selection for the waste station with community	DPW&T,EPA																								
2	Purchase Dump truck	1	Find venders to provide quations	DPW&T,EPA																								
		2	Purchase a truck	EPA																								
3	Construct Waste station	1	Develop a design of the waste station	DPW&T																								
		2	Bid out to public	EPA																								
		3	Award the bid to the contractor	EPA																								
		4	Constrct the stations	Contracter																								
		5	Inspect the stations	DPW&T, EPA																								
4	Start collection	1	Start collection service as Pilot Project	Collection company																								
		2	Moniter the waste station	EPA																								
		3	Evaluate the Pilot Proiect	DPW&T, EPA																								

Budget: The cost of pilot project mainly included installation of collection points (3), 2 ton truck (1), and awareness-raising materials. Some cost will be covered by the budget of the Department of Health and Sanitation while C/Ps of EPA and DPW&T who participated in JICA training in 2013 will submit a proposal to JICA Follow-Up Scheme for the financial assistance.

e. Activities of the Seventh Dispatch (from 7th to 17th of November, 2015)

e.1. Fifth State JCC

The State JCC was held on 16th of November 2015 and there were 9 participants.

Director of EPA and Deputy Director of DPW&T gave a presentation about the Project progress and the next activity plan from 2016.

Some points of the presentation were;

- ✓ Unachieved indicators:
 - Indicator 5-2-3: Soil cover at the existing dumpsite (completed by March 2016)
- ✓ Continuous activities which have been supported under the Project:
 - Output 5-1: monitor the Action Plan and start revision of SSWMS in 2016
 - Output 5-2: install eco-fan, start recirculation of leachate at new Landfill, continue environmental monitoring, and complete soil cover at the existing dump site
 - Output 5-3: continue the awareness-raising workshops, conduct site visit of students to Landfill, conduct new awareness program (e.g. Clean Schools Program, promoting the Recycling Program)
- ✓ Prioritized next activities after the end of the Project:
 - Improvement and Expansion of the waste collection service
 - Sustainable financing for SWM
 - Composting/green waste
 - Improvement of the maintenance of heavy equipment
 - Encourage more “Return” (markets for commodities)

At the end of the JCC, award ceremony was held for one agency and one C/P who were awarded in 5th J-PRISM Steering Committee.

- Special Award: Island Paradise, (private recycling company) for their contribution to Yap through recycling activities.
- Best Counterparts: Director of EPA, Ms. Christina for one of the Best Counterparts who contributed to develop “The Pacific Solid Waste Management Guidebook”.



Commendation to Island Paradise



Commendation to Director of EPA



Group photo

e.2. Capacity assessment

Third capacity assessment was conducted on the institutions and individuals. The following chart shows the result of the institutional capacity assessment.

- Target agencies: DPW&T, EPA
- Conducted: three times (1st: June, 2012, 2nd: January 2014, 3rd: November 2015)

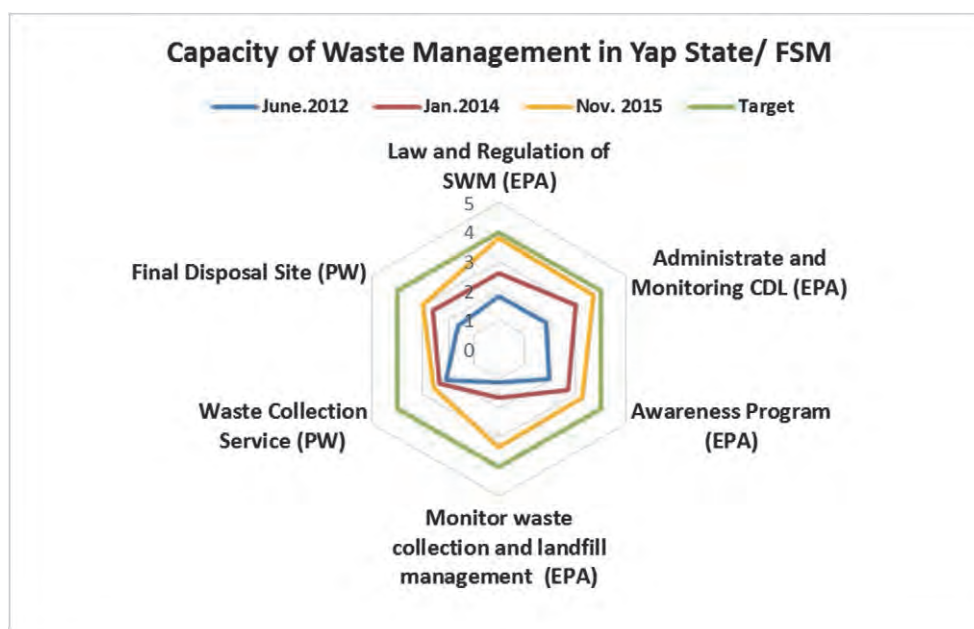


Figure 9-8: Chart of the capacity assessment in Yap

Some improved points and recommendations in each category are summarized.

- ✓ **Law and Regulation of SWM:** Several laws and regulations were developed for SWM with assistance of Australian lawyer. *Improvement of the enforcement is next steps.*
- ✓ **Administer and Monitoring CDL:** Data collection and developing the report of CDL has been improved. Also the regulation is under process to amend and add more target items in the CDL.
- ✓ **Awareness-raising Program:** Awareness-raising activities have been conducted, also some materials such as posters and stickers were developed and My-Bags campaign was conducted. *In order to continue the activities, the next activity plan should be developed considering the available manpower in each agency.*
- ✓ **Monitor waste collection and landfill management:** Leachate and landfill condition have been monitored. *Improving the monitoring the collection service will be the next step.*
- ✓ **Waste Collection Service:** There is a few progress in the collection service. *Therefore, Improvement of the collection service should be prioritized as a next main activity.*

- ✓ **Final Disposal Site:** The new landfill site has been operated properly after a new heavy equipment was provided. *Regular monitoring and recording the operation should start and maintenance of the heavy equipment should be improved.*

e.3. Establishment of the regulations (Yap original activity)

As reported in the above paragraph, Yap State has enacted and amended several regulations related to waste management in the last few years by receiving the technical support from the Australian legal advisor (volunteer). The following table showed the list of the enacted regulations.

Table 9-17: List of the regulations enacted or amended in Yap

Enacted in	Name of the laws/regulations	Outline
Jan. 2008	Yap State Recycling Program Regulations	Identifies the target items (Pet bottle, aluminum can, glass bottle and cooking oil PET container) and its \$ of deposit (CDL regulation)
Mar. 2014	Regulation for Persistent Organic Pollutants	Regulates 23 POPs per Convention and their management and disposal within Yap State
Apr. 2014	Environmental Requirements for Transport Vessels	'Stow it, Don't Throw it' – No inorganic waste from vessel to be disposed at sea or at any of Outer Islands; All inorganic waste must be kept onboard until it can be responsibly disposed of at the dump site All waste onboard a Vessel that is recyclable must be separated from other inorganic waste and taken to the Recycling Agent
Sep. 2014	Regulation for Oil Spill Reporting	Regulate reporting and responding to the oil spilling occurred on the land and sea
Oct. 2014	Regulation for the Prohibition of Plastic Bags	Regulates prohibition of plastic disposable grocery bags both bio & non-biodegradable bags
De. 2014	Recycling Program Regulation	[amendment] added lead batteries, vehicles and food containers in the above Recycling Program
Feb. 2015	Hazardous Substance Regulation	Regulated imported hazardous substances with its registration, reporting, controlling and storage
Mar. 2015	Solid Waste Management Regulation	Regulates operations at Public Landfill Site and community disposal sites

10 Palau

10.1 Outline of the Activities in Palau

10.1.1 Dispatch Schedule

Total: 137 days

Dispatch	Date	Days	Dispatched Expert
1 st :	21 st of June, 2014 – 1 st of July, 2014	11days	Haseyama, Muranaka
2 nd :	17 th of Aug. 2014 – 30 th of Aug. 2014	14days	Haseyama, Muranaka
3 rd :	6 th of Dec. 2014 – 13 th of Dec. 2014	8days	Muranaka
4 th :	28 th of Feb. 2015 – 14 th of Mar. 2015	15days	Muranaka
	5 th of Mar. 2015 – 14 th of Mar. 2015	10days	Haseyama
5 th	(No Dispatch)		
6 th :	26 th of July, 2015 – 25 th of Aug, 2015	31days	Muranaka
	23 rd of Aug, 2015 – 25 th of Aug, 2015	3days	Haseyama
7 th :	28 th of Nov, 2015 – 12 th of Dec, 2015	15days	Muranaka
	8 th of Dec, 2015 – 12 th of Dec, 2015	5days	Haseyama

10.1.2 Counterpart Organizations

Solid Waste Management office of Bureau of Public Works of Ministry of Public Infrastructure, Industries and Commerce (SWM-BPW)

Solid Waste Management Office of Koror State Government (SWM-KSG)

Although there are four organizations listed in R/D as C/P organizations, SWM-BPW is a main C/P organization and SWM-KSG is collaborating partly in the activities.

10.1.3 Counterpart Members

Organization	Title	Name	Note
SWM-BPW	Director	Brian Melairei	
	Chief of SWM	Calvin Ikesiil	
	Educator	Mengkur Rechelulk	
	State coordinator	Jessica Emesiochl	Added as a C/P from 2014
SWM-KSG	Project Coordinator	John O. Ngiraked, Jr.	Only Output 5
	Manager	Selby P. Etibek	Only Output 5
	Administrative officer for community	Ngirbechat Arsenio	Only Output 5

10.1.4 Activities and Outputs

The progress of the activities and their achievements from May 2014 to January 2016 are summarized in accordance with the Plan of Operations (P/O) and agreed indicators in the next table.

Output/ Indicators		Achievement by FY2013	Activity/ Progress					
			1 st dispatch	2 nd dispatch	3 rd Dispatch	4 th Dispatch	6 th Dispatch	7 th Dispatch
Output1: Capacity to manage the beverage deposit container fee program (sustainable financing system) is enhanced		CDL launched from 2011. The Recycling Fund has been utilized to improve the M-Dock landfill.	bb) Monitoring the Progress of Container Deposit Fee Program BPW hired two staffs, and one of the staffs is in charge of CDL monitoring. The law has not been amended yet.	bb) Monitoring the Progress of Container Deposit Fee Program A C/P and a JOCV in BPW started collecting data of CDL. BPW invited a staff from the Finance office to clarify the data in a document submitted by the Finance office. The contents of an annual report was discussed, the C/Ps of BPW will develop a draft by October.	bb) Monitoring the Progress of Container Deposit Fee Program The data of CDL was updated. The annual report was drafted.	bb) Monitoring the Progress of Container Deposit Fee Program The annual report was reviewed by C/Ps of BPW to be finalized.	bb) Monitoring the Progress of Container Deposit Fee Program The annual report (FY2011-2015) was finalized and submitted to the President, the Minister, the Congress and other stakeholders.	bb) Monitoring the Progress of Container Deposit Fee Program The annual report (FY2016) was started to be developed.
	Indicator 1-1: 1) % of amount of containers redeemed out of imported beverage containers by the end of the Project ↓ 2) (Revised in Dec. 2015) SWM-BPW can regularly monitor redemption rate	1) Redemption rate: 131% in 2012 because it was the first year of the program and the people bring lots of collected containers. Redemption rate: 99.42% in 2013.			1) Redemption rate: 92% in 2014 (by Sep.).		1) Redemption rate: 93% (2011-Feb.2015)	
Indicator 1-2: 1) The financial balance between income and expenditure of BCDFP is well maintained. ↓ 2) (Revised in Mar. 2015) Amount of shipped off containers. ↓ 3) (Revised in Dec. 2015) SWM-BPW can regularly monitor the amount of shipped-off beverage containers		1) (2012) 6months after beginning of the CDL, the redeemed amount is above the import amount and the balance of the Fund became minus. (2013) KSG set the limit to receive the container with 1 mil monthly, and the balance has been stable afterward.		1) (2014) Except for in January and June 2014, when the number of redeemed containers was above the imports resulted in the deficit balance of the Recycling Fund, the Fund has kept the financial balance.		2) SWM-BPW receive data from Koror State about weight of containers sold to a private recycling company and use the data as exporting amount; Total Export is about 638ton (aluminum cans: 360ton, steel cans: 33ton, PET bottles: 244ton)		【Mostly Completed】 2) Total Export is 844ton (FY2011-FY2015) 3) SWM-BPW received data from KSG about the weight of containers sold to a private recycling company, and this data as exported weight; however SWM-BPW has not received the actual exported weight from the recycling company yet.
	Output2: National Solid Waste Management Plan is finalized and Action Plan is revised	The Action Plan of the NSWMP developed in 2008 was revised in 2012. The revised Action Plan was	cc) Monitoring the Revision of the NSWMP Considering the progress of the new landfill and other activities related to	cc) Monitoring the Revision of the NSWMP (planned in 2015)	cc) Monitoring the Revision of the NSWMP (planned in 2015)	cc) Monitoring the Revision of the NSWMP (planned in 2015) After discussion with C/P, BPW will request SPREP to	cc) Monitoring the Revision of the NSWMP Preparation for the workshop to revise the NSWMP was started	cc) Monitoring the Revision of the NSWMP The workshop was held to revise the

	monitored in Jan. 2014.	SWM, it was agreed to postpone to revise the NSWMP in FY2015.	dd) Support for Monitoring of the Action Plan (planned in March 2015)	dd) Support for Monitoring of the Action Plan (planned in March 2015)	revise the NSWMP in 2015.	dd) Support for the Action Plan (The monitoring of the Action Plan will be conducted concurrently with revision of the NSWMP.)	NSWMP.
Indicator 2-1:	NSWMP is finalized.	【Fully Achieved】 The NSWMP was finalized and approved by the Minister of MPIIC in the 1st JCC in 2012.					
Indicator 2-2:	Action Plan is revised.	The Action Plan was revised in 2012. Next revision is planned when the NSWMP is revised.					【Fully Achieved】 Action Plan was monitored and revised with NSWMP.
Output3:	Capacity to conduct Awareness raising on 3R (targeting MPIIC and Earth day) is enhanced	PEEC was reestablished but most of the activities were not implemented. Therefore, PEEC was dissolved and BPW will conduct the awareness-raising activities as a main agency.	ee) Support for the Monitoring Awareness Activity The progress of the awareness-raising activities was monitored, and some activities were conducted. ff) Support for the Implementation of the Awareness Activity C/P and the Expert visited schools in Babeldao to promote awareness-raising activities in schools.	ee) Support for Monitoring the Awareness Activity The progress of the awareness-raising activities was monitored, and one school workshop and a pamphlet for tourist was developed. ff) Support for the Implementation of the Awareness Activity Not specific activities was conducted with the Expert.	ee) Support for Monitoring the Awareness Activity It was reported by the C/Ps that two workshops at schools were conducted. ff) Support for the Implementation of the Awareness Activity C/P of BPW and SWM-KSG discussed about My Bag Campaign.	ee) Support for the Monitoring Awareness Activity The progress of the awareness-raising activities was monitored.	ee) Support for the Monitoring Awareness Activity The progress of the awareness-raising activities was monitored.
Indicator 3-1:	Materials are delivered to 50% of schools in the Earth day activity.	(Indicators of Output3 were modified totally and this indicator cannot be evaluated)	【Fully Achieved】 Flower pots made from waste tires were distributed to the all schools participated in the Earth day event and 200 pics of 3R face towel and 50 pics of T-shirts were distributed in the Earth day 2014.			Additionally, 70 pieces of 3R water bottles were distributed in the Earth day event in 2015.	
Indicator 3-2:	1) Number of installed recycling bins at MPIIC. ↓ 2) (Revised) Number of school presentations/ visits & conducted workshops (Target	(Indicators of Output3 were modified totally and this indicator cannot be evaluated)	1) 1 st Recycling Bin was installed at airport in Aug. 2014			2) Totally 10 workshops were conducted: 5 elementary school 1 high school 2 college 1 community 1 in-house (BPW)	【Mostly achieved】 2) Totally 17 workshops (together with left): 10 elementary school 1 high school 2 college 2 teachers 1 community

Indicator 5-1:	Training manual / materials developed.	country/ State. 【Fully Achieved】 3 manuals and other materials were developed for the regional training.							
Indicator 5-2:	Number of training conducted and number of participants	1 st Regional training was conducted. Totally 40 people from FSM, Samoa and Palau participated in the training.							<p>【Mostly Achieved】 Second training (In-country training) was conducted and 21 staffs participated from State Governments. The reason of the “Mostly Achieved” was explained by the Final Evaluation team that there was no target number set in the number of training and participants in the indicators; however, the training was planned twice in the PO and staffs from 14 states out of the total 16 states participated in the workshop.</p>

10.2 Activity Report of Each Output

10.2.1 Output1: Capacity to manage the beverage container deposit fee program (sustainable financing system) is enhanced

a. Activity of the First Dispatch (from 21st of June to 1st of July, 2014)

Although the limited number of staff was the main issue of the organizational capacity in the SWM-BPW, SWM-BPW finally hired two new staff members in June 2014; one administrator and one state coordinator. Then, the total number of staff increased to five including one JOCV plus 7 operators at the landfill site. State coordinator will be in charge of data monitoring of the CDL as well.

As the first introduction of the CDL to the new staff, the Expert explained the system and challenges of the CDL, also asked Mr. Fuji, a consultant of SWM-KSG to give a briefing to the staff.

There was no progress in the amendment of the CDL Act.

b. Activity of the Second Dispatch (from 17th to 30th of August, 2014)

The balance of the Recycling Fund and other financial data were shared monthly by MOF while the C/Ps of SWM-BPW could not understand some of the data because of its technical terms of the finance. Therefore, SWM-BPW set a meeting with MOF to get a lecture on the data and checked all the balance of the Recycling Fund one by one to clearly understand the situation of the Recycling Fund.

The financial data was regularly updated by new staff members, Ms. Jessica and Kitahara JOCV so that SWM-BPW was able to start drafting the first annual report which is required to be issued annually under CDL Act but was never prepared before.

The following figures show the balance of the containers and the finance from the beginning of the CDL in April 2011 until July 2014.

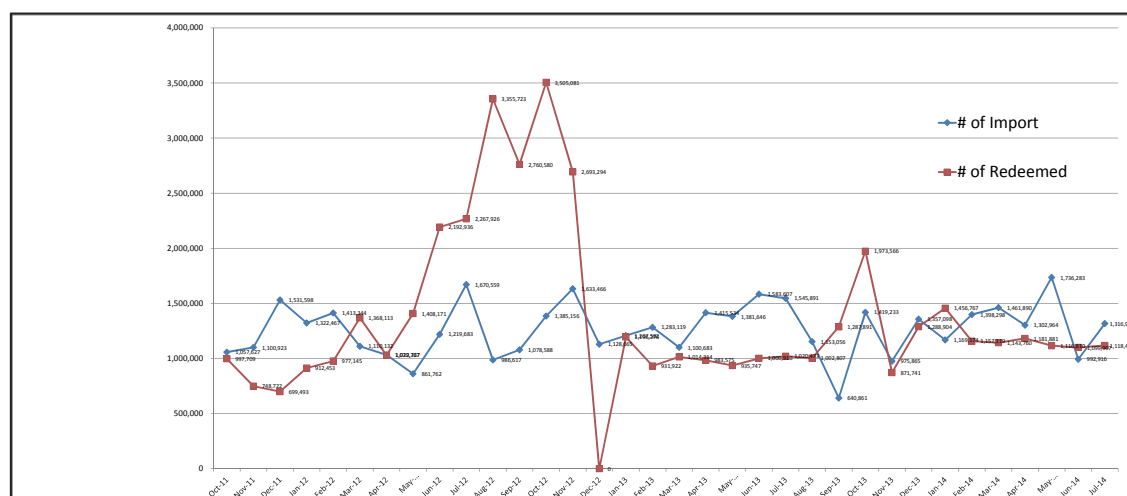


Figure 10-1: Balance of containers: imported and redeemed

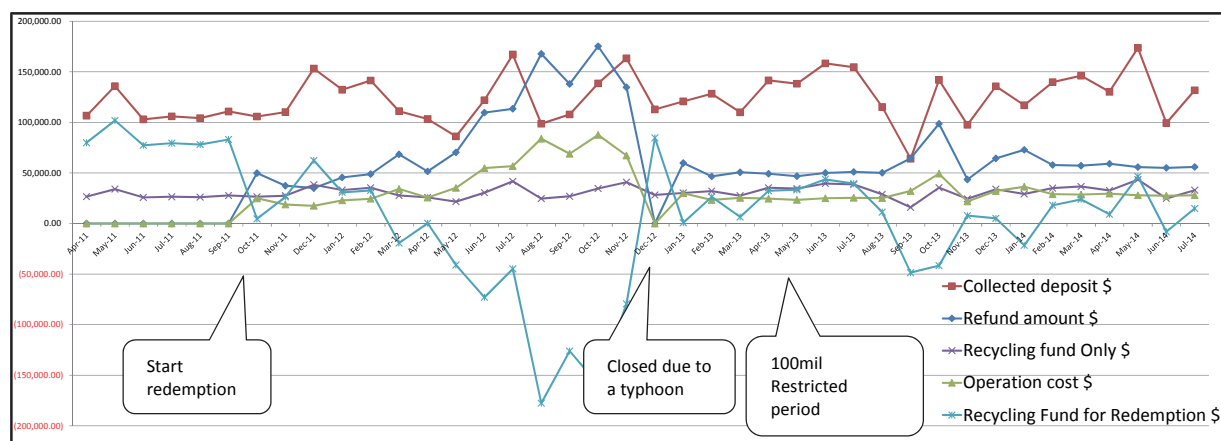


Figure 10-2: Financial Balance

The data showed that the number of the redeemed containers was as twice as the number of the imported ones in the second year that resulted in the deficit balance of the Recycling Fund. As the countermeasure, Koror State temporarily set the limit of the number of containers redeemed at 100 million per month at the Recycling Center. After 7 months, the balance of the Fund became stable.

c. Activity of the Third Dispatch (from 6th to 13th of December, 2014)

C/Ps of SWM-BPW updated the data of the CDL by September 2014. The data from October will be updated after the C/P returns from a JICA training conducted in Japan.

The Annual Report was drafted for submission to the President by the end of December 2014.



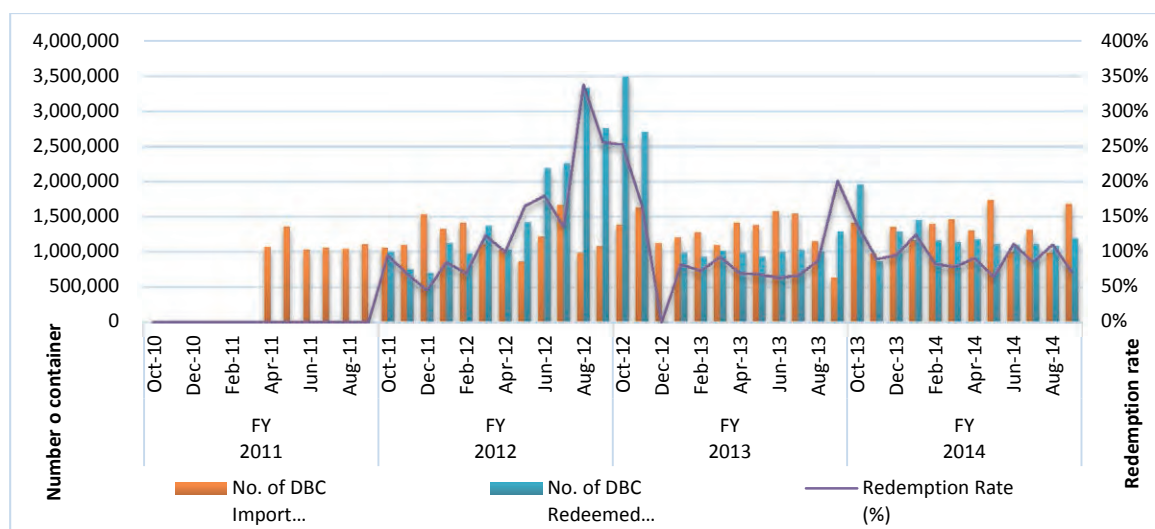
Annual Report

d. Activities of the Fourth Dispatch (from 28th of February to 14th of March, 2015)

The Annual Report was not finalized yet; therefore, the drafted report was reviewed by the Expert with C/Ps for its finalization. The summary of the report are mentioned below;

Table 10-1: Number of Imported and Redeemed containers with Redemption Rate

FY	Total Imports (A)	Total Number Redeemed (B)	Redemption Rate (%)
2011	6,663,590	0	0.00%
2012	14,386,027	18,925,157	131.55%
2013	15,459,266	15,369,174	99.42%
2014	15,798,713	14,678,332	92.91%
Total	52,307,596	48,972,663	93.62%



*DBC (Deposit Beverage Container)

Figure 10-3: Number of Imported and Redeemed containers with Redemption Rate

Table 10-2: Number of Containers Redeemed (classified by types)

FY	Aluminum Cans	Steel Cans	Plastic Bottles	Glass bottles	Tetra pack	Total
2011	-	-	-	-	-	-
2012	12,321,127	370,680	4,360,757	391,062	1,481,531	18,925,157
2013	8,679,141	652,739	3,638,431	452,352	1,946,511	15,369,174
2014	9,358,251	2,344,615	2,203,894	509,018	262,554	14,678,332
Total	30,358,519	3,368,034	10,203,082	1,352,432	3,690,596	48,972,663

Table 10-3: Deposit Fee/ Recycling Fund/Compensation/ Refund

FY	Collected Deposit Fee (10 ¢ /DBC)	Recycling Fund (2.5 ¢ /DBC)	Compensation to KSG (operation cost of the Center) (2.5 ¢ / DBC)	Refund (5 ¢ /DBC)
2011	\$ 666,359.00	\$ 166,589.75	\$ 166,589.75	-
2012	\$ 1,438,602.70	\$ 359,650.68	\$ 359,650.68	\$ 946,257.85
2013	\$ 1,545,926.60	\$ 386,481.65	\$ 386,481.65	\$ 768,458.70
2014	\$ 1,579,871.30	\$ 394,967.83	\$ 394,967.83	\$ 733,916.60
Total	\$ 5,230,759.60	\$ 1,307,689.90	\$ 1,307,689.90	\$ 2,448,633.15

Table 10-4: Recycling Fund

FY	Total Income	Total Expenditure	Balance
2011	\$ 166,589.75	-	-
2012	\$ 389,943.25	\$ 105,428.16	\$ 451,104.84
2013	\$ 417,895.36	\$ 138,786.85	\$ 835,641.51
2014	\$ 436,515.16	\$ 677,813.16	\$ 733,130.35
Total	\$ 1,410,943.51	\$ 922,028.17	\$ 733,130.35

Recycling Fund was one of the main financial sources of SWM-BPW, and the annual report showed the expenditure from the Recycling Fund as follows; \$458,000 for the construction and rehabilitation of M-Dock landfill, \$80,000 for a heavy equipment, \$2,788 for awareness-raising activities and \$138,000 for administration of SWM-BPW. Also there was the expenditure categorized as “Others” with no detail information on expenditure items. Therefore, it was advised by the Expert to clarify and explain the detail of the expenditure from the Recycling Fund as much as possible.



Revision of the Annual Report

Additionally, some recommendations were included in the report such as amendment of the existing CDL Act to remove the limitation of the size on the containers and add other recyclable items such as steel or aluminum food cans into the target items.

The annual report, clarified the redemption rate and expenditure of the Recycling Fund. It will be submitted to Director of BPW, Minister of MPIIC, the Congress and the President in order.

e. Activities of the Sixth Dispatch (from 26th of July to 25th of August, 2015)

e.1. Monitoring the CDL data

The annual report (FY2011-FY2014) was finalized and submitted to the President, the Congress and other stakeholders such as Environmental Quality Protection Board (EQPB) and KSG.

In the Final Evaluation of the Project, it was raised that the data of the sales profit of the sold containers and 10cents of deposit deposited in the Recycling Fund were not separately recorded. SWM-BPW was required to record all the income separately by the categories to clarify the balance of the Fund.

It was explained by the Director of the BPW that the budget of the SWM-BPW was used to be funded from Recurrent Fund (25%) and Recycling Fund (75%) by FY 2015; however the Government of Palau decided to discontinue to fund SWM-BPW from the Recurrent Fund and the Recycling Fund became the only budget from FY2016. Although it is tentative decision, but it is important to make an annual financial plan which should be based on the revised National Solid Waste Management Plan (NSWMP).

f. Activities of the Seventh Dispatch (from 28th of November to 12th of December, 2015)

f.1. Monitoring the progress of the annual report

The CDL data from KSG and MOF have been collected but not combined into the Excel during the maternity leave of the staff of SWM-BPW, but after the staff returned to work, the data was restarted to be combined, then the annual report (FY2011-FY2015) was developed and finalized in January 2016.

The summary data from the latest annual report (FY2011-FY2015) is shown in the following tables.

Table 10-5: Summary of the CDL: figure of containers and finance

FY	No. of imported containers (all types)	Collected deposit (USD)
2011	10,353,738	1,035,373.80
2012	14,843,166	1,484,316.60
2013	15,064,176	1,506,417.55
2014	16,030,696	1,603,069.61
2015	13,523,052	1,352,305.20
Total	69,814,828	6,981,482.76

Redeemed containers	: 62,667,570
Refund (USD)	: 62,667,570x\$0.05=\$3,133,378.50
KSG Compensation (USD)	: 62,667,570x\$0.025=\$1,566,689.25
Export weight ⁸	: 844ton
Redemption rate	: 89%
Sales amount (aluminum, steel) (USD)	: \$154,355.26

⁸ Note: This figure is the weight of the containers which KSG Recycling Center redeemed. The actual amount (weight) of exported container hasn't been submitted by the private recycling company which received the containers from KSG Recycling Center to ship-off.

10.2.2 Output2: National Solid Waste Management Plan is finalized and Action Plan is revised

a. Activity of the First Dispatch (from 21st of June to 1st of July, 2014)

a.1. Revision of NSWMP

As it was proposed to revise and update the NSWMP in the third JCC held in February 2014, the schedule was discussed with Director of BPW, and it was planned to be revised in 2015 considering the upcoming new projects related to the SWM and a new landfill site project which were all required to evaluate their feasibility and implementation schedule.

b. Activities of the Fourth Dispatch (from 28th of February to 14th of March, 2015)

Due to the limited dispatch days of the Expert and previous assistance from the SPREP on the revision of the existing Action Plan in 2012, it was agreed in the Fourth JCC in March 2015 to revise the NSWMP with the assistance from SPREP.

SWM-BPW and J-PRIMS Project office will respectively send the request letter to SPREP.

c. Activities of the Sixth Dispatch (from 26th of July to 25th of August, 2015)

c.1. Preparation of the workshop

After SPREP accepted the request to assist the revision of the NSWMP, it was planned to revise it in a workshop with other stakeholders and the preparation of the workshop was started. It was advised by the JICA Expert to utilize the data of the WACS in the revision and to invite staffs from State Governments in the workshop as much as possible.

d. Activities of the Seventh Dispatch (from 28th of November to 12th of December, 2015)

d.1. Workshop to revise the NSWMP

The workshop to revise the NSWMP was held from 30th of November to 7th of December (6 days). The SWM-BPW and SPREP Experts were the facilitators. The revision of the NSWMP was not included in the PO but the J-PRISM Expert also participated in the workshop in order to assist it.

The workshop concentrated on revising the Action Plan of the existing NSWMP based on the revised regional SWM strategy “Clean Pacific,” while, the main body of the NSWMP wasn’t revised in the workshop; therefore, C/Ps and other stakeholders have to revise and finalize it to submit to the Minister of MPIIC by February 2016.



Group photo



Facilitator from SPREP

d.2. Monitoring the Action Plan of the existing NSWMP

For the revision of the NSWMP, the progress of the Action Plan of the existing NSWMP was monitored by C/Ps and the Expert. The summary of the achievement levels of each category monitored in 2012 and this time are shown in the table below.

Table 10-6: Monitoring result of the Action Plan of Palau

Categories (number of activities)	Achievement (%) June, 2012						Achievement (%) December, 2015					
	0	25	50	75	100	Average	0	25	50	75	100	Average
1. Planning and Monitoring (7)	3	3			1	21	2	1	1	1	2	49
2. 3R (Reduce, Reuse, Recycle) (5)	1	1	3			35	1	1	1	1	2	70
3. Waste Disposal (8)	7	1				3	3	1	1	1	2	44
4. Collection and transportation (4)	3	1				8	3			1		19
5. Waste Treatment (incineration) (2)	2					0	2					0
6. Hazardous Waste Management (5)	5					0	4		1			10
7. Institutional Capacity Building (2)	2					0	2					0
8. Sustainable Financing (2)	2					0	1		1			25
9. Public Education and Awareness (1)	1					0	1					0
						7						23

The advanced/on-going activities and low-advanced activities are shown in the following table.

Categories	Advanced /on-going activities	Low-advanced activities
1. Planning and Monitoring	<ul style="list-style-type: none"> Plan the monitoring items at the landfill (State, BPW) Conduct monitoring around M-Dock (BPW, State) Conduct awareness activity (PEEC) 	<ul style="list-style-type: none"> Development of the State SWM plan (State, BPW) Annual Monitoring on the progress of the NSWMP (BPW) Conduct quantity survey in vehicles, e-wastes, batteries, and wastes under the recycling law. (State, BPW) Review the permit to require waste facility (EQPB)
2. 3Rs (Reduce, Reuse, Recycle)	<ul style="list-style-type: none"> Install Segregation station (KSG)?? Promote composting in to the community (KSG) 	<ul style="list-style-type: none"> Amend the law of CDL (remove the limitation of size of container of 32 once) (BPW) Study on the overseas market in the battery, waste tire and e-waste (BPW) Promote composting (other States)
3. Waste Disposal	<ul style="list-style-type: none"> Extended the lifespan of M-Dock landfill (BPW) Procured some heavy equipment for the M-Dock landfill (BPW) Finalized the closure plan of the M-Dock landfill (BPW) Selection of the land for a new landfill (BPW) 	<ul style="list-style-type: none"> Developed a rehabilitation plan of the State dumpsites (State, BPW) Conduct EIA and detailed landfill design and procure heavy equipment for the new landfill (BPW) Close State dumpsite (State, BPW)
4. Waste Collection and Transportation	<ul style="list-style-type: none"> Prepare procurement plan of collection vehicles (KSG) 	<ul style="list-style-type: none"> Plan inter-state collection service (State, BPW) Plan and start collection service in Angaur, Peleliu and Kayangel (State, BPW)
5. Waste Treatment (incineration)		<ul style="list-style-type: none"> Evaluate and assess existing incinerators (EQPB, DEH) Prepare technical guidance for incinerator operation (EQPB)
6. Hazardous Waste Management	<ul style="list-style-type: none"> Establish drop off station (mottainai yard) (BPW) 	<ul style="list-style-type: none"> Strengthen the Hazardous waste management reg. (EQPB)? Implement Hazardous waste collection (State, BPW) Prepare and implement Hazardous waste management plan (BPW) Establish temporary storage (BPW)
7. Institutional Capacity Building		<ul style="list-style-type: none"> Strengthen enforcement of the dumping reg. (EQPB, State, Public safety) Strengthen partnership with Private for PEEC activity (MPIIC, chamber of commerce)
8. Sustainable Financing		<ul style="list-style-type: none"> Develop and implement detailed sustainable financial plan (MPIIC, State, MOF) Introduce the concept of use-pay system

10.2.3 Output3: Capacity to conduct Awareness raising on 3R (targeting MPIIC and Earth day) is enhanced

a. Activity of the First Dispatch (from 21st of June to 1st of July, 2014)

a.1. Monitoring of the awareness-raising activities

It was observed that based on the Action Plan, C/Ps of SWM-BPW conducted awareness-raising program in the Earth day event, on 22nd of April with Kitahara JOCV was working at SWM-BPW since November 2013.

It could be observed that SWM-BPW improved the environment to conduct awareness-raising activities such as a new staff who joined SWM-BPW from 2014 was also assisting the awareness activities and the office purchased stationery and a projector for the awareness raising activities. On the other hand, recycling bins in the Government buildings were not installed yet.

During this dispatch, C/Ps of SWM-BPW took high school students to the landfill site and explained about waste management and system of Fukuoka method.



Demonstration of Semi-aerobic landfill in the Earth day
(photo: provided by Kitahara JOCV)



Flower pot made from used tires in the Earth day
(photo: provided by Kitahara JOCV)



Landfill Site Visit by high school students in July

a.2. Assistance to plan the awareness-raising activities

In order to catch up the delay of installing the Recycling Bins, C/Ps and the Expert visited some hardware shops to find the containers to be used as Bins, and discussed with staffs of SWM-KSG on the collection and transportation of the items from the Bins.

It was expected that SWM-BPW would purchase and install the Bins with promotion of the separation of waste.

In addition, as regular activities of SWM-BPW, C/Ps decided to conduct a school workshop and radio talk show at least once a month and develop more materials for the activities.

b. Activity of the Second Dispatch (from 17th to 30th of August, 2014)

b.1. Monitoring and assisting the awareness-raising activities

Some progress was reported by C/Ps after the previous visit of the Expert;

- ✓ Installed one set of Recycling Bins at the airport, which made of waste tires and security net.
- ✓ Conducted a school workshop in Peleliu (outer island)
- ✓ Developed brochures of SWM



Recycling Bins installed at the Airport

b.2. Assistance to implementation of awareness-raising activities

During this dispatch, C/Ps and the Expert visited the airport to check the installed Recycling Bin and visited schools in Babeldaob for promotion in school workshops.

Monitoring the installed Recycling Bins at the airport

- ✓ The Bins were installed outside of the building, which were relatively difficult for the people to notice. There were not much waste in the Bins. The waste in the bins were generally segregated with some exceptions of mixed waste in the bins.
- ✓ Although the signboards to promote the segregation of the waste by types were paper-made, SWM-BPW would prepare plastic signboards with the finance from the Recycling Fund.

Promotion of the School Workshop

Two C/Ps of SWM-BPW, Kitahara JOCV and the Expert visited 6 elementary schools in Babeldaob to promote school workshop in schools. Most of the principals of the schools responded positively to hold a workshops of waste at schools and SWM-BPW would wait for the official request to conduct the workshops after the schools arranged the date with their school curriculum. The C/Ps of BPW continued to visit other remaining schools and prepare a presentation for the workshops.

At the time of visiting schools in Babeldaob, the C/Ps, JOCV and the Expert visited State dumpsites. All of the State dumpsites in Babeldaob were open dumpsites and not well maintained. The school workshops should include some information about State dumpsites.



C/P Explains about the program to the principals (Aimeliik primary school)



Dumpsite in Ngatpang State



Dumpsite in Ngarchelong State where is used to be a semi-aerobic landfill

c. Activity of the Third Dispatch (from 6th to 13th of December, 2014)

Some progress was reported on the awareness-raising activities by C/Ps;

- ✓ Visited the remaining 2 elementary schools in Babeldaob to promote the workshops.
- ✓ One school workshop was conducted in Miyuns based on the request from the school.
- ✓ A pamphlet for tourists was designed, but it was not printed out due to the financial issue; however, SWM-BPW plans to print out with the Recycling Fund.
- ✓ Contest to promote “Reuse” was planned but not been started yet.
- ✓ Not additional Recycling Bin was installed after the airport.
- ✓ Upgraded the sign board of the Recycling Bins at the airport from paper to plastic material.



Workshop at Meyuns
(pic. Provided by Kitahara JOCV)

There were some progress observed especially on school workshops. The Expert advised to keep records of the activities to understand the achievement with their evaluations. The Expert also mentioned that there were some activities which were planned by C/Ps but were given up. The Expert suggested that the C/Ps should focus on implementation of the activities originally planned.

d. Activities of the Fourth Dispatch (from 28th of February to 14th of March, 2015)

The progress of the awareness-raising activities were monitored.

Several workshops were conducted in Meyuns Elementary school (second time) and Ngeremlengui Elementary school by C/Ps of SWM-BPW with JOCV based on the requests by the schools. Although the number of the workshops was not many,



Workshop at Ngeremlengui

it was a significant progress that SWM-BPW received the request from schools and C/Ps responded to the request properly.

The summary of the awareness-raising activities conducted by SWM-BPW is shown in the following table.

Table 10-7: The awareness-raising activities conducted by SWM-BPW from 2014-Feb. 2015

Year/Month	Activities
2014	
Jan.	• PEEC was dismissed and it was agreed that SWM-BPW will continue the awareness activities.
Apr.	• Earth Day activity (presentation, booth and waste tire flower pots became popular)
May.	• Workshop at Peleliu Elementary school
July	• Recycling bin was installed at airport
	• Workshop and site visit in CRISP (College Readiness Institute Summer Program)
	• Landfill visit by Toyo University Faculty & Students
	• Installed 3R board in Koror
Sep.	• Installed sign board at airport for recycling bins
Oct.	• Waste composition survey & Action Plan development with Peleliu State.
	• Set 3R booth in Independence Day in Melekeok: presentation about landfill, 3R quiz, brochure, waste tire flower pot and composting
	• Presentation about landfill, 3R and career of waste management in Career Expo (PCC)
Nov.	• 3R workshop (Meyuns Elementary school)
2015	
Jan.	• 3R workshop (Meyuns Elementary school)
Feb.	• 3R workshop (Ngeremlengui Elementary school)

SWM-BPW is planning to continue school workshops, conduct some activities on the Earth day and launch My Bag campaign as the main activities in 2015.

As for the My Bag campaign, Koror State had a similar activity plan to promote My Bag called “Eco Bag” which was made of scrap of cloths to reduce textile waste into the landfill. The Eco Bag activities were launched in Fiji. The idea of “My Bag” campaign came from Yap State to distribute My Bag to the communities while he/she can join raffle when someone bring My Bag at designated shops. SWM-BPW and Koror State will work closely to plan the activity.

e. Activities of the Sixth Dispatch (from 26th of July to 25th of August, 2015)

e.1. Monitoring the awareness-raising activities

It was reported that SWM-BPW set a booth in the Earth day event and played games with school students, distributed pamphlets and 70 pieces of 3R water bottles. Also school workshops were conducted as a part of the event.



Earth day workshop 2015

In the Final Evaluation of the Project, the target number of school workshops was set at 22 times; 16 elementary schools, 5 high schools and 1 college in Koror and Babeldaos. 10 workshops at elementary schools and 1 at college were conducted so far.

While, two C/Ps who are in charge of the public education in SWM-BPW had to leave the work for a couple of months for their family matters and one JOCV in SWM-BPW also returns to Japan in September; therefore it was not sure if the SWM-BPW could accomplish the remaining workshops by the end of the Project. Director of BPW and Chief of SWM-BPW explained that the office would try to hire one additional staff in this year to cover the absence of staffs.

f. Activities of the Seventh Dispatch (from 28th of November to 12th of December, 2015)

f.1. Monitoring the progress of the awareness-activities

The progress of the awareness-raising activities was shared. C/Ps of SWM-BPW conducted totally 17 workshops during the Project. Although it did not reach the target number of 22 workshops, it could be seen the motivation of the C/Ps has been increased after the JOCV joined and assisted the activities.

Total number of workshops conducted

10: Elementary schools
1: High schools
2: Teachers workshops
2: College
1: Community
1: In-house (SWM-BPW)

10.2.4 Output4: Capacity to manage the final landfill site is enhanced

a. Activity of the First Dispatch (from 21st of June to 1st of July, 2014)

a.1. Advice on the closure plan of the M-Dock landfill

Based on the existing Closure Plan of the M-Dock landfill, C/Ps and the Expert team reviewed the monitoring method. For example, in addition to the monitoring of the leachate (COD, pH) it was recommended to monitor gas from the landfill (CO₂ and composition of gas). The gas from the landfill can tell the decomposition level of the waste inside the waste layer and is used commonly as one of the indicators in Japan. On the other hand, considering the difficulty of identifying the composition of gas without monitoring device, the Project started to monitor the gas temperature as the first step.

Landfill gas monitoring was started with a cooking thermometer usually used for cooking turkey. The C/P check the temperature of the gas at the top of the venting pipes.

First trial showed that temperatures from some pipes were relatively high with 140 degree Fahrenheit (60 degree Celsius) and other pipes were same as air temperature, which could be considered that these pipes were damaged or the waste layer around the pipes was already decomposed.



Cooking thermometer

After the trial, C/Ps understood the meaning of monitoring the gas temperature and they will continue the monitoring quarterly.

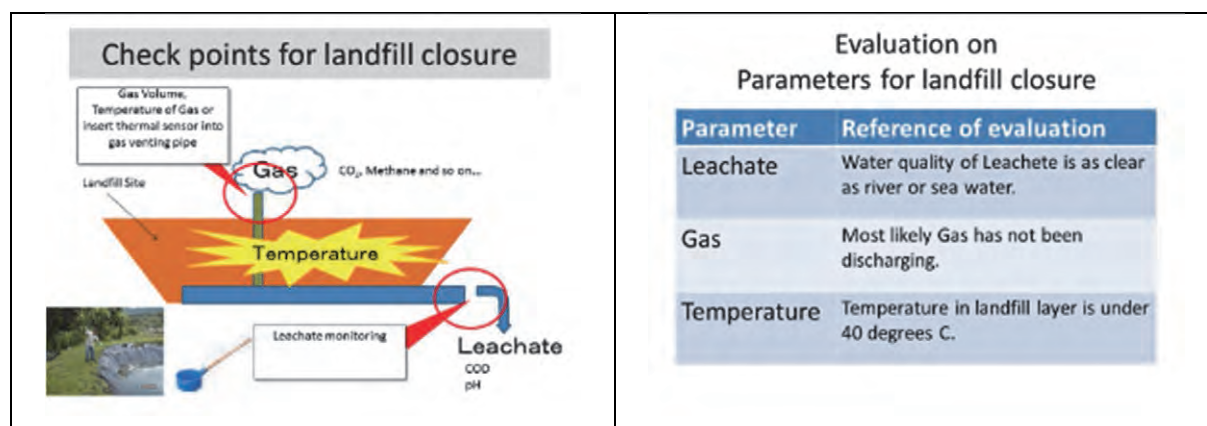


Figure 10-4: Proposed monitoring parameters



Discussion on the closure plan of M-Dock landfill



Monitoring the temperature of gas

a.2. Advice on the planning of a new landfill

It was shared by the C/Ps that Aimeliik State agreed verbally to use their land for a new national landfill site. The C/Ps and the Expert team visited the proposed site. It took about 30 minutes from the central area of Koror State, the distance is about 16km by a GPS, and 200m inside from the main US compact road with hilly terrain.

EIA was conducted by US private consultant company in 2009 when Aimeliik State was planning to construct a State landfill in this area. C/Ps was thinking of utilizing the report as an EIA report of the new landfill after updating some information and would submit the report to EQPB.

After the site visit, the Expert team explained the basic idea of EIA and compared the assessment items reported in the previous EIA with the requirement in EQPB regulation with C/Ps.

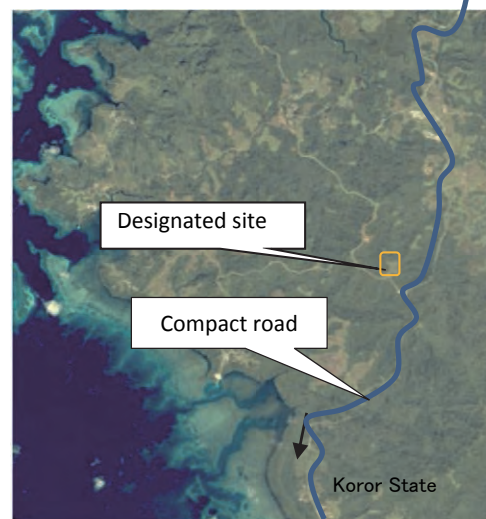
The table below shows the summary of comments from the Expert on the existing report. C/Ps will respond to the comments by updating or modifying the report.

表 10-1: Comments on the existing EIA report

Contents of the Report	Comments from the Expert
1. Size of the site The Report says that the proposed site is 5,282m ² .	This site seems to be proposed only for the use of Aimeliik State. It needs to update the information of the size, and consider the necessary size to be used as a national landfill
2. The boundary The boundary in the report is not clearly described, so it is difficult to identify it from the document.	Same as above, the minimum required size as a new national landfill is recommended to set, and then discuss the boundary based on the required size.
3. The location of the 'proposed site' and 'Alternative site' The report have two words 'proposed site' and 'alternative site' but it is not clear the difference of the locations from the report.	The EIA should be conducted on the site where is conclusively designated as a final decision, otherwise there is no meaning to conduct EIA.
4. Some information is old The M-Dock landfill is explained as open dumpsite.	The information about the M-Dock in the report is the situation before the rehabilitation. It should be updated.
5. The liner The basic design of the new landfill designed in the report includes the HDPE liner at the bottom of the site and drainages for the ground water.	The liner and groundwater drainage will increase the construction cost and require difficult maintenance. It is recommended to design a landfill by considering feasibility and capacity of finance, construction skills and operation & Maintenance for Palau.
4. Others	The EIA report should follow the assessment items required by the EQPB regulation, such as monitoring wells, leachate monitoring, buffer zone, the thickness of the cover soil are not included in the existing EIA report.



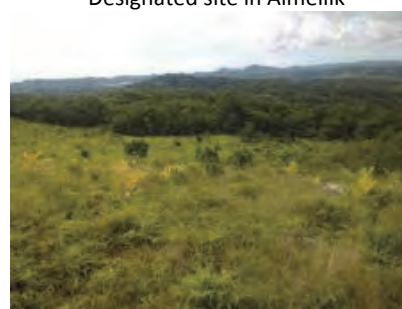
Map of the M-Dock landfill and designated site



Designated site in Aimeliik



Site visit to the designated site



Designated site in Aimeliik

b. Activity of the Second Dispatch (from 17th to 30th of August, 2014)

b.1. Advice on closure of the M-Dock landfill

After the first dispatch in June when a C/P started monitoring the temperature of the gas from the venting pipes in the landfill site, the C/P continued monitoring the temperature. Based on the collected data, the Expert explained how to read the result of the monitoring.

It was founded that there were four pipes from which the C/P could not identify any gas emission. It seemed that some pipes were damaged or the waste around the area was already stabilized. On the other hand, the new disposal area showed high temperature meaning active decomposition.

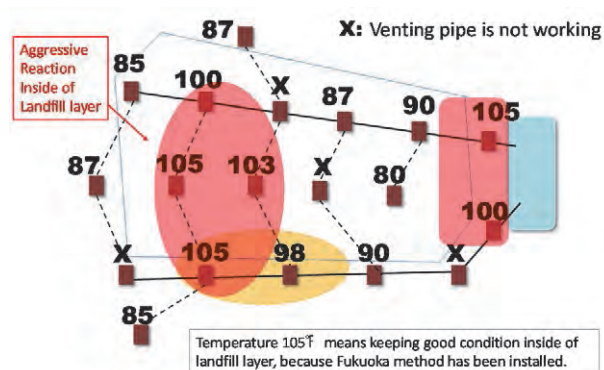


Figure 10-5: Temperature monitored at the gas venting pipes in August 2014

Monitoring the temperature of the gas with a thermometer was not expensive and the result can tell many information about the landfill. The long-term monitoring data can be the one of the parameters to estimate the stabilization of the landfill.

Also the Expert gave some advice on the daily operation to the operators in the weekly meeting of the staffs;

- ✓ Good daily compaction and leveling of the waste by a bulldozer.
- ✓ To improve the segregation of cardboards and green waste.
- ✓ To discuss the idea to minimize waste and recycling.
- ✓ To install sign boards to lead the vehicle to the dumping spot to minimize the operation area.

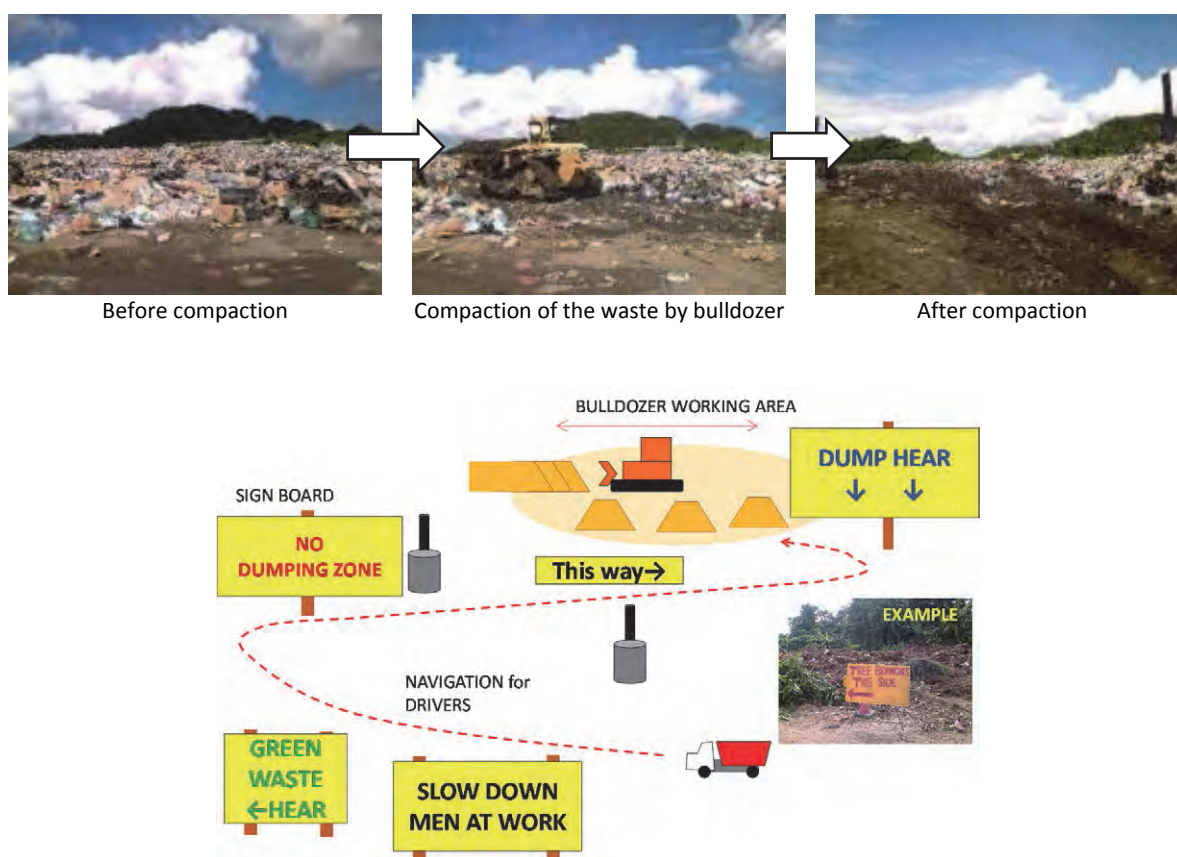


Figure 10-6: One example of installing the sign boards

b.2. Advice on the a new landfill

There was not much progress on the development of new landfill; the land survey at the designated site was not conducted yet. Furthermore, it was informed by the C/Ps that there was misunderstanding in the Government on the idea of the number of the new landfill; therefore, BPW needed to remind the decision reached in the Task Force and explained the feasibility to have one national landfill from the financial and management aspects.

On the other hand, BPW confirmed with Aimeliik State to conduct the land survey.

The Expert provided rough cost estimation for two cases; 1) constructing one national landfill in Palau and 2) constructing landfills in each State.

c. Activity of the Third Dispatch (from 6th to 13th of December, 2014)

c.1. Advice on the management of the M-Dock landfill

C/Ps reported a fire in early December at the tire stock area of M-Dock landfill. Since the operators of BPW and fire fighters did their best and put the fire down in one and half days, it burned many tires but fortunately did not spread to the general waste area. The incident of the fire was on the top page of the local newspaper.

There were some progresses in the operations of the landfill site based on the advice by the Experts;

- ✓ Operators conduct daily compaction and leveling of the waste by a bulldozer adequately→ After the bulldozer was down, SWM-BPW was renting an excavator to continue the leveling of the waste. Operators are now repairing the bulldozer.
- ✓ Green waste and card board wastes are segregated well → The operators promoted more segregation including bulky waste for recycling in the future.
- ✓ The operators discussed the idea to minimize the waste→ The operators promoted more segregation including bulky waste for recycling in the future.
- ✓ Install sign boards to lead the vehicle to the dumping spot to minimize the operation area→ Three sign-boards were made and will be installed after the bulldozer is repaired for preparing the dumping spot.

Although there were still some remaining issues in the operation due to the mechanical trouble on the heavy equipment, C/P who is a supervisor of the landfill led other operators and showed good improvement in the operation and maintenance of the landfill.



Segregation area for bulky waste

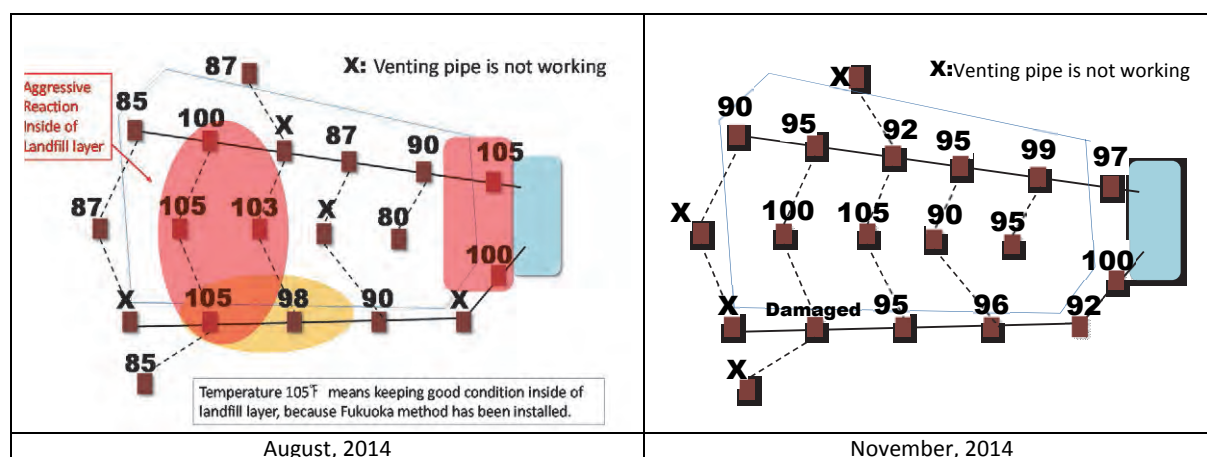


New sign boards



New sign board

Also the C/P developed a monitoring sheet of gas temperature by himself and kept monitoring quarterly. The data of temperature monitored in November is shown below.



A new excavator will arrive in December and a tire shredder will come in February 2015, which will further improve the operations at the landfill site and reduce the volume of waste tire waste occupying some space of the landfill site for segregation space.

c.2. Advice on conceptual planning of the new landfill

In November, it was discussed on the idea of the new landfill among State Governors, EQPB, Governor's office and other concerned agencies and reconfirmed to have one National landfill site. However, there was no other progress about the new landfill site. Therefore, the Expert reminded the need to conduct the land survey including a contour map before the next dispatch of the Expert in March 2015 to assist in designing.

Developing a collection plan was also one of the key components after the new landfill is relocated to Babeldaob since the collection service in Babeldaob will be provided by the National Government, not State Government which are currently responsible for providing collection service.



Exercise of planning collection service

A small workshop was held in SWM- BPW to exercise how to make a collection plan and how to estimate the cost of the collection service in Babeldaob. Some hypothetical figures of waste generation were used for this exercise.

For the actual planning of the collection service, the accurate generation data is necessary, and it was recommended by JICA Expert to conduct a 'Time and Motion Study' in 1 or 2 selected States in Babeldaob in cooperation with KSG.

d. Activities of the Fourth Dispatch (from 28th of February to 14th of March, 2015)

d.1. Advice on closure of the M-Dock landfill

The waste was well compacted and the other operations were also well conducted.

In addition, designating the dumping area before dumping and compaction of the waste with regular soil cover can further improve the condition and its visual impact of the landfill site. It is required to give more information to each operator to understand the meaning of these works.



M-Dock landfill site



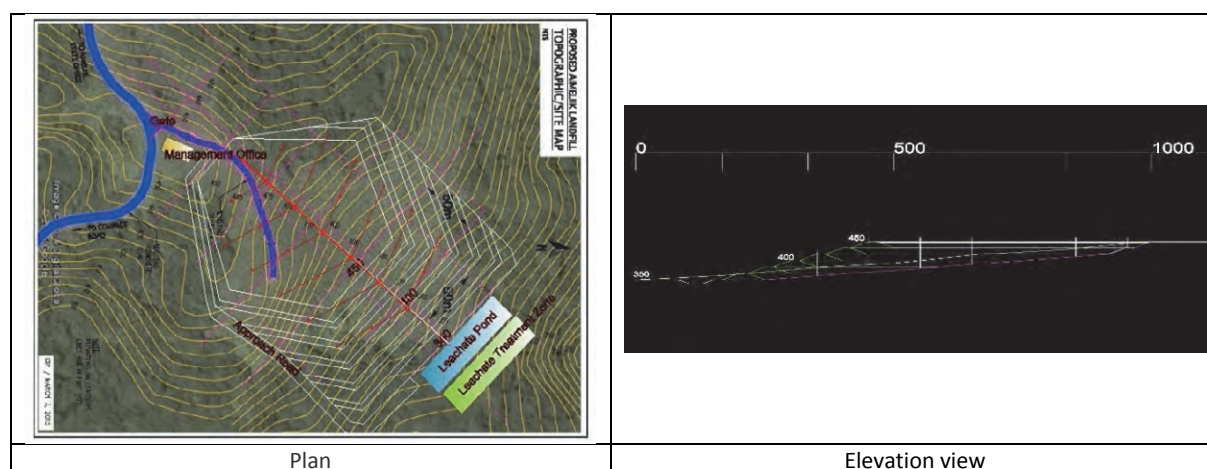
Inside the landfill site

d.2. Advice on a new landfill

It was reported by C/Ps of SWM-BPW that Division of Capital Improvement Project under BPW conducted the land survey at the proposed site in Alimeliik and BPW secured budget to outsource EA with development of a basic design of the new landfill from Taiwan Fund.

The Experts discussed with C/Ps of SWM-BPW on the basic plan of new landfill and drafted the conceptual plan. Since the C/Ps of SWM-BPW had a basic knowledge of civil engineering, they were able to have clear image of layout planning and cross section views of landfill.

Since an engineer of the Division of Capital Improvement Project can use CAD for drafting design, the developed conceptual plan will be refined by him and the C/Ps of SWM-BPW. SWM-BPW expected the subcontractor to complete the EA and the basic design by December 2015.



e. Activities of the Sixth Dispatch (from 26th of July to 25th of August, 2015)

e.1. Monitoring the M-Dock landfill

There were some improvements observed in the M-Dock landfill. A new excavator was provided at the landfill and dumping lots and approach road were built inside the landfill, also a small-size of leachate recirculation system treatment was built by the operators and leachate has been monitored and recorded regularly.

According to the result of monitoring, the leachate level was stable and gas temperature from the landfill was also stable within the certain range, so it could be said that the semi-aerobic condition has been maintained.



Prepared approach road



Excavator at the dumping zone



Recirculation system made of hose



Panoramic view of M-Dock landfill (provided by C/P)

e.2. Finalizing the Closure Plan of M-Dock landfill

The closure plan of the M-Dock landfill was updated and finalized considering the current condition. The following points were revised.

- ✓ Monitoring parameters and frequency after closing: In the existing closure plan, the leachate would be monitored with a potable measuring equipment; however it hasn't been installed yet. The monitoring parameters and methods with frequency were revised to be more simple, easy and feasible at the site.

Table 10-8: Monitoring parameters and frequency

Parameters	Frequency
pH (Test paper)	<ul style="list-style-type: none"> 1/month (After the completion of hauling waste 0-3rd yr) 1/2months(After the completion of hauling waste 4-7th Yr) 1/3months (After the completion of hauling waste 8th Yr-)
COD (Pack Test)	
[Choose One Parameter] Turbidity, Transparency or SS	
Leachate Temperature	
Venting Gas Temperature	<ul style="list-style-type: none"> 1/3months

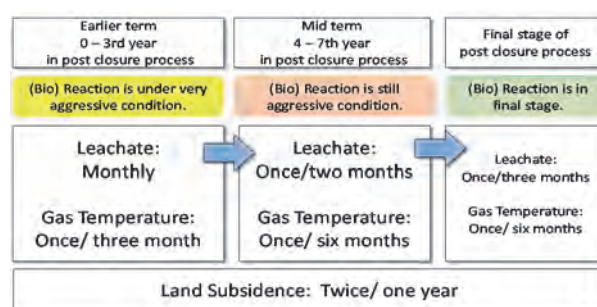


Figure 10-7: Concept of the monitoring after closing

- ✓ Final cover soil: the thickness of the final soil cover was suggested at least 18 inches in the existing plan; however, it is recommended with 3feet, and slope on the surface of the landfill should be also considered for draining the rain water.

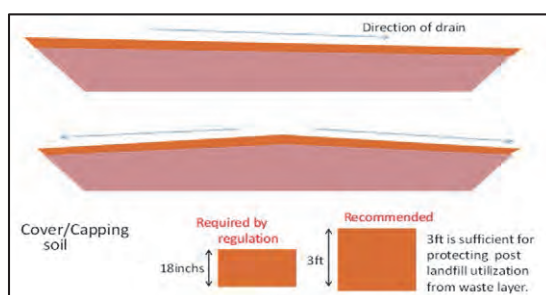


Figure 10-8: Design of the final cover soil

- ✓ Monitoring the land subsidence: the figure was added to explain the monitoring method of subsidence of the land.

Table 10-9: Monitoring the subsidence of the landfill

Parameters	Frequency
Land Subsidence	After the completion of hauling waste, measuring and comparing the target height level with the base point level (frequency: 1/6months)

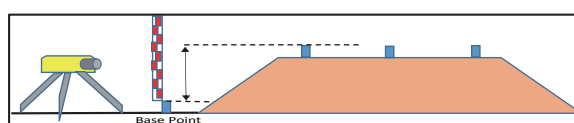


Figure 10-9: Monitoring method of the subsidence

- ✓ Evaluation criteria of stabilization: this component was added in the Closure Plan. The stabilization is evaluated with the following criteria.

Table 10-10: Parameter and evaluation criteria of the stabilization

Parameter	Reference of evaluation
Leachate	Leachate is stabilized under 45 mg/L-COD for consecutive 2 years.
Gas	Gas temperature is kept under 104 degrees F for consecutive 2 years.
Land Subsidence	To avoid the delay of utilizing the site in the future, the subsidence level at the site must be evaluated carefully for the future land use.

It was recognized that this draft plan should be submitted to EQPB for its review and official authorization.

e.3. Monitoring the progress of the new landfill

SWM-BPW was preparing the bid to outsource the EA and design of the basic plan in one contract and held a open briefing session to private companies. This first activity was funded by Taiwan Government; therefore, only local and Taiwanese companies were able to participate in the bidding. On the other hand, SWM-BPW submitted an application to Japanese Official Development Assistance (ODA) for construction of the new landfill. EA and basic design was expected to be started in December 2015.

f. Activities of the Seventh Dispatch (from 28th of November to 12th of December. 2015)

f.1. Monitoring the progress of the new landfill

It was explained by the Director of BPW that BPW decided to redo the bid in January 2016 because there were no capable company participated in the bidding to conduct the EA, and the Director also shared that they had an election on State Governor in Ailmeliik State and they will have a new Governor from 2016. Therefore, it is required for SWM-BPW to explain the plan of the new landfill to obtain the cooperation from the new Governor again.

10.2.5 Output5: Training program on 3R / SWM is developed

a. Activity of the Second Dispatch (from 17th to 30th of August, 2014)

a.1. Preparation of a SWM Text Book

Based on a proposal from the Manager of SWM-BPW, it was planned to develop a SWM text book as a training material for the next in-country training. This text book will be utilized not only for the training but also for a promotion exam in the BPW in the future. Some other Government agencies started these promotion exam in Palau.

The level of the text book will be basic and include general information about the. The text book will be drafted by C/Ps of SWM-BPW and SWM-KSG.

Table 10-11: The idea of the contents of the text book

Category	Items	Charge in
Introduction	What is 3R	BPW
	History of SWM of Palau	BPW, Koror
Law and Regulation	Existing Law	BPW
	Existing Regulation	BPW
Survey	Generation Survey+ Composition	Koror
	Incoming Survey	BPW
Collection	Time and Motion Study	Koror
	Equipment	Koror
	Planning	Koror
	Segregated collection	Koror
Landfill	System (Semi-aerobic)	BPW
	Operation	BPW
	Closure	BPW
	Heavy equipment	BPW
3R	3R	BPW
	Composting	Koror
	CDL	BPW
	Exporting	BPW
Awareness	Method	Koror
	Tools	Koror
Finance	Cost of SWM	BPW
	Method to generate the budget (tipping fee, collection fee)	BPW

After a couple of months, since the SWM guideline for the Pacific Regional was decided to be revised/developed under J-PRISM through workshops with C/Ps from all other C/P countries including Palau, the C/P decided to follow and use the guideline while the preparation of text book was canceled.

a.2. Preparation for the in-country training program

As for the next in-country training, it was agreed to modify the objectives and contents of the training to be more practical, since C/Ps and the Expert recognized the actual situation of SWM in the State after visiting Peleliu where no staff was assigned to SWM and limited capacity in the PWs.

b. Activity of the Third Dispatch (from 6th to 13th of December, 2014)

The theme and objectives of the in-country training were discussed again with C/Ps of SWM-BPW and SWM-KSG, and it was changed to include more practical contents based on the ideas that 1) the trainees can implement the activities in their States soon after the training and 2) the result could be utilized for the new landfill construction. The general contents of the training are;

- ✓ Target: staffs(1-2) from each States(PW) (the trainees will be selected by State Government)
- ✓ Tentative schedule of the training: 28th of April, 2015- 6th of May, 2015
- ✓ Objectives:
 - a) The participants understand how to conduct the WACS
 - b) The participants understand how to use the data from WACS to improve the SWM in the States
 - c) The participants understand on-going activities of SWM in Palau
 - d) The participants understand the 3R

In order to understand the situation and level of the SWM of the Stats and gain more cooperation from them, C/Ps of SWM-BPW will visit each State to explain the training and collect information. The training schedule will be finalized in the next dispatch.

c. Activities of the Fourth Dispatch (from 28th of February to 14th of March, 2015)

Plan of the In-Country training was finalized with C/Ps of SWM-BPW and SWM-KSG with the Expert. The schedule was postponed to August since some C/Ps would join JICA training during this time, and the venue of the training was selected at Melekeok State building centrally located in Bbeldaob.

Table 10-12: The Tentative In-Country Training Program

	Mon	Tue	Wed	Thu	Fri
AM	- Orientation - Lecture: SWM in Palau	- Collect& weigh waste	- Collect& weigh waste	- Collect& weigh waste	- Analyze data - Workshop: Develop Action Plan
PM	- Lecture: Survey method - Visit sampling households to explain the survey	- Accumulate data - Discussion with each State	- Accumulate data - Discussion with each State	- Accumulate data - Lecture: how to utilize the data/ how to develop Action Plan	- Presentation of Action Plan -

d. Activities of the Sixth Dispatch (from 26th of July to 25th of August, 2015)

d.1. Preparation of the In-Country Training

In the training, C/Ps became trainers and they were required to meet the objectives of the training that trainees understood how to conduct WACS. Therefore, each C/P had to understand clearly all the procedures of the WACS. Several meeting were held to explain the WACS from the Expert and the methods of WACS for the training was planned with C/Ps based on WHO guideline.

Other preparations such as selecting the sampling houses for the WACS during the training and venue in Melekeok State were arranged by C/Ps, JOCV, staffs of the Meleleok State and the Expert in advance.

d.2. In-Country Training

In-Country Training was held from 10th to 14th of August (5days) and staffs from 14 States including Koror State participated in the training.

✓ Objectives of the training

- Trainees understand how to conduct WACS
- Trainees develop the Plan to conduct the WACS in their each State
- Trainees conduct WACS after the Training

✓ **Trainees participated from States:** the number of the participants was different by day and the table below shows the trainees who received certifications at the end of the training.

	Name	Organization
1	Dudley Uro	Airai State
2	Sengebau Masami	Airai State
3	Pamfila Techur	Airai State
4	Dennis Omengkar	Melekeok State
5	Standford Blaluk	Melekeok State
6	Forster Ngirturong	Aimeliik State
7	Salui Inacio	Ngiwal State
8	Stephanie Lorenzo	Ngchesar State
9	Ismael Renguul	Ngiwal State
10	Cluster Iechad	Ngaraard State
11	Mercy Beketaut	Ngardmau State
12	Matsuda Ngiraikelau	Ngeremlengui State
13	Inabo Secharmida	Ngeremlengui State
14	Clansen Iechad	Ngatpang State
15	Khan Cruz	Peleliu State
16	Noel Ngedebuu	Angaur State
17	Jesse Marcil	Angaur State
18	Toshio Kelmal	Kayangel State
19	Colombus Edeboi	Kayangel State
20	Samuel Bemar	Sonsorol State
21	Bernard John	Sonsorol State

✓ Trainers/ Facilitators/ Organizer

	Name	Organization	Title
1	Mr. Calvin Ikesiil	SWM-BPW	Manager
2	Mr. Mengkur Rechelulk	SWM-BPW	Educator
3	Ms. Jessica Emesiochel	SWM-BPW	SWM Coordinator *Due to the birth close, not participated in the training
4	Ms. Keiko Kitahara	SWM-BPW	JOVC
5	Mr. Selby P. Etibek	SWM-KSG	Manager
6	Mr. Ferris Baulechong	SWM-KSG	Supervisor of Waste generation rate survey
7	Mr. Leeroth Wilhelm	SWM-KSG	Technical assistant
8	Mr. Rondy Ronny	SWM-KSG	Educator assistant
9	Ms. Zena Kulie Rengulbai	EQPB	Outreach officer
10	Ms. Risa Muranaka	J-PRISM	Expert

✓ **Day 1: 10th of August (Monday)**

First of all, the purpose of the training was explained by the C/Ps (trainers) of SWM-BPW and SWM-KSG and they gave presentations about their waste management activities conducted by each agency. In the afternoon, the method of WACS was explained and the trainees were divided into three groups (Group A, B and C), and each group with 6 to 7 trainees visited 6 to 7 sampling houses to interview, explain about the WACS and hand over the garbage bags for sampling.



Introduction (explaining objects and contents of the training)



Presentation (by Leeroth)



Explanation and interview at the sampling house

✓ **Day 2: 11th of August (Tuesday)**

The garbage bags were collected and weighed, but this first garbage bags were discarded based on the WHO guideline because some household might put old waste in the garbage bag by mistaking the WACS as clean-up campaign. In the afternoon, from day 2 to 4, a consultation meeting were held with small number of the participants and discussed unclear points of the survey and their concerns of waste management in their State.



Weighing the waste generated from each household



Check the data



Consultation meeting of Group A

✓ **Day 3: 12th of August (Wednesday) and Day 4: 13th of August (Thursday)**

In the morning, the garbage bags from the sampling households were collected and weighed. In the Day4, trainers explained how to calculate the collected data. The calculation of WACS is simple but some trainees were not good at figures and it took time for them to understand but the trainers explain it conscientiously.



Weighing waste



Segregation of waste by group



Explanation of calculation

✓ **Day 5: 14th of August (Friday)**

Trainees from each State developed the survey plan to conduct the WACS in each State after the training and the representatives of each State presented the plan. Most of the State WACS were planned to be conducted between August and October.

In the afternoon, the trainees took an exam prepared by the trainers. After the exam, trainers explained some points of the exam, and 21 trainees received certifications at the end of the training.



Disclosure of the test and explanation



Presentation of state WACS plan
(Kayangel State)



Award of Certification from Minister
of MPIIC



Group photo

✓ **Cost of the training**

The total cost was approximately USD 6,000 which was mainly shared by J-PRISM and BPW, and KSG provided transportation of the collected garbage bags.

Table 10-13: Summary of the cost of the In-Country Training

	Items	Unit Price		Amount	Sub Total (USD)	Note	(source)
Materials	bucket (5gal)	11.95	x	15	179.25		J-PRISM
	Scale	3.00	x	15	45.00	purchased in Japan	J-PRISM
	Glove	13.00	x	16	208.00		J-PRISM
	Trash bag (33Gal)	100.00	x	4	400.00		J-PRISM
	Tarp	22.00	x	15	330.00		J-PRISM
	Plastic container (1gal)	3.50	x	20	70.00		J-PRISM
	label	2.35	x	2	4.70		J-PRISM
	Tape	2.55		3	7.65		J-PRISM
	Certificate paper	8.00		1	8.00		J-PRISM
	battery	1.30		9	11.70		J-PRISM
	Fuel	5.00	x	50	250.00		J-PRISM
	Truck (collect waste)	0.00	x	1	0.00		BPW and KSG
	Sanitizer	10.00	x	2	20.00		BPW
	paper towel	5.00	x	2	10.00		BPW
Stationary	Calculator	4.00	x	15	60.00		BPW
	Pen	4.00	x	5	20.00		BPW
	Note	0.40	x	30	12.00		BPW
Lunch/coffee break	Coffee break	5.00	x	180	900.00		J-PRISM
	Lunch	9.00	x	180	1,620.00		J-PRISM
	Pet water bottles	0.70	x	180	126.00		J-PRISM
	Service charge				65.50		
Accommodation	Hotel	53.60	x	21	1,125.60		J-PRISM
Allowance	only for outer island participants	15.00	x	35	525.00	USD15/day	BPW
Total					5,998.40		

✓ Evaluation of the Training

There were two evaluations conducted at the end of the training; trainees evaluated the training with its management, preparation and program, and trainers evaluate the understanding level of the trainees based on the results of the exam.

The following table shows the result of the exam. There are a few questions resulted with low accuracy rate highlighted with light orange in the table. This is because of misunderstanding of the trainees of the method of WACS. WACS conducted in the training shortened the sampling days due to the limited training days while the actual survey days should be longer. Therefore, the trainers explained these points again.

Table 10-14: Result of the test

	Questions	Correct answer	Wrong answer	Accuracy rate
1	What data can you get from WACS?	18	3	86%
2	Can the data from the WACS use to estimate the capacity of the landfill?	19	2	90%
3	Is this survey a part of clean up the waste from villages?	13	8	62%
4	How many days you collect waste from households in WACS?	8	13	38%
5	During the training, we collect waste from 20 households, but when you do WACS in your State after this training, how many households you collect?	14	7	67%
6	How many categories do we separate in this Training?	9	11	43%
7	How often do you collect waste during this Training?	19	2	90%
8	Based on the WHO Guideline, is the first day waste collection data included?	17	4	81%
9	Can resident put old waste in the garbage bag?	20	1	95%
10	What is the first procedure of WACS?	19	2	90%

In the evaluation on the training, many trainees responded that the training program was well prepared and managed, answering that the trainees could learn the WACS well and enjoyed planning the WACS for each State. Also there were several requests to continue similar training about waste management. Although this was the first challenge for the C/Ps to train the State staffs, they could transfer the knowledge to the trainees well and the flow of the training was smooth. It is expected that SWM-BPW would continue these trainings.

Table 10-15: Result of the evaluation of the Training

Program Coverage						
1	Coverage	incomplete	just right	too broad		
			19			
2	Level	too elementary	just right	too advanced		
			6	3		
3	Time Allocation					
1)	Lectures	too little	just right	too much		
			19			
2)	Site Work	too little	just right	too much		
		1	18			
3)	Develop your survey plan	too little	just right	too much		
			19			
4)	Consultation with State staffs	too little	just right	too much		
		1	18			
5	Duration	too short	just right	too long		
		1	18			
COURSE CONDUCT						
1	Technique Method	very poor	just right	outstanding		
		1	5	13		
2	Application of techniques and knowledge (chance to make good use of techniques and knowledge attained)	few	too some extent	quite many		
		1	15	3		
ADMINISTRATION AND MANAGEMENT						
1	Coordination	very poor	good	outstanding		
			4	15		
2	Pre-course information	very poor	good	outstanding		
			7	12		
3	Housing & food	very poor	good	outstanding		
			7	12		
4	Communication among participants	very poor	good	outstanding		
		1	9	9		
TRAINING OUTCOMES						
1	Attainment of technique and knowledge	little	to some extent	fully		
			8	11		
2	Achievement of objectives	not met	to some extent	fully met		
			2	17		
3	Satisfaction level of expectation	not fulfilled	to some extent	completely fulfilled		
			5	14		
DAY1 (Monday, 10 th Aug.)						
SESSION 12:30-14:00		Presentation: Survey method by Leeroth				
1	How was the explanation of the presentation?	Poor	Fair	Good	Very Good	Excellent
			1	2	5	11
2	Did you understand why you lean waste survey?	Poor	Fair	Good	Good	Excellent
				3	3	13
3	Did you understand the survey method clearly?	Poor	Fair	Good	Very Good	Excellent
				5	4	10
SESSION 14:00-16:00		Visit Houses to explain about the survey				
1	The object of the activity is clearly explained?	Poor	Fair	Good	Very Good	Excellent
				5	3	10
2	The activity was well arranged?	Poor	Fair	Good	Very Good	Excellent
				2	6	11
3	Did you understand the purpose and how to do interview the residents?	Poor	Fair	Good	Very Good	Excellent
				2	5	12
DAY2 (Tuesdav. 11 th Aug.)						

SESSION 9:00-11:30		Site Work: Collect waste				
1	The object of the activity is clearly explained?	Poor	Fair	Good	Very Good	Excellent
				2	7	10
2	The activity was well arranged?	Poor	Fair	Good	Very Good	Excellent
				2	6	11
3	Did you understand the method of the survey clearly?	poor	Fair	Good	Very Good	Excellent
				3	6	10
SESSION 13:30-16:00		Discussion and consultation with States (Total 8 answers) *Please fill in only if you joined the discussion on this data				
1	The discussion was helpful to plan the survey in your State?	Poor	Fair	Good	Very Good	Excellent
				1	2	5
2	The discussion was well arranged?	Poor	Fair	Good	Very Good	Excellent
				1	1	6

DAY3 (Wednesday, 12th Aug.)

SESSION 9:00-11:30		Site Work: Collect waste and separate				
1	The object of the activity is clearly explained?	Poor	Fair	Good	Very Good	Excellent
				1	7	11
2	The activity was well arranged?	Poor	Fair	Fair	Very Good	Excellent
				2	5	12
3	Did you understand the method of the survey clearly?	Poor	Fair	Good	Very Good	Excellent
				3	6	10
SESSION 13:30-16:00		Discussion and consultation with States (Total 5 answers) *Please fill in only if you joined the discussion on this data				
1	The discussion was helpful to plan the survey in your State?	Poor	Fair	Good	Very Good	Excellent
					4	1
2	The discussion was well arranged?	Poor	Fair	Good	Very Good	Excellent
				1	3	1

DAY4 (Thursday, 20th Feb.)

SESSION 9:00-11:30		Site Work: Collect waste and separate				
1	The object of the activity is clearly explained?	Poor	Fair	Good	Very Good	Excellent
				3	8	8
2	The activity was well arranged?	Poor	Fair	Good	Very Good	Excellent
				2	6	10
3	Did you understand the method of the survey clearly?	Poor	Fair	Good	Very Good	Excellent
				3	6	10
SESSION 13:30-16:00		Discussion and consultation with States (Total 6 answers) *Please fill in only if you joined the discussion on this data				
1	The discussion was helpful to plan the survey in your State?	Poor	Fair	Good	Very Good	Excellent
				1	2	3
2	The discussion was well arranged?	Poor	Fair	Good	Very Good	Excellent
				1	1	4

DAY5 (Friday, 14th Aug.)

SESSION 9:00-12:00		Develop a survey plan and presentation by each State				
1	The object of the activity is clearly explained?	Poor	Fair	Good	Very Good	Excellent
				3	7	8
2	Did you understand how to fill in the data sheet?	Poor	Fair	Good	Very Good	Excellent
				3	5	10

What was your most interesting and beneficial session?

Day 1

Presentation: Waste management activities of National Government (BPW)	4
Presentation about waste management activities of Koror State	4
Presentation on waste survey method	5
Visit households to explain about the survey	7

Day 2

Site Works :Collect waste	4
Fill in Data	3
Group discussion	0

Day 3

Site Works : Collect waste and segregate	5
Fill in Data	3
Group discussion	2

Day 4

Site Works: collect waste and segregate	2
Fill in Data	4
Group discussion	2

Day 5

Develop a survey plan	9
Presentation by each State	5

Comments

It is good Program but limited number of Presentations
My first time joining this workshop so I have not fully gained my objectives and satisfaction.
I need more of the trainings
Communication among trainees and outside people is very important

I could learn How to communicate with households member and how to calculate the rate of each house of their waste
Everything about this survey is very clear to me
Venue was a little too hot
I understood how Koror State Redemption center works, how each machine operates and very useful information was explained.
Small group discussion was very helpful, it allowed me to fully understand the concept of the form what need to be done.
I can learn most of waste
I learned how to approach households
The training was well organized, in perfect order and well presented
I learn some ideas that can help my State
I learn how to separate, scale and calculate the waste
I learn a lots and how to conduct the survey and share information with other States
Administration is well done
I can discuss with State and the people
What I learned most was to minimize the waste in my house and my State
I learn how to do this survey and how to persuade people in my State
I learn how important to segregate the waste

Request

To have more trainings held in my State so people can learn how to minimize their waste (Melekeok)
I want to learn how to make a better dumpsite like M-Dock landfill (Ngchesar)
I want to learn how to make trash cans (segregation station in Koror) (Ngchesar)
More training to others (Melekeok)
The whole package was very interesting (Airai)
To visit different household ad work with new idea was good
Bring more people from each State to participate (Anguar)
I want to learn how to manage the dumpsite (Sonsorol)
I want to learn marine debris and environment (Ngiwal)
I want to learn how to collect and measure waste that reached out shores from outside (Ngiwal)
Trash bins for each State (melekeok)

Recommendation

Thank you and come back with more interesting plans on how to minimize the waste (Melekeok)
Have a reception after trainnig (Ngchesar)
Choose better vender to be used for the trainnig because State building is very hot (Airai)
Work with Foreigners (Ngiwal)
Conduct another training (Melekeok)

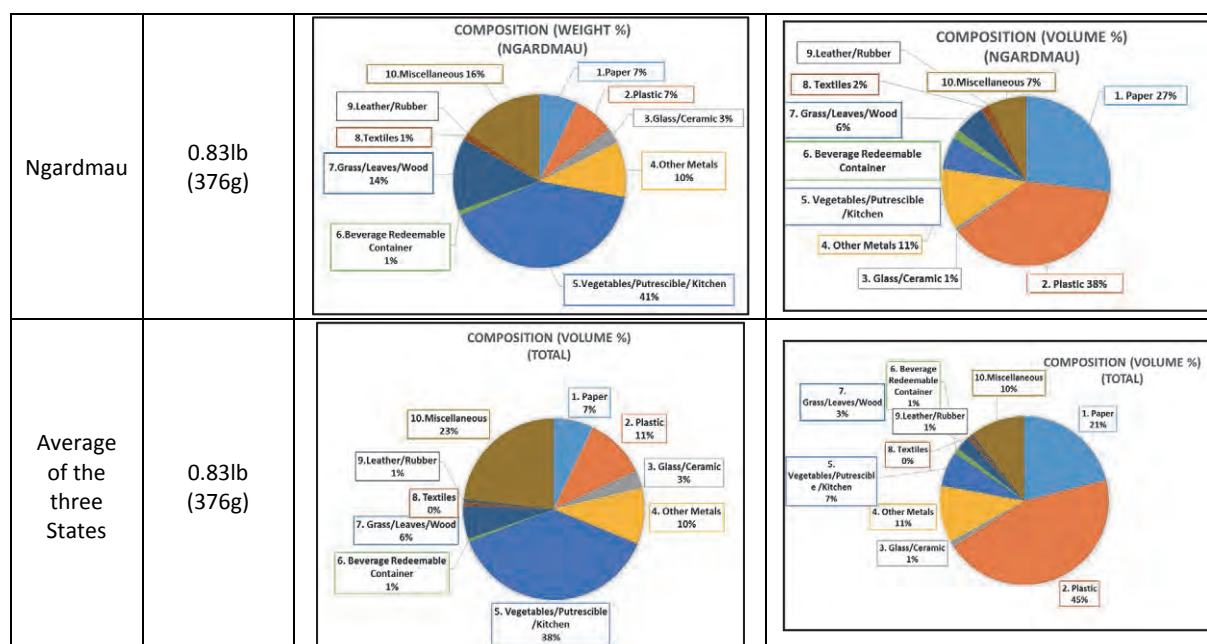
e. Activities of the Seventh Dispatch (from 28th of November to 12th of December, 2015)

e.1. Follow-up of the In-Country Training

The trainees of the In-Country Training had homework to conduct WACS after the training in each State, and 4 States conducted the WACS after the training and results from 3 of 4 States could be used as data. The results of 3 States (Ngaraard State, Ngchesar State and Ngardmau State) were summarized in the table below.

Table 10-16: Waste generation amount in Babeldaob

State	Waste generation (lb/capita/day)	Composition (Weight) %	Composition (Volume) %
Ngaraard	0.74 lb (335g)	<p>COMPOSITION (WEIGHT %) (NGARAARD)</p> <ul style="list-style-type: none"> 1. Paper 6% 2. Plastic 9% 3. Glass/Ceramic 4% 4. Other Metals 8% 5. Vegetables/Putrescible/Kitchen 44% 6. Beverage Redeemable Container 0% 7. Grass/Leaves/Wood 0% 8. Textiles 0% 9. Leather/Rubber 0% 10. Miscellaneous 29% 	<p>COMPOSITION (VOLUME %) (NGARAARD)</p> <ul style="list-style-type: none"> 1. Paper 19% 2. Plastic 40% 3. Glass/Ceramic 2% 4. Other Metals 10% 5. Vegetables/Putrescible/Kitchen 0% 6. Beverage Redeemable Container 0% 7. Grass/Leaves/Wood 0% 8. Textiles 0% 9. Leather/Rubber 0% 10. Miscellaneous 18%
Ngchesar	0.93lb (420g)	<p>COMPOSITION (WEIGHT %) (NGCHESAR)</p> <ul style="list-style-type: none"> 1. Paper 8% 2. Plastic 16% 3. Glass/Ceramic 3% 4. Other Metals 11% 5. Vegetables/Putrescible/Kitchen 30% 6. Beverage Redeemable Container 0% 7. Grass/Leaves/Wood 3% 8. Textiles 0% 9. Leather/Rubber 0% 10. Miscellaneous 27% 	<p>COMPOSITION (VOLUME %) (NGCHESAR)</p> <ul style="list-style-type: none"> 1. Paper 17% 2. Plastic 55% 3. Glass/Ceramic 1% 4. Other Metals 11% 5. Vegetables/Putrescible/Kitchen 0% 6. Beverage Redeemable Container 0% 7. Grass/Leaves/Wood 2% 8. Textiles 0% 9. Leather/Rubber 2% 10. Miscellaneous 8%



With a supplement data of the waste generation amount in Koror State is 0.88lb/capita/day⁹ (399g), it could be estimated that;

- Daily Household Waste Generation from Babeldaob (9 States) : **2.2t**
- Daily Household Waste Generation from Koror State : **5.1t**
- Daily Household Waste Generation in Palau(except for outer island States) : **7.3t**

These data can be utilized in planning the new integrated collection service in Babeldaob; while it is still required for SWM-BPW to assist outer island States to carry out the WACS so that the waste management in the outer islands can be improved.

⁹ Feasibility study of JCM Project in 2015, Amita Holdings Co., Ltd

10.2.6 Other activities related to SWM

This section reports the activities related to SWM but not included in the PO of the J-PRISM including JCCs and Capacity Assessments.

a. Activity of the Second Dispatch (from 17th to 30th of August, 2014)

a.1. Upgrading the SWM office

The SWM-BPW was under the Division of Road and Ground in BPW and reorganized as a Division. This was one of the progress of the intuitional development which was formerly discussed in the JCC.

In addition, the SWM-BBPW increased the number of staff members and upgraded the office supply and working environment such as internet, new computers, stationery and a projector, which strengthened the capacity of the organization.

a.2. Activity in Peleliu

Based on a request from State Governor of Peleliu to JICA office to assist in the SWM in Peleliu, the Resident Representative of JICA Palau office, two C/Ps of SWM-BPW, attaches of the Embassy of Japan, a JOCV and the Expert team visited Peleliu and discussed the issues and shared ideas with the Governor and other local staff including a JOCV working for waste management in Peleliu.

This visit was a part of the capacity development of the C/Ps of SWM-BPW, since providing assistance and training to the States was one of the weakness of SWM-BPW highlighted in the Capacity Assessment conducted in 2014.

The situation of the waste management in Peleliu is;

- ✓ There is no SWM unit but PW collected the waste and sometimes pushed the waste at the dumpsite.
- ✓ There are three secondhand waste collection compacter trucks that collect household waste from totally about 400 population on the island once a week.
- ✓ There is no recycling system, but there are three middle men who buy containers (\$0.01-0.03 /container) and ship them out to Koror State to sell (\$0.05/container). These middle men are retired people; therefore, their businesses are very small for the purpose of obtaining supplementary incomes with their goodwill of cleaning the island.
- ✓ On the way to the dumpsite, there are several few illegal dumping sites along the road.
- ✓ The dumpsite designated by the Government was the open dumping site located along the road. This is a private land and it was not officially agreed between the landowner and the government to use the area as a dumpsite. Also there were not much waste transported to this site; therefore, it is not urgent to install fences, gate or any security staff at this time.

There are some points in the discussion;

- ✓ The Governor and other local staff stressed that they needed heavy equipment and they can manage the waste by themselves with the equipment.
- ✓ Experts explained that human resource such as assigning a staff to be responsible for the SWM even not full-time was important and the heavy equipment could not solve the main issues of the dumpsite. The Governor believed that the improvement of the dumpsite was possible with the use of heavy equipment.
- ✓ The C/P of SWM-BPW suggested to start with conducting WACS to identify the issues and to make a plan, then invited the State staff to observe a waste survey which was conducted under Joint Crediting Mechanism (JCM) project in Koror, and agreed to support Peleliu for developing the State SWM plan.

It could be observed that the C/P of BPW gave a good advice during their visit by understanding the situation in Peleliu and what BPW can do for Peleliu.

It is expected that BPW would continuously support Peleliu to improve their SWM, which could be a model case for other outer island States.



3 waste collection compacter trucks



Dumpsite where waste is disposed along the road



Dumpsite where waste collected a compacter truck is dumped



Dumpsite where some waste were burned down

b. The Activities of the Fourth Dispatch (from 28th of February to 14th of March, 2015)

b.1. 4th JCC

The Fourth JCC was held on 11th of March 2015. The C/P of SWM-BPW gave a presentation highlighting the needs to revise the NSWMP, sharing the progress of new landfill, report of CDL, in-Country training and progress of awareness-raising activities.

The Expert appreciated the institutional capacity development in SWM-BPW and new trials and efforts to reduce waste by Koror State while the operation of M-Dock landfill such as regular compaction and soil cover, revision of NSWMP and amendment of CDL law were still needed to be improved or initiated.



JCC

Furthermore, some indicators of PO were revised as follows;

Table 10-17: The revised indicators of PO

Indicator	Before	After revision	Reason of revision
1-2	The financial balance between income and expenditure of BCDP is well maintained	Amount of shipped off containers	Same meaning as Indicator 1-1
3-2	Number of installed recycling bins at MPIIC	Number of school presentations/ visits & conducted workshops	It became difficult to install more recycling bins; while, school workshops have been conducted continuously and can be evaluated.

b.2. SWM workshop

SWM-BPW held an in-house workshop to share the information and to learn each other about waste management activities among BPW.

The staff of SWM-BPW gave presentation on the history of SWM in Palau, CDL, Operation manual of landfill, awareness-raising activities and administration in BPW. It was a good opportunity to discuss the detail of each activity that was not discussed in JCC.



SWM Workshop

This kind of workshop was previously initiated and held by JICA, but this time the workshop was initiated, prepared and conducted by C/Ps themselves, which can be highly appreciated.

c. Activities of the Sixth Dispatch (from 26th of July to 25th of August, 2015)

c.1. Assistance in the Final Evaluation

The Final Evaluation Team of the Project visited Palau from 8th to 11th of August and the C/Ps and the Experts showed the project sites and shared the progress of the Project activities

d. Activities of the Seventh Dispatch (from 28th of November to 12th of December, 2015)

d.1. 5th JCC

The Fifth JCC was held on the 11th of December 2015.

The C/P of the SWM-BPW delivered a presentation about the progress of J-PRISM and activity plan from 2016.

✓ Unachieved indicator:

- Indicator 1-2: The actual exported amount of the collected containers has not been well understood yet. It is required to request the recycling company to report the exported weight of the containers.
- Indicator 3-2: The number of school workshop was targeted 22 times, but it was conducted for 17 times. The remaining workshops will be conducted once after the C/P who is in charge of the awareness-raising returns to work from his official leave.

✓ Continuous Activities:

- Output1: Continue & Monitor the CDL and Amend the law of CDL
- Output2: Finalize the revised NSWMP
- Output3: Develop materials and continue awareness activity
- Output4: Conduct EIA and secure the land use right for the new landfill, start shredding tires at the M-Dock landfill
- Output5: Hold annual workshop to stakeholders such as staffs of State Governments

✓ Prioritized New Target Activities

- New Landfill –develop the detailed design, conduct the EIA and construct
- Plan the collection service –conduct the feasibility study and pilot project of the new collection service including the segregation
- Disaster waste management –develop the plan and include in the National Disaster Management Plan]
- Revise the hazardous waste management regulation (EQPB)
- Revise the SWM regulation (EQPB)

d.2. Capacity Assessment

Third capacity assessment was conducted on the institutions and individuals. The following chart shows the result of the institutional capacity assessment.

- Target agencies: SWM-BPW
- Conducted: three times (1st: June 2012, 2nd: January 2014, 3rd: December 2015)

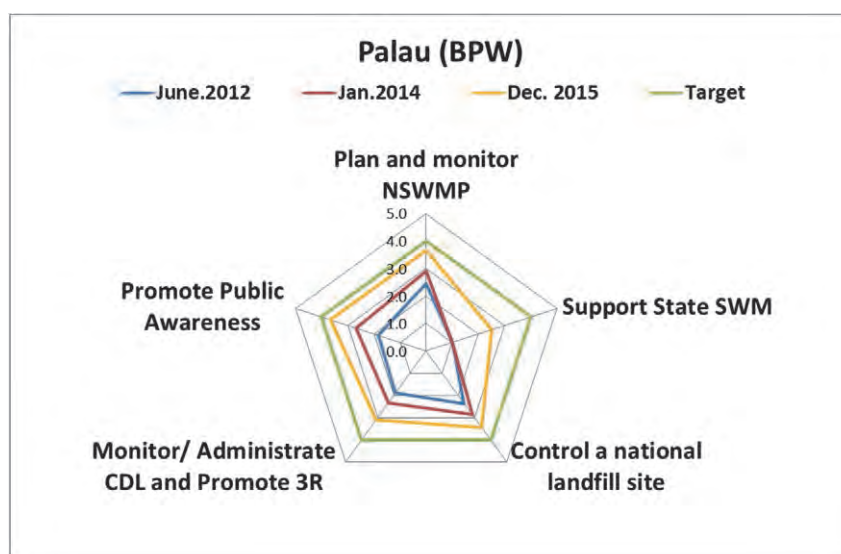


Figure 10-10: Result of the institutional capacity assessment in Palau

Some improved points and recommendation in each category are summarized.

- ✓ **Plan and Monitor the NSWMP:** Waste generation survey and incoming waste survey were conducted and CDL data has been monitored monthly. NSWMP was revised. *Ensuring the implementation and Monitoring of the Action Plan is required.*
- ✓ **Support State SWM:** In-country training was conducted and waste surveys were conducted in some States. *Continue to support States in their SWM through providing training and information, and keep collecting data from the States.*
- ✓ **Control a National landfill:** The closure plan of M-Dock landfill was finalized and the leachate has been monitored regularly. The site for a new landfill was identified. *M-Dock landfill can be further improved by controlling the daily operation, good maintenance on the heavy equipment and securing the spare parts.*
- ✓ **Monitor and Administer CDL and Promote 3R:** Data of containers and money has been submitted by KSG and MOF and recorded monthly, and an annual report was developed by the staff of SWM-BPW who is in charge of CDL. *Amendment of the law, regular monitoring on the operation of the Redemption Center and the recycling company which ship off the redeemed containers and further study on the recycle market are recommended.*
- ✓ **Promote Public Awareness-raising:** Awareness-raising activities have been conducted well after securing the enough budget from the Recycling Fund. *Continue the activity by developing annual awareness-raising plan and monitoring the achievement are recommended.*