

添付資料 11-4: 成果3サブグループ会議

11-4-3 : 3rd SG3



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NOTICE OF MEETING

FOR : **ALL DESIGNATED SUB-GROUP MEMBERS FOR PROJECT OUTPUT 3**

FROM : **THE DIRECTOR**
 Environmental Management Bureau

SUBJECT : **3rd SUB-GROUP MEETING FOR PROJECT OUTPUT 3**
Enhancement of National Government's Capacity for Supporting And Coordinating Of LGU's WtE Project Under The Technical Cooperation Project (TCP) Re Capacity Development On Improving Solid Waste Management Through Advanced/Innovative Technologies

DATE/TIME : 24 March 2022, Thursday, 1:00 – 3:00 PM (*via MS Teams*)

AGENDA :

1. Call to Order/Meeting Objectives/Adoption of Agenda/Acknowledgement of Attendees *by Ms. Elvira S. Pausing, EMB-SWMD-PMO*
2. Summary of discussions during the last meeting *by JET*
3. Technical Presentations under Project Output 3 *by Mr. Satoshi Miyaichi, JET:*
 - Implementation updates
 - Progress of implementation of Activities 3-3 and 3-4
 - Remaining activities & way forward
4. Wrap-up/Required Actions/Agreements/Timelines *by Ms. Andrei Mallare, JET*
5. Other Matters

Your attendance/participation is enjoined.

ENGR. WILLIAM P. CUÑADO



3rd Subgroup Meeting for

Output 3: Enhancement of the National government's capacity
of environmental monitoring for WTE project

24th March 2021

The Technical Cooperation Project (TCP) for Capacity Development on
Improving Solid Waste Management (SWM) through
Advanced/Innovative Technologies

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2. Summary of discussions during the last meeting

2nd Subgroup meeting: 31st May 2021

Activity	Contents	Discussions
3-1	Review of the current capacity and activities in central and regional EMB	-
3-2	Analyze gap between the present capacity of the central EMB laboratory and required capacity and formulating training plans	-
3-3	Prepare Standard Operation Procedures (SOP)	<ul style="list-style-type: none"> Presentation on an overview of PCDD/DF analysis, method verification status (by ERLSD) Requests for provision of materials to AQMS (by JET)
3-4	Conduct training of sampling, analysis and QA/QC of Dioxins and Furans	<ul style="list-style-type: none"> Explanation on the status of the verification works for GC/HRMS (by ERLSD) Presentation on daily inspection and troubleshooting of GC/HRMS (by JET)
3-5	Prepare Sampling Plan (Design) for ambient air samples	-
3-6	Implement sampling, analysis and QA/QC of Dioxins and Furans	-

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Agenda

1. Call to Order/ Meeting Objectives/ Acknowledgement of Participants by SWMD-PMO
2. Summary of discussions during the last meeting by JET
3. Presentations and discussions:
 - a. Implementation updates under Project Output 3 by JET
 - b. Progress of activities under Project Output 3 by JET
 - c. Future plans of Project Output 3 by JET
4. Wrap-up/ Required Actions by JET
5. Other Matters

3a. Implementation updates under Project Output 3

- Technical advice, documents sharing (blue text: ERLSD)
 - June 17: Sharing the calibration standards measurement results
 - Aug 13: Sharing Japanese standard method for PCDD/DF & DL-PCB (JIS K 0311, 0312)
 - Aug 17: Sharing the ISS and WDS measurement results
 - Aug 23: Advice for GC temperature condition modification (based on ISS result)
 - Aug 23: Advice for changing the grouping time of SIM (based on WDS result)
 - Aug 31: Sharing the review result of the draft SOP for Method 23
 - Nov 16 to 18: Online training
 - ✓ Preparation of stack gas and ambient air sample capturing/ adsorbent materials
 - ✓ Sample recovery from sampling train
 - ✓ GC/HRMS measurement and Data processing by DIOK
 - Nov 26: Advice on troubleshooting for GC retention time fluctuation
 - Jan 19: Japanese PCDD/DF and DL-PCB related standards
 - Feb 22: Sharing the information on the requirements of the validation

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3a. Implementation updates under Project Output 3

- Online training: Nov 16 to 18
 - Contents were determined based on the activities conducted by the end of August.
- Online meeting: Jan 17, Feb 22
 - Agreed to hold a monthly meeting to get the activity on track.
- GC/HRMS operation
 - After the GC column replacement in May 2021, due to unexpected issues, the measurement operation was suspended until Feb 22, 2022.
 - ✓ UPS repair: May 24 to Oct 19, 2021
 - ✓ Communication problem between GC/HRMS and control PC
 - Measurements resumed on February 23, 2022.
- Onsite activity
 - Mar 4, 7, 8, 9, 11, 14, 15, 16, 18, 21

3b. Progress of activities under Project Output 3

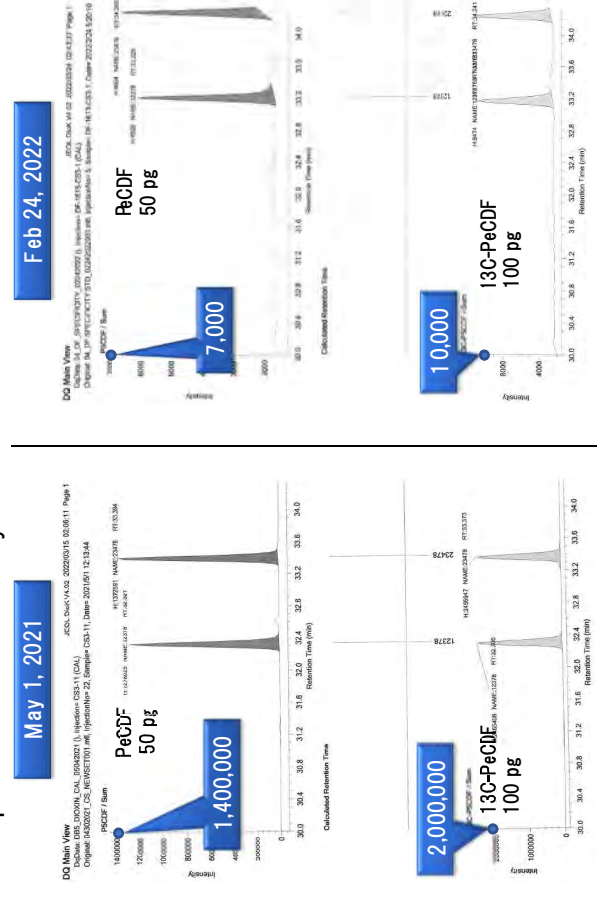
- Activity 3-3 (SOP)
- Method 23: Review completed. Validation or verification is needed due to the difference in the extraction process from the EPA method → If NMI Australia's SOP is available, only a verification test will be necessary.
- TO-09A: Under review. No major problems are expected. Currently, the priority is lowered to focus on activity 3-4.

3b. Progress of activities under Project Output 3

- Activity 3-4 (Sampling, analysis and QA/QC)
- Utilization of the Certified Reference Materials (CRM): CRM for fly ash can be used for the method development. Currently under consideration for the detail process.
- Comparison of measurement results between before and after the suspension of GC/HRMS measurements.
 - Low sensitivity of GC/HRMS
 - Peak shape distortion
 - Low sensitivity is the most significant issue.
 - JET opinion: Possibility of HRMS malfunction cannot be excluded, but GC should be inspected first. (5 months GC/HRMS shutdown, peak shape distortion)
- Starting a trial on the full-time measurement to decide the grouping time of SIM
 - Successfully measured 4 to 8 chlorinated compounds
 - It is now possible to examine the SIM grouping time by measuring WDS.

3b. Progress of activities under Project Output 3

◆ Example of the low sensitivity

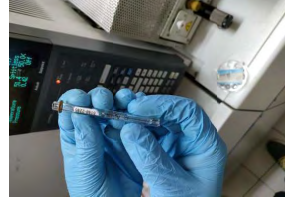


3b. Progress of activities under Project Output 3

- Latest situation
- As of today, improvements that ERLSD can implement have been addressed, but the sensitivity is not yet improved.
- Need to wait for column reinstalment/ replacement and ion source cleaning by the service provider (confirmed for March 31).
 - Poor availability of the service provider is a big concern.



Checking micro syringe



Replacing inlet liner

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Checking gas leakage



Replacing Septum

3c. Future plans of Project Output 3

- The highest priority should be given to getting the GC/HRMS to work properly.
- After the sensitivity of GC/HRMS returns to normal, the GC temperature rise condition is examined by ISS measurement, followed by the SIM grouping time setting by WDS measurement.
 - As a result, the GC/HRMS operating conditions are determined.
- Once the GC/HRMS operating conditions are finalized, verification of the MDL, etc. will commence.
- JET is not concerned about pretreatment, etc., since ERLSD has a high level of technical expertise in organic analysis. However, ERLSD needs to analyze a large number of samples at this stage. It is highly likely that cleaning of ion sources, etc. will be necessary.
 - The availability of service providers remains a concern.
- Maintenance around the ion source, such as column replacement and ion source cleaning, should be included in the routine inspection by ERLSD.
- If ERLSD is to perform many analyses in the future, it is almost essential.
 - A lab specialist is expected to come from Seki-san's lab in May and June. JET would like to include the maintenance work around the ion source in the training.

3b. Progress of activities under Project Output 3

4. Wrap-up/ Required Actions

- Activity 3-3
 - To send review results of the draft SOP for ambient air analysis (JET)
 - To get NMI Australia's SOP and finalize both stack emission and ambient air (ERLSD)
- Activity 3-4
 - To make sure the GC/HRMS is working properly as a top priority, after the inspection of the service provider (ERLSD)
 - To decide the GC/HRMS operation condition by analyzing ISS and WDS (ERLSD)
 - To propose the development of analytical methods utilizing fly ash CRM (JET)
 - To try developing the analytical methods through verification works (ERLSD)

PROJECT ACTIVITY : 2nd SUB-GROUP MEETING FOR PROJECT OUTPUT 2 (ENHANCEMENT OF NATIONAL GOVERNMENTS' CAPACITY OF ENVIRONMENTAL MONITORING FOR WTE PROJECT)

DATE/TIME : 31 May 2021, 9:00AM - 10:30AM (Philippine Time)

VENUE : Video Conference through Microsoft Teams

MATERIALS : <http://bit.ly/2ndOP3SSGmtg>

Agenda Topics	Issues/Discussions/Actions	Comments/Agreements/ Timelines	Required Actions/Responsible Agency/Person
<p>1.) Call to Order/ Meeting Objectives/Acknowledgement of Attendees (Ms. Elvira Pausing, EMB-SWMD-PMO)</p>	<ul style="list-style-type: none"> Ms. Elvira Pausing of EMB-SWMD-PMO commenced the 2nd subgroup meeting for Project Output 3 when quorum was reached representing 5 of the 7 invited agencies, and all presenters for the meeting have signed in. Ms. Pausing presented the agenda and asked the subgroup members if anything else needed to be discussed. Ms. Pausing acknowledged the presence of the participants, and briefly ran through the proceedings of the last subgroup meeting held last February 10, 2020. 	<ul style="list-style-type: none"> Agenda was moved for adoption with no comments and modifications from the participants. 	
<p>2.) Review of the previous discussions from the last subgroup meeting (Mr. Takahiro Kamishita, JET)</p>	<ul style="list-style-type: none"> Mr. Takahiro Kamishita presented the meeting summary of the 1st OP3 Subgroup Meeting. In the last meeting, JET reported the results and review of the current capacity and gap analysis in EMB Central and Regional Offices. It was pointed out that though the meeting was held in February 2020, activities for Project Output 3 have already commenced as early as 2019. 		
<p>3.) Presentations and discussions: a. Implementation updates/ Progress of activities under Project Output 3 (Mr. Satoshi Miyaichi, JET)</p>	<ul style="list-style-type: none"> Mr. Miyaichi discussed the activities under Output 3, noting that 3-1 and 3-2 are already done and 3-3 and 3-4 are currently underway. For Activity 3-3: Prepare SOPs 		<ul style="list-style-type: none"> [JET] Provide comments to the SOPs

	<ul style="list-style-type: none"> ○ ERLSD has drafted SOPs for stationary sources and ambient air, and were already shared with JET. JET is currently reviewing the SOP for stationary sources based on the discussion on December 15, 2020, and will provide feedback to ERLSD to allow them to finalize the SOPs accordingly. ● For Activity 3-4: Conduct Training of sampling, analysis and QA/QC of dioxins and furans <ul style="list-style-type: none"> ○ Sampling- AQMS is still preparing the requested documents from JET <ul style="list-style-type: none"> ■ JET will make recommendations for ERLSD on the preparation of sampling materials especially on contamination control. ○ QA/QC and analysis - GC/HRMS verification is necessary, ongoing in ERLSD <ul style="list-style-type: none"> ■ ERLSD to share the verification results with JET for review. 	<ul style="list-style-type: none"> ● Ms. Pausing requested a timeline for the next steps in the project. 	<ul style="list-style-type: none"> ● [AQMS] Respond to the follow up inquiries by JET (from email thread): <ul style="list-style-type: none"> - From the Stack Testing Manual: The following four documents are mentioned in the manual, but cannot be found in the document. <ul style="list-style-type: none"> - References provided to EMB Central and Regional Offices - F23-1 - LP 23a - L23-1 - Provide following calibration records from AQMS <ul style="list-style-type: none"> - Actual example of record of (a) stack sampler calibration, and (b) high-volume air sampler calibration ● [JET, ERLSD, PMO, FASPS] Finalize the timeline for the next
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		<ul style="list-style-type: none"> Mr. Seki opened his presentation by discussing how this will be useful for ERLSD to perform troubleshooting, and perform tuning of the GC/HRMS equipment. He however notes that ERLSD has relayed that the equipment is running smoothly now. In his presentation, he discussed the tuning procedure and the precautions that need to be observed in the process. He also touched on the common troubles experienced by the equipment, the usual causes of these issues, and how these can be prevented. He added that if ERLSD could tell JET specifically what they were having troubles with the GC/HRMS operation, so that JET can provide appropriate measures for those cases as well. 	<ul style="list-style-type: none"> Mr. Miyaiichi agreed, and mentioned that this timeline will be settled after the upcoming coordination meeting with ERLSD. 	<p>steps in the project in the next coordination meeting.</p>
<p>3.) Presentations and discussions: b. Daily inspection and troubleshooting of GC/HRMS (Mr. Tomohiro Seki, JET)</p>				
<p>3.) Presentations and discussions: c. GC/HRMS operation verification by EMB-ERLSD (Mr. Roger Evangelista, EMB-ERLSD)</p>	<ul style="list-style-type: none"> Mr. Evangelista presented an overview of PCDD/PCDF analysis in ambient air and stationary source emissions aligned to US EPA TO-9A and US EPA Method 23 respectively. He discussed the high-volume sampling method, sample handling, and analysis, for both ambient air and stationary source emissions. <ul style="list-style-type: none"> Mr. Evangelista discusses the equipment and materials that ERLSD uses to implement the procedures. 			<ul style="list-style-type: none"> [ERLSD] Share presentation materials with JET and OP3 subgroup, including the documentation of the verification works for the GC/HRMS.

	<ul style="list-style-type: none"> ○ He also underscores the requirements that each material needs to go through before being used for the procedure, such as the certification process for the pre-cleaning procedure for each of the supplies needed. ○ The sample cleanup procedure was also discussed, sharing that the procedure is similar for both US EPA TO-9A and US EPA Method 23. ● He discussed the status of the verification works for GC/HRMS mentioning that the criteria for acceptance of results were all achieved, showing a sample data of GC/HRMS Tuning that was run last April 30, 2021. ● Lastly, the next steps for the verification works were shared which included the conduct of window-defining and isomer specificity tests, analysis of performance indicators, and measurement of uncertainty calculations. 		
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<p>4.) Wrap-up, Required Actions, and Agreements</p>	<ul style="list-style-type: none"> ● Ms. Andrei Mallare of JET wrapped up the earlier discussions and reiterated the arrangements and timelines as agreed. ● [JET] Provide comments to the SOPs ● [AQMS] Respond to the follow up inquiries by JET (from email thread): <ul style="list-style-type: none"> - From the Stack Testing Manual: The following four documents are mentioned in the manual, but cannot be found in the document. <ul style="list-style-type: none"> - References provided to EMB Central and Regional Offices <ul style="list-style-type: none"> - F23-1 - LP23a - L23-1 - Provide following calibration records from AQMS <ul style="list-style-type: none"> - Actual example of record of (a) stack sampler calibration, and (b) high-volume air sampler calibration ● [JET, ERLSD, PMO, FASPS] Finalize the timeline for the next steps in the project in the next coordination meeting. ● [ERLSD] Share presentation materials with JET and OP3 subgroup, including the documentation of the verification works for the GC/HRMS. 	<ul style="list-style-type: none"> ● Mr. Jundy Del Socorro clarified the requested calibration records on whether this pertains to a specific equipment. He wraps up by agreeing to share calibration records for all relevant equipment. 	
<p>5.) Way forward, Schedule of the next meetings</p>	<ul style="list-style-type: none"> ● Ms. Pausing announced that the 3rd OP3 Subgroup Meeting is tentatively set on September 8, 2021. 		

添付資料 11-4: 成果3サブグループ会議

11-4-4 : 4th SG3



NOTICE OF MEETING

FOR : **ALL DESIGNATED SUB-GROUP MEMBERS FOR PROJECT OUTPUT 3**

FROM : **THE DIRECTOR**
Environmental Management Bureau

SUBJECT : **4th SUB-GROUP MEETING FOR PROJECT OUTPUT 3**
Enhancement of National Government's capacity of environmental monitoring for WTE and other SWM technologies is under the Technical Cooperation Project (TCP) Re Capacity Development on Improving Solid Waste Management Through Advanced/Innovative Technologies

DATE/TIME : 25 October 2022, Tuesday, 10:00 AM – 12NN (*via MS Teams*)

AGENDA :

1. Call to Order/Meeting Objectives/Acknowledgement of Attendees and Adoption of Agenda - **EMB-SWMD, PMO**
2. Updates on the following activities:
 - a. Progress of Activities 3-3 and 3-4 - **Mr. Satoshi Miyaichi, JET**
 - b. Presentation of Draft Standard Operation Procedure (SOP) for sampling, analyzing and QA/QC of Dioxins and Furans in ambient air and source emission gas in fulfillment of Activity 3-3 – **Mr. Roger Evangelista Jr., EMB-ERLSD**
 - c. Remaining Activities and way forward - **Mr. Satoshi Miyaichi, JET**
3. Wrap-up/Required Actions/Agreements/Timelines - **Ms. Andrei Mallare, JET**
4. Other Matters

Your attendance/participation is enjoined.

ENGR. WILLIAM P. CUÑADO



1. Progress of Activities 3-3 and 3-4
 - a. Current Status
 - b. Troubleshooting
 - c. Training
 - d. Achievements of the recent activities
2. Remaining Activities and way forward

4th Subgroup Meeting for Output3

25th October 2022 (Tuesday)

The Technical Cooperation Project (TCP) for Capacity Development on Improving Solid Waste Management (SWM) through Advanced/Innovative Technologies



1-a. Current Status of OP3

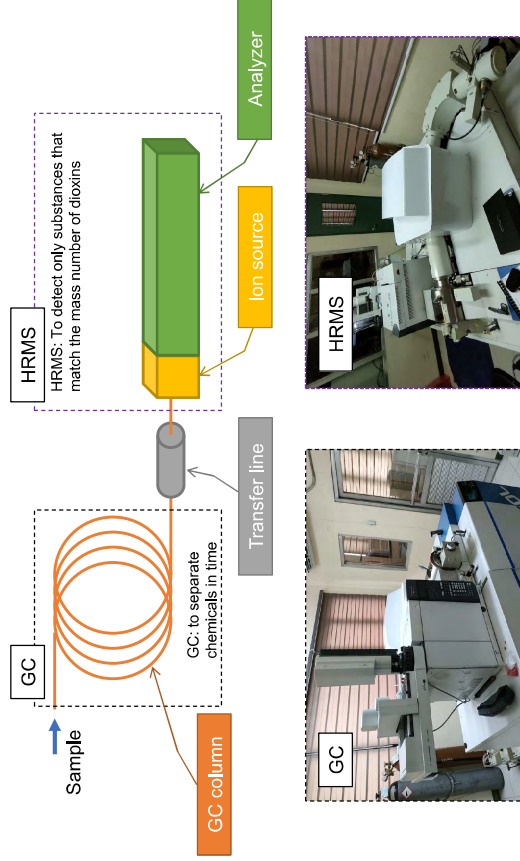
Activity	Contents	Status
3-1	Review of the current capacity and activities in central and regional EMB	Done
3-2	Analyze gap between the present capacity of the central EMB laboratory and required capacity and formulating training plans	Done
3-3	Prepare Standard Operation Procedures (SOP)	JET review was done in May 2022, SOPs are being modified by ERLSD based on the results of the Activity 3-4.
3-4	Conduct training of sampling, analysis and QA/QC of Dioxins and Furans	Now in the process of finalizing of the detailed analytical conditions
3-5	Prepare Sampling Plan (Design) for ambient air samples	AQMS and ERLSD have already started the discussion. The plan has already been formulated, and preparations has been already underway.
3-6	Implement sampling, analysis and QA/QC of Dioxins and Furans	Pre-cleaning of sampling materials has already started.

1-a. Current Status of OP3

- Resumption of JET visits
 - JET was able to resume the visits to ERLSD lab from March 2022. GC/HRMS training was able to be started.
 - ERLSD renovated its laboratory and assigned additional staff for dioxins analysis.
 - Since March 2022, JET visited ERLSD lab for a total of 46 days. (March 4, 7-9, 11, 14-16, 18, 21, 24, 31, April 4, 6-8, May 13, 16-20, June 28-July 1, July 4-8, 11-15, Oct 10-14, 17-21)
 - During the above period, ERLSD and JET have continued to have meaningful discussions through the activities.
 - After the resumption of JET visits, some unexpected troubles had occurred, but we have already overcome these troubles and continued the activities.

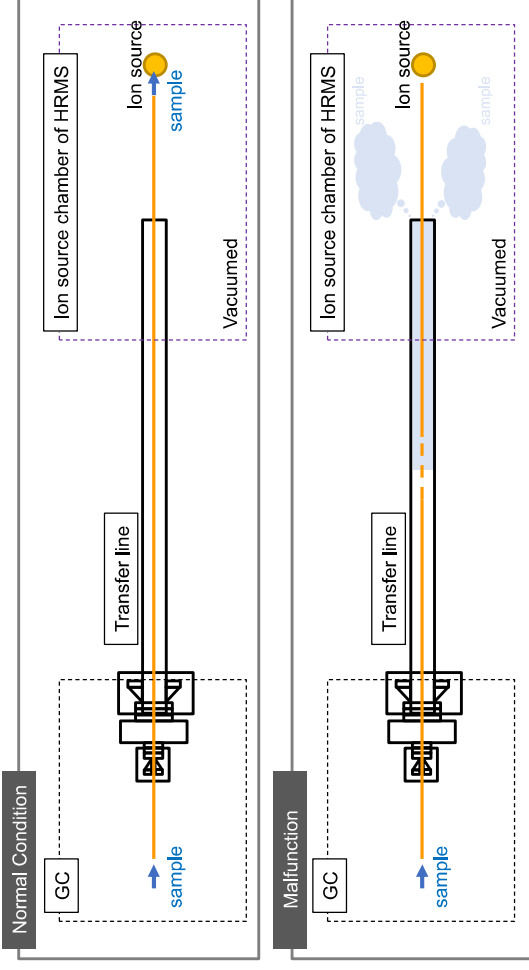
1-b. Troubleshooting

- GC/HRMS malfunction and repair
 - Sensitivity of GC/HRMS significantly lowered ($\approx 1/200$). The cause was the GC column had broken and clogged in the transfer line.



1-b. Troubleshooting

- GC/HRMS malfunction and repair
 - Sample did not directly reach the ion source, presumably.



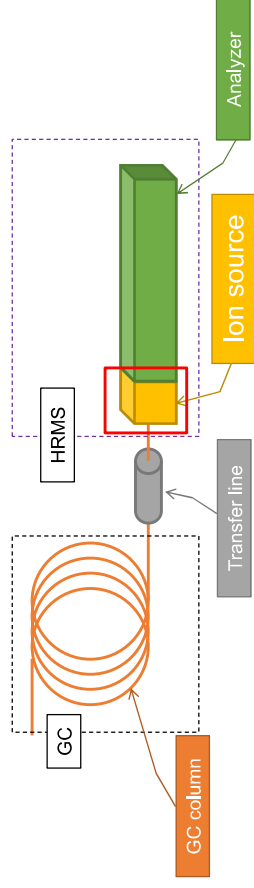
1-b. Troubleshooting

- GC/HRMS malfunction and repair
 - Due to EMB's procurement procedures and the local service provider's capability, it was difficult to perform the repair immediately.
 - Based on a request for assistance, JICA agreed to dispatch a JEOL engineer and shoulder the cost. Repairs were completed in June.



1-c. Training

- Capacity enhancement on the GC/HRMS maintenance
 - Since there is only one GC/HRMS in the Philippines, it is difficult to learn maintenance skills especially for ion source part of HRMS such as cleaning, filament replacement, GC column replacement. The local service provider is in charge of maintenance, but they are not easily available. Furthermore, their work has to be guided online by the Taiwanese distributor, resulting in prolonged GC/HRMS downtime.
 - These difficulties must be overcome to achieve a more frequent routine analysis.



1-c. Training

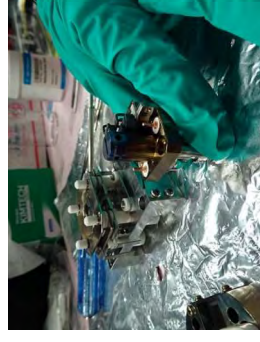
- Capacity enhancement on the GC/HRMS maintenance
 - Since it is inadvisable for ERLSD to continue to rely on local service providers for GC/HRMS maintenance, JICA approved an increase of JET input to enhance GC/HRMS maintenance technical capabilities. Trainings were conducted in May and July to capacitate the ERLSD staff on routine maintenance activities.



1-c. Training



Ion source removal/ installation



Ion source disassembly



Ion source cleaning



Ion source assembly

1-c. Training

- Customize analytical conditions for GC/HRMS
 - The local service provider did not allow ERLSD to change the GC/HRMS conditions. However, JET emphasized the need to perform changes in the parameters to understand the best operating conditions for the equipment. Trial and error by changing the conditions is necessary to establish the analytical method. Trainings were conducted in July and October to capacitate the ERLSD staff in performing these changes.



1-c. Training

- Pre-treatment
 - Sample pre-treatments are necessary for method development, some supports were provided for HCl treatment, Soxhlet extraction, fraction test, manual cleanup, preparation of test samples, etc. Trainings were conducted in October.



1-d . Achievements of the Recent Activities

- GC/HRMS is working
 - The repair of the GC/HRMS has enabled the implementation of the activities of Output 3 due to the JICA HQ's additional support.
- Enhancement of skills for GC/HRMS operation
 - ERLSD can now perform GC/HRMS maintenance work required in daily operations due to additional JET input approved by JICA HQ; ERLSD no longer needs to rely on local service providers.
 - ERLSD can now perform column exchanges at its own discretion and can successfully verify GC/HRMS operation and set GC/HRMS operating conditions. ERLSD has also successfully generated calibration curves and has been trying many tests to establish the analytical methods. The detailed conditions of the analytical method are just about to be determined.

2. Remaining Activities and way forward

- Activity 3-4
 - Completing the analytical method development: finalizing the automated cleanup equipment condition, method blank, method detection limit, etc.
- Activity 3-5
 - Considering the current situation, there is no substantial necessity for assistance from JET. JET will provide the Japanese guideline for ambient air sampling for WTE facility development, for their information.
- Activity 3-6
 - Actual samples need to be analyzed in numbers, since different techniques are required for different sample characteristics. For stack emission, it will be difficult to obtain many samples. It may be necessary to supplement through the measurement of fly ash samples, which have similar characteristics to exhaust gases.

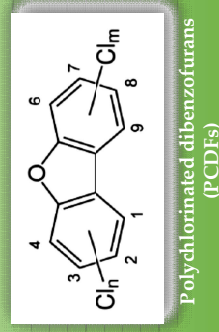
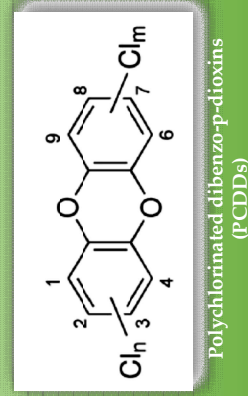
Environmental Management Bureau
Environmental Research and Laboratory Services Division

Standard Operating Procedures and Other Activities on the Dioxins Analysis Component (JICA TC Project)

ROGER C. EVANGELISTA, JR., RCh.
Senior Science Research Specialist
Head, Organics Laboratory Unit
Environmental Laboratory Services Section

OUTLINE

- Contents of the SOPs of EMB CO for DF analysis
- Overview of the SOPs and the discussions with OP3 Expert Team Members
- Ways forward of ERLSD



PCDDs	PCDFs
75 congeners "Dioxins"	135 congeners "Furans"
2,3,7,8-TCDD as the most toxic congener	Tend to co-occur with PCDDs

17 priority congeners
(7 PCDDs, 10 PCDFs)

ERLSD SOPs

	TEST METHOD	Document No. OLU-Test-009	Page 1 of 37
		Revision No. 0	Effectivity Date:
		Determination of Polychlorinated Dibenzofurans (PCDFs), Polychlorinated Dibenzodioxins (PCDDs) in Ambient Air by High Resolution Gas Chromatography with Magnetic Sector Mass Spectrometer	
Subject			

添付資料11

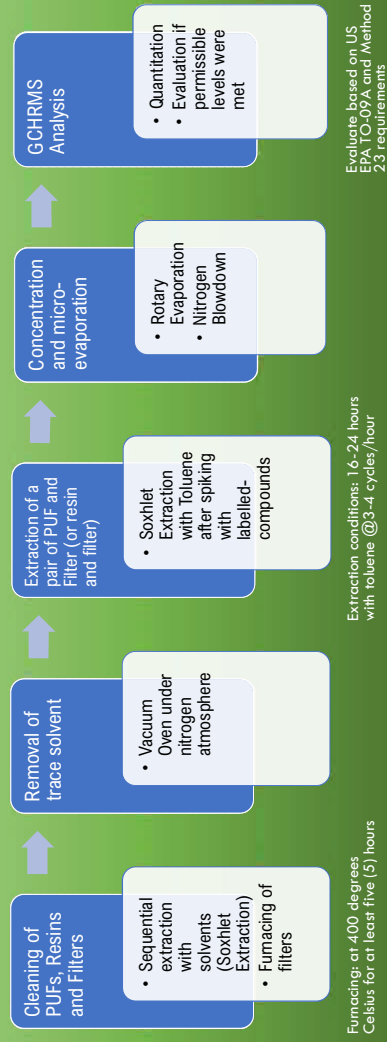
	TEST METHOD	Document No. OLU-Test-013	Page 1 of 37
		Revision No. 0	Effectivity Date:
		Determination of Polychlorinated Dibenzofurans (PCDFs), Polychlorinated Dibenzodioxins (PCDDs) in Stationary Source Emissions by High Resolution Gas Chromatography with Magnetic Sector Mass Spectrometer	
Subject			

ERLSD SOP Sections:

1. Principle
2. Interferences
3. Sample Storage and Preservation
4. Materials and Apparatuses
5. Equipment
6. Reagents and Standards
7. Procedure
8. Calculations
9. Reporting of Results
10. Quality Control
11. Health and Safety
12. Waste Handling and Disposal
13. Relevant Records
14. References
15. Distribution of Copies
16. Appendices

Certification Process of Sampling Materials for Dioxins and Furans in Ambient Air and Stationary Source Emissions

Cleaning and Certification of Cleanliness of Sampling Materials Prior to Dispatch



1. Cleaning through Soxhlet Extraction



2. Evaporation of residual solvent

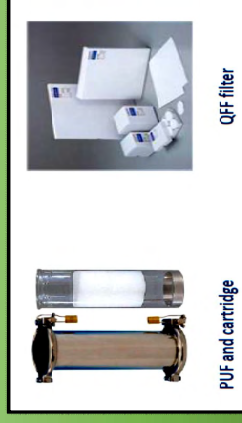


Treat representative filter/PUF or batch as sample to be analyzed for DFs

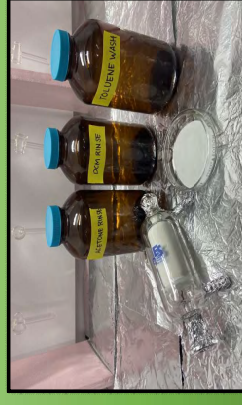
Notes on cleaning time: 22 hours extraction with toluene; 3 hours with acetone (for PUFs)
8 hours with water, 22 hours with methanol, 22 hours with methylene chloride, 22 hours with toluene (for XAD-2 Resin)

Analysis Process for Ambient Air and Stationary Source Emissions

Ambient Air Emissions



PUF and QFF
Reference: US EPA Method TO-09A



XAD-2 resin, GFF, Solvent Rinses
Reference: US EPA Method 23

Analysis Phase 1: Extraction of Samples

Manual Soxhlet Extraction
– for Ambient Air samples

Extraction conditions: 16-24
hours with toluene @3-4
cycles/hour

(followed by Rotary
Evaporation and Solvent
Exchange)



Analysis Phase 1: Extraction of Samples

Pressurized Fluid Extraction – for
stationary source emissions

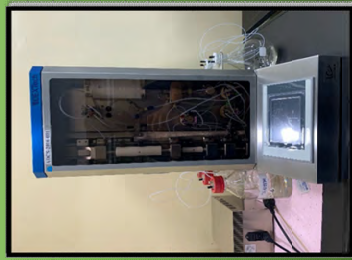
Conditions: GFF and XAD-2 resin
extracted with PFE using toluene
(followed by Rotary Evaporation
and Solvent Exchange)

Note: Solvent rinses are concentrated
separately by rotary evaporation and
combined with PFE extracts before
solvent exchange



Analysis Phase 2: Cleanup of Sample Extracts

Automated Cleanup (LC Tech)



Columns used:
Positions (1) and (2)
are Silica gel
columns

Positions (3) and (4)
are Carbon Columns

Solvents:
Toluene
Dichloromethane
Hexane

Analysis Phase 2: Cleanup of Sample Extracts

Manual Cleanup (Silica and Carbon)



Columns used:
Multi-layer acidic silica
column: 20% and 40%
acidic silica

Carbon Column
procured from Kanto
Chemical Corp.

ERLSD also has Cape
Columns and Cleanup
techniques based on
previous trainings

Analysis Phase 3: Concentration and Micro-evaporation



Rotary evaporation of purified extracts

Nitrogen blowdown from canical tube to GC vial. All transfers are facilitated with rinsing to ensure quantitative transfer.

Analysis Phase 4: GC-HRMS Analysis



Columns used: DB-5 and ZB-Dioxins; Instrument Program was developed to meet the criteria for isomer specificity and window-defining tests as required by the reference methods. Additional qualification on peak identification (e.g., signal-to-noise ratios, relative retention time, relative response factors, etc.) are also based on the requirements of US EPA Method 23, Method 1613 and Method TO-09A.

QA/QC REQUIREMENTS

QC TOOLS

Method Blank

Laboratory Surrogate Compound Recoveries

Field Surrogate Recoveries

Mass Resolution, Ion Abundance Ratios

Initial Calibration

Instrument Blanks

CRM analysis

Calibration Verification

Proficiency Testing

Thank you for your
attention!

Ways Forward:

- (1) Monitor contamination levels in the Dioxins laboratory workrooms and enhance practices to prevent possible cross-contamination in the lab.
- (2) Procure new LC Tech columns and determine optimum LC Tech conditions to increase recovery rate of ¹³C-labelled compounds used for isotope dilution.
- (3) Verify the viability for use of the cleanup method introduced by JET considering the acquisition of the required glassware and resources.
- (4) Analyze the procured fly ash Certified Reference Material for low-level dioxins and furans as representative of stationary source emissions.
- (5) Continually conduct Method Verification activities to include spiking of cleaned PUFs and QFF for ambient air DF analysis.
- (6) Complete the renovation of the three (3) additional workrooms for organic analyses in the EMB CO laboratory, one of which will be for a second GCHRMS unit.
- (7) Acquire a second GC-HRMS equipment to enhance efficiency of DF testing services.
- (8) Include Dioxins and Furans analysis in the scope of the parameters to be applied for ISO/IEC 17025 accreditation.

添付資料11-5: 成果4サブグループ会議

- 11-5-1 : 1st SG4
- 11-5-2 : 2nd SG4
- 11-5-3 : 3rd SG4
- 11-5-4 : 4th SG4
- 11-5-5 : 5th SG4
- 11-5-6 : 6th SG4

添付資料11-5: 成果4サブグループ会議

11-5-1 : 1st SG4
(添付資料11-3-1と同じ)



Republic of the Philippines
 Department of Environment and Natural Resources
ENVIRONMENTAL MANAGEMENT BUREAU
 DENR Compound, Visayas Avenue, Diliman, Quezon City 1116
 Telephone Nos.: (632) 927-15-17, 928-37-25; Fax No.: (632) 920-22-58
 Website: <http://www.emb.gov.ph> / Email: mail@emb.gov.ph

NOTICE OF MEETING

TO : **ALL SUB-GROUP MEMBERS (PROJECT OUTPUT 2 & 4)**

Selected Concerned Government Agencies

Engr. Reynaldo Esguerra – DOST-ITDI
 Ms. Ruby de Guzman – DOE-REMB
 Mr. Carlo Mari Crisregionald C. Tan – DILG-BLGS
 Mr. Aldwin U. Urbina - NEDA-IPG
 Ms. Justine Padiernos – PPPC

Local Government Units (LGUs)

Mr. Vincent Ferdinand Paul G. Vinarao – EPWMD/LGU Quezon City
 Atty. Junine Aragonés – LGU Cebu City
 Atty. Dwight Domingo – LGU Davao City

EMB Central Office

Mr. Renato T. Cruz – EMB EQMD
 Ms. Consolacion Crisostomo – EMB-PPPDD
 Ms. Fatima Anneglo R. Molina – EMB- ERLSD
 Atty. Carmelo R. Segui – EMB-LD
 Engr. Jundy T. Del Socorro – EMB-EQMD-AQMS

Project Output Coordinators

Director Angelito V. Fontanilla – DENR-FASPS
 Mr. Conrado A. Bravante, Jr. – DENR-FASPS
 Ms. Marianica Philina L. Obmerga - DENR-FASPS
 Engr. Nolan B. Francisco – EMB-SWMD/PMO
 Ms. Elvira S. Pausing – EMB-SWMD/PMO
 Mr. Takahiro Kamishita – JICA/JET

All SWMD-PMO Staff

FROM : **THE EMB DIRECTOR**

DATE/TIME/VENUE: **13 February 2019 (Thursday)/ 10:00 AM/ EMB-AQMTC Bldg.**

SUBJECT : **1st SUB-GROUP MEETING (PROJECT OUTPUT 2):**
ENHANCEMENT OF TARGET LGUS' CAPACITY FOR PLANNING, EVALUATION, FORMULATION AND SUPERVISION OF WTE PROJECT UNDER THE TECHNICAL COOPERATION PROJECT (TCP) RE CAPACITY DEVELOPMENT ON IMPROVING SOLID WASTE MANAGEMENT THROUGH ADVANCED/INNOVATIVE TECHNOLOGIES

1st SUB-GROUP MEETING (PROJECT OUTPUT 4):
ENHANCEMENT OF THE NATIONAL GOVERNMENTS AND TARGET LGUS' CAPACITY TO IDENTIFY ISSUES AND PROVIDE SUGGESTIONS/ RECOMMENDATIONS FOR OTHER SWM TECHNOLOGIES THAN WTE UNDER THE TECHNICAL COOPERATION PROJECT (TCP) RE CAPACITY DEVELOPMENT ON IMPROVING SOLID WASTE MANAGEMENT THROUGH ADVANCED/INNOVATIVE TECHNOLOGIES

AGENDA:

1. Call to Order/Objectives of the Meeting
2. Presentation/Introduction of Sub-Group Members for Project Output 2 &4
3. Presentation/Discussions on the Outline of the Specific Activities under Project Output 2 & 4 including deliverables based from the Inception Report.
4. Presentation/Discussions on the following:
 - a. **Project Output 2**
 - i. Review of 10 years plan of LGUs (Quezon City, Davao City, Cebu City) addressing identification of WTE project, quantity of waste to be treated in WTE facility, consistency with LGU land use plan, etc.
 - ii. Status of WTE projects in the target LGUs
 - b. **Project Output 4**
 - i. Review of 10 years plan of LGUs regarding other technologies than WTE
 - ii. Observations on the present situation of SWM of target LGUs including advanced material recovery/treatment facility
 - c. Proposed outline of the TCP Newsletter (*Sub-group members may provide proposals for the title of the Newsletter*)
 - d. Capacity Assessment of Sub-group members (*Kindly fill up the attached checklist and send to the Secretariat via email (dimernelie@yahoo.com or deth25760945@gmail.com) by Friday 11 February 2020*)
 - e. Participants to the Training in Japan
5. Finalization of the Comments/Agreements/Timelines
6. Way Forward

Your participation/attendance is enjoined.

ENGR. WILLIAM P. CUÑADO



1st Sub Group Meeting for



Output 2: Enhancement of Target LGUs' capacity on planning, evaluation, formulation & supervision of WTE projects

Output 4: Enhancement of The National Government's Capacity to identify issues and provide suggestions/recommendations for other SWM technologies other than WTE

13th February 2020 (Thursday) 10:00 a.m.

The Technical Cooperation Project (TCP) for Capacity Development on Improving Solid Waste Management (SWM) through Advanced/Innovative Technologies

1

Agenda

1. Call to Order
2. Objectives of the Meeting
3. Presentation on the Outline of the Specific Activities under Project Output 2 including deliverables based on the Inception Report
4. Presentation and discussions on the following:
 - a. Output 2
 - i. Review of 10 years plan of LGUs (Quezon City, Davao City, Cebu City) addressing identification of WTE project, quantity of waste to be treated in WTE facility, consistency with LGU land use plan, etc.
 - ii. Status of WTE projects in the target LGUs

Agenda

- b. Output 4
 - i. Review of 10 years plan of LGUs regarding other technologies than WTE
 - ii. Observations on the present situation of SWM of target LGUs including advanced material recovery/treatment facility

Inter-output activities

- c. Proposed outline of the TCP Newsletter
 - d. Participants in Training in Japan
 - e. Kick-off Seminar
 - f. Capacity Assessment of Sub-group members
5. Finalization of the comments/agreements/Timelines
 6. Way Forward

2. Objectives of the meeting

- ❑ **Inter-Agency Technical Working Group (ITWG) was created under EMB Special Order No. 2019-347.** The ITWG shall serve as core group to undertake important tasks such as providing technical and operational guidance to the project.
- ❑ **The ITWG members shall create sub-groups within the members of the ITWG that would take a lead in the implementation of the project on a per output basis.**

Sub group	Objectives
Output 1	The enhancement of National Project Government's capacity for supporting and coordinating of LGU's WTE project
Output 2	The enhancement of Target LGUs' capacity for Planning, Evaluation, Formulation and Supervision of WTE project.
Output 3	The enhancement of the National government's capacity of environmental monitoring for WTE project
Output 4	The enhancement of the National Governments and target LGUs' capacity to identify issues and provide suggestions/ recommendations for other SWM technologies other than WTE.

2. Objectives of the meeting

□ Members for Sub-Group for Output 2&4

	Agency/Office	Members
Selected Concerned Government Agencies	DOST-Industrial Technology Development Institute	Engr. Reynaldo Esguerra
	DOE-REMB	Ms. Ruby De Guzman
	PPP Center	Ms. Justine Padiernos
	DILG	Mr. Carlo Mari Crisostomenald C. Tan
EMB Central Office	EMB-EQMD-Air Quality Management Section	Engr. Jundy T. Del Socorro
	Target LGUs	(TBA)
Project Output Coordinators	Quezon City	Atty. Junine Aragonas
	Cebu City	Atty. Dwight Domingo
	Davao City	Director Angelito V. Fontanilla
	DENR-Foreign Assisted and Special Project Service	Engr. Nolan B. Francisco
	EMB-Solid Waste Management Division/Project Management Office	Ms. Elvira S. Pausing
	EMB-Solid Waste Management Division/Project Management Office	Mr. Takahiro Kamishita
	JICA Experts Team	Mr. Makoto Kosaka Ms. Kyoko KIMURA Ms. Iku Sato

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2. Objectives of the meeting

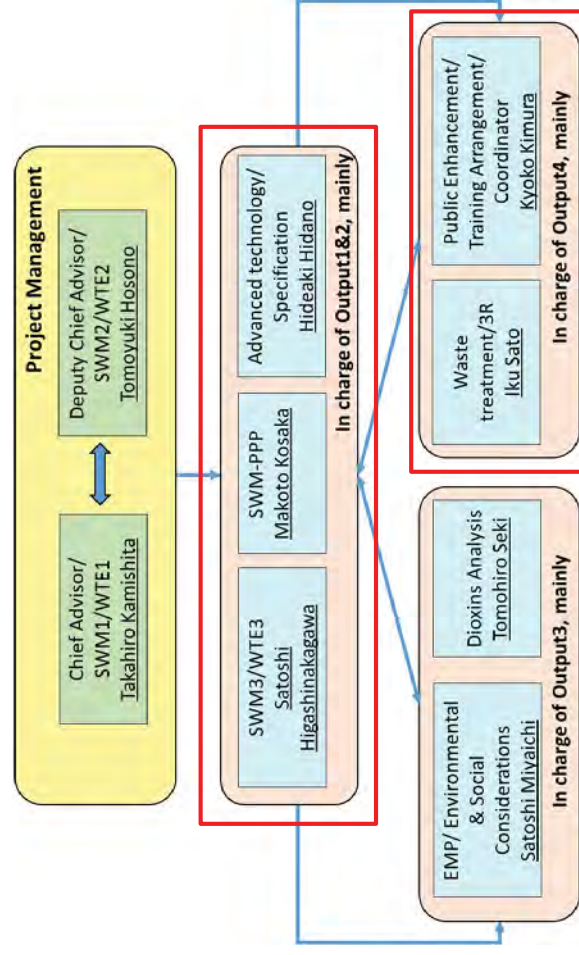
□ Objectives of the meeting:

- **Kick-off** of the sub-group meeting
- **Share the specific activities** of Output 2&4
- **Explain/discuss the progress** of Output 2&4
- Inter-output Activities of the Project
 - a. Training Plan in Japan related to SWM/WTE
 - b. Proposed outline of the TCP Newsletter
 - c. Seminar on 27th February
 - d. Capacity Assessment of Sub-group members
- Others

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3. Outline of the Specific Activities under Project Output 2 & 4

□ Composition of the JICA Expert Team



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3. Outline of the Specific Activities under Project Output 2

- 2-1: Review current situation on introducing WTE facilities in the target LGUs
- 2-2: Clarify current waste flow & amount, set target on waste reduction in the existing SWM 10-year plans
- 2-3: Evaluate LGUs' land use plan for WTE projects
- 2-4: Analyze & verify candidate WTE projects selected from the existing F/S, unsolicited/solicited proposals
- 2-5: Define points & issues to be addressed for formulating WTE projects in the target LGUs
- 2-6: Define proper responsibility of the target LGUs in promoting WTE projects under PPP scheme
- 2-7: Formulate technical specification of WTE facilities in each target LGU
- 2-8: Define points & issues to be addressed for supervising WTE projects in the target LGUs

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3. Outline of the Specific Activities under Project Output 2

Schedule	2019	2020	2021
2.1			
2.2			
2.3			
2.4			
2.5			
2.6			
2.7			
2.8			
Main activity	<ul style="list-style-type: none"> Target setting for waste reduction projects on WTE in LGUs Analysis on WTE projects in LGUs 	<ul style="list-style-type: none"> Technical specification of WTE facilities in each target LGU Inputs to Output 1 	

□ Deliverables

- ✓ Project report, Monitoring sheet, Specification of WTE

3. Outline of the Specific Activities under Project Output 4

Activities	1 st Year Mar/'19 - Mar/'20	2 nd Year Apr/'20 - Mar/'21	3 rd Year Apr/'21 - Mar/'22
4.1			
4.2			
4.3			
4.4			
4.5			
Main activity	<ul style="list-style-type: none"> Grasp the current situation and identify the current issues by National SWM strategy and 10 year SWM plan in the target LGUs. 	<ul style="list-style-type: none"> Collect the information of "Good practice/Good technology" of other SWM technologies in third countries. Summarize and provide suggestion/recommendation to improve utilization to target LGUs. 	<ul style="list-style-type: none"> Seminar for disseminating suggestion/recommendation is held.

□ Deliverables

- ✓ Project report, Monitoring Sheet

3. Outline of the Specific Activities under Project Output 4

- Output 4. National Government's and target LGUs' capacity to identify issues and provide suggestion/recommendation for other SWM technologies than WTE is enhanced.
- Specific activities
 - 4.1 Grasp the current situation by National SWM strategy and 10 year SWM plan in the target LGUs.
 - 4.2 Identify the current issues for other SWM technologies in the target LGUs.
 - 4.3 Collect the information of "Good practice/Good technology" of other SWM technologies in Japan/third countries.
 - 4.4 Summarize and provide suggestion/recommendation to improve utilization of other SWM technologies to target LGUs.
 - 4.5 Seminar for disseminating suggestion/recommendation is held.

Output 2

- a. Review of 10 years plan of LGUs regarding WTE
- b. Observations on the present situation of SWM of target LGUs including advanced material recovery/treatment facility

4.a.i. Review of 10 years plan of LGUs

Requirements in the Guidelines

- NSWMC Resolution (2016-669)
 - Section 5. Pre-Operation Phase: The following conditions must be met prior to registration of a WTE facility with the Bureau
 - The host LGU shall notify the Commission of any WTE facility that will be established within its jurisdiction by submitting an **updated 10-year solid waste management plan**
 - A WTE facility shall be located at a **site consistent with the land use plan of the LGU** and must always consider all environmental criteria on site selection including provision for buffer zone(s)
- DAO 2019-21 (WTE Guidelines)
 - Section 5. Requirements: The following conditions must be met prior to registration of a WTE facility with the Bureau
 - The host LGU including the LGUs where the source of the feedstock will originate from shall ensure that the plan to establish and/or utilize **WTE facility is integrated in their approved 10-year solid waste management plan** consistent with the provisions of RA 9003.

WTE project in the 10-year SWM plan

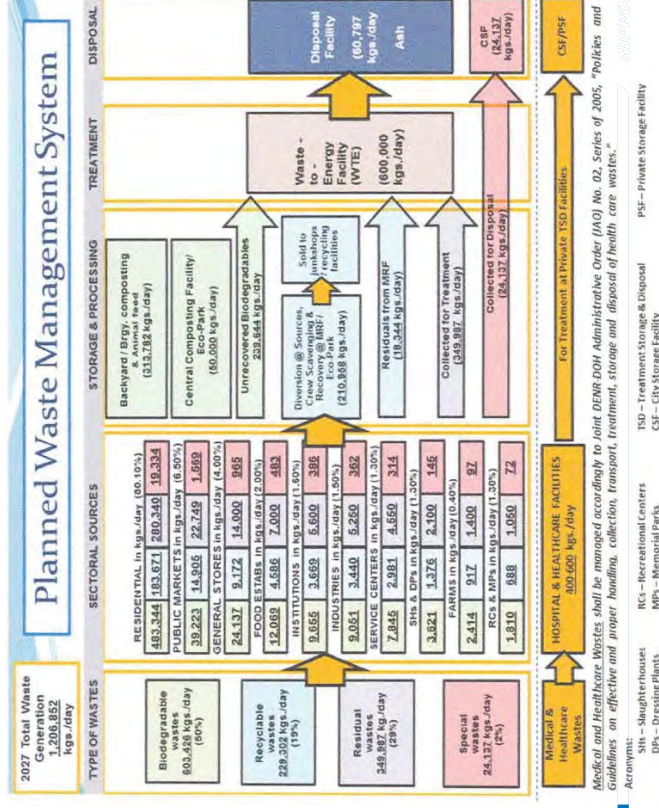
	Quezon City	Davao City	Cebu City
Evaluation by NSWMC	Approved in August 2018	Deliberation has undergone (TBC)	Deliberation has undergone (TBC)
Identification of WTE project	<ul style="list-style-type: none"> • WTE is considered to adopt. • Detailed information facility is missing • Investment by private sector for WTE is counted 	<ul style="list-style-type: none"> • Planned to operate WTE(600tpd) in 2022 • Waste amount to be treated is quantified • Operation cost is counted. 	<ul style="list-style-type: none"> • WTE(500tpd) is mentioned w/o detailed information • Investment cost is counted
Consistency with land use plan	To be updated based on the proposed site (?)	Candidate sites are mentioned. To be updated in accordance with decision of site	To be updated in accordance with decision of site
Waste Material Flow	Some missing information	Material flow is elaborated with quantities	Very little information

Summary of WMB in Davao City

Waste material balance	2017	2022	2027
a) Waste Generation (kg/day)	990,703	1,099,623	1,208,544
b) Waste Collection (kg/day)	712,726	690,014	710,624
c) Waste Diversion (kg/day)	306,507	451,742	1,115,475
c1) Diversion at source	277,977	409,610	497,920
c2) Crew scavenging	15,442	10,446	9,185
c3) Composting	10,000	25,000	50,000
c4) Material recovery	3,088	6,686	18,370
c5) WTE	0	0	540,000
Diversion rate	31%	41%	92%
d) Waste Disposal (kg/day)	684,195	647,882	93,069

Planned WMF in Davao City

(attached to EMB Evaluation Form-4)



Observations on Davao City's Plan

- **Consistent figures** on waste generation, collection, diversion & disposal are summarized in a few tables in the plan. (Tables 45, 46, 53)
 - Regarded as **good example** of 10-year SWM plan.
- **“Diversion rate”** stipulated in “Philippine Development Plan (2011-2016)” should be divided into **collection rate & LGU's diversion rate**.
 - Current diversion rate may include **uncollected waste & illegal dumping**.
 - Current diversion rate mainly rely on **diversion by households' efforts, but not LGU's SWM system**.

Observation on Davao City's Plan (cont.)

	2017	2022	2027
Diversion rate (=c/a)	31%	41%	92%
Collection rate (=b/(a-c1))	100%	100%	100%
LGU's diversion rate (= (c-c1)/b)	4%	6%	87%

- **Scavenging, composting & material recovery accounts for only 5%.**
- **Relevance & effectiveness of WTE. (5% → 87%)**
- **Planned policy measures & budget plan seem consistent with WMB. (easy-to-understand)**
 - Still, there are some insufficiency such as plan for **incineration ash management for WTE.** (It has to be detailed in WTE facility development plan.)

Summary of WMB in Quezon City

Waste material balance	2015	2017	2024
a) Waste Generation (m³/day)	10,511	11,165	15,739
a) Waste Generation (t/day)	2,796	2,970	4,187
b) Waste Collection (t/day)		2,873	
c) Waste Diversion (t/day)	1,576	1,776	3,140
c1) Composting (t)		3,071	
c2) Material recovery (t)		2,248	
c3) WTE		0	1,700
Diversion rate	56%	60%	75%
d) Waste Disposal (t/day)	1,220	1,194	1,047

Observations on Quezon City's Plan

- **Discussed only with waste generation, diversion & disposal amounts.**
 - Unclear target for waste collection amount.
 - Unclear targets for composting & material recovery.
- **Unable to assess if diversion target (75% in 2024) can be achieved**
- **Quantitative data is scattered & their units are not unified in the plan. (uneasy-to-understand)**
- **Capacity of the proposed facility including WTE (1,700 t/day) is not reflected in the approved plan.**

Summary of WMB in Cebu City

Waste material balance		2015	2019	2028
a) Waste Generation (kg/day)		861,719	906,335	1,015,351
b) Waste Collection (kg/day)		481,715		
c) Waste Diversion (kg/day)			589,118	866,196
c1) Diversion at source				
c2) Crew scavenging				
c3) Composting				
c4) Material recovery				
c5) WTE		0	0	500,000
	Diversion rate		65%	85%
d) Waste Disposal (kg/day)			317,217	149,155

Observations on Cebu City's Plan

- **Little quantitative information** in the plan...
 - Only estimated waste generation amount by WACS & diversion target determined by policy.
 - Even current situation of SWM is unclear.
- **Unable to assess if diversion target (85% in 2028) can be achieved or not.**
- **Quantitative data is scattered in the plan. (uneasy-to-understand)**

4.a.ii. Status of WTE projects in the target LGUs

LGU	Present status	WTE Site owner	Treatment Capacity	LGU's Obligation	Prj per iod
QC	Being suspended (In the process of Swiss Challenge)	Private	? 1,700 tpd (incl. WTE and MBT)	<ul style="list-style-type: none"> • Delivery of daily waste (specific amount) • T/F • ROW acquisition 	? 35
Davao City	F/S by consultant team by Japan Grant Aid is on-going	Public	? 600 tpd (WTE)	<ul style="list-style-type: none"> • Delivery of daily waste (specific amount and calorific value) • WTE site • Disposal of ash 	? 20
Cebu City	Negotiation with OPS	Private	? 800 tpd (WTE)	<ul style="list-style-type: none"> • Delivery of daily waste (specific amount) 	? 28

Technical evaluation and suggestion on the WTE proposal to Cebu City is on-going

- **Key issues**
 - Capacity of facility, which has to be decided logically according to the waste generation and collection in LGU
 - Waste material flow in the 10-year SWM plan
 - Evaluation of the private proponent including reliable experience, validity of the proposed technology, and financial analysis
 - Risk/Obligation allocation (ROW, EIA, T/F etc.):
 - Guarantee by LGU
- **How have QC and Davao City solved these issues?**

4.b. Output 4

- i. Review of 10 years plan of LGUs regarding other technologies than WTE
- ii. Observations on the present situation of SWM of target LGUs including advanced material recovery/treatment facility

4.b.i. Review of 10 years plan of LGUs regarding other technologies than WTE

□ Quezon City

5. Collection and Transportation of Waste
 - Biodegradable waste and the other waste are separated and collected.
 - The collected waste is refilled in the bigger trucks at the staging area.
6. Intermediate treatment facility /3R
 - MRFs are installed at 58 barangays, and MRS s are installed at 84 barangays.
 - 64 public recycling facilities exist.
 - 173 junkshops took EC.
7. Landfill
 - In 2017, Payatas landfill was closed. Now, LGU uses the landfill in Rizal Province.
 - So, the present transportation cost is bigger than before 2017 because of the distance to transport waste.
8. Education of Waste Management
 - Broacher is distributed to schools and residents.

4.b.i Review of 10 years plan of LGUs regarding other technologies than WTE

□ Quezon City

1. Ordinance of Waste Management
 - Separation at the source
 - Prohibition using of plastic bags
2. Organization of Waste Management
 - EPWMD is in charge of SWM
3. Budget of Waste Management
 - The general budget of LGUs is used
 - LGU does not collect garbage fee from residents.
4. Waste Generation Quantity and Quality
 - 2,970t/day, 0.88kg/person/day
 - Biodegradable waste: 54%,
 - Recyclable waste:20%,
 - Residual waste: 26%,
 - Special waste: 7%

4.b.i. Review of 10 years plan of LGUs regarding other technologies than WTE

□ Davao City

1. Ordinance of Waste Management
 - Designate the waste discharging hours and method
 - Based on RA9003, barangays should install the MRF
2. Organization of Waste Management
 - CENRO is in charge of the SWM
 - Among the 182 barangays, 91 have BESWMC which is in charge of SWM.
3. Budget of Waste Management
 - LGU collects the garbage fee from residents.
 - The method of collection is depends on the barangays.
4. Waste Generation Quantity and Quality
 - 991t/day, 0.58kg/person/day
 - Biodegradable waste : 50%,
 - Recyclable waste :19%,
 - Residual waste : 29%,
 - Special waste: 2%

4.b.i. Review of 10 years plan of LGUs regarding other technologies than WTE



□ Davao City

5. Collection and Transportation of Waste
 - 2 kinds of “mobile garbage bin” are installed on the main road; biodegradable waste and residual waste.
 - The collection rate is 70%. LGU collects wastes on main road and the barangays collect on other roads.
6. Intermediate treatment facility /3R
 - 16 barangays installed MRF. 8 MRFs do not function well because of shortage the budget for utility.
 - A lot of barangays can not install MRF because of the shortage the land and administrator.
7. Landfill
 - 600t/day waste are disposed of at New carmen landfill.
 - Waste over flowing at some parts and rough road
8. Education of Waste Management
 - 23 IEC personals implement the education about SWM at the school.

4.b.i. Review of 10 years plan of LGUs regarding other technologies than WTE

□ Cebu City

5. Collection and Transportation of Waste
 - All kinds of waste are discharged with plastic bag.
 - LGU outsources collection and transportation from residents to landfill.
 - Wastes from 80 barangays are collected.
6. Intermediate treatment facility /3R
 - MRFs are installed at 15 barangays, but the situation is unknown.
 - Composting “Takakura methods” are operated at some barangays.
7. Landfill
 - After Inayawan landfill of LGU were closed at 2016, the waste are disposed of at private landfills.
8. Education of Waste Management
 - When a barangay request IEC, CCENRO provide some materials and recture for school and residents.

4.b.i. Review of 10 years plan of LGUs regarding other technologies than WTE

□ Cebu City

1. Ordinance of Waste Management
 - Requires designated bags for discharge waste
2. Organization of Waste Management
 - CESET, CCENRO, BEOs and DPS under SWMD
 - Barangay captain organize BSWMCs.
3. Budget of Waste Management
 - The general budget of LGUs is used
 - LGU does not collect garbage fee from residents.
4. Waste Generation Quantity and Quality
 - 862t/day, 0.934kg/person/day
 - Biodegradable waste: 37%,
 - Recyclable waste:35%,
 - Residual waste: 28%,
 - Special waste: 0.1%

4.b.ii. Observations on the present situation of SWM of target LGUs including advanced material recovery/treatment facility

□ Challenges for SWM in target LGUs

Budget of Waste Management

- With increasing residents and their waste generation, how to secure the budget for SWM?
- Challenges to collect the fee; e.g. How to agree with people for appropriate and reasonable rate of garbage fee
- Planned budget for SWM Plan can be allocated from central government? How can LGUs request increase of budget allocation?

Next Step

- Research the method to obtain budget and funding in other countries
- Analyze the suitable method to obtain funding for each LGU

Waste Generation Quantity and Quality

- Analysis and evaluation of the waste data (generation trend, physical composition, chemical composition etc.) by LGUs are still challenge

Next Step

- Refer to the WACS methods and data management in other countries

4.b.ii. Observations on the present situation of SWM of target LGUs including advanced material recovery/treatment facility

□ Challenges for SWM in target LGUs

Collection and Transportation of Waste

- Incomplete segregation and separate collection
- Next Step**
- Research good example of segregation and separate collection of other countries
 - Analyze the suitable segregation methods including type of wastes in segregation for each LGU

Intermediate treatment facility /3R

- Segregation does not make sense without recycling ways including recycling facilities.
 - There is no budget and land for recycling facility.
- Next Step**
- Research the method of recycling for each kinds of waste in LGU
 - Research the scheme of implementation; e.g. subsidy from national government, PPP and selling a by-product
 - Analyze the suitable recycling facility and implementation scheme for each LGU

4.b.ii. Observations on the present situation of SWM of target LGUs including advanced material recovery/treatment facility

□ Challenges for SWM in target LGUs

Landfill

- Necessity of the infrastructure rehabilitations for waste overflow and rough road
- Next Step**
- Identify needs the rehabilitation or new landfill
 - Research the method of rehabilitation/construction and estimate required cost

Education of Waste Management

- Insufficient understanding of responsibilities of residents for SWM
- Next Step**
- List the item for SWM that should be understood by residents; e.g. reduce the waste, segregation, collection of garbage fee
 - Research the IEC method for the items listed above
 - Analyze the suitable method for each LGU

4.b.iii. Future activities of Output 4

□ Schedule

Activities	1 st Year Mar/'19 - Mar/'20	2 nd Year Apr/'20 - Mar/'21	3 rd Year Apr/'21 - Mar/'22
4.1	Finished		
4.2		Next Step	
4.3		Information Collection	Presentation
4.4			Analysis
4.5		16-Jun	
Sub-Group MTG			
Main activity	<ul style="list-style-type: none"> • Grasp the current situation and identify the current issues by National SWM strategy and 10 year SWM plan in the target LGUs. 	<ul style="list-style-type: none"> • Collect the information of "Good practice/Good technology" of other SWM technologies in third countries. • Summarize and provide suggestion/recommendation to improve utilization to target LGUs. 	<ul style="list-style-type: none"> • Seminar for disseminating recommendation is held.

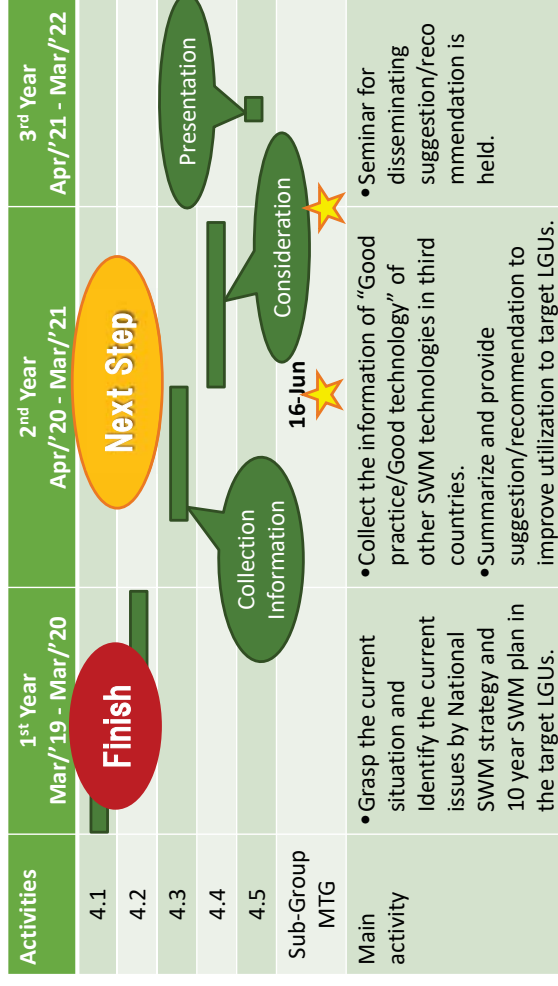
4.c. Future activities of Output 4

□ Allocation of the Activity 3

Item	Research for "Good practice/Good technology"	The Organization in Charge
Budget	➢ methods to obtain budget and funding in other countries	PPPC
Waste Generation Quantity and Quality	• WACS methods and data management in other countries	DOST
Collection and Transportation	• Good example of segregation and separate collection of other countries	Cebu City
Intermediate treatment facility /3R	• Method of recycling for each kinds of waste in LGU • The scheme of implementation; e.g. subsidy from national government, PPP and selling a by-product	DOST PPPC
Landfill	• Identify needs the rehabilitation or new landfill	Davao City
Education (IEC)	• List the item for SWM that should be understood by residents • The IEC method for the items listed above	Quezon City

4.b.iii. Future activities of Output 4

□ Schedule



4.c. Proposed outline of the TCP Newsletter

Newsletter on this project will be published twice a year for the following purposes:

- To disseminate and share the progress of the project
- To share the products of the project (such as manuals)

The Newsletter will be published on the website and distributed at the related events.

	Page	Writer	deadline
Cover	1	JET	
Greeting	1	-	-
1.1 Greeting from EMB	0.5	EMB	21th-Feb.2020
1.2 Greeting from JET	0.5	JET	21th-Feb.2020
2 Outline of SWM-AIT Project	5	-	-
2.1 About SWM-AIT Project	0.4	PMO	21th-Feb.2020
2.2 About TCP	0.4	JICA	21th-Feb.2020
2.3 PDM	0.2	JET	21th-Feb.2020
(1) Output 1	1	Sub-Group1	25th-Feb.2020
(2) Output 2	1	Sub-Group2	25th-Feb.2020
(3) Output 3	1	Sub-Group3	25th-Feb.2020
(4) Output 4	1	Sub-Group4	25th-Feb.2020
3 The Member of SWM-AIT Project	1	JET	21th-Feb.2020
3.1 Organization Chart			
(1) JCC			
(2) Project Team			
(3) ITWG			
(4) JICA Expert Team			
TOTAL	8		

- Allocated 1 page
- Deadline: 25th Feb

4.d. Participants in 1st Training in Japan

- Proposed period:
 - May 24 –June 6 (incl. traveling Philippines - Japan)
- Number of trainees:
 - LGUs:1person/LGU in total 3
 - Laboratory (ERLSD): 3
 - EMB central (SWMD) : 3
 - EMB region: 1person/region in total 3
 - DOE, PPPC, DOST: 3

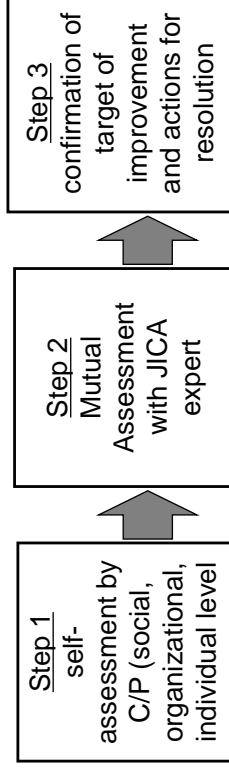
4.c. Proposed outline of the TCP Newsletter

- Title of newsletter: (Examples)
 - Road to Shokyaku (“combustion” in Japanese)
- Article for the 1st newsletter (Examples)
 - Output2
 - Introduction of WTE project in 3LGUs
 - Status of project, year of operation
 - Technology and treatment capacity
 - Messages to stakeholders
 - Output4
 - WTE projects in other LGUs
 - Common
 - Good Practice in 3 LGUs
 - Expectations to TCP (What will learn? What will you achieve?)

- Proposed date: February 27, 2020
- Draft Program: (distributed)

5. Finalization of the comments/agreements/Timelines

- Evaluation based on the Capacity Assessment Sheet
- Questions related with activities for outputs
- Evaluation may improve according to execution of activities
- 3times of assessment in project period (beginning, mid-term and end of the project)



6. Way Forward

Schedule of JCC, ITWG and sub-group meetings

GROUPS	Ja	Fe	Mar	Ap	May	Jun	Jul	Au	Se	Oc	No	De
ITWG	24			23			16		16			
SUBGROUP												
OP1		18	5		15		20			12	5	
OP2		13		16		9		10				
OP3		10			14					8		
OP4		13				16						
JCC						18					15	

Meeting Record

Title	Meeting with Subgroup for Output 2 & 4
Date and Time	10:33 AM, February 13, 2020
Place	Environmental Management Bureau Building, Conference Room Department of Environment and Natural Resources Compound, Visayas Avenue, Diliman, Quezon City, 1101 Metro Manila
Organizer	JICA Expert Team, PMO (DENR EMB-SWMD)
Participants (name & title)	<p><u>Selected Government Agencies</u></p> <p>[DOST/ITDI/ERD] Engr. Reynaldo T. Esguerra, Chief SRS</p> <p>[DILG-BLGS] Ms. Marla Clarisol L. Agas</p> <p>[PPP Center] Ms. Justine E. Padiernos</p> <p><u>Local Government Units (LGUs)</u></p> <p>[QC-EPWMD] Mr. David John S. Vergara</p> <p>[Davao-CENRO] Engr. Elisa P. Madrazo Engr. Orcullo Lakandiwa</p> <p>[Cebu-CENRO] Engr. Glory Rose C. Manatad</p> <p><u>EMB Central Office</u></p> <p>[EMB-Legal Division] Ms. Fatima E. Millan</p> <p>[DENR/EMB/PPPDD] Ms. Mary Esther D. Ofiaza</p> <p>[DENR/EMB/ERLSD] Ms. Ma. Fatima Anneglo R. Molina</p> <p>[FASPS/PMD] Ms. Marianica Philina Obmerga, PEO</p> <p>[EMB/SWMD/PMO] Ms. Elvira S. Pausing Ms. Rodeth F. Antonio</p> <p><u>JICA Expert Team</u></p> <p>Mr. Takahiro Kamishita, Chief Advisor Mr. Makoto Kosaka, SWM-PPP Ms. Kyoko Kimura, Expert of Public Enhancement, Training Arrange & Coordinator Mr. Eric Cea, Project Secretary Ms. Cynthia Rose C. Faylogna, Project Assistant</p>

Main contents of the meeting	<p>The meeting started at 10:33 AM with Ms. Pausing (as the Chairman) presenting the recap of the meeting agenda prepared by the PMO (EMB-SWMD). She solicited for any additional comments and other matters which may be included in the discussions from the participants. Without any modifications from the Subgroup members, Ms. Padiarnos of PPPC moved for the adoption of the agenda, and seconded by Ms. Fatima of the EMB-Legal Division.</p> <p>Presentation/Introduction of Subgroup and Specific Activities</p> <ul style="list-style-type: none"> ▪ Ms. Pausing of PMO introduced the members of the Subgroup, then the meeting has been called. Likewise, she declared the presence of the quorum with a total of 8 participants. <p>Discussions</p> <ul style="list-style-type: none"> ▪ Mr. Kamishita delivered the Outline of the Specific Activities under Project Output 2 including deliverables. He also highlighted the importance of the TCP as a mutual work; and explained that the Philippine counterpart and JET must exert equal efforts for the success of the project. Hence, suggested that from now on, the concerned government agencies must communicate with the group and work together. He continued to discuss the present scenario of the Solid Waste Management Condition of the 3 LGUs with the corresponding Project Schedule. The following discussions and agreements were defined in the meeting: <p>For Output 2:</p> <p>a. <i>Review of 10 years plan of 3 LGUs (Quezon City, Davao City, Cebu City) addressing identification of WTE project, quantity of waste to be treated in WTE facility, consistency with LGU land use plan, etc.</i></p> <ul style="list-style-type: none"> ▪ Mr. Kamishita explained the result of interview about the updates for the 10 years MSWM plan of 3 LGUS: <ol style="list-style-type: none"> 1. Quezon City: QC-EPWMD reported that another WACS is required to consider the effect of new Plastic Ban of the LGU on waste amount and composition for deliberation of plan. 2. Cebu City: According to CCENRO, the SWM Plan needs to be updated and yet to be finalized. 3. Davao City: According to Davao CENRO, the 10-year SWM Plan was approved by the Commission last November 2019, and the Land Use Plan has also been updated. ▪ Mr. Kamishita shared the Waste Mass Balance (WMB) and Waste Mass Flow of 3 LGUs using the presentation. Only Davao city's WMB stated in 10 years MSWM Plan is well-written. On the other hand, QC's WMB has some missing data and inconsistency of the unit (t/d and m3/d). CC's WMS has many missing data. QC and CC are advised to collect these data to identify how much waste can be fed to the WTE. <p>b. <i>Status of WTE projects in the target LGUs</i></p> <ul style="list-style-type: none"> ▪ Mr. Kamishita explained the present status of WTE procurement in 3 LGUs using presentation material prepared based on the interview and study up to now. Followings are the discussions for each LGU. <p>b-1. Quezon City</p>
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- DOST asked QC if the Swiss Challenge is still on going.
> QC-EPWMD affirmed to this. PPC added that QC-EPWMD has not yet issued Notice of Award (NOA) for the proponent because there is a need to wait for the approval of the Sanggunian and the Mayor.
- Mr. Kosaka asked QC the calculation basis of WTE capacity of 1,700 tpd from the disposal quantity how much the city is presently disposing to SLF.
> QC-EPWMD responded that 3,000 t/day is being disposed but this residual amount will be changed due to newly enacted plastic ban ordinances. The QC-EPWMD explained that the Capacity of WTE was based on a lot of feasibility studies, one from ADB (conducted various WACS, basic waste quantity and composition, etc.), and the private proponent has also their own study. The QC verified 1700 tpd delivery commitment basically brought about by confirming and validating the data from the proponent and the city side. The private companies have their own proposals but PPC and LGU needed to negotiate using their own data as a baseline to validate the proposals.
- Mr. Kamishita inquired on how QC will deal with the segregation. Since the WTE-DAO stated that the WTE facility shall accept segregated waste only.
> QC-EPWMD explained that the schedules for segregated waste will be arranged. During certain days, the biodegradables will only be collected, then the other days, the residuals and the bulky waste will be collected.
- Mr. Kamishita asked if the city verified the waste that will be transported to the WTE.
> QC-EPWMD answered that the proponent will adjust to that scheme.
- Mr. Kamishita inquired if the waste collected as residual waste shall be used as feedstock to WTE.
> PPC clarified that the unacceptable wastes shall be returned to the LGU and such will be specified to the contract. She also emphasized that the city supports and encourage segregation.
- Ms. Pausing inquired if the residual waste should be segregated.
> QC-EPWMD responded that the residual wastes will go directly to the other facilities.
- Mr. Kosaka inquired whether 1,700 tpd of feedstock includes biodegradable waste as well as recyclables.
> QC-EPWMD affirmed to this, and added that the biodegradable wastes are for Mechanical Biological Treatment (MBT) and compost but QC-EPWMD was uncertain about the each capacity of MBT and WTE.

b-2. Davao City

- Davao CENRO explained the status of WTE procurement under Japan Grant Aid. Study for 600 tpd of WTE capacity as well as calorific value are conducted already.
- Mr. Kamishita inquired if there is NO unacceptable waste for the facility.
> Davao: No
> PPC:
> DOST:

b-3. Cebu City

- Mr. Kamishita explained that based on the request from Cebu City Administrator, JET is now supporting Cebu City for its evaluation of unsolicited WTE proposal from a private company.
- Mr. Kosaka explained that Cebu City's present stance for WTE is a bit risky compared to the other 2 cities because city wants to contract out all of MSW activities from collection to final disposal. In case of QC, QC contracts separately in collection and hauling, WTE and disposing ash. And DC directly collects and

	<p>transports the waste using the LGU's Garbage trucks, and the incineration ash is also to be hauled and disposed by LGU.</p> <ul style="list-style-type: none"> ▪ Additionally, Mr. Kosaka explained one of the important issue is the setting up the capacity of WTE facility. In the proposal, proposed capacity of WTE is 800 tpd, in which 600 tpd is required to guarantee by city. However, the actual disposal quantity in SLF is only around 600 tpd. He added that there is maybe a gap to be addressed, however, there are very less information in CC's 10 years MSWM plan, so, Waste Mass Flow, how much city collect, recover and dispose, shall be investigated at first. ▪ CCENRO responded that the MSWM plan shall be updated accordingly. Based on WACS, biodegradables represent the biggest portion of the total waste. It should not be fed to the WTE, however, proposed WTE plan intend to incinerate all residual including them and present administration supports it. ▪ Mr. Kosaka added that JET is now requesting Cebu city to provide daily tonnage statistics in last 6 months to try to figure out the WTE capacity, how much city can guarantee to provide. It would be beneficial to this Sub-Group to share such discussions in next subgroup meeting. ▪ PPPC explained that Cebu City was specifically classified as a solicited project. Based on the study that was conducted, one of the key issues is the potential project site for the facility. PPPC inquired if there is a proposed site for Cebu since there is no available land for the facility. <ul style="list-style-type: none"> > CCENRO emphasized that their SWM plan is not yet approved and there are no updates on the details since it was deliberated last October 2019. The proposed location from the proponent is close to the landfill so the hauled waste will be fed directly to the WTE facility. The specific lot is still yet to be finalized. ▪ PPPC inquired if there is a transfer station. <ul style="list-style-type: none"> > CCENRO explained that the 10-year MSWM Plan was differed because the contracted private company is not compliant. There is a proposed new direction of the administration to have a waste directly delivered to the landfill instead of the transfer station. The city procured trucks and contracted a private hauler. She added that there is no available information since no data were turned over, and the finalization of plans were only made with the help of the EMB-VII. <p>c. Other matters (definition of Residual, Diversion Rate, etc.), Way forward</p> <ul style="list-style-type: none"> ▪ Mr. Kamishita explained that the JET will continue to communicate directly with Cebu City for their WTE project since QC is almost finished with the procurement, and Davao City is already in the preparation of the procurement. The JET still welcomes the consultation with the 3 LGUs. Mr. Kamishita highlighted that QC and DC took a long time to decide many conditions of WTE that is why the JET would like to support Cebu city because they don't have any technical experts. ▪ Mr. Kosaka wanted to clarify if there is any unified formula for the "diversion rate" which all LGUs shall adapt <ul style="list-style-type: none"> > DOST clarified that the Diversion Rate equals the Waste Diverted divided by the Waste generated. $(DR = WD \div WG)$ Wherein the Waste diverted is equal to the Waste Generation minus Waste dumped to SLF. > Mr. Kosaka pointed out a problem how to calculate diverted waste. Waste generated is calculated by waste gen per capita times population, and disposal quantity can be actual basis. I doubt all of their difference is truly diverted, it must contain illegal dumping otherwise no marine plastic comes into Manila bay. He emphasized that the diversion rate shall be well-defined. > Mr. Kamishita explained that there is also a difference between Generation and collection waste. >DOST projected that NSWMC is now discussing about the expansion of the
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Categories of the waste (in addition on present categories; Biodegradable, Non-Biodegradable, Recyclable, and special waste) such as Residual with potentially diversion, YYY, ZZZ because all of recyclables cannot be recovered then disposed at landfill.

- DOST stated that the table in the presentation introducing 3 LGUs WTE projects, the amount of energy (MW) should be included.
 - > Mr. Kosaka clarified that the primary purpose of the WTE facility in Japan is on treatment and reduction of waste. Government side only requires the tonnage for treatment and does not require the power gen capacity.
 - > DOST was concerned about other people who will scrutinize the documents like DOE. He added that the energy generation could be included in the viability of the project.
- DOST also emphasized that the people who are opposing the WTE facility will increase if there is no energy being recovered. Hence, he commented that the energy generation should be disclosed so that the opposition will agree.
 - > Mr. Kamishita clarified that the WTE project would like to provide safe environment to people which means the primary purpose of WTE is environmental.
 - > Mr. Kosaka stated that the WTE doesn't generate profit from power then it cannot recover total investment that is why the LGU must pay for the tipping fee.

For Output 4

a. Review of 10 years plan of LGUs regarding other technologies than WTE

Ms. Kimura presented Output 4 and she requested that the participants of LGUs to confirm the descriptions in the presentation.

- The following revisions had been made based on the discussions for target LGUs' current situation.
 - QC-EPWMD clarified as follows:
 1. The city prohibits the distribution of plastic bags.
 2. The Residual waste is 18.75%.
 3. The Recyclable waste is 20.3%.
 4. A total of 173 junkshops took ECC.
 - Davao CENRO clarified as follows:
 1. Some barangays have their own MRF but others do not. The MRFs are NOT monitored if these are still functional as of now. LGU will conduct the monitoring.
 2. The city is arranging new Sanitary Landfills (SLF).
 3. There has also been a problem in transferring MSW from residents' households to transfer station then to landfill sites.
 4. The Davao LGU has the IEC Team. However, the perennial problem is the change of barangay officials, CCENRO is still updating designations for the responsibilities from time to time. It is recommended that barangays will organize their own teams and will provide data.
- The following issue were discussed.
 - Budget
 - Davao CENRO inquired if the national government can fund the barangays for waste management project since LGU cannot provide all the budget.

- Mr. Kamishita of JET mentioned that EMB has supported to develop MRF in the barangays.
- Davao City responded that funds are lacking because some barangays have small budget and there are no such allocations for SWM/SLFs.
- DOST inquired about the location where the materials are sent since there are no paper plants and gas plants in Davao. He mentioned that there are also no processing plants in Cebu, and there is only one in Luzon somewhere in Bataan. If this is the case, such challenges will include transportation. He recommended that DTI will identify market for recyclables.
- DOST also mentioned that China had stopped pet bottles manufacturing and only Coca-Cola is manufacturing as of the moment.
- Davao stated that the city has been segregating but there is no economic value for the recyclables.
- DOST specified that QC has PPP Activity, Davao has JICA's assistance, and Cebu has JET's assistance.
- Ms. Kimura of JET cited that each LGU could arrive to a profitable measure.

WACS

- NSWMC prepared the draft WACS Guideline.

Intermediate treatment facility /3R

- DOST explained that this is more of the business side. He further claimed that if the items can be sold at a higher value, then establishments will invest.
- Mr. Kamishita supported the claim. He emphasized that it will depend on the market value, and in developed countries, there is a support to the recycling facility from the government.
- DOST cited that it is a part of the strategy but has not yet approved.
- DOST stated that there is an initial effort for the laws governing recycling (eg. EPR) but has not yet taken care of. However, if you put additional cost of the product then price will increase; and the population would prefer the cheaper products.
- DILG suggested that LGUs that has Best practices shall also be considered and not only other countries. EMB has the lists. EMB affirmed to this.

Landfill

- Davao CENRO cited that existing landfills in Davao will be rehabilitated and the mayor wanted the LGU to look for a new location for the landfills. Zoning also is proposed, and SLFs will include the disposal of fly ash.
 - DOST recommended that SLFs shall secure Environmental Compliance Certificate (ECC). He further questioned what exactly is expected and if the WACS methodology was subjected to discussions.
- Allocation which was the collecting the information of "Good practice/Good technology" of other SWM technologies in third countries was decided as below;
 - Ms. Kimura recommended that it would be better if concerned agencies will research on the good practices and the Organization in Charge for it shall be specified.
 - Organization in charge of research of good practice and good technologies

Item	Research for "Good practice/Good technology"	The Organization in Charge
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		Budget	methods to obtain budget and funding in other countries	PPPC
		Waste Generation Quantity and Quality	WACS methods and data management in other countries	DOST
		Collection and Transportation	Good example of segregation and separate collection of other countries	Cebu City
		Intermediate treatment facility /3R	Method of recycling for each kinds of waste in LGU. The scheme of implementation; e.g. subsidy from national government, PPP and selling a by-product	DOST PPPC
		Landfill	Identify needs the rehabilitation or new landfill	Davao City
		Education (IEC)	List the item for SWM that should be understood by residents The IEC method for the items listed above	Quezon City

➤ Ms. Kimura said that for the next subgroup meeting, the results of the research will be shared as a part of the discussions. The FORMATS/TEMPLATES WILL BE SENT TO ALL within February 2020. The period of the research will be around March, April, and May.

For Inter-output activities

I. Proposed outline of the TCP Newsletter

*Title of the Newsletter

QC-EPWMD-Article Writer

- Introduction of WTE project in 3LGUs
 - Overview
 - Status of project, year of operation
 - Technology and treatment capacity
 - Messages to stakeholders
- (*Next writer will be Davao city or Cebu city)
- Good Practices in 3 LGUs
- Expectations to TCP
 - (What will you learn? What will you achieve?)
- (**each One third page)

II. Participants of the Training in Japan

- For the Participants of the Training in Japan:
 - The criteria for the participants had been set but still yet to be verified and evaluated. The invitation letters will be sent by JICA (Official Invitations).

III. Kick-off Seminar

- For the Kickoff Seminar:

	<ul style="list-style-type: none"> ➤ The audiences are selected agencies of about 40 participants and not the general public. The invitation letters will be sent by PMO (Official Invitations). <p>IV. Capacity Assessment of Sub-group members</p> <ul style="list-style-type: none"> • For the Capacity Assessment: <ul style="list-style-type: none"> ➤ The members of the Subgroup for Output 2 & 4 shall fill-up the Capacity Assessment form to be submitted to PMO(EMB-SWMD) within the week. <p>3. Finalization of the Comments/Agreements/Timelines</p> <p>4. Ways Forward</p> <p>For the Newsletter (Output 2 & 4), the target readers will be the General Public.</p> <p>Adjournment</p> <p>With no other important matters to discuss, the meeting was adjourned at 2:14PM.</p>
Request by JET	<ul style="list-style-type: none"> • Capacity Assessment Evaluation • Newsletter Title Proposal and Articles from specified writers
Request by Subgroup Output 3	<ul style="list-style-type: none"> • Continuous evaluation and support from JET.
References / Materials Presented	<ul style="list-style-type: none"> • Meeting Agenda prepared by PMO (EMB-SWMD)
Prepared by	Ms. Cynthia Rose C. Faylogna

添付資料11-5: 成果4サブグループ会議

11-5-2 : 2nd SG4

2ND SUB-GROUP MEETING FOR PROJECT OUTPUT 4
 ENHANCEMENT OF THE NATIONAL GOVERNMENT'S CAPACITY TO IDENTIFY
 ISSUES AND PROVIDE SUGGESTIONS/RECOMMENDATIONS FOR OTHER SWM
 TECHNOLOGIES OTHER THAN WTE

24 June 2020, Wednesday, 9:00 AM (via MS Teams)

LIST OF PARTICIPANTS

NO	NAME	AGENCY/OFFICE	CONFIRMED
CONCERNED GOVERNMENT AGENCIES			
1	Engr. Reynaldo L. Esguerra	DOST-ITDI	✓
2	Ms. Ruby de Guzman/Ms. Charisse Jane Pascual	DOE-REMB	Not available due to prior commitment
3	Mr. Carlo Mari Crisregionald C. Tan	DILG NAPOLCOM CENTER	*already followed up last June 22, 2020, yet no response
4	Mr. Aldwin U. Urbina/Mr. Gilbert V. Kintanar, Jr./Kevin Gilbert M. Manzano	NEDA-IPG	✓
5	Dir. Justine E. Padiernos	PPP Center	*already followed up last June 22, 2020, yet no response

**TECHNICAL COOPERATION PROJECT (TCP) FOR THE
 CAPACITY DEVELOPMENT ON IMPROVING SOLID
 WASTE MANAGEMENT THROUGH
 ADVANCED/INNOVATIVE TECHNOLOGIES
 2ND SUB-GROUP MEETING FOR
 PROJECT OUTPUT 4**

**ENHANCEMENT OF THE NATIONAL
 GOVERNMENT'S CAPACITY TO IDENTIFY
 ISSUES AND PROVIDE SUGGESTIONS/
 RECOMMENDATIONS FOR OTHER SWM
 TECHNOLOGIES OTHER THAN WASTE-TO-
 ENERGY (WTE)**

24 June 2020, Wednesday, 9:00 AM (via MS Teams)

2ND SUB-GROUP MEETING FOR PROJECT OUTPUT 4
 ENHANCEMENT OF THE NATIONAL GOVERNMENT'S CAPACITY TO IDENTIFY
 ISSUES AND PROVIDE SUGGESTIONS/RECOMMENDATIONS FOR OTHER SWM
 TECHNOLOGIES OTHER THAN WTE

24 June 2020, Wednesday, 9:00 AM (via MS Teams)

LIST OF PARTICIPANTS

NO	NAME	AGENCY/OFFICE	CONFIRMED
LOCAL GOVERNMENT UNITS			
6	Mr. Vincent Ferdinand Paul G. Vinarao/Mr. David Vergara	LGU Quezon City	✓
7	Atty. Junine Aragonas Engr. Glory Rose Manatad/ Engr. Editha Peros Ms. Gail Padayhag/Ms. Jovelyn Gellig	LGU Cebu City Cebu City ENRO Cebu City Admin Office	*already followed up last June 22, 2020, yet no response ✓
8	Atty. Dwight Tristan Domingo Engr. Elisa Madrazo/Engr. Lakandiwa Orculo	LGU Davao City Davao City ENRO	*already followed up last June 22, 2020, yet no response ✓

2ND SUB-GROUP MEETING FOR PROJECT OUTPUT 4
 ENHANCEMENT OF THE NATIONAL GOVERNMENT'S CAPACITY TO IDENTIFY
 ISSUES AND PROVIDE SUGGESTIONS/RECOMMENDATIONS FOR OTHER SWM
 TECHNOLOGIES OTHER THAN WTE

24 June 2020, Wednesday, 9:00 AM (via MS Teams)

TENTATIVE AGENDA

1. Call to Order/Meeting Objectives/ Acknowledgement of Attendees and Adoption of Agenda - Ms. Eivira S. Pausing, EMB-SWMD, PMO (10 mins)
2. Presentations/Discussions by JET:
 - Review of the previous Sub-group meeting (10 mins)
 - Today's discussion points (10 mins)
 - Activity 4-3: Discussion on some examples of the information of "Good Practices/Good Technologies" of other SWM technologies in third world countries. - Ms. Sato & Ms. Kimura. JET including WACS Researches by Engr. Reynaldo Esguerra, DOST (Presentation 30 mins + Q&A 15 mins)
 - How to proceed with future activities of Project Output 4 (15 mins)
3. Wrap-up (Required Actions/Agreements/Timelines) - Ms. Nikka Sales, JET (10 mins)
4. Proposed schedules of the next Sub-group meetings - Ms. Eivira S. Pausing, EMB-SWMD-PMO (10 mins)
5. Other matters

2ND SUB-GROUP MEETING FOR PROJECT OUTPUT 4
 ENHANCEMENT OF THE NATIONAL GOVERNMENT'S CAPACITY TO IDENTIFY ISSUES AND PROVIDE SUGGESTIONS/RECOMMENDATIONS FOR OTHER SWM TECHNOLOGIES OTHER THAN WTE

24 June 2020, Wednesday, 9:00 AM (Via MS Teams)

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED
EMB-SWMD-Project Management Office (PMO)			
13	Ms. Nelie A. Dimer	EMB-SWMD-PMO (Central Office)	✓
	Ms. Rodeth Antonio	EMB-SWMD-PMO (Central Office)	✓
	Engr. Roxanne Barcenas	EMB-SWMD (Central Office)	✓
	Engr. Jedidiah Mangubat	EMB-SWMD (Central Office)	✓
	Ms. Kris Morada	EMB-SWMD (Central Office)	✓

2ND SUB-GROUP MEETING FOR PROJECT OUTPUT 4
 ENHANCEMENT OF THE NATIONAL GOVERNMENT'S CAPACITY TO IDENTIFY ISSUES AND PROVIDE SUGGESTIONS/RECOMMENDATIONS FOR OTHER SWM TECHNOLOGIES OTHER THAN WTE

24 June 2020, Wednesday, 9:00 AM (via MS Teams)

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED
EMB Central Office			
9	Mr. Renato T. Cruz	EMB-EQMD (Central Office)	*email not working
	Ms. Consolacion P. Crisostomo	EMB-PPDD (Central Office)	*already followed up last June 22, 2020, yet no response
	Dr. Fatima Anneglo Molina	EMB-ERLSD (Central Office)	*already followed up last June 22, 2020, yet no response
	Atty. Carmelo R. Segui	EMB-Legal Division (Central Office)	*already followed up last June 22, 2020, yet no response
	Engr. Jundy del Socorro/Engr. Wiyona Kay Rativo	EMB-AQMS (Central Office)	✓
PROJECT COORDINATORS			
10	Director Angelito V. Fontanilla	DENR-Foreign Assisted and Special Project Service	*email not working
	Mr. Eddie Abugan	DENR-FASPS (Central Office)	*already followed up last June 22, 2020, yet no response
	Ms. Marianica Philina Obmerga	DENR-FASPS (Central Office)	✓

2ND SUB-GROUP MEETING FOR PROJECT OUTPUT 4
 ENHANCEMENT OF THE NATIONAL GOVERNMENT'S CAPACITY TO IDENTIFY ISSUES AND PROVIDE SUGGESTIONS/RECOMMENDATIONS FOR OTHER SWM TECHNOLOGIES OTHER THAN WTE

24 June 2020, Wednesday, 9:00 AM (via MS Teams)

PROPOSED SCHEDULE OF MEETINGS for CY 2020

PROJECT OUTPUT	JUNE	JULY	AUG	SEPT	OCT	NOV
OP 1	4 (Thu)	7 (Tue)	20 (Thu)		12 (Mon)	5 (Thu)
OP 2		9 (Thu)		10 (Thu)		
OP 3					8 (Thu)	
OP 4	24 (Wed)					
ITWG		16 (Thu)		16 (Wed)		
JCC						15 (Thu)

OP1 – meeting dates from Aug to Nov were the original meeting schedules except for 7 July which was proposed by JET
 OP 2 – meeting dates from July & Sept were the original meeting schedules. However, these dates will be decided after confirmation with the representatives from LGUs Cebu City and Davao City (due difficulty in internet connection).
 OP3 - Meeting schedules for OP3 will be decided based from the progress of activities and discussion with ERLSD.
 OP4 – Last meeting for this year.

2ND SUB-GROUP MEETING FOR PROJECT OUTPUT 4
 ENHANCEMENT OF THE NATIONAL GOVERNMENT'S CAPACITY TO IDENTIFY ISSUES AND PROVIDE SUGGESTIONS/RECOMMENDATIONS FOR OTHER SWM TECHNOLOGIES OTHER THAN WTE

24 June 2020, Wednesday, 9:00 AM (via MS Teams)

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED
PROJECT COORDINATORS			
11	Engr. Nolan Francisco	EMB-SWMD-PMO (Central Office)	Senate hearing re WTE
	Ms. Elvira S. Pausing	EMB-SWMD-PMO (Central Office)	✓
JICA EXPERTS TEAM			
12	Mr. Takahiro Kamishita	Nippon Koei Co., Ltd.	✓
	Ms. Kyoko Kimura	Nippon Koei Co., Ltd.	✓
	Ms. Iku Sato	Nippon Koei Co., Ltd.	✓

2ND SUB-GROUP MEETING FOR PROJECT OUTPUT 4
ENHANCEMENT OF THE NATIONAL GOVERNMENT'S CAPACITY TO IDENTIFY ISSUES AND
PROVIDE SUGGESTIONS/RECOMMENDATIONS FOR OTHER SWM TECHNOLOGIES OTHER
THAN WTE

04 June 2020, Thursday, 9:00 AM (via on-line)

ADJOURNMENT

□ **Output 4:** National Government's and target LGUs' capacity to identify issues and provide suggestion/recommendation for other SWM technologies than WTE is enhanced.

□ **Specific activities**

- 4.1 **Grasp the current situation** by National SWM strategy and 10 year SWM plan in the target LGUs. 1st meeting
- 4.2 **Identify the current issues** for other SWM technologies in the target LGUs.
- 4.3 Collect the information of **"Good practice/Good technology" of other SWM technologies in Japan/third world countries.** 2nd meeting
- 4.4 **Summarize and provide suggestion/recommendation** to improve utilization of other SWM technologies to target LGUs.
- 4.5 **Seminar** for disseminating suggestion/recommendation is held.

□ **Schedule**

Activities	1 st Year Mar/'19 - Mar/'20	2 nd Year Apr/'20 - Mar/'21	3 rd Year Apr/'21 - Mar/'22
4.1	[Bar chart]		
4.2	[Bar chart]		
4.3	[Bar chart] Information Collection		
4.4	[Bar chart] Analysis		
4.5	[Bar chart] Presentation		
Sub-Group MTG	13-Feb ★	24-Jun 7-Aug ★★	
Main activity	<ul style="list-style-type: none"> • Grasp the current situation and identify the current issues by National SWM strategy and 10 year SWM plan in the target LGUs. • Collect the information of "Good practice/Good technology" of other SWM technologies in third countries. • Summarize and provide suggestion/recommendation to improve utilization to target LGUs. • Seminar for disseminating suggestion/recommendation is held. 		



2nd Sub Group Meeting for

Output 4: Enhancement of The National Government's Capacity to identify issues and provide suggestions/recommendations for other SWM technologies other than WTE

24th June 2020 (Wednesday) 9:00 a.m.


The Technical Cooperation Project (TCP) for Capacity Development on Improving Solid Waste Management (SWM) through Advanced/Innovative Technologies

Agenda


1. Call to Order
2. Presentation and discussions on the following: Output4
 - I. Review of the previous meeting
 - II. Today's discussion points
 - III. Explanation on some examples of the information of "Good practice/Good technology" of other SWM technologies in third world countries
 - IV. Discussion on how to proceed with future activities of output4
3. Wrap-up/Required Actions/Agreements
4. Schedule of the next Sub-group meetings

□ Challenges for SWM in target LGUs

5. Landfill


- **Necessity of the infrastructure rehabilitations for waste overflow and rough road** 
- Identify the need for rehabilitation or new landfill

6. Education of Waste Management

- **Insufficient understanding of responsibilities of residents for SWM** 
- List the items for SWM that should be understood by residents; e.g. reduce the waste, segregation, collection of garbage fee
- Research the IEC method for the items listed above
- Analyze the suitable method for each LGU


□ Challenges for SWM in target LGUs

1. Budget of Waste Management

- With increasing residents and their waste generation, how to secure the budget for SWM?
- **Challenges to collect the fee;** e.g. How to agree with people for appropriate and reasonable rate of garbage fee
- **Planned budget for SWM Plan can be allocated by/from central government?** How can the LGUs request increase of budget allocation? 

- Research methods on obtaining budget and funding by/in other countries
- Analyze the suitable method to obtain funding for each LGU

2. Waste Generation Quantity and Quality


- **Analysis and evaluation of the waste data** (generation trend, physical composition, chemical composition etc.) **by LGUs are still a challenge** 
- Refer to the WACS methods and data management of/in other countries

□ Allocation of the Activity 3


Item	Research for “Good practice/Good technology”	The Organization in Charge
Budget	<ul style="list-style-type: none"> • methods on obtaining budget and funding by/in other countries 	PPPC
Waste Generation Quantity and Quality	<ul style="list-style-type: none"> • WACS methods and data management in other countries 	DOST
Collection and Transportation	<ul style="list-style-type: none"> • Good examples of segregation and separate collection of other countries 	Cebu City
Intermediate treatment facility /3R	<ul style="list-style-type: none"> • Method of recycling for each kind of waste in LGU • The scheme of implementation; e.g. subsidy from national government, PPP and selling a by-product 	DOST PPPC
Landfill	<ul style="list-style-type: none"> • Identify the need for rehabilitation or new landfill 	Davao City
Education (IEC)	<ul style="list-style-type: none"> • List the items for SWM that should be understood by residents • The IEC method for the items listed above 	Quezon City

□ Challenges for SWM in target LGUs

3. Collection and Transportation of Waste

- **Incomplete segregation and separate collection** 
- Research good examples of segregation and separate collection of other countries
- Analyze the suitable segregation methods, including type of wastes in segregation, for each LGU

4. Intermediate treatment facility /3R

- **Segregation does not make sense without recycling including recycling facilities.**
- There is no budget and land for recycling facility. 
- Research the method of recycling for each kind of waste in LGU
- Research the scheme of implementation; e.g. subsidy from national government, PPP and selling a by-product
- Analyze the suitable recycling facility and implementation scheme for each LGU

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

1. Budget of Waste Management (1/2)

Point:

➢ Understand how to secure the budget for SWM

Collection of waste fee from residents

Title	Fees for a waste bag designated by local government
Outline	<ul style="list-style-type: none"> Fees for waste bags are auxiliary budget of waste management. (⇒ Mostly covered by annual revenue) Fees for a waste bags are determined by each local government. (Almost about \$0.3-\$0.4/1 bag) To introduce the fee for a waste bag, local government need to receive the understanding from residents through meetings. To prevent illegal dumping, hold meetings with residents and decide the appropriate price.
Advantage	<ul style="list-style-type: none"> Effect of weight reduction (⇒ reference: next slide)
Disadvantage	<ul style="list-style-type: none"> Risk of illegal dumping

[EXAMPLE]



Waste bag for municipal spid waste

Waste bag for plastic waste

In some countries, waste fees are included in utility costs to secure certainly.

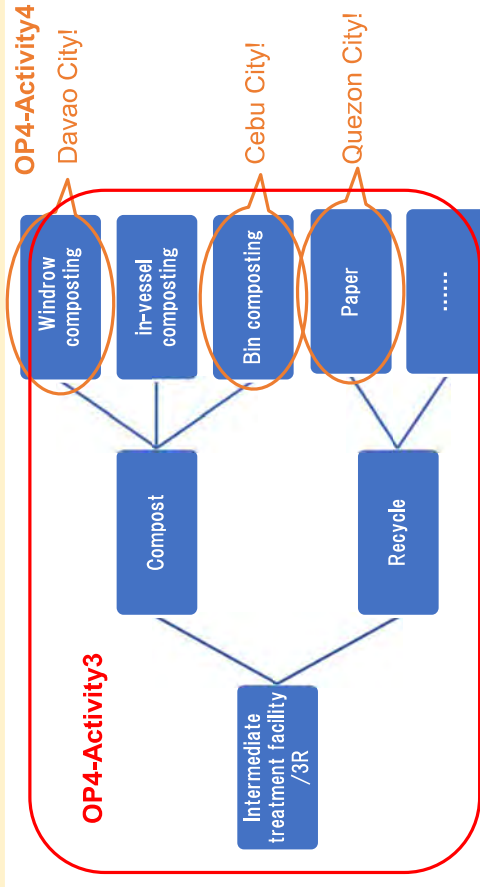
II. Today's discussion points (1/2)

- Today, we will just introduce some examples of good technology and good practices.
- Subgroup members will continue to collect the information of good practices and good technology until the next subgroup meeting.
- At the next subgroup meeting (in August), subgroup members will give a presentation like as today.

- Please give a comment to the format of good technology and good practices. (Today's Power Point and Excel research format)
- The information is expected to be used by subgroup members and others in the future. Please give a comment on how we are going to treat/utilize the data? e.g. Post on the EMB, distribute as a booklet, and etc.

II. Today's discussion points (2/2)

- At OP4-Activity4 (summarize recommendation to target LGUs), suitable technology will be found from the information of OP4-Activity3.
- At OP4-Activity3, we organize as many information as possible, furthermore, we survey each technology for more details.

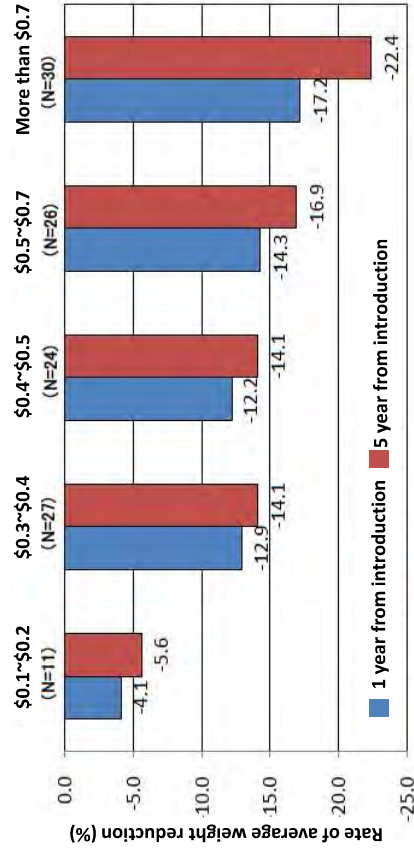


III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

1. Budget of Waste Management (2/2)

Reference: Effect of weight reduction

➢ A survey of 118 cities in Japan that introduced fee for a waste bag showed the effect of weight reduction.



Significance and effects fee for household waste (Yamatani, 2013)

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

Waste Generation Quantity and Quality

A. WACS method	
A-5. Sampling	Sample Selection
Feature: A “randomizer” program was used to select precise cell within each load for extraction and categorization. Randomizer is an MS-Excel worksheet that uses a set of formulas to randomly select material for sorting. Each cell in the sixteen-cell table was assigned a random number. The first two cells were assigned an integer value based on their rank with the other cells. The number assigned to the first cell was the cell to be sampled, unless inaccessible the second cell was sampled.	
A-6. Sampling	Hand-Sort Protocol
Feature: Perform daily safety briefings, review of methodology and sorting categories with the crew before sampling began. Same crew members throughout sampling process to ensure reliability and uniformity of results. Samples were obtained from randomly selected cell consisting 150-200 pounds of waste and sorted into prescribed categories. Field Crew Manager monitored sorting process to ensure proper classification and verified purity of each material classification as it was weighed, prior to recording data on the data sheet. At the end of each day, Field Crew Manager conducted a QC review of data recorded.	

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

Waste Generation Quantity and Quality

Point:	Understand WACS method and utilize data.
A. WACS method	
A-1. WACS Study	Statewide Municipal Solid Waste (MSW) Characterization Study
Feature: Field study to characterize MSW composition going into Indiana SLFs. Study structured to provide educational opportunity for Purdue students in SWM and performing data collection and research. The State saw fit to hire University to perform the study. Knowledge and experience have been brought back to school (Purdue University Calumet)	
A-2. Determination of waste components	ASTM D5231 (Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste)
Feature: Solid waste samples were collected to represent 4 different lifestyles (high, medium, low income, and downtown) in winter and summer periods. WACS was conducted 4 times; 2x for winter and 2x in summer to evaluate seasonal conditions.	

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

Waste Generation Quantity and Quality

A. WACS method	
A-7.	Quality Control Plan
Feature: A QC plan was executed to ensure quality and consistency throughout fieldwork, data entry and reporting. Train Sorting Crew –same crew members trained at onset of study continued to work until completion. Training focused on precise definition for each waste component category, safety procedures, sorting techniques and QC procedures. Sample Selection –sampling frequency, total number of vehicles needed and vehicle type was indicated on <i>Vehicle Selection Form</i> . For each sampled vehicle, gatekeeper placed a fluorescent “sample” card on windshield and directed vehicle to sorting crew. Record and Review Data –Sort Crew Manager recorded composition weight information on a specially designed tally sheet. Combining tally sheet, database and corresponding electronic data entry forms together ensure accuracy, consistency among forms and efficient recording of data. Report Preparation – Automated analytical tool to calculate waste composition estimates was tailored and used to reduce possibility of human error and meet needs of the study.	

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

Waste Generation Quantity and Quality

A. WACS method	
A-3. Sampling	Non-stratified sampling
Feature: In San Quintin, net weight of the waste collected was obtained by difference obtained between weight of the waste-loaded trucks (gross weight) and weight of trucks after discarding the waste (tare).	
A-4. Sampling	Point-quarter method
Feature: The total weight of the collected waste was determined by modifying the method in order to estimate the waste proposed by Tchobanoglous et. Al. (1994) $W_T = \left(\sum_{i=1}^d (N_i \times V_i \times \rho_i) \right) (F_c)$ Where: d = number of days sampled N = number of daily trips of the waste collection trucks V = average n m3 of the trucks P = specific waste of uncompact waste Fc = compaction factor (1.77)	

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

Waste Generation Quantity and Quality

B. Utilize the data

B-3. Waste Management at University of Idaho

Feature: Participation on yearly waste minimization competition to minimize waste and maximize waste diversion (recycling and composting). A SWM unit “Recycling/Surplus/Solid Waste” (RSSW) is responsible for the management and operation of programs related to waste. There are two major farms on UI campus, the north farm houses 130 dairy cows and the west farm houses 200 beef cows and 75 horses.

Development of Composting System and installation of on campus Composting Facility – to compost food waste all campus dining facilities, manure from North farm along with wood waste the steam plant and leaves from street sweepings, animal carcasses and other organic waste found in the UI waste stream.

UI controlled indoor Recycling facility – accepts mixed paper, newspaper, white ledger paper, plastics #1 and #2 and aluminum.

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

Waste Generation Quantity and Quality

A. WACS method

A-8. Hazard Assessment

Feature: Every facility is different, which may present unique hazards. Field Supervisor perform assessment to identify and evaluate workplace hazards which may be present at each work site when:

- Initial establishment of Health & Safety protocols
- New substances, processes, procedures or equipment which may present potential new hazards are introduced into the workplace
- New, previously unidentified hazards are recognized
- Workplace conditions warrant an assessment
- When occupational injuries and illnesses occur.

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

Waste Generation Quantity and Quality

B. Utilize the data

B-4. Recycling at Kansas State University

Feature: Increased recycling rates on campus through participation effort when *Traditional Sorting Method* switched to *Single Stream Method*. (Dual Stream vs Single Stream)

Dual Stream Recycling – involves sorting recyclable materials into various containers designated for aluminum cans, plastic, glass, newspaper and cardboard.

Single Stream Recycling – newer innovative recycling program where one centrally located bin collects all type of recyclables. The need for several different bins was eliminated thus precious space is saved. The method decreased the need for trucks for pick up with different materials leading to reduction in the cost of collection.

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

Waste Generation Quantity and Quality

B. Utilize the data

B-1. Site selection for appropriate sanitary landfill site

Feature: Site selection for appropriate SLF site to accommodate residual waste from Tashkent with at least 30 to 50 years capacity and would fulfill all requirements as international accepted minimum standards. WACS was used to gather specific information on waste composition and generation of residential sector of Tashkent City to develop plans for waste collection, recycling and disposal.

B-2. Solid Waste Management Solutions

Feature: Through the analysis of the study data, several immediate opportunities for improvement of recycling and landfill diversion have emerged such as:

- Policies to make recycling mandatory and community/educational outreach programs to encourage and improve participation rates.
- Development and operation of MRF to process and sell source-separated recyclables, composting process to manage yard waste and wood waste materials, mixed waste processing to recover post-consumer recyclables that do not find their way into source separation programs and generate valuable energy-producing feedstock.

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

4. Intermediate treatment facility /3R

Point:

- Understand the recycling methods for each type of waste
- Understand the operation way of the recycling facility

A. Organic Waste

◆ Example for organic waste treatment in Japan

- (1) Utilization of private recycling facilities
- (2) Establishment of MRFs: **←Support from central government**
 - Composting facility
 - Waste treatment facility
 - Methane fermentation facility
- (3) Introduction of multiple small composting equipment
- (4) Spread of household composting equipment



https://kyushu.env.go.jp/recycle/data/091221a_6.pdf

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

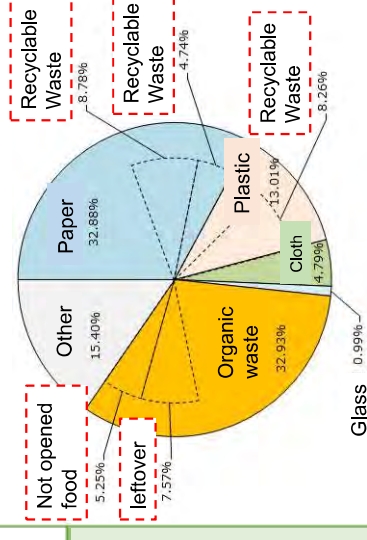
2. Waste Generation Quantity and Quality (4/4)

B. Utilize the data

B-5. Regular surveys and information disclosure

- The composition survey of household garbage (ordinary waste, recyclable waste, plastic containers and packaging, used paper and clothing) is conducted, and the secular change is disclosed.
- City can get accurate figures and use them in cities' policies.
- The result is posted on the local government HP, then it is effective for raising residents' awareness.

e.g. Osaka city in Japan



Composition of household waste in 2017

Osaka city in Japan
<https://www.city.osaka.lg.jp/kankyo/page/0000444225.html>

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

4. Intermediate treatment facility /3R

Point:

- Understand the recycling methods for each type of waste
- Understand the operation way of the recycling facility

A. Organic Waste

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https://kyushu.env.go.jp/recycle/data/091221a_6.pdf

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

4. Intermediate treatment facility /3R

Composting facility

Title	Rainbow plan compost center (Composting facility) (Nagai City, Yamagata Prefecture, Japan)
Outline	<ul style="list-style-type: none"> • Approximately 5,000 households (out of 9,700 households) organic wastes are collected. (*1) • Volume of waste treatment: About 1,000t/year (Organic waste only) • Operation cost: About \$140,000/year • Income of compost sales: About \$19,000/year

(*1) Remaining 4,000 households conduct household composting

Household composting

Title	Subsidy for household composting processor (Hamamatsu City, Shizuoka Prefecture, Japan)
Outline	<ul style="list-style-type: none"> • To reduce the amount of waste and promote the composting in households, the City provides subsidy to households that purchase household composting processors. • Subsidy amount: Max. 50% of equipment



Rainbow plan compost center



Container bucket for organic waste collection

[EXAMPLE]



MS-N53 (Panasonic)

<https://www.city.fuefuki.yamanashi.jp/documents/385f279977b662f3.pdf>
https://www.city.hamamatsu.shizuoka.jp/gomigen/gomi/genyou/life_gomi.html

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

3. Collection and Transportation of Waste (1/2)

Point:

- Understand the way of segregation and separate collection

On Thursday → **Recyclable**



1. Segregation

- Decide the point of collecting garbage in advance and collect specific waste on a fixed day. Since unsorted garbage is not collected, the accuracy of separation of residents increases.
- Recyclable products are divided into cans, bottles, PET bottles, Styrofoam, and cardboard. For recyclable product, separation boxes need to be installed.

2. Segregation

- It is the collection of resources (paper, cloth, metal, bottles) carried out by residential groups (registered groups) and registered traders. A subsidy will be issued by the city according to the amount collected.
- Place recyclables in specific spaces or doors and contractors come directly to get them.
- Residents' voluntary activities are essential.

Group Resource Collection

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

4. Intermediate treatment facility /3R

D. Bin, Can

D-1. Glass Recycle raw material

- In Japan, used bin is separated and collected from residents. The glass is clashed and separated depending on the size. This material is called Cullet. The cullet can be reproduced as a new bottle, insulation, or raw materials for road construction.

D-2. Can Recycle raw material

- In Japan, aluminum cans and steel cans are collected from residents. Separated into each type at the factory and crushed. This material is called scrap. The aluminum scrap is new can and car, the steel scrap is new can and ironware of raw materials.

Item	Evaluation
Investment	Low, Middle, High
Maintenance	Easy, Middle, Difficult
Space	Small, Middle, Large
Time	Fast, Middle, Slow
Labor	Less, Middle, Many

Finally, I would like to collect as many cases as possible so that each technology can be evaluated for the installation cost, maintenance cost and impact.

NIPPON-KOEI
EJEC 26

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

4. Intermediate treatment facility /3R

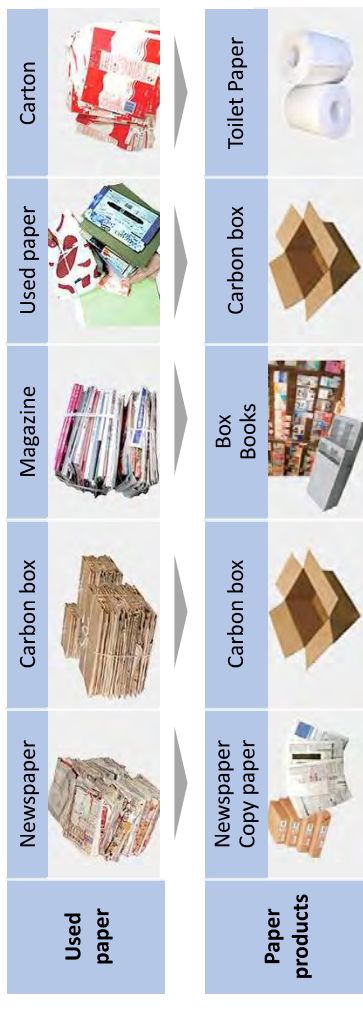
B. Paper

➤ Flow of general used paper recycling

(1) Segregation ⇒ (2) Collection ⇒ (3) Used paper wholesaler ⇒ (4) Paper mill ⇒ (5) Paper processing factory

➤ Examples of major types of used paper and paper products

Used papers are reused as raw materials for different papers depending on its quality and characteristics.



http://www.pnpc.or.jp/recycle/waste_paper/

NIPPON-KOEI
EJEC 24

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

5. Landfill (1/3)

Point:

- Understand the rehabilitation methods for each problem at the landfill.

1. Fences, retaining walls

- Areas where there is a danger of intrusion should be enclosed by fences, etc., and closed except during the waste reception hours. Prevent people from entering landfills without permission.
- Filling along fences and retaining walls enables planned landfills.
- Fences prevent waste from being blown away by the wind.



III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

4. Intermediate treatment facility /3R

C. Plastic

C-1. The fluff fuel GUUN Co., Ltd.

- Guun Co., Ltd. sell the fluff fuel consisting of paper, plastic, and textile as the alternative coal to cement factory and others.
- They accept the waste from private companies (about 50 companies) and Mandaue City.
- Mandaue City tries to improve the segregation by distributing the IEC material of waste segregation to residence, therefore, the waste segregation level by Mandaue City is acceptable for Guun.
- Since GUUN is awarded by Japanese Grant fund named JCM, they are now keeping operation at 30% of availability. This is not economically feasible without grant. This facility cannot earn profit because of too low tipping fee. Market development referring this case by the government is essentially needed.
- 20-25 tons/day, actual (50-75 tons/day – processing capacity)



III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

6. Education of Waste Management (1/3)

Point:

➤ Understand the effective and appropriate IEC method

IEC for Segregation	
Title	Calendar of household waste collection
Outline	<ul style="list-style-type: none"> The collection date of segregated waste is specified. The calendar is distributed to residents free. Generally prepared by each local government in Japan. Preventing mistakes on collection days will contribute to keep the sanitation of the town.



In Japan, one copy is distributed per one household.

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

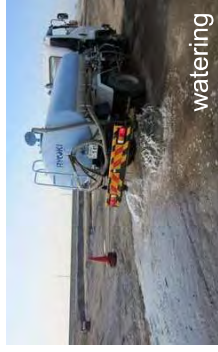
5. Landfill (2/3)

2. Covering

- Cover the landfill waste with soil on the same day so that the waste does not scatter. It is useful not only for scattering but also for prevention of smell, fire, prevention of generation of sanitary pests such as flies, leveling, and landscape protection.
- In Japan, the surface cover with soil is approximately 50cm every 3m or less against the height of the waste.



cover soil
Chiba-sangyo



watering
HIBIKINADA Development

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

6. Education of Waste Management (2/3)

Waste Classification in Mandaue City

Notice to the Public
MANDAUE CITY SYNCHRONIZED WASTE SEGREGATION PROGRAM
Executive Order No. 27

For large waste generators please follow the above waste code
Please bring out your trash/garbage ONLY WHEN THE GARBAGE TRUCK IS WITHIN YOUR AREA

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

5. Landfill (3/3)

3. gas collection pipe

- Ventilation equipment is provided to eliminate gases from landfills.
- One degassing facility will be installed every 2,000 m².



gas collection pipe
Aishin, Toyohashi-city



III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

7. Summary (2/2)

➤ Comparison “Challenges on LGUs” with “Good practice/Good technology”

#	Item	Activity 3 Good practice/Good technology	
		Research items	Not finished yet (24 th Jun ~)
4	Intermediate treatment	<ul style="list-style-type: none"> Further recycling 	<ul style="list-style-type: none"> Recycling methods other than basic recycling (such as specific cases)
5	Landfill	<ul style="list-style-type: none"> Necessity of the infrastructure rehabilitations for inappropriate management (waste overflow and rough road) Need to secure a new landfill site 	<ul style="list-style-type: none"> Other Necessary facility for sanitary landfill.
6	IEC	<ul style="list-style-type: none"> Conduct of effective IEC 	<ul style="list-style-type: none"> IEC of waste reduction Evaluation methods of IEC

IV. Discuss how to proceed with future activities of OP4

OP4 - Activity 3

- Excel & PPT Format

Is there any point that should be added or be improved?
Is there any point that you want to know more?

- How to collect information about Good practice and Good technology

→ Nikka-san

- Can you collect information and give a presentation at the subgroup meeting?
- Information collection (Excel): End of July
- Preparing PPT and give a presentation at the subgroup meeting on August

OP4 - Activity 4

- In order to use good practice and good technology which we collected, how we treat/utilize the data?
e.g. Post on the EMB, distribute as a booklet, and etc.
- Is there any discussion point?

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

6. Education of Waste Management (3/3)

Title	Application for waste segregation (Fujisawa City, Kanagawa Prefecture, Japan)
Outline	<ul style="list-style-type: none"> Function 1: Confirmation of segregation method Function 2: Schedule for the collection date Function 3: Alert to inform the collection date Function 4: Map for the stores selling the waste bag Function 5: Waste collection in the emergency <p>⇒ More than 17,000 download and especially effective for young people.</p>

Screen of the application



Title	Collection bag for used paper (Fukuoka City, Fukuoka Prefecture, Japan)
Outline	<ul style="list-style-type: none"> The bag describes the types of used paper that can be recycled. Prevents recyclable used paper from being mixed in with other waste. Distribute to citizens for free.



Back

III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

7. Summary (1/2)

➤ Comparison “Challenges on LGUs” with “Good practice/Good technology”

#	Item	Activity 1&2 Challenges on LGUs	
		Good practice/Good technology	Survey items
1	Budget	<ul style="list-style-type: none"> Inappropriate waste treatment cause of lack of SWM budget 	<ul style="list-style-type: none"> Subsidy to waste treatment from central government in Philippines and other countries
2	WACS	<ul style="list-style-type: none"> Appropriate WACS method Effective utilization of WACS data 	<ul style="list-style-type: none"> If any
3	Collection	<ul style="list-style-type: none"> Incomplete segregation and separate collection 	<ul style="list-style-type: none"> Collection method of organic waste and other

#	Item	Activity 3 Good practice/Good technology	
		Finished (~ 24 th Jun)	Not finished yet (24 th Jun ~)
1	Budget	<ul style="list-style-type: none"> Collection of waste fee from residents 	<ul style="list-style-type: none"> Subsidy to waste treatment from central government in Philippines and other countries
2	WACS	<ul style="list-style-type: none"> Sampling method Utilization of WACS data and disclosure to residents 	<ul style="list-style-type: none"> If any
3	Collection	<ul style="list-style-type: none"> Segregated collection (Station collection, Group resource collection) Collection with gathering the waste treatment fee 	<ul style="list-style-type: none"> Collection method of organic waste and other

添付資料11

IV. Discuss how to proceed with future activities of OP4

03 Good Technology/Good practice

設備の保守・点検

Investment	Low, Middle, High
Maintenance	Easy, Middle, Difficult
Space	Small, Middle, Large
Time	Fast, Middle, Slow
Labor	Less, Middle, Many

設備の保守・点検

Details

- Feature
- Good Point
- Bad Point

← Evaluation

04 Good Technology/Good practice

設備の保守・点検

Investment	Low, Middle, High
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設備の保守・点検

Details

- Feature
- Good Point
- Bad Point

← Evaluation

Output 4: Review of the previous meeting

□ Schedule

Activities	1 st Year Mar/'19 - Mar/'20	2 nd Year Apr/'20 - Mar/'21	3 rd Year Apr/'21 - Mar/'22
4.1	[Bar]		
4.2	[Bar]		
4.3	[Bar]	[Bar]	
4.4	[Bar]	[Bar]	
4.5	[Bar]	[Bar]	
Sub-Group MTG	13-Feb ★	24-Jun 7-Aug ★★	
Main activity	<ul style="list-style-type: none"> • Grasp the current situation and identify the current issues by National SWM strategy and 10 year SWM plan in the target LGUs. 	<ul style="list-style-type: none"> • Collect the information of "Good practice/Good technology" of other SWM technologies in third countries. • Summarize and provide suggestion/recommendation to improve utilization to target LGUs. 	<ul style="list-style-type: none"> • Seminar for disseminating suggestion/recommendation is held.

PROJECT ACTIVITY : 2nd SUB-GROUP MEETING FOR PROJECT OUTPUT 4 (ENHANCEMENT OF THE NATIONAL GOVERNMENT'S CAPACITY TO IDENTIFY ISSUES AND PROVIDE SUGGESTIONS/RECOMMENDATIONS FOR OTHER SWM TECHNOLOGIES OTHER THAN WTE)

DATE/TIME : 24 June 2020, 9:15 AM - 11:20 AM (Philippine Time)

VENUE : Video Conference through Microsoft Teams

Agenda Topics	Issues/Discussions/Actions	Comments/Agreements/ Timelines	Required Actions/Responsible Agency/Person
<p>1.) Call to Order</p>	<ul style="list-style-type: none"> Ms. Elvira Pausing of EMB-SWMD-PMO established the meeting which was duly called and declared a quorum based from the Secretariat's report that out of the 12 member agencies, 9 joined the meeting. 		
<p>2.) Adoption of the Agenda</p>	<ul style="list-style-type: none"> Ms. Pausing presented the agenda and asked the members if there are other matters that they need to discuss. She also reiterated the sequence of the meeting and later asked for the adoption of the agenda. 	<p>➤ Agenda was moved for adoption with no comments and suggestions from the participants.</p>	
<p>3.) Acknowledgement of Attendees</p>	<ul style="list-style-type: none"> Acknowledgement of Subgroup OP4 members by Ms. Pausing. 		
<p>4.) Brief Review of the Previous Subgroup Meeting & Discussion Points for the Current Meeting</p>	<ul style="list-style-type: none"> Ms. Kyoko Kimura of JET gave a brief review of the accomplished activities, Activities 1 & 2, during the 1st Subgroup Meeting for Output 4. She then reminded the subgroup members of the general schedule of the activities for Output 4. 	<p>➤ No clarifications and/or alterations raised by the subgroup members.</p>	

	<ul style="list-style-type: none"> Ms. Kimura also enumerated the discussion points for the current meeting and the relation between Activities 3 and 4 of Output 4. 																
<p>5.) Presentation and discussions on the topics under:</p> <p>Activity 4-3: Discussion of examples of the information of “Good practice/Good technology” of other Solid Waste Management (SWM) technologies in third world countries.</p>	<p>The presentation was delivered by Ms. Kyoko Kimura and Ms. Iku Sato of JET; and Engr. Reynaldo Esguerra of DOST-ITDI who discussed researches on good practices and technology on Waste Generation Quantity and Quality.</p> <p>From this presentation, the following had been agreed upon and discussed with the subgroup members:</p> <ul style="list-style-type: none"> Ms. Kimura emphasized that the JET would like to collect as many data as possible of good practices and technology of SWM from Japan/third world countries, especially those un-surveyed items indicated in the presentation. <p>Thus, Ms. Sato reminded the subgroup members to collect more information for</p>	<p>➤ Subgroup members of Output 4 (assignment per member as summarized by the table below) are expected to collect information of Good Practices and Good Technology of SWM from Japan/third countries.</p> <table border="1"> <thead> <tr> <th>Item</th> <th>The Organization in Charge</th> </tr> </thead> <tbody> <tr> <td>Budget</td> <td>PPPC</td> </tr> <tr> <td>Waste Generation Quantity and Quality</td> <td>DOST</td> </tr> <tr> <td>Collection and Transportation</td> <td>Cebu City</td> </tr> <tr> <td>Intermediate treatment facility /3R</td> <td>DOST PPPC</td> </tr> <tr> <td>Landfill</td> <td>Davao City</td> </tr> <tr> <td>Education (IEC)</td> <td>Quezon City</td> </tr> </tbody> </table>	Item	The Organization in Charge	Budget	PPPC	Waste Generation Quantity and Quality	DOST	Collection and Transportation	Cebu City	Intermediate treatment facility /3R	DOST PPPC	Landfill	Davao City	Education (IEC)	Quezon City	<p>➤ Subgroup members of Output 4 are expected to collect information of Good Practices and Good Technology of SWM from Japan/third countries. Collected information and researches will be presented by the respective subgroup member on the next subgroup meeting for Output 4.</p>
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	<p>Activity 3 of Output 4. She added that, collected information/researches will be presented by the respective subgroup member on the next subgroup meeting.</p>	<p>➤ Collected information and researches will be presented by the respective subgroup member on the next subgroup meeting for Output 4 scheduled on 07 August 2020.</p>	
<p>6.) Summary of Discussion on Activity 3 and Activity 4 and Discussion on How to Proceed with the Future Activities of Output 4</p>	<p>Ms. Kimura initiated the discussion. The following had been agreed upon and discussed with the subgroup members:</p> <ul style="list-style-type: none"> • <i>Format for Collection of Data</i> <ul style="list-style-type: none"> ➤ Ms. Kimura summarized the previous discussion. She then asked the subgroup members if they have any comments on the Research Format in MS Excel for Activity 3 of Output 4 and the PowerPoint presentation. She suggested the subgroup members to approach JET if ever they are having any difficulty in using the format. ➤ Ms. Pausing confirmed if the subgroup members received the MS Excel format for the collection of data for Activity 3 of Output 4. ➤ The subgroup members confirmed that they received the format. • <i>Suggestions on How to Conduct Research Online</i> 	<ul style="list-style-type: none"> ➤ No comments were raised by the subgroup members regarding this. 	

	<p>➤ Ms. Nikka Sales of JET gave some suggestions on how to collect information about good practice and good technology.</p> <ul style="list-style-type: none"> ● <i>Collection and Presentation of Data Schedule</i> ➤ Ms. Kimura informed the subgroup members that collection of data for Activity 3 of Output 4 is expected until the end of July. Presentations by the subgroup members of their collected information are expected on the next subgroup meeting on 07 August 2020. ➤ Mr. Takahiro Kamishita of JET emphasized that the remark of Ms. Kimura is a reminder to the subgroup members. ➤ Mr. David John Vergara of Quezon City (QC) LGU informed the team that the expected IEC research from his office has already been drafted and is only waiting for approval. He then asked for clarification if researches on IEC of Waste-to-Energy are also required, or only IEC of SWM. ➤ Ms. Kimura clarified that for Output 4, subgroup members are only expected to conduct research on good Solid 	<p>➤ Collection of Information of Activity 3 of Output 4 is expected until the end of July. Presentation of the collected information is expected on the next subgroup meeting on August.</p> <p>➤ QC LGU to submit to JET their collected information, once approved, and to give a presentation on the next subgroup meeting.</p>	<p>➤ Collection of Information of Activity 3 is expected from the assigned subgroup members of Output 4 until the end of July. Presentation by the responsible subgroup member of the collected information is expected on the next subgroup meeting on August.</p> <p>➤ QC LGU to submit to JET their collected information, once approved, and to give a presentation on the next subgroup meeting.</p>
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	<p>Waste Management (SWM) practices and technologies. She added that subgroup members are also encouraged to conduct research on items that are not assigned to them.</p> <ul style="list-style-type: none"> ➤ Ms. Pausing confirmed that the team will wait for the IEC research of QC LGU. ➤ Ms. Kimura also reminded Mr. Vergara to prepare a presentation on their collected data on the next subgroup meeting. ➤ Engr. Elisa Madrazo of Davao City LGU informed the team that they already submitted the good practices of Davao City. She then asked for clarification if their office is still required to collect information for Activity 3 of Output 4. ➤ Ms. Kimura confirmed that Davao City LGU is still required to collect information for Activity 3. ➤ Engr. Madrazo assured to inform Engr. Lakandiwa Orcullo about the deliverable. 		
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	<ul style="list-style-type: none"> ➤ Engr. Madrazo clarified that the document that they submitted is the Practices and Technologies on SWM of Davao City. ➤ Ms. Pausing requested Engr. Madrazo to submit this document again to the team. ➤ Ms. Glory Manatad of Cebu City ENRO also signified that she has already started her research for Activity 3. She confirmed that she will present her output on the next subgroup meeting. ➤ Ms. Pausing asked for confirmation if DOST-ITDI still has to submit any information for Activity 3 of Output 4. ➤ Ms. Kimura confirmed that DOST-ITDI still has to submit collected information about good practices/technology on intermediate treatment facility /3R. ➤ Ms. Pausing suggested to send an email to PPPC about the requirements of research collection. 	<ul style="list-style-type: none"> ➤ Davao City LGU to submit to JET the mentioned document by Engr. Madrazo. ➤ DOST-ITDI still has to submit collected information about good practices/technology on intermediate treatment facility /3R. ➤ EMB-SWMD/PMO will send an email to PPPC about the 	<ul style="list-style-type: none"> ➤ Davao City LGU to submit to JET the document on Practices and Technologies on SWM of Davao City. ➤ DOST-ITDI to submit collected information about good practices/technology on intermediate treatment facility /3R, and present on the next subgroup meeting. ➤ EMB-SWMD/PMO to send an email to PPPC
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	<ul style="list-style-type: none"> ● <i>Utilization of Collected Data</i> <ul style="list-style-type: none"> ➤ Ms. Kimura and Mr. Kamishita asked for suggestions from the subgroup members on how the collected data can be utilized and disseminated. ➤ JET also gave examples on how the collected data can be utilized such as through posting to the EMB website and distribution of booklets. ➤ Ms. Marianica Obmarga of DENR-FASPS suggested that a dissemination seminar can be organized for selected stakeholders. ➤ Mr. Kamishita welcomed the suggestion and further clarified that a technical dissemination training is actually part of the activities of Output 4. ➤ Ms. Pausing supported the examples given by JET. She then inquired if JET will be the one to prepare and produce the booklet and EMB-SWMD PMO will be responsible for the distribution. 	requirements of research collection.	about the requirements of research collection.
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	<ul style="list-style-type: none"> ➤ Mr. Kamishita answered that the matter can be discussed in a separate meeting. ➤ Mr. Kamishita asked the subgroup members if there is any association or organization in the Philippines wherein LGUs discuss SWM issues. He justified that organizations might have social media websites which can be a good platform to disseminate the good practices and technologies on SWM. ➤ Ms. Pausing mentioned that a League of Municipalities might be existing. ➤ Engr. Madrazo cited that there is an association of barangays in Davao City. ➤ Engr. Manatad also cited that each barangay in Cebu City has a committee that discussed SWM issues. These issues are also tackled by the city's SWM Board. ➤ Ms. Pausing recommended that if the preparation and distribution of booklets will push through, the team could ask for assistance from the LGUs, EMB Regional offices, schools, 	
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	<p>etc. for the distribution. She justified that without specific organizations or associations of LGUs to participate in the distribution may not affect the matter.</p> <ul style="list-style-type: none"> ● <i>Project's Newsletter</i> <ul style="list-style-type: none"> ➢ Ms. Pausing asked for any updates on the preparation of the Newsletter of the project. ➢ Ms. Sales updated that many subgroup members have not yet submitted their assigned deliverables. ➢ Ms. Pausing then recommended to proceed with the issuance of the Newsletter using the available information submitted by some of the sub-group members, e.g. title of the Newsletter, short write-ups, etc. She also mentioned that DENR-FASPS is actually requesting some articles regarding project updates for the 2nd quarter of this year to be included in the FASPS Newsletter ➢ Ms. Pausing asked for any timelines on the expected release of the first draft of the Newsletter. 	
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	<ul style="list-style-type: none"> ➤ Mr. Kamishita mentioned that since the preparation of the Newsletter is already behind schedule, the first draft should be expected as soon as possible. ➤ Ms. Pausing requested JET to assess the data/information submitted by the sub-group members if already enough for the finalization of the newsletter or what other critical information are still needed to crop up with a Newsletter. ➤ JET agreed on the suggestion and committed to inform the members on any updates. • <i>Other Questions and/or Comments</i> <ul style="list-style-type: none"> ➤ Ms. Kimura asked the subgroup members about the handling or recyclable glass and cans in the Philippines. ➤ Ms. Pausing mentioned that the EMB Central Office has been practicing segregation of wastes using various waste bins per Division including glass and cans. She also mentioned that some LGUs have their own glass crusher machines usually housed in their respective MRFs wherein glasses are shredded and mixed with cement. 	<ul style="list-style-type: none"> ➤ JET to prepare the Newsletter and assess any additional information that is needed for its production. 	<ul style="list-style-type: none"> ➤ JET to prepare the Newsletter and assess any additional information that is needed for its production.
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	<ul style="list-style-type: none">➤ Mr. Vergara stated that he has to check first the QC practices on recycling glasses and cans. He mentioned that there are efforts on the matter, but since segregation of waste in QC is limited to biodegradable and non-biodegradable, recycling of glasses and cans specifically might not be generally implemented within the city.➤ Engr. Madrazo added that in Davao City, there is no specified site for recyclables.➤ Engr. Manatad joined the discussion, mentioning that Cebu City has no specific facility for the processing of collected glasses, but they have the equipment. CCENRO collects glasses from establishments and temporarily store these glasses to the MRF. Processed glasses are used for construction.➤ Engr. Madrazo mentioned that Davao City also plans to purchase equipment for the processing of recyclables such as glasses.		
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<p>7.) Way forward, Schedules of the next meetings</p>	<ul style="list-style-type: none"> ● Ms. Pausing discussed the proposed schedule for the next subgroup meetings. <ul style="list-style-type: none"> ➢ Proposed schedule for the next Subgroup for OP1 Meeting is July 7, 2020. ➢ Ms. Pausing mentioned that the proposed subgroup meeting for Output 2 will be on July 9. She emphasized the importance of the 3 LGU’s presence on the said meeting. ➢ Mr. Kamishita suggested to move 1 week later the July 9 meeting since it shortly follows the July 7 meeting. ➢ Ms. Pausing mentioned that the schedule (Oct 8, 2020) for the next subgroup meeting for Output 3 is yet to be decided. The final schedules for OP3 will be decided based from the progress of activities and further discussion with ERLSD. ➢ Proposed schedule for the next subgroup meeting for Output 4 is on August 7. ➢ JET mentioned that the next ITWG and JCC meetings will be discussed 	<ul style="list-style-type: none"> ➢ The 4th Subgroup Meeting for Output 1 will be on July 7, 2020. ➢ The 2nd Subgroup Meeting for Output 2 is moved to July 16. ➢ The proposed 3rd Subgroup Meeting for Output 4 scheduled on August 7 was confirmed by JET. 	<ul style="list-style-type: none"> ➢ JET/EMB-SWMD-PMO to confirm the availability of subgroup members of Output 2 on July 16.
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	<p>depending on the course of events considering the COVID-19 outbreak and the progress of the activities by the sub-groups 1-4.</p> <ul style="list-style-type: none">➤ Mr. Kamishita informed the subgroup members that Japanese experts will continue working for the project in Japan, for the mean time. <ul style="list-style-type: none">● Adjournment <ul style="list-style-type: none">➤ There be no other matters to be discussed, Ms. Pausing adjourned the meeting at 11:20 AM by extending her appreciation to all the Sub-group members and other participants who joined the meeting.		
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