

Appendix 11-5: Sub-group Meeting for Output 4

- 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

Appendix 11-5: Sub-group Meeting for Output 4

11-5-1 : 1st SG4

(Same as Appendix 11-3-1)



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 Department of Environment and Natural Resources
ENVIRONMENTAL MANAGEMENT BUREAU
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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

2

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

3

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.

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2. Objectives of the meeting

□ Members for Sub-Group for Output 2&4

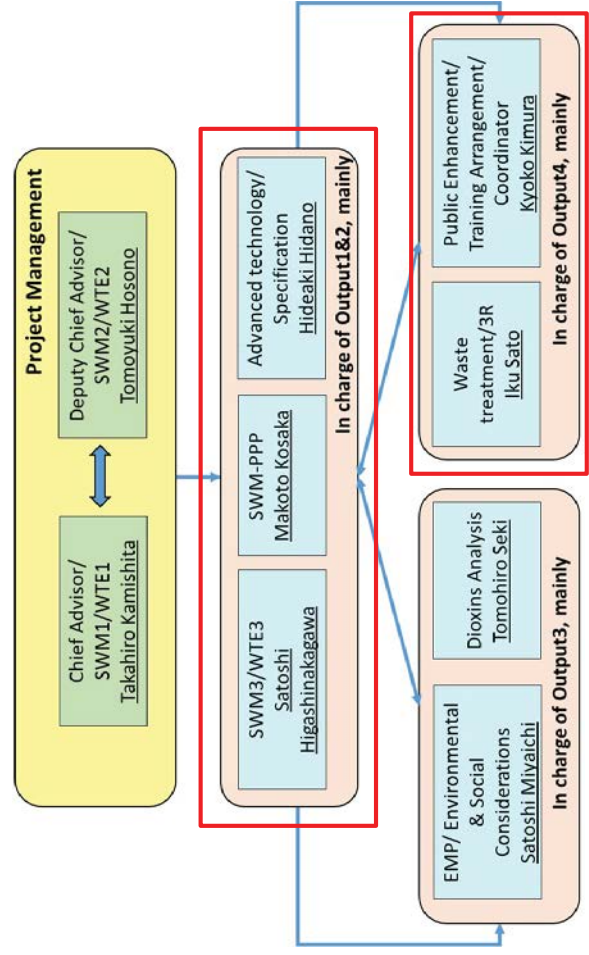
	Agency/Office	Members
Selected Concerned Government Agencies	DOST-Industrial Technology Development Institute	Engr. Reynaldo Esguerra
	DOE-REMB	Ms. Ruby De Guzman
	PPP Center	Ms. Justine Padiernos
	DILG	Mr. Carlo Mari Crisostomenald C. Tan
EMB Central Office	EMB-EQMD-Air Quality Management Section	Engr. 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

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

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

□ Composition of the JICA Expert Team



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

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 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.

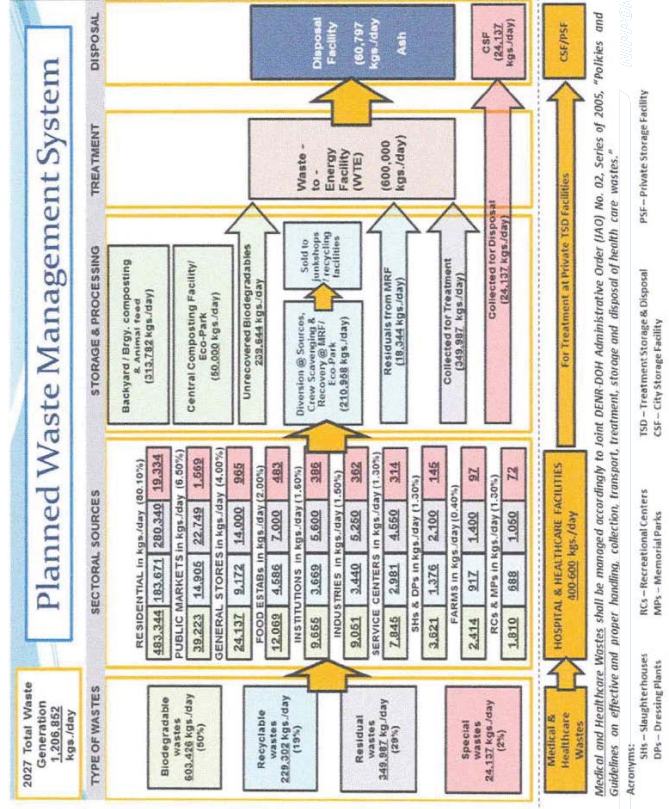
Summary of WMB in Davao City

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
d) Waste Disposal (kg/day)	684,195	647,882	93,069
Diversion rate	31%	41%	92%

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

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
c.1) Composting (t)		3,071	
c.2) Material recovery (t)		2,248	
c.3) 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	Unsolicited 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

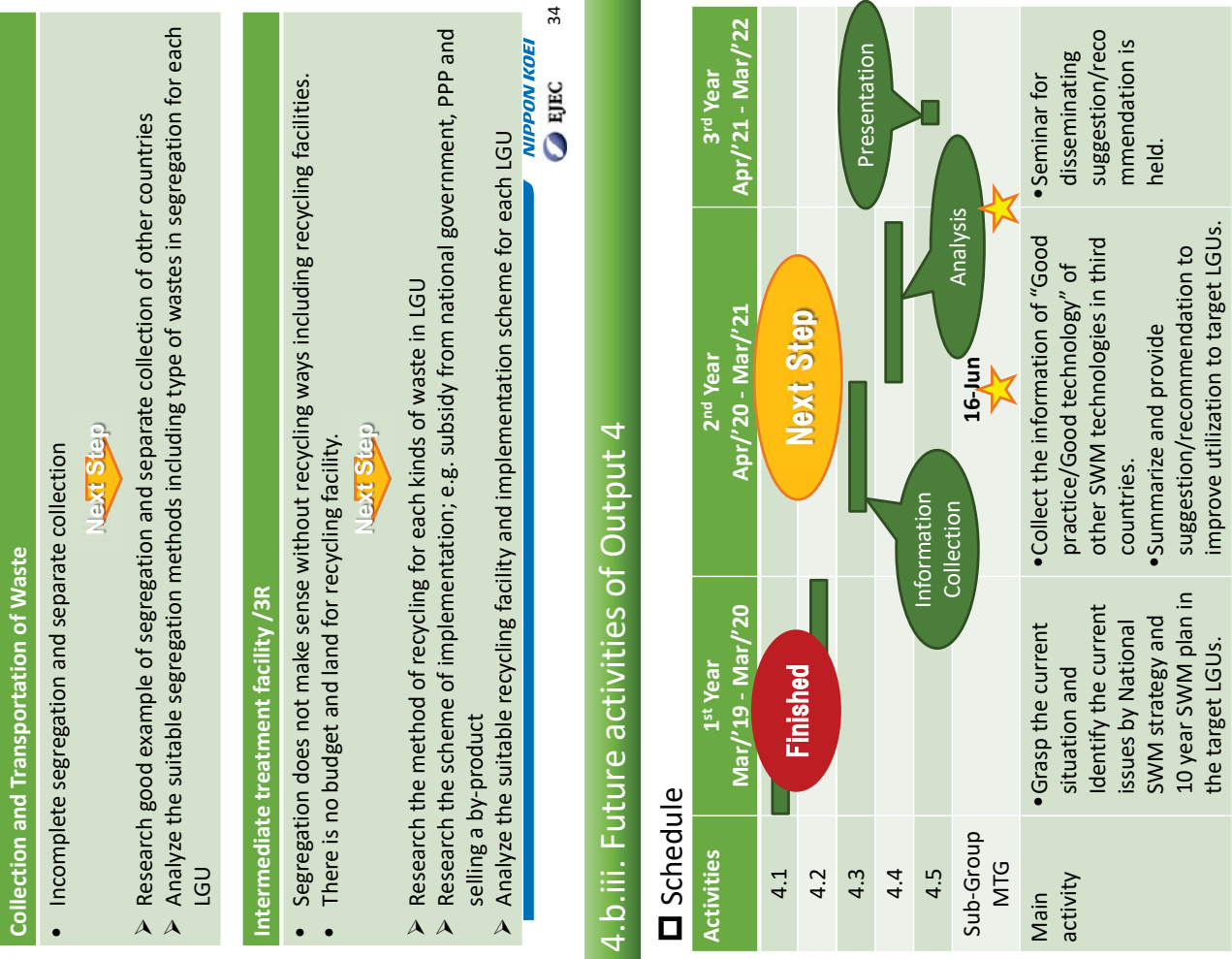
- Necessity of the infrastructure rehabilitations for waste overflow and rough road
- Next Step**
- Identify needs the rehabilitation or new landfill
 - Research the method of rehabilitation/construction and estimate required cost

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



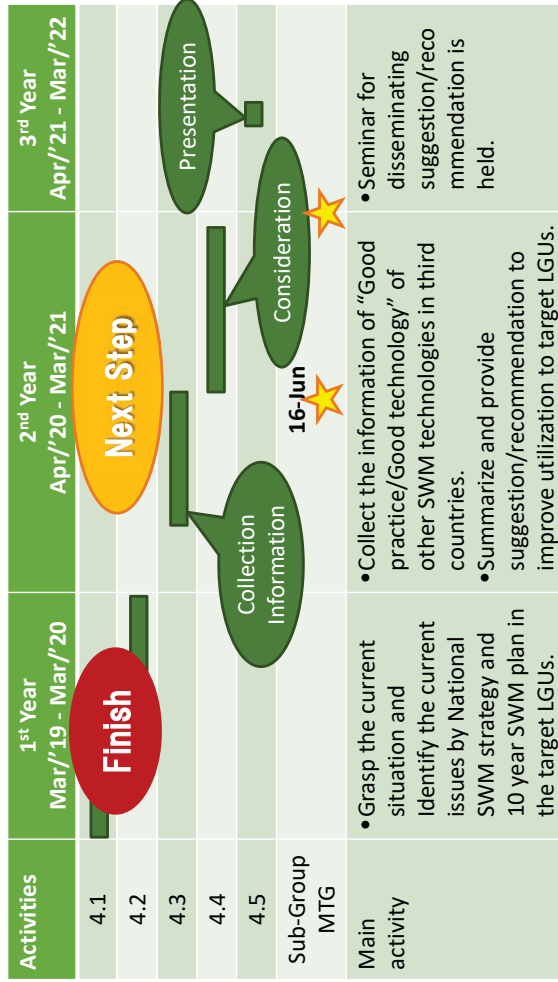
4.c. Future activities of Output 4

□ 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

- 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
 - WTE projects in other LGUs
 - Output4
 - Good Practice in 3 LGUs
 - Common
 - Expectations to TCP (What will learn? What will you achieve?)

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	
1	1	-	-
1.1	0.5	EMB	21th-Feb.2020
1.2	0.5	JET	21th-Feb.2020
2	5	-	-
2.1	0.4	PMO	21th-Feb.2020
2.2	0.4	JICA	21th-Feb.2020
2.3	0.2	JET	21th-Feb.2020
(1)	1	Sub-Group1	25th-Feb.2020
(2)	1	Sub-Group2	25th-Feb.2020
(3)	1	Sub-Group3	25th-Feb.2020
(4)	1	Sub-Group4	25th-Feb.2020
3	1	JET	21th-Feb.2020
3.1			
(1)			
(2)			
(3)			
(4)			
TOTAL	8		

- Allocated 1 page
- Deadline: 25th Feb

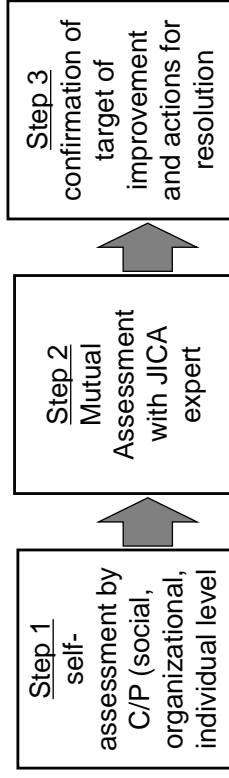
4.d. Participants in 1st Training in Japan

- 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

- 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	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.

	<ul style="list-style-type: none"> ➤ 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. <p><u>WACS</u></p> <ul style="list-style-type: none"> ➤ NSWMC prepared the draft WACS Guideline. <p><u>Intermediate treatment facility /3R</u></p> <ul style="list-style-type: none"> ➤ 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. <p><u>Landfill</u></p> <ul style="list-style-type: none"> ➤ 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. <ul style="list-style-type: none"> • Allocation which was the collecting the information of "Good practice/Good technology" of other SWM technologies in third countries was decided as below; <ul style="list-style-type: none"> ➤ 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 <table border="1" data-bbox="584 1901 1402 1977"> <thead> <tr> <th data-bbox="584 1901 839 1977">Item</th> <th data-bbox="839 1901 1197 1977">Research for "Good practice/Good technology"</th> <th data-bbox="1197 1901 1402 1977">The Organization in Charge</th> </tr> </thead> <tbody> <tr> <td data-bbox="584 1977 839 1977"></td> <td data-bbox="839 1977 1197 1977"></td> <td data-bbox="1197 1977 1402 1977"></td> </tr> </tbody> </table>	Item	Research for "Good practice/Good technology"	The Organization in Charge			
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

➤ 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

Appendix 11-5: Sub-group Meeting for Output 4

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 Aragoness 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 ✓ *already followed up last June 22, 2020, yet no response
8	Atty. Dwight Tristan Domingo Engr. Elisa Madrazo/Engr. Lakandiwa Orcullo	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. Elvira 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. Elvira 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



2nd Sub Group Meeting for

□ **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.

I. Review of the previous meeting (2/6)

□ 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	Bar chart	Bar chart
4.4	Bar chart	Bar chart	Bar chart
4.5	Bar chart	Bar chart	Bar chart
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"> Information Collection 	<ul style="list-style-type: none"> Analysis Presentation Seminar for disseminating suggestion/recommendation is held.

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**
- Next Step** →
- Identify the need for rehabilitation or new landfill

6. Education of Waste Management

- **Insufficient understanding of responsibilities of residents for SWM**

Next Step →

- 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?

Next Step →

- 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**

Next Step →

- 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**

Next Step →

- 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.

Next Step →

- 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.

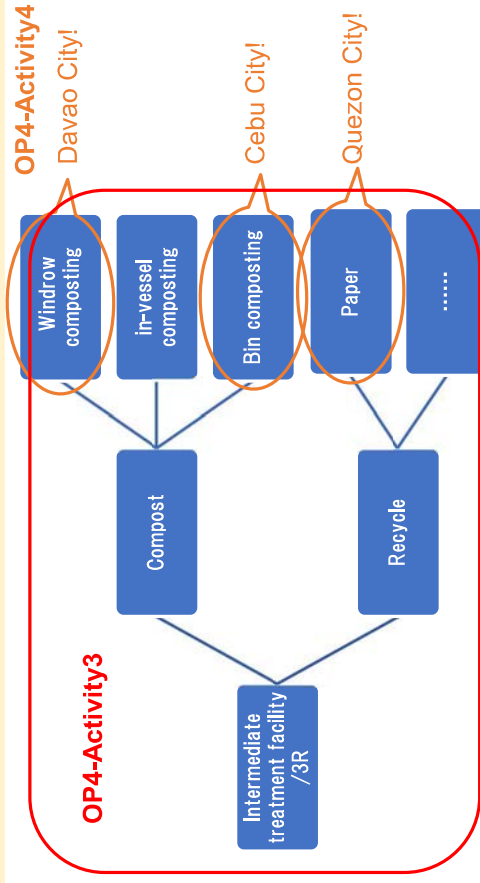
II. Today's discussion points (1/2)

- 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.

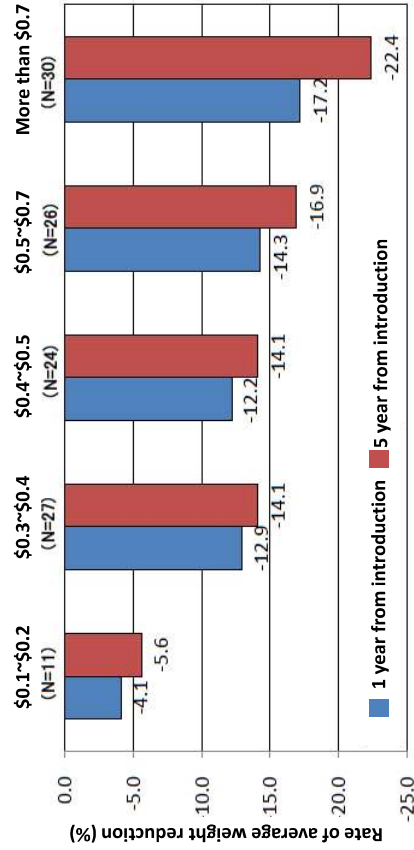


III. Example of “Good practice/Good technology” of other SWM technologies in third world countries

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.	

NIPPON KOEI
EJEC 14

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.	

NIPPON KOEI
EJEC 12

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.	

NIPPON KOEI
EJEC 15

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)	

NIPPON KOEI
EJEC 13

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

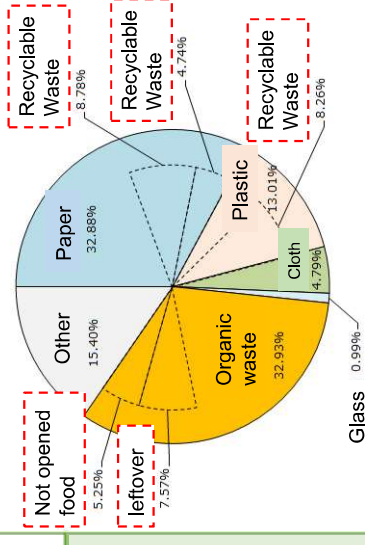
2. Waste Generation Quantity and Quality (4/4)

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

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/385f5279977b662f3.pdf>
https://www.city.hamamatsu.shizuoka.jp/gomigen/gomi/genyou/life_gomi.html

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

Point:

- Understand the way of segregation and separate collection

On Thursday → **Recyclable**



1. Segregation	Station collection
<ul style="list-style-type: none"> • 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 Group Resource Collection

- 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.

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.

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.

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

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.



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)



Feed stock and receiving hopper



Segregate the waste



The product for alternative of coal

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

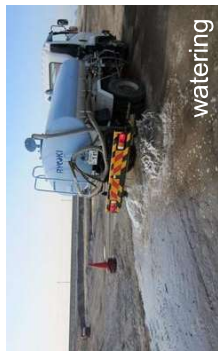
5. Landfill (2/3)

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



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.



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	
4	Intermediate treatment	<ul style="list-style-type: none"> Further recycling 	Finished (~ 24 th Jun) <ul style="list-style-type: none"> Example of basic recycling method (Organic waste, paper, plastic and bin, can)
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 	Not finished yet (24 th Jun ~) <ul style="list-style-type: none"> Recycling methods other than basic recycling (such as specific cases) 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 segregation 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 ⇒ More than 17,000 download and especially effective for young people.

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.



Screen of the application


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

03 Good Technology/Good practice




Details

- Feature
- Good Point
- Bad Point

← Evaluation

04 Good Technology/Good practice



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]	[Bar]
4.4	[Bar]	[Bar]	[Bar]
4.5	[Bar]	[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
1.) Call to Order	<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. 		
2.) Adoption of the Agenda	<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>	
3.) Acknowledgement of Attendees	<ul style="list-style-type: none"> Acknowledgement of Subgroup OP4 members by Ms. Pausing. 		
4.) Brief Review of the Previous Subgroup Meeting & Discussion Points for the Current Meeting	<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" data-bbox="724 524 1286 987"> <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>
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>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> 	<p>➤ No comments were raised by the subgroup members regarding this.</p>	

	<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. • Adjournment ➤ 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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Appendix 11-5: Sub-group Meeting for Output 4

11-5-3 : 3rd SG4

TECHNICAL COOPERATION PROJECT (TCP) ON CAPACITY DEVELOPMENT ON IMPROVING SOLID WASTE MANAGEMENT THROUGH ADVANCED/INNOVATIVE TECHNOLOGIES

3rd 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

03 September 2020, Thursday, 9:00 AM (via Teams)

TENTATIVE AGENDA

1. Call to Order/Meeting Objectives / Acknowledgement of Attendees and Adoption of Agenda by *Ms. Ma. Della Cristina Valdez, EMB-SW/MD, PMO*
2. Review of the previous discussions from the last Sub-group meeting - *Ms. Kyoko Kimura, JET*
3. Presentations/Discussions on some examples of "Good Practices/ Good technologies" of other SWM technologies in third world countries under Activity 4-3 (Presentation 30 mins + Q&A 15 mins):
 - Intermediate Treatment Facility/3R by *Engr. Reynaldo L. Esguerra, DOST-ITDI Sanitary Landfill - Engr. Elisa P. Madrazo/Engr. Lukandiva Soliman R. Orcullo, LGU Davao City*
 - Collection Method - *Engr. Glory Rose C. Manatad, LGU Cebu City*
 - IEC of Waste Reduction and Evaluation Methods of IEC - *Mr. David John S. Yergara, LGU Quezon City*

3rd SUB-GROUP MEETING FOR PROJECT OUTPUT 4
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 03 September 2020, Thursday, 9:00 AM (via Teams)

TENTATIVE AGENDA (cont.)

4. The proposed format to consolidate the Good Practices and Technologies - *Ms. Ika Sato, JET*
5. Wrap-up/Required Actions/Agreements - *Ms. Nikole Andrea Mallare, JET*
6. Schedules of the next Sub-group meetings - *Ms. Elwira S. Pausing, EMB-SW/MD-PMO*
7. Other matters

3rd 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
 03 September 2020, Thursday, 9:00 AM (via Teams)

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED
CONCERNED GOVERNMENT AGENCIES			
1	Engr. Reynaldo Esguerra	DOST-ITDI	✓
	Engr. Rochelle L. Retamar	DOST-ITDI	
	Engr. Dante C. Vergara	DOST-ITDI	
2	Ms. Ruby de Guzman	DOE-BEMD	
	Mr. Romeo M. Galangam	DOE-BEMD	
	Ms. Charisse Pascual	DOE-BEMD	✓
3	Mr. Carlo Mari Crisregionald C. Tan	DILG-BLGS/NAPOLCOM Center	
	Ms. Maria Clarisol L. Agas	DILG-BLGS/NAPOLCOM Center	
4	Mr. Aldwin U. Urbina	NEDA IPG	
	Mr. Gilbert V. Kintanar	NEDA IPG	

3rd 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
 03 September 2020, Thursday, 9:00 AM (via Teams)

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED
CONCERNED GOVERNMENT AGENCIES			
5	Dir. Justine E. Padernos Atty. Phebean Belle Ramos-Lacama Ms. Maria Beatriz N. Quintos	PPP Center PPP Center PPP Center	✓
DENR-EMB FOCAL PERSONS			
6	Engr. Marcelino N. Rivera, Jr.	EMB-Environmental Quality Management Division	
	Ms. Consolacion P. Crisostomo	EMB-Planning, Policy and Program Development Division	
7	Ms. Mary Esther D. Ofiaza Engr. Majoc Cristobal	EMB-Planning, Policy and Program Development Division EMB-Environmental Research and Laboratory Services Division	✓ ✓
8	Ms. Fatima Annelgo R. Molina Mr. Roger C. Evangelista Jr.	EMB-Environmental Research and Laboratory Services Division	

3rd 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
 03 September 2020, Thursday, 9:00 AM (via Teams)

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED
DENR-EMB FOCAL PERSONS			
9	Engr. Jundy T. Del Socorro Engr. Wiyona Kay C. Rativo	EMB-EQMD-Air Quality Management Section EMB-EQMD-Air Quality Management Section	✓
LOCAL GOVERNMENT UNITS			
10	Mr. Vincent Ferdinand Paul G. Ymarao Mr. David John S. Vergara Engr. Editha D. Peros Engr. Glory Rose C. Manatad Atty. Dwight Trisitan P. Domingo Engr. Elisa P. Madrazo Engr. Lakandwiwa Soliman R. Orcullo	LGU Quezon City LGU Quezon City LGU Cebu City LGU Cebu City LGU Davao City LGU Davao City LGU Davao City	cannot attend (informed thru email) ✓ ✓ ✓ ✓ ✓ ✓

3rd 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
 03 September 2020, Thursday, 9:00 AM (via Teams)

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED
PROJECT COORDINATORS			
13	Dir. Angelito V. Fontanilla Mr. Eddie Abugan Ms. Marianica Philina Obmerga Ms. Ma. Della Cristina Valdez Ms. Elvira S. Pausing	DENR-FASPS DENR-FASPS DENR-FASPS EMB-SWMD-PMO EMB-SWMD-PMO	✓ ✓ ✓ ✓ ✓

3rd 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
 03 September 2020, Thursday, 9:00 AM (via Teams)

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED
EMB-SWMD-PMO			
15	Ms. Nelie Dimer Ms. Raquel Reyes Ms. Rodeth Antonio Engr. Jedidiah Mangubat Engr. Roxanne Barcenas Ms. Kris Morada	EMB-SWMD-PMO EMB-SWMD-PMO EMB-SWMD-PMO EMB-SWMD-PMO EMB-SWMD-PMO EMB-SWMD-PMO	✓ ✓ ✓ ✓ ✓ ✓
JICA Philippines			
16	Mr. Christian Perez Ms. Florda Chan	JICA Philippines JICA Philippines	✓ ✓

3rd 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
 03 September 2020, Thursday, 9:00 AM (via Teams)

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED
JICA EXPERTS TEAM (JET)			
	Mr. Takahiro Kamishita	Nippon Koei Co., Ltd./JET	✓
	Mr. Satoshi Higashinakagawa	Nippon Koei Co., Ltd./JET	✓
	Mr. Makoto Kosaka	Nippon Koei Co., Ltd./JET	✓
	Mr. Tomoyuki Hosono	Nippon Koei Co., Ltd./JET	✓
	Ms. Kyoko Kimura	Nippon Koei Co., Ltd./JET	✓
	Ms. Iku Sato	Nippon Koei Co., Ltd./JET	✓
	Ms. Nikole Andrei Mallare	JICA Experts Team (JET)	✓
	Mr. Eric Cea	JICA Experts Team (JET)	✓

SCHEDULE OF SUB-GROUP 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		16 (Thu)		10 (Thu)		
OP 3					8 (Thu)	
OP 4	24 (Wed)		26 (Wed) tbc			
ITWG					15 (Thu)	
JCC						4 (Wed)

3rd 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
 03 September 2020, Thursday, 9:00 AM (via Teams)

ADJOURNMENT



3rd 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

3rd September 2020 (Thursday) 9:00 a.m.

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

2. Review of the previous meeting (1/3)

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

1st meeting

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.

2nd and 3rd meeting

4.3 Collect the information of "Good practice/Good technology" of other SWM technologies in Japan/third world 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.

Agenda

1. Call to Order/Meeting Objectives/ Acknowledgement of Attendees Adoption of Agenda
2. Review of the previous discussions from the last Sub-group meeting
3. Presentations/Discussions on some examples of "Good practices/Good technologies" of other SWM technologies in third world countries under Activity 4-3
4. The proposed format to consolidate the Good Practices and Technologies
5. Wrap-up/Required Actions/Agreements
6. Schedules of the next Sub-group meetings
7. Other matters

2. Review of the previous meeting (2/3)

Comparison "Challenges on LGUs" with "Good practice/Good technology"

#	Item	Activity 1&2 Challenges on LGUs
1	Budget	<ul style="list-style-type: none"> Inappropriate waste treatment cause of lack of SWM budget
2	WACS	<ul style="list-style-type: none"> Appropriate WACS method Effective utilization of WACS data
3	Collection	<ul style="list-style-type: none"> Incomplete segregation and separate collection

Activity 3 Good practice/Good technology	
Survey items	Current situation
Finished (~ 24 th Jun)	<ul style="list-style-type: none"> Some examples are shared by JET. (2nd SG meeting)
Collection of waste fee from residents	<ul style="list-style-type: none"> Sampling methods and utilization of WACS data was presented by DOST and JET. (2nd SG meeting)
Segregated collection (Station collection, Group resource collection)	<ul style="list-style-type: none"> Collection method of organic waste and other waste will be shared by Cebu city at this meeting. (3rd SG meeting)
Collection with gathering the waste treatment fee	

2. Review of the previous meeting (3/3)

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

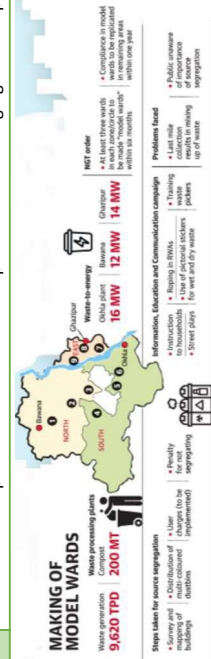
#	Item	Activity 3 Good practice/Good technology	
		Research items	Current situation
4	Intermediate treatment	<p>Activity 1&2 Challenges on LGUs</p> <ul style="list-style-type: none"> Further recycling 	<p>Finished (~ 24th Jun)</p> <ul style="list-style-type: none"> Example of basic recycling method (Organic waste, paper, plastic and bin, can)
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"> JET presented the basic recycling method previous SG meeting. DOST will present more specific technology at this meeting. (3rd SG meeting)
6	IEC	<ul style="list-style-type: none"> Conduct of effective IEC 	<ul style="list-style-type: none"> Davao city will present the technology of SLF at this meeting. (3rd SG meeting)
		<ul style="list-style-type: none"> IEC of waste segregation 	<ul style="list-style-type: none"> Some examples are shared by JET. (2nd SG meeting) Quezon city will share the good practice of IEC.

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

Intermediate treatment facility (3R)

Scheme

Title	Model Ward Initiative, National Green Tribunal (NGT) Delhi, India
Outline	<ul style="list-style-type: none"> Areas from the north, east and south Delhi are to be made as “model wards” in six months where complete compliance of solid waste management rules is expected. A record of 60,000 households is targeted for complete compliance in source segregation. Officials from the NGT were to demonstrate waste segregation and provide segregated bins to households Based on the monitoring, only 22.5% of households were compliant with source segregation (13,500 out of 60,000 households) The project aims to divert segregated waste from the cooperating households to composting facilities (200MT) and to three waste-to-energy facilities. The amount of waste to be fed in the facilities is expected to increase once the practice of source segregation is replicated in Delhi.



Agenda

1. Call to Order/Meeting Objectives/ Acknowledgement of Attendees Adoption of Agenda
2. Review of the previous discussions from the last Sub-group meeting
3. **Presentations/Discussions on some examples of “Good practices/Good technologies” of other SWM technologies in third world countries under Activity 4-3**
4. The proposed format to consolidate the Good Practices and Technologies
5. Wrap-up/Required Actions/Agreements
6. Schedules of the next Sub-group meetings
7. Other matters

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

Intermediate treatment facility (3R)

Recycling/WTE

Title	URENCO Refuse Paper and Plastic Fuel (RPF) Hanoi, Vietnam
Outline	<ul style="list-style-type: none"> Refuse paper and plastic fuel (RPF) is a subclass of RDFs and serve as a compacted burning source with high calorific value Calorific value can be adjusted by changing the mixing ratio of waste paper and waste plastic. RPF's ash percentage is less than 6% (Coal's ash percentage is 12-15%) RPF production led by URENCO company in Hanoi together with Ichikawa Kankyo Engineering (IKE) cooperation in Japan. Aims to produce over 12000 T of RPF pellets Suitable technology for industrial waste like those from paper factory because the waste is already segregated. Refuse paper and plastics from household wastes must be segregated and collected separately



URENCO 11 RPF Facility



RPF pellets

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

DOST

Intermediate treatment facility /3R

WTE	
Title	Rayong Waste-to-Energy Facility Rayong, Thailand
Outline	<ul style="list-style-type: none"> Anaerobic digestion system capable of accommodating 70 tons per day of organic waste for generation of biogas. Aimed at producing 340,000 kg of methane per year Technology suitable for segregated agricultural waste and food processing waste Technology also suitable for organic waste segregated from municipal solid waste.



Rayong Biogas Plant

Juidamrongphan, W. 2018. Sustainable Waste Management and Waste to Energy Recovery in Thailand. Advances om Biofuels and Bioenergy

NIPPON KOEI
EJEC 8

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

DOST

Intermediate treatment facility /3R

WTE	
Title	Waste-to-Energy Project for the rice milling sector in Cambodia Cambodia
Outline	<ul style="list-style-type: none"> Technology aimed to generate electricity from rice husks in milling factories. Funded by EU, SWITCH-Asia, SNV Cambodia. Use of rice husk gasifier technology for energy generation. Rice millers to invest in driers so that they can process the wet paddy they currently export at a low cost As of 2014, 116 rice husk gasifiers were installed in 12 provinces in Cambodia. Thru gasification, one liter of fuel can be replaced by 6kg of rice husk for electricity production. However, wastewater from syngas cooling and cleaning is commonly discharged with little treatment. Tar produced was generally thrown away or burned. About 85% of rice husk ash or biochar remains unused, 6% were sold off, 9% were given away to villagers as raw material for brick making or as soil amendment



600kW rice husk gasifier

SNV Cambodia. “Waste to Energy for the Rice Milling Sector in Cambodia”. http://eas.europa.eu/delegations/cambodia/documents/publications/waste_to_energy_en.pdf

NIPPON KOEI
EJEC 10

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

DOST

Intermediate treatment facility /3R

Composting	
Title	District Model of Waste as a Resource in Suan Luang District Bangkok, Thailand
Outline	<ul style="list-style-type: none"> Segregated collection of source separated yard waste and food waste from households and restaurants for diversion to composting facility and as animal feed. Community-based management; Promotes waste reduction and segregation via scheduled collection, provision of waste separation bins, establishment of SWM Learning Center Average 3.4 tons/day collected yard waste for composting; average 2 tons/day food waste collected from restaurants as animal feed



Lammawichai J. 2017. Solid Waste Management in Bangkok. Department of Environment, Bangkok Metropolitan Administration. Retrieved from <https://www.jesc.or.jp>

NIPPON KOEI
EJEC 9

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

DOST

Intermediate treatment facility /3R

Composting	
Title	FORWARD Black Soldier Fly (BSF) Upcycling of Urban Organic Solid Waste Sidoarjo, Indonesia
Outline	<ul style="list-style-type: none"> R&D project funded by the Swiss State Secretariat for Economic Affairs (SECO); implemented at Sidoarjo. Uses black soldier fly larvae for compost production and animal feed production Able to process 2 tons per day of organic waste. Grown larvae are harvested and processed to animal feed (fish and poultry) while the residue is used as compost Technology can be used in conjunction with other technologies such as WTE’s since it only address a small portion of waste.



Organic waste recycling facility in Sidoarjo



Black soldier fly composting

<https://www.eawag.ch/en/department/sandec/projects/mswm/forward-from-organic-waste-recycling-for-development/>

NIPPON KOEI
EJEC 11

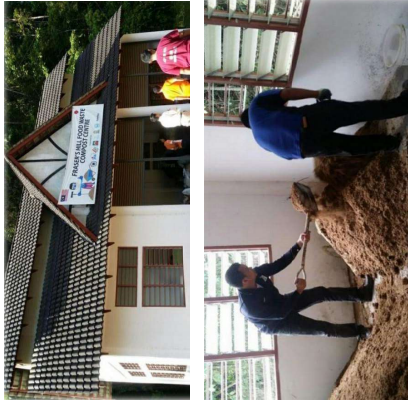
3. Example of “Good practice/Good technology” of other SWM technologies in third world countries

DOST

Intermediate treatment facility (3R)

Composting

Title	Bokashi composting of food waste from restaurants and hotels in Fraser's Hill Fraser's Hill, Malaysia
Outline	<ul style="list-style-type: none"> Backed by JICA and Solid Waste Corporation Management (SWCorp), establishments were trained in managing kitchen waste thru Bokashi method. Processed about 9000kg of food waste from commercial establishments, produced 200kg of fertilizer. Increased recycling rate, turn food waste into fertilizer and diverts waste from the Cheroh landfill near the hill top resort of Fraser's Hill Technology can be used in conjunction with other technologies such as WTE's since it only address a small portion of waste.



Fraser's Hill Food Waste Compost Centre

<https://www.reawag.ch/en/department/sandec/projects/mswm/forward-from-organic-waste-recycling-for-development/>

NIPPON KOEI
EJEC 12

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

JET

Collection and Transportation (2/3)

Prices of Designated Garbage Bags in Taipei City

1
3-liter bag
COSTS
0.0357 USD
~1.75 PHP

NIPPON KOEI
EJEC 14

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

JET

Collection and Transportation (1/3)

Pay As You Throw (PAYT) System

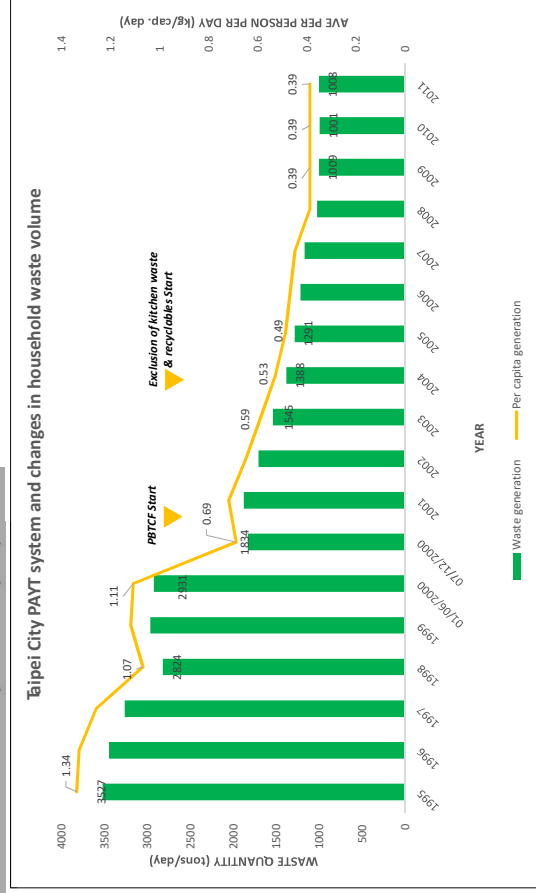
Title	Trash Per-Bag Fee Collection Program (Taipei, Taiwan)
Outline	<ul style="list-style-type: none"> Through the program, residents are charged with fees according to the weight or volume of generated waste, through the use of specific containers, stickers or garbage bags. Collected fees from the program is used for waste management and other environmental problems. Certified garbage bags are provided by the City Government Department of Environmental Protection (TDEP) and can be purchased at convenience stores. Waste not included in this program: (Free of charge collection) <ul style="list-style-type: none"> Recyclables Kitchen waste / Food waste
Advantage	<ul style="list-style-type: none"> Fair treatment of fee collection Resource recycling and waste minimization Promotion of recycling
Disadvantage	<ul style="list-style-type: none"> Risk of illegal dumping

NIPPON KOEI
EJEC 13

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

JET

Collection and Transportation (3/3)



Source Taipei Department of Environmental Protection, Taipei City Government (2012)

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EJEC 15

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

JET

Collection and Transportation (1/2)

Embedding Local Economic Development (LED) into SWM

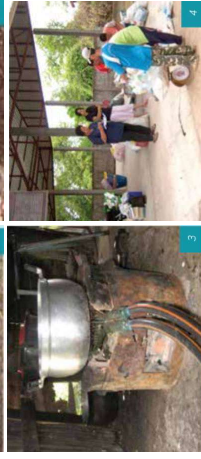
Title	<p>Participatory Solid Waste Management (Phangkon Municipality, Sakon Nakhon Province, Thailand)</p>
Outline	<ul style="list-style-type: none"> • SWM Programs of the municipality incorporate cultural, social, and economic aspects with the aim of promoting sustainable waste segregation by the residents. • The local government supplies the community members with tank for waste collection in their house. • Waste is segregated accordingly: <ul style="list-style-type: none"> ➢ Organic Waste → recycled into compost or biogas ➢ Recyclables → collected then sold ➢ Hazardous Waste → drop off points → sold to private companies → income donated to Buddhist monks • To ensure well-implemented approach, the local government worked closely with the community and local leaders, connecting the community with private sector towards sustainability of the process in particular the economic activities.

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EJEC 16

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

JET

Collection and Transportation (2/2)



NIPPON KOEI
EJEC 17

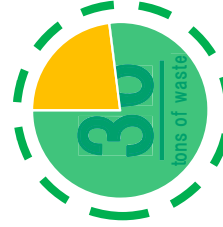
3. Example of “Good practice/Good technology” of other SWM technologies in third world countries

JET

Information, Education, & Communication Campaigns

Waste Wise Festival

Title	<p>Taipei Lantern Festival 2003 (Taipei, Taiwan)</p>
Outline	<ul style="list-style-type: none"> • Taipei City Government organized the Taipei Lantern Festival last 2003 with the aim of showing citizens that they can enjoy themselves, while at the same time, without leaving a great deal of trash behind. • Specially designed recycle bins were provided during the festival to collect recyclables, non-recyclables and food waste for composting. The festival lasted for ten days, and estimated attendance is over four million. • For those who dump the trash on the ground, 16 citations and 54 notice of improvement were issued.



23%
recycled tons of waste
recycling rate

70%

waste disposed of correctly

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EJEC 18

Agenda

1. Call to Order/Meeting Objectives/ Acknowledgement of Attendees Adoption of Agenda
2. Review of the previous discussions from the last Sub-group meeting
3. Presentations/Discussions on some examples of “Good practices/Good technologies” of other SWM technologies in third world countries under Activity 4-3
- 4. The proposed format to consolidate the Good Practices and Technologies**
5. Wrap-up/Required Actions/Agreements
6. Schedules of the next Sub-group meetings
7. Other matters

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EJEC 19

4. The proposed format to consolidate the Good Practices and Technologies

Example of Booklet

- The booklet format is assumed to be a sample.
- If subgroup members have any other information you would like to include in the booklet, please contact us.
- In addition to the booklet, we plan to prepare the web site about good practice.

Request from JET

- JET will adapt the information gathered by subgroup members to this format.
⇒ So, please share the output materials.

#	Person in charge	Item	Output materials	
			Excel	Power point
1	DOST	Waste Generation Quantity and Quality	Received	Received
2	Davao City	Landfill	Received	Received
3	Cebu City	Collection and Transportation	Please share	Received
4	Quezon City	Education (IEC)	Please share	Please share

Booklet Sample

1. Scheme

Title of Good Practice _____ **Country, (Prefecture)** _____



TARGET AREA _____ **State information** _____

XXXX _____ **Commencement date** _____
Initial cost _____
Operation cost _____
Capacity _____
Area _____

Center _____
 XXXX City _____
Area _____

Outline _____
 • XXX
 • XXX
 • XXX
 • XXX

Good Practice Point
 • XXXXX
 • XXXXXX
 • XXXXXXXX
 • XXXXXXXX

XX
 XXX
 XXX
 XXX

Schedule of Output4

Activities	1st Year Mar/'19 - Mar/'20	2nd Year Apr/'20 - Mar/'21	3rd Year Apr/'21 - Mar/'22
4.1			
4.2			
4.3	situation and issues		
4.4		Information Collection	
4.5			A analysis presentation
Sub-Group MTG	13-Feb ★	24-Jun 3-Sep ★★	
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.

To analyze what is the most suitable technology for each LGUs, LGUs’ help in providing information is appreciated.
e.g. income and expenditure of SWM (Actual and future forecast)

III. Example of “Good practice/Good technology” of other SWM technologies

5. Landfill

Davao City

Title	SEMI-AEROBIC LANDFILL (FUKUOKA METHOD) (Fukuoka City, Japan)
Outline	<ul style="list-style-type: none"> Leachate Collection pipes Gas Ventilation System Surface Liner Facility Leachate Treatment Facility Daily Soil Cover

Republic Act 9003,

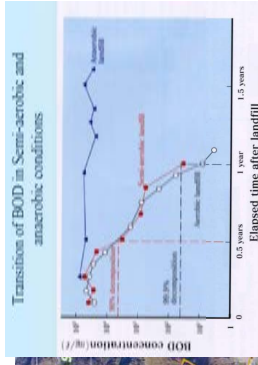
“Ecological Solid Waste Management Act of 2000”

Section 41. Criteria for Establishment of Sanitary Landfill.

- Liners
- Leachate collection and treatment system
- Gas control recovery system
- Soil Cover
- Ground water monitoring well system

III. Example of “Good practice/Good technology” of other SWM technologies

5. Landfill



III. Example of “Good practice/Good technology” of other SWM technologies

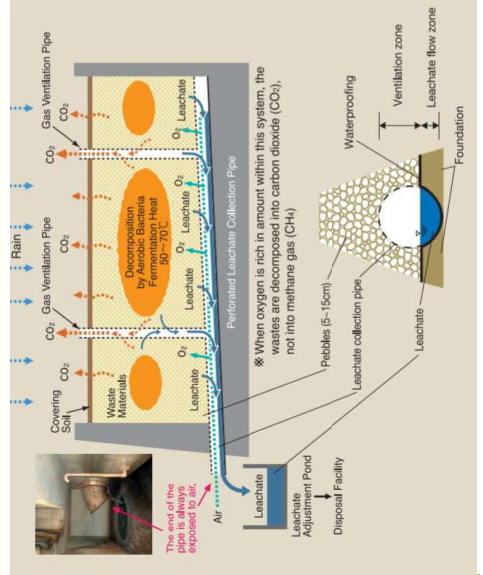
5. Landfill

SEMI-AEROBIC LANDFILL (FUKUOKA METHOD)

Point:

➤ Understand the intervention methods for each problem at the landfill.

- Leachate Collection Pipes**
 - Piping system designed and provided to minimize leachate built-up in the landfill.
 - Positive Point:** Allows for the drainage of leachate from the landfill while at the same time provides passage of air to enter and ventilates the waste pile thus rendering the landfill system semi-aerobic.
 - Negative Point:** Regular inspection of pipes (leachate collection and gas vents) to ensure efficiency of system. Prone to obstruction and damage.

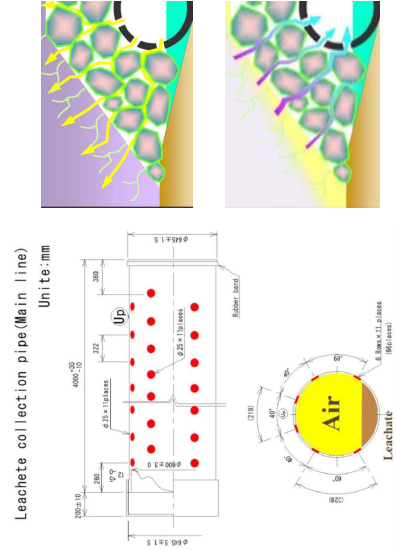


III. Example of “Good practice/Good technology” of other SWM technologies

5. Landfill

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III. Example of “Good practice/Good technology” of other SWM technologies

5. Landfill

SEMI-AEROBIC LANDFILL (FUKUOKA METHOD)

2. Gas Ventilation System

- Vertical piping system placed in the landfill to collect gas for treatment or productive use as an energy source;
- Positive Point:**
Allows for the escape and avoid build-up of methane and other gases in the landfill.
- Negative Point:**
Regular inspection of pipes (leachate collection and gas vents) to ensure efficiency of system. Prone to obstruction and damage.



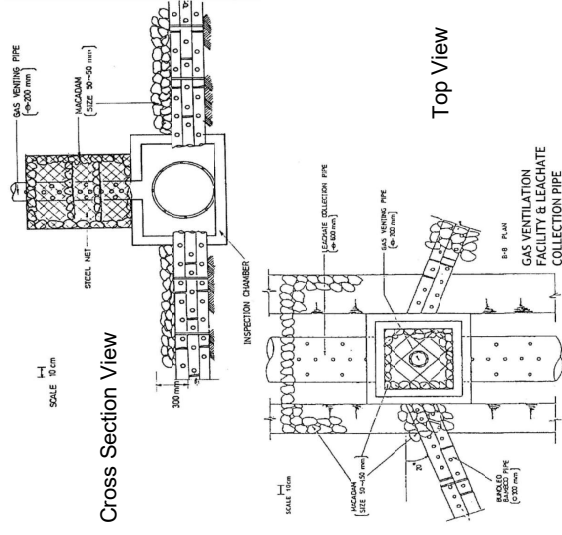
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Dominican Republic

III. Example of “Good practice/Good technology” of other SWM technologies

5. Landfill

SEMI-AEROBIC LANDFILL (FUKUOKA METHOD)

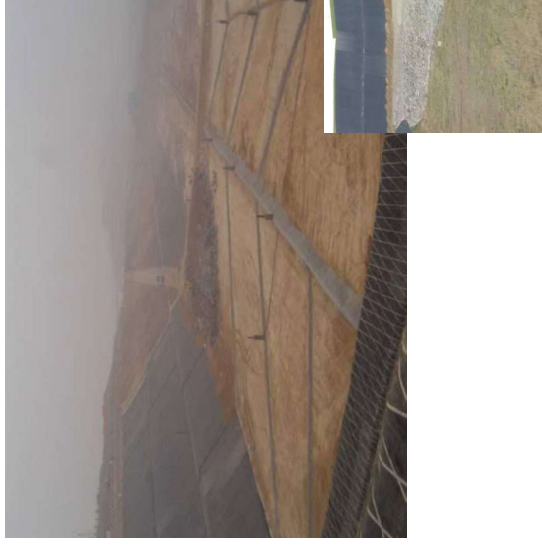


Pakistan

III. Example of “Good practice/Good technology” of other SWM technologies

5. Landfill

SEMI-AEROBIC LANDFILL (FUKUOKA METHOD)

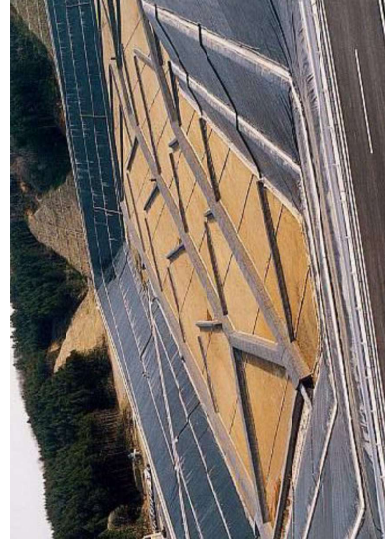


China

III. Example of “Good practice/Good technology” of other SWM technologies

5. Landfill

SEMI-AEROBIC LANDFILL (FUKUOKA METHOD)



- 3. Surface Liner Facility**
- A system of clay layers and/or geosynthetic membranes used to contain leachate.
 - Positive Point: Reduce or prevent contaminant flow to groundwater.
 - Negative Point: May be prone to damage or breakage due to passage of equipment or other factors.

III. Example of “Good practice/Good technology” of other SWM technologies

5. Landfill

SEMI-AEROBIC LANDFILL (FUKUOKA METHOD)



- 3. Surface Liner Facility**
- A system of clay layers and/or geosynthetic membranes used to contain leachate.
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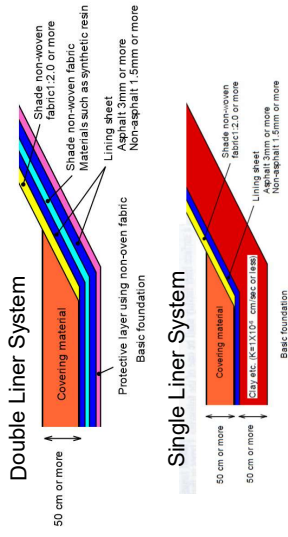
III. Example of “Good practice/Good technology” of other SWM technologies

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SEMI-AEROBIC LANDFILL (FUKUOKA METHOD)

3. Surface Liner Facility

- A system of clay layers and/or geosynthetic membranes used to contain leachate.
- **Positive Point:** Reduce or prevent contaminant flow to groundwater.
- **Negative Point:** May be prone to damage or breakage due to passage of equipment or other factors.



Non-woven fabric

NIPPON KOEI

EJEC 12

III. Example of “Good practice/Good technology” of other SWM technologies

5. Landfill

SEMI-AEROBIC LANDFILL (FUKUOKA METHOD)

5. Daily Soil Cover

- A daily soil cover placed over the waste at the close of each day's operations
- **Positive Point:** Protects wastes from long-term contact with the environment.
- **Negative Point:** Soil will take up space in landfill and reduce its overall capacity.



Daily Soil Cover (flat)

Daily Soil Cover (slope)

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EJEC 14

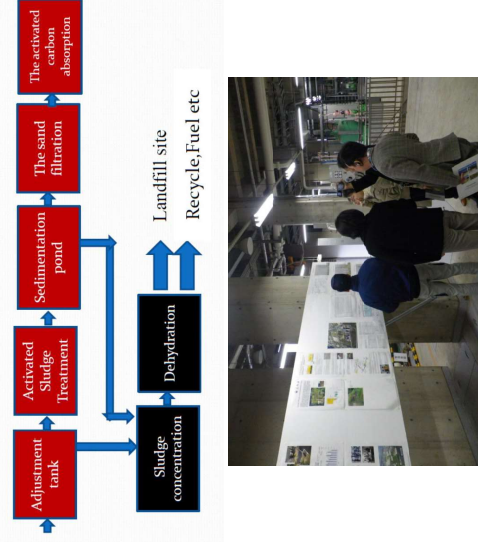
III. Example of “Good practice/Good technology” of other SWM technologies

5. Landfill

SEMI-AEROBIC LANDFILL (FUKUOKA METHOD)

4. Leachate Treatment Facility

- Collects leachate for storage, treatment and discharge
- **Positive Point:** Facilitates treatment of landfill wastewater to be able to meet effluent discharge and water quality standards.
- **Negative Point:** Will incur additional costs in overall waste management.



NIPPON KOEI

EJEC 13

III. Example of “Good practice/Good technology” of other SWM technologies

5. Landfill

SEMI-AEROBIC LANDFILL (FUKUOKA METHOD)

5. Daily Soil Cover

- A daily soil cover placed over the waste at the close of each day's operations
- **Positive Point:** Protects wastes from long-term contact with the environment.
- **Negative Point:** Soil will take up space in landfill and reduce its overall capacity.

RA 9003	(a) Same day covering soil	10cm	15.24 cm (6 in.)
	Incineration residue	15-20cm	
	Incombustible big shape waste	30-50cm	
	(b) Intermediate Covering		30.48 cm (12 in.)
	Expose a relatively long period of time	50cm	
	(c) Final Covering		60 cm (0.6m)
	Planting of low tree	more than 50cm	
	Planting of high tree	more than 1 m	

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EJEC 15

Collection and Transportation Practices

In waste management systems, the area collection-transportation plays a central role.

It cause for 60 to 80% of the total costs of waste disposal and therefore there are significant saving possibilities on improvements in its organization and implementation.

Engr. Glory Rose C. Manatad
Cebu City Environment and Natural Resources Office (CCENRO)
September 3, 2020

Collection Methods

Backyard Collection

- collectors going to the backyards
- emptying the garbage cans into large carts or containers, and
- carrying these to the waiting truck.

This system was not only expensive in dollar cost to the community, but it was expensive in terms of the extremely high injury rate to the collectors.



Curbside Collection

Some communities in the US have adopted a volume-based fee system to pay for solid waste collection and specify the containers that must be used. In a volume-based fee system, residents are offered cans in three sizes— such as 30-, 60-, or 90-gallon (110-, 230-, and 340-liter) cans. The fee for refuse service is based on the size of can used.



Multiple Compartment Collection

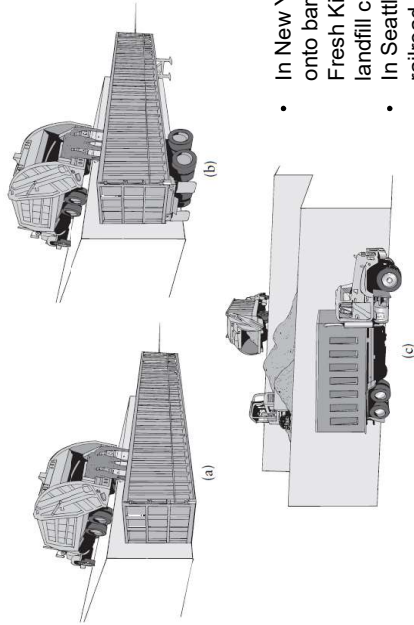
Some communities initiate collection programs where the residents separate the materials and placed them into different containers. For example, bottles and cans go in one container, newspaper in a second, and mixed paper in the third. This eliminates the need to sort newspaper, which is the most common recyclable (by weight) and shifts the cost of sorting to the waste generator.

When Los Angeles shifted to a commingled container method, the recycling rate increased by 40%. ("Single Stream Recycling: The Future Is Now," 2000, Recycling Today 38, n. 1:79)



Manual collection VS. Collection with vehicles equipped with "can snatchers."

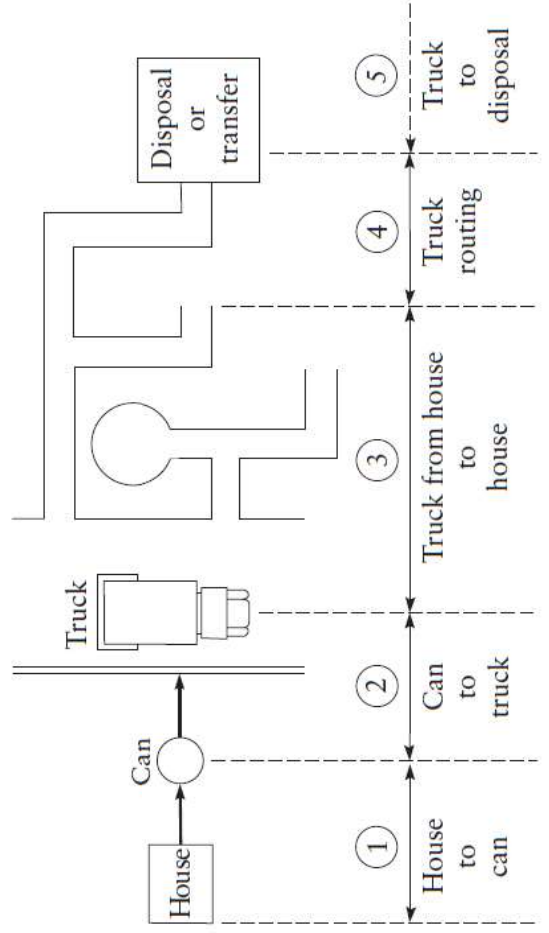
When the waste disposal unit is remote to the collection area, a **transfer station** is employed.



Sometimes a transfer station is required regardless of distance to a landfill. To minimize the traffic and air pollution impacts at a landfill.

- In New York City, solid waste was transferred onto barges, which then moved the refuse to Fresh Kills Landfill on Staten Island until the landfill closed in 2001.
- In Seattle, solid waste is transferred to railroad shipping containers that are then placed on a rail car for shipment to eastern Oregon.
- On a much smaller scale, residents in rural areas such as the unincorporated area of San Diego County bring their waste to transfer stations with 40-yd³ (30-m³) roll-off bins, which are then hauled to the disposal site.

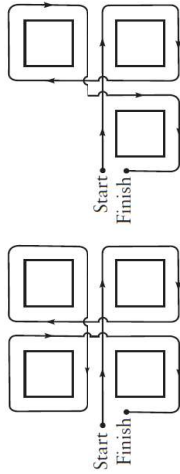
General Collection-Transfer-Transportation Scheme



Thing to consider in transporting solid waste: Truck Routing

The objective is to minimize deadheading (and transportation cost), which is passing a collection point again after a previous pickup.

The assumption is that if a route can be devised that has the least amount of deadheading possible, it is the most efficient collection route.



Model Country: Singapore

Wastes can be:

1. Incinerable
2. Non-incinerable waste, and
3. Recyclable

GENERAL WASTES:

Type A Waste - furniture, electrical appliances, construction, and renovation debris, cut tree trunks and branches, bulky waste, non-putrefiable waste, recyclable waste (excluding food waste), digested sludge that has been dewatered from water reclamation plants.

Type B Waste - domestic refuse, food waste and market, waste with a high organic content and which is putrefiable.

Type B.1 Waste – Used cooking oil

Type C Waste – sludge, waste from grease interceptors, sewage, sludge and other waste from water-seal latrines, sewage treatment plants, septic tanks, etc.

Other countries employ:

1. Waste transport by rail
2. Waste transport by ship



Licensed garbage waste collector

It is an offence under the Environmental Public Health Act (EPHA) and the Environmental Public Health (General Waste Collection) Regulations to operate a waste collection business without a valid license.

There are four classes of General Waste Collector Licenses:

1. Class A license – Type A waste only
2. Class B license – Type B waste only
3. Class B.1 license – Type B.1 waste only

A general waste collector may apply for or hold more than one class of license at any one time.

Collection and Transportation of General Waste:

1. The general waste collector shall only use those vehicles and equipment approved under the license.

- General waste collectors are to inform the client/ general waste generators (e.g. commercial and trade premises, food establishments, industrial premises, households)
- The general waste collectors are to regularly remind the general waste generators to segregate incinerable waste, non-incinerable waste and recyclables at source. The general waste collector may require the general waste generator to use separate containers for separate storage of the segregated waste.
- The general waste collector shall ensure that the vehicles and equipment that he uses to store, collect and transport waste are suitably designed, kept clean, and maintained in good working condition at all times.

For Type C waste:

- Must acquire certification from National Environment Agency in Singapore
- Class C general waste collectors shall dispose Type C waste at Public Utilities Board's (PUB) **Water Reclamation Plants**

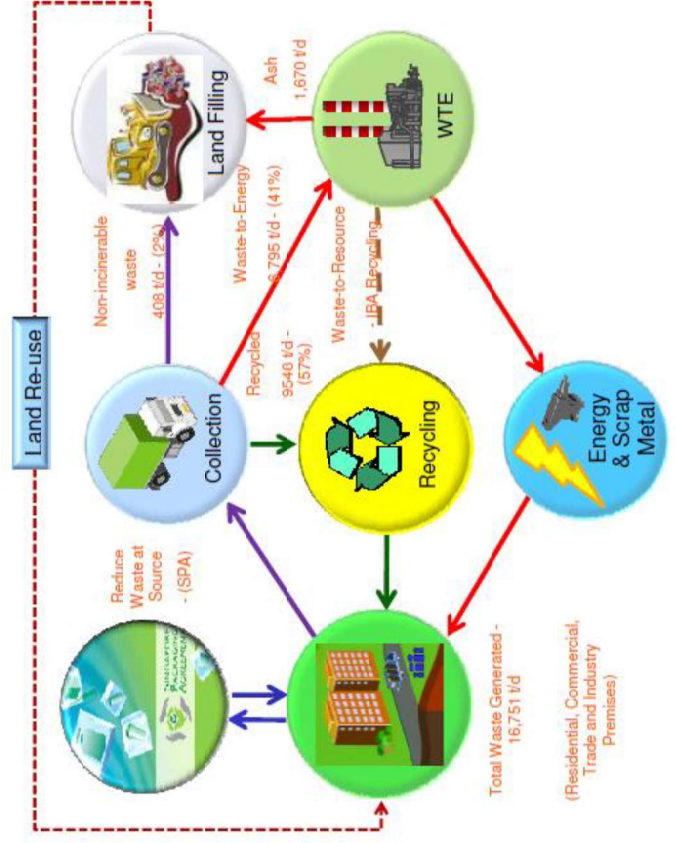
2. Separate Disposal of Incinerable Waste, Non-incinerable Waste and Recyclables

- General waste collector shall provide necessary receptacles for the waste generators to separate their waste into incinerable waste, non-incinerable waste and recyclables, and shall ensure wastes are segregated. No hazardous wastes.

Incinerable waste → incineration plants

Non-incinerable waste → transfer station

Recyclable waste → recycling facilities



Public Education & Community Participation

- School Recycling Corner Programme (100%)
- Annual Recycling Week
 - Residents, Companies, Schools, Grassroots organizations, Government agencies, and Non-Governmental Organisations
 - Launched 3R booklet cum exhibition
 - Recognition to communities
 - E-waste take back



Domestic and Trade Waste

- Provide infrastructure for recycling
 - National Recycling Programme
 - all households have access to recycling receptacles (bins/bags)
 - >4,100 public recycling bins

•63% of households participate



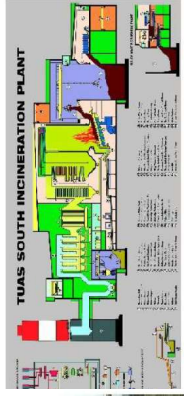
Incineration

Cost-effective disposal in land-scarce situations:

- volume of refuse can be reduced by 90%
 - only 10% landfill space required
- energy can be recovered for power generation
- scrap metal can be recovered for recycling

Industrial and Commercial Waste Recycling:

- Wood (207,400 tonnes, 72% recycled)
- Horticultural Waste (93,500 tonnes, 39%)
- Used Slag (418,600 tonnes, 99%)
- C & D Waste (1,150,700 tonnes, 98%)
- Ferrous Metal (806,200 tonnes, 92%)



Landfilling

- Commenced operations on 1 Apr 99
- Cost : \$610 million
- Area : 350 ha
- Capacity : 63 million m³

References:

- Solid Waste Engineering, William A. Worrel and P. Aarne Vesilind
- Solid Waste Management in Singapore, 2nd Regional 3R Forum in Asia, Kuala Lumpur, Malaysia, October 4-6, 2020
- Code of Practice for Licensed General Waste Collectors, National Environment Agency, Singapore

PROJECT ACTIVITY : 3rd SUB-GROUP MEETING FOR PROJECT OUTPUT 4 (ENHANCEMENT OF NATIONAL GOVERNMENTS' AND TARGET LGU'S CAPACITY TO IDENTIFY ISSUES AND PROVIDE SUGGESTION/ RECOMMENDATION FOR THE OTHER SWM TECHNOLOGIES THAN WTE IS ENHANCED)

DATE/TIME : 3 September 2020, 9:00AM - 11:30AM (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/Meeting Objectives/ Acknowledgement of Attendees and Adoption of Agenda (Ms. Elvira Pausing)</p>	<ul style="list-style-type: none"> ● Ms. Elvira Pausing of EMB-SWMD-PMO commenced the 3rd subgroup meeting for Project Output 4 when quorum was reached 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 all meeting attendees, and welcomed Engr. Editha Peros as the new head of LGU Cebu CENRO. 	<p>➤ Agenda was moved for adoption with no comments and modifications from the participants.</p>	
<p>2.) Review of the previous discussions from the last Sub-group meeting (Ms. Kyoko Kimura, JET)</p>	<ul style="list-style-type: none"> ● Ms. Kimura presented the brief review of the last subgroup meeting for OP4, and discussed each of the activities for the benefit of the new subgroup 4 members. ● Ms. Kimura also shared the expected outputs for today's meeting per last meeting's discussions. 		
<p>3.) Presentations/Discussions on some examples of "Good practices/ Good technologies" of other SWM technologies in third world countries under Activity 4-3 Intermediate treatment facility/3R (Engr. Reynaldo L. Esguerra, DOST-ITDI)</p>	<ul style="list-style-type: none"> ● Engr. Esguerra presented good practices and good technologies on intermediate treatment facilities/3R. The following examples were tackled in the discussion: <ul style="list-style-type: none"> ○ Model Wart Initiative, National Green Tribunal (NGT) in Delhi, India ○ URENCO Refuse Paper and Plastic Fuel in Hanoi, Vietnam ○ Rayong Waste-to-Energy Facility in Rayong, Thailand 	<p>➤ For all presenters, Ms. Flerida Chan raised a question on the cost of the technologies and its applicability and sustainability in the Philippine context.</p> <p>➤ Mr. Kosaka requested for updates on the Model Wart Initiative in India, mentioning that a project he was involved in in Ho Chi Minh City encountered problems with coordinating with communities near the facility,</p>	<p>➤ Engr. Esguerra mentioned that cost information can be accessed through consultations with his colleagues, and shall be shared with the team once gathered.</p> <p>➤ Engr. Esguerra will follow up on the status of the New Dehli Model Wart Initiative and get back to Mr. Kosaka.</p>

<p>3.) Presentations/Discussions on some examples of “Good practices/ Good technologies” of other SWM technologies in third world countries under Activity 4-3</p> <p>Sanitary Landfill (Engr. Elisa Madrazo/ Engr. Lakandiwa Orcullo, LGU Davao City)</p>	<ul style="list-style-type: none"> ○ District Model of Waste as a Resource in Suan Luang District in Bangkok, Thailand ○ Waste-to-Energy Project for the rice milling sector in Cambodia ○ FORWARD Black Soldier Fly (BSF) Upcycling of Urban Organic Solid Waste in Sidoarjo, Indonesia ○ Bokashi composting of food waste from restaurants and hotels in Fraser’s Hill, Malaysia 	<p>and with the handling of the high influx of waste generated daily. Mr. Kosaka went on to suggest that local government needs to set up the whole municipal solid waste management system before launching the full-scale source segregation such as composting/biogas facility.</p>	
	<ul style="list-style-type: none"> ● Engr. Orcullo presented good practices and good technologies on sanitary landfill management, focusing particularly on Semi-aerobic landfill implemented in Fukuoka City, Japan. 	<p>➤ For all presenters, Ms. Florida Chan raised a question on the cost of the technologies and its applicability and sustainability in the Philippine context.</p> <p>➤ Engr. Orcullo mentioned that the Semi-aerobic landfilling technology is already being observed in their landfilling site, proving its applicability in the Philippine setting, though implementation can still be improved to really align with the specifics of the technology.</p> <p>➤ Mr. Kamishita asked Engr. Orcullo on what the difficulties does Davao LGU have in its current operations, to which Engr. Orcullo expressed his concern on the implementation of the technology. The location of the SLF was also a problem in that hauling trucks found it</p>	<p>➤ Provide cost information on the implementation of the good practices/ technologies presented, and give insights in its applicability and sustainability in the context of Davao.</p>

<p>3.) Presentations/Discussions on some examples of “Good practices/ Good technologies” of other SWM technologies in third world countries under Activity 4-3</p> <p>Collection Method (Engr. Glory Rose C. Manatad, LGU Cebu City)</p>	<ul style="list-style-type: none"> ● Engr. Manatad presented good practices and good technologies on collection and transportation methods. The following examples were tackled in the discussion: <ul style="list-style-type: none"> ○ Different collection methods ○ General Collection- Transfer-Transportation Scheme ○ Key considerations in Truck Routing 	<p>difficult to drive through the terrain going to the SLF.</p> <ul style="list-style-type: none"> ➤ Mr. Kamishita asked Engr. Orcullo on his suggestion to other LGU’s that are considering the same setup. Engr. Orcullo strongly suggests for other LGU’s to adopt the same technology. ➤ Mr. Kamishita also asked if the new SLF in Davao is going to be a semi aerobic one as well, and Engr. Orcullo confirmed that the new landfill will work under the same technology. ➤ Mr. Kamishita asked Engr. Orcullo, and the rest of the attendees if they know of other semi-aerobic SLF in the Philippines. Engr Orcullo mentioned that aside from the one they have in Davao, he is not aware of other ones that may exist elsewhere, so Ms. Pausing stepped in and delegated the task to SWMD-PPS to come up with a list of other semi-aerobic landfills in the Philippines. 	<ul style="list-style-type: none"> ➤ SWMD-PPDS will be providing JET with the information on other semi-aerobic landfills in the Philippines.
		<ul style="list-style-type: none"> ➤ For all presenters, Ms. Florida Chan raised a question on the cost of the technologies and its applicability and sustainability in the Philippine context. ➤ Mr. Higashinakagawa asked about what good points are and are not applicable in Cebu. Engr. Manatad suggested that the city 	<ul style="list-style-type: none"> ➤ Provide cost information on the implementation of the good practices/ technologies, and give insights in its applicability and sustainability in the context of Cebu City.

<p>3.) Presentations/Discussions on some examples of “Good practices/ Good technologies” of other SWM technologies in third world countries under Activity 4-3 Collection and Transportation Method, Information, Education and Communication Campaigns (Ms. Andrei Mallare, JET)</p>	<ul style="list-style-type: none"> ○ Singapore as model country for waste collection and transportation 	<p>invest in garbage trucks with can snatchers to make collection more efficient. ➤ Additionally, Mr. Higashinakawaga noted that the routing of hauling trucks can be improved guided by the insight that Engr. Manatad presented.</p>	
	<ul style="list-style-type: none"> ● Ms. Andrei Mallare presented good practices and good technologies on collection and transportation methods, and IEC campaigns The following examples were tackled in the discussion: <ul style="list-style-type: none"> ○ Trash per-bag fee Collection Program in Taipei, Taiwan ○ Participatory Solid Waste Management in Phangkon Municipality, Sakon Nakhon Province, Thailand ○ Taipei Lantern Festival in Taiwan 	<p>➤ For all presenters, Ms. Florida Chan raised a question on the cost of the technologies and its applicability and sustainability in the Philippine context. ➤ Ms. Mallare mentioned that the exact cost information on the presented practices were not available at the moment. However, the campaigns to lessen waste generation and to handle waste disposal more responsibly is something that LGU’s must really consider implementing given that all the cited practices mentioned that IEC campaigns were key to the success of their strategies.</p>	
<p>4.) Presentation on the proposed format to consolidate the Good Practices and Technologies (Ms. Iku Sato, JET)</p>	<ul style="list-style-type: none"> ● Ms. Sato presented the booklet that will be used as a guide for summarizing the good practices and good technologies gathered by the members of the subgroup. ● Ms. Sato also followed up on the LGU’s to submit the files that JET needs: <ul style="list-style-type: none"> ○ Cebu City to share the excel file ○ Quezon City to share the excel and ppt file 	<p>➤ Mr. Christian Perez suggested adding the criteria/basis that was used to determine the selected examples. ➤ Ms. Florida Chan suggested to include the period when the technologies were implemented, and the status of these good practices. ➤ Engr. Esguerra suggested to cite the sources of the research</p>	<ul style="list-style-type: none"> ● Cebu City shall share the excel file summary of their research on Collection and Transportation to JET ● Quezon City shall share the excel and powerpoint files of their research on IEC to JET ● JET shall revise the format to incorporate the following items: <ul style="list-style-type: none"> ○ Criteria/ basis for choosing the example ○ Implementation of each

		<p>➤ Ms. Sato responded positively on all the additions, and these shall be added in the revised format of the summary.</p>	<p>example (from planning to execution)</p> <ul style="list-style-type: none">○ References used in the research
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<p>5.) 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. ● From the presentation of Ms. Mallare, the following discussions and agreements were defined: <ul style="list-style-type: none"> ○ Quezon City LGU has prepared their research for this output, but is still waiting for approval before sending to JET. ○ JET has scheduled an on-boarding meeting with Engr. Peros of Cebu City on September 16, 2020. ○ Mr. Kamishita shared with the subgroup that JET will not be allowed to go back to the Philippines until the end of March 2021 (tentative) per JICA memo. With this, he gave a heads up to the subgroup that the next ITWG and JCC meetings will most likely be conducted online. 	<p>➤ No clarifications and/or alterations raised by the subgroup members.</p>	
<p>6.) Way forward, Schedule of the next meetings</p>	<ul style="list-style-type: none"> ● Ms. Kyoko mentioned that the analysis phase will now commence to determine the most suitable practices and technologies in the context of the Philippines. ● The next activity, Activity 4-5, which is the conduct of seminars to disseminate the findings of the precious activities, is scheduled in April 2021. 		<p>➤ Subgroup members are tasked to summarize their research, and provide insights on what technologies and practices best suited in the Philippines, and suggestions on how they can be designed to be more fit to our context.</p>
<p>7.) Other Matters</p>	<ul style="list-style-type: none"> ● There be no other matters to be discussed, Ms. Pausing adjourned the meeting by extending her appreciation to all the subgroup members and other participants who joined the meeting. 		