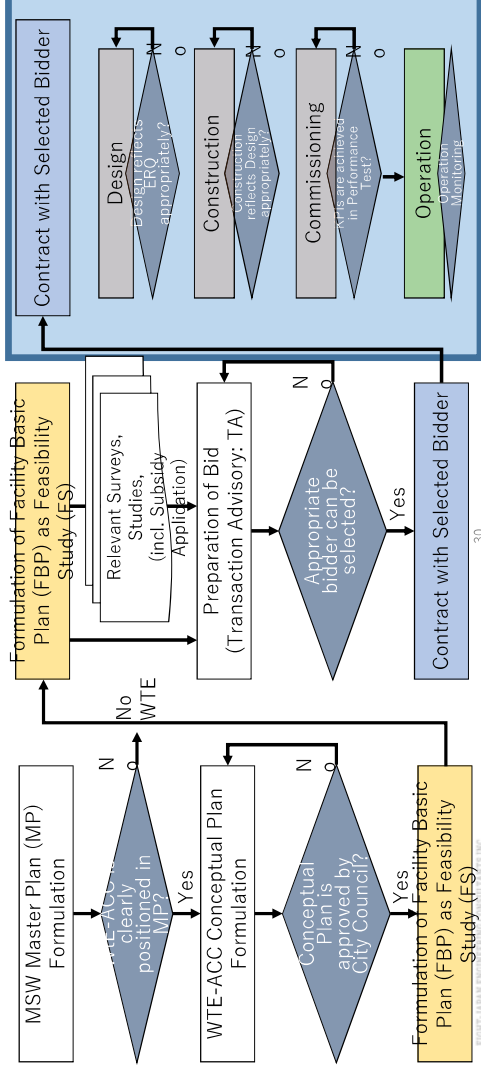


1. Rationale
2. Planning Phase
3. Formulation Phase
4. Evaluation Phase
5. Contract Management Phase Chapter 5
6. Dismantling of WTE-ACC
7. Appendix

5.1 Background  
 5.2 Purpose of Contract Management  
 5.3 Differences in Business Schemes and Contract Management between Japan and Philippines  
 5.4 Design and Construction Stage  
 5.5 Detailed Procedure in DBO Case and Implication to BOT/BOO;  
 5.6 Operation Phase

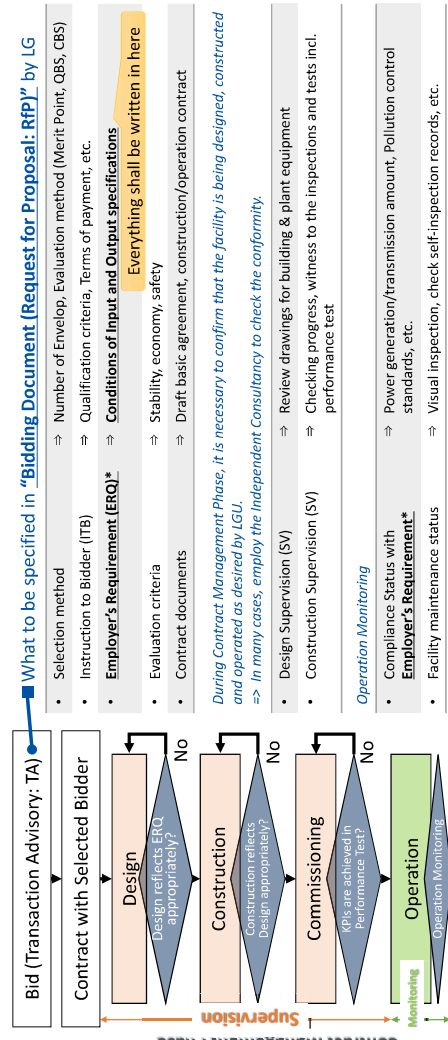
## 5. Contract Management Phase

### (1) WtE Project Procedure



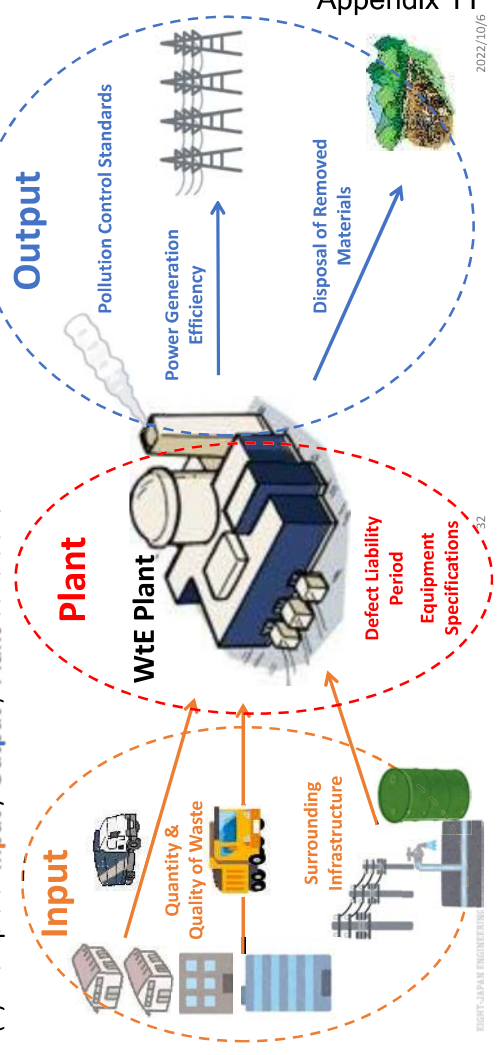
## 5. Contract Management Phase

### (1) Procedure of Contract Management (in the aspect of LGU)



\***Employer's Requirement (ERQ)** is defined as the document specifies the purpose, scope, and/or design and/or other technical criteria for the execution of the Works in FIDIC general conditions. It is used as "Technical Specification" in the Design-Build ordering system where the Employer specifies only some output/input conditions and let contractor to propose their best options.

### (2) Example of Input / Output / Plant Conditions



## 5. Contract Management Phase

### (2) Example of Input / Output / Plant Conditions

Main contents of "Employer's Requirement (ERQ)" in Bidding Document

(A) COMMON	(B) CONSTRUCTION	(C) OPERATION
1. Capacity of the Facility, Project scheme	1. Quantity and quality of waste	1. Project implementation structure
2. Construction Site, Area	2. Performance Guarantee Matters;	2. Development of manuals and plans
3. Project period, time schedule	(1) Power generation efficiency	3. Operation and maintenance contents;
4. Topography and geology conditions	(2) Pollution control standards, etc.	(1) Operation management
5. Surrounding infrastructure, city planning related matters	3. Performance guarantee method	(2) Inspection, testing, repair and renewal
	4. Defect Liability Period	(3) Disposal of removed materials
	5. Equipment specifications	(4) Information management
	(1) Mechanical equipment specifications	4. Handling after the Project Period
	(2) Electrical instrumentation equipment specifications	
	(3) Civil engineering and building works specifications	

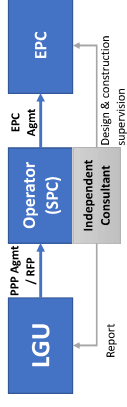
Source: Outline of WtE Technology and Requirements for WtE Project (JICA-TCP Online Training, 10Dec2021)

## 5. Contract Management Phase

### (3) Relationship among LGU, Operator (SPC) and EPC contractor

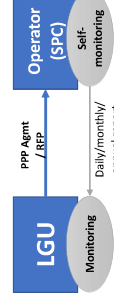
#### Design/Construction Supervision:

- In the design/construction phase, LGU, the client of the Project, directly or indirectly through (SPC) monitor the design and construction of EPC contractor's drawings, as well as the work plan for commissioning and performance test.
- The purpose of monitoring is to confirm, through approval and confirmation of drawings and implementation of inspections and tests, whether the construction work is planned and executed in accordance with the agreement, RFP, and the project proposal.



#### Operation Monitoring:

- In the operation phase, the purpose of monitoring is to provide citizens with high-quality public services based on an appropriate division of roles between the LGU and the Operator (SPC) by monitoring and confirming the implementation status of various tasks related to the operation and reflecting the results in the payment of fees.



\*Specific rules and procedures shall be designed in Contract Management Manual

➔ Even though BOT/BOO, LGU can design the level of intervention to the Private Partner's role bcs this is Public Project.

## 5. Contract Management Phase

### (3) Design and Construction Supervision / 4 PPP case studies in Japan

DBO (K union, 2019)	BTO (N city, 2019)	BOO (K city, etc., 2019)
<p>Contract/Requirement level documents</p> <p>Design &amp; Construction Supervision (Approve)</p> <p>Supervisor</p> <p>K union</p>	<p>N city</p> <p>Member, board of directors periodically (contract approval for Approval)</p> <p>SPC (BTO) contract</p> <p>EPC contract</p> <p>Supervisor</p> <p>Design &amp; Construction supervision (Approve)</p> <p>EPC</p>	<p>7 municipality confirm</p> <p>contract, etc</p> <p>PFI entity (SPC) contract</p> <p>Supervisor</p> <p>contract, etc</p> <p>EPC contractor</p> <p>Design &amp; construction supervision (Approve)</p> <p>EPC</p>
<ul style="list-style-type: none"> <li>No SPC. No monitoring on the business side.</li> <li>The union supervisor approves the various drawings and procedures. When the union lacks the capacity, it outsources the work.</li> <li>The consent of the union is a condition for proceeding to the next step.</li> </ul>	<ul style="list-style-type: none"> <li>City asks SPC to hire supervising company.</li> <li>The supervising company (supervisor) approves the various drawings.</li> <li>Only the list of approved books and test procedures are approved by the city.</li> <li>Other drawings are reported* by SPC to the city. When the city lacks the capacity, it outsources the work</li> </ul>	<ul style="list-style-type: none"> <li>The city requests SPC to supervise the construction.</li> <li>Supervisor of SPC approves the various drawings.</li> <li>Report and obtain confirmation* of the approved documents from SPC to the city.</li> </ul>

Phase	Work	Contents
Construction	Design supervision	Checking whether there are any discrepancies between the requirements document/contract and the basic design/detailed design documents
Construction	Construction supervision	Confirmation that construction work is being carried out in accordance with the requirements, contract, and design documents
Operation	Operation supervision	Confirmation that operation and maintenance are being carried out in accordance with the requirements and contract documents

### 5. Contract Management Phase

#### (4) Design and Construction basic approach to construction monitoring

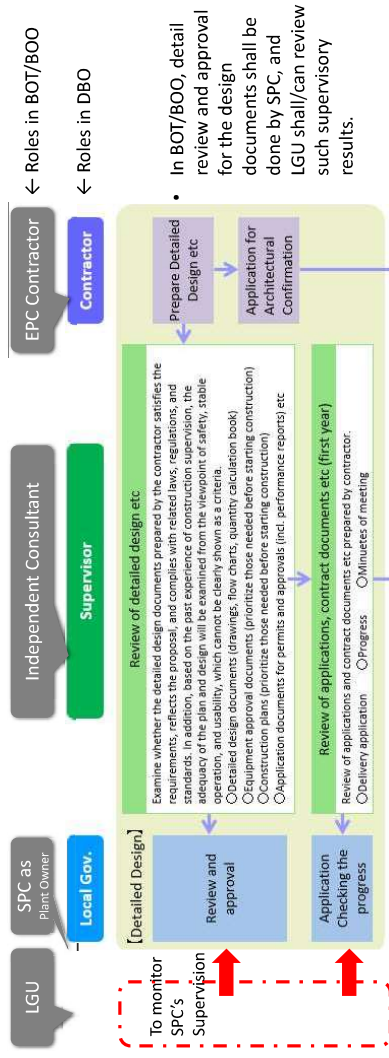
- In general, WTE-ACC facilities are ordered under the lump-sum design-build (performance order) system, so LGU shall confirm that the contents specified in the RFP are reflected in the design documents.
- LGU shall confirm that the work is being performed in accordance with the approved design documents.
- The facilities must be developed to reflect the intentions and requirements of the client, keeping in mind that they are environmental infrastructure facilities that provide public services over a long-term operational period.
- This is a public project led by the private sector, and the private sector's ingenuity and know-how must be used to the maximum extent possible.
- Quality control must be carried out by project operators to ensure that only economic efficiency is not pursued, such as the use of poor quality materials, poor quality construction, and economic design.
- Each process must be prevented from being delayed without clear and unavoidable reasons, and the provision of public services must be prevented from being delayed.
- When applying for subsidies, etc., the progress and completion of construction must be confirmed and reported in an appropriate and transparent manner.
- The commissioning of facilities, performance tests and various inspections and completion inspections must be carried out properly in accordance with predetermined methods.

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### 3. Contract Management Phase

#### (5) Design and Construction Supervision / Detail Procedure in DBO Case / and Implication of BOT/BOO;

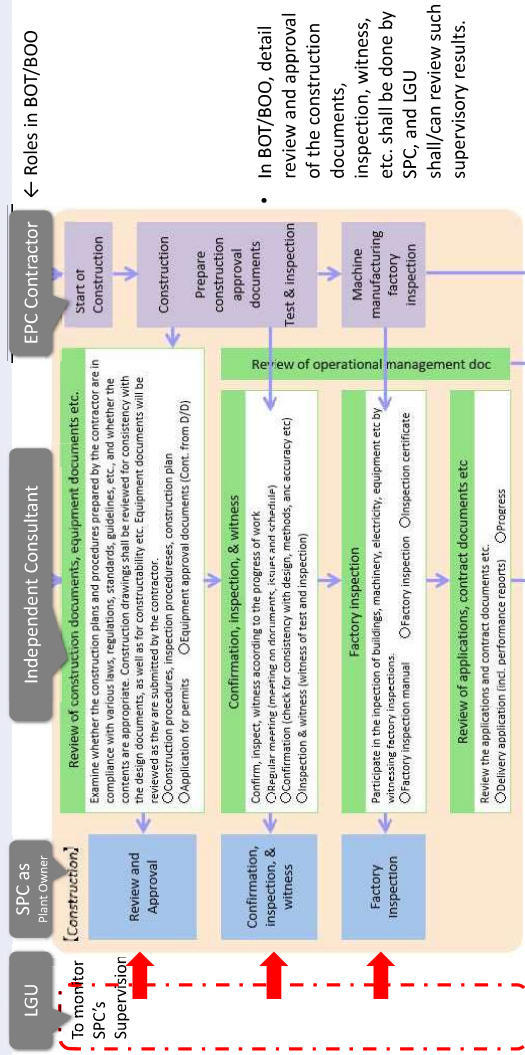


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### 3. Contract Management Phase

#### (4) Design and Construction Supervision / Detail Procedure in DBO Case / and Implication of BOT/BOO;

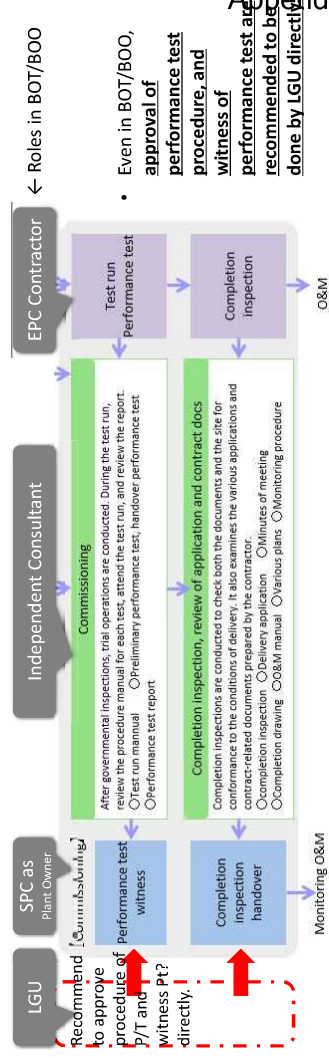


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### 3. Contract Management Phase

#### (5) Design and Construction Supervision / Detail Procedure in DBO Case / and Implication of BOT/BOO;

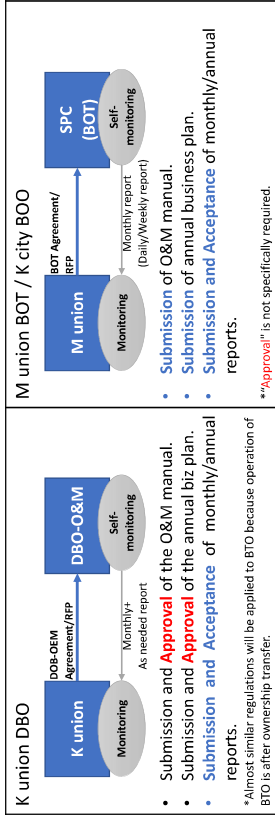


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### 5. Contract Management Phase

#### (6) Operation Monitoring / 3 PPP case studies in Japan



- At the Operational Phase, there is no significant difference in the RFP documents between DBO/BTO where LGs own facilities, and BOT/BOO where private companies own facilities.
  - As shown in above, there are differences in the expressions used for "Acceptance" or "Approval".
  - Same as the Design and Construction Phase, it is a considerable matter if to assign experts who can check the SPC's self-monitoring and discuss countermeasures when any problems occur.



### 3. Contract Management Phase

#### (6) Operation Monitoring / List of Documents to be requested to prepare to SPC

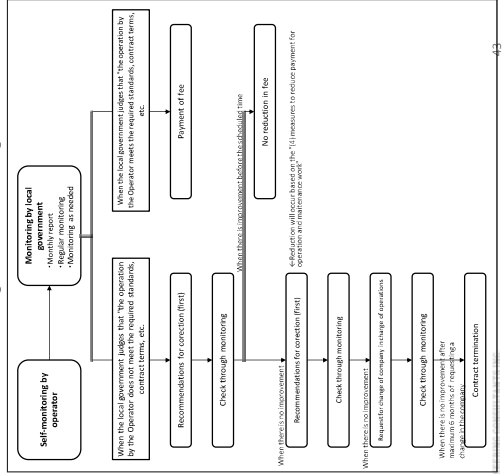
Documents to be prepared:		Work Plans / Work Implementation Plans		Reports	
Name of Works / Period applied for	Description	Manuals	Thru Operation Period	Annually	Monthly
1. Operational Management (Operation Works)	Operational Management Manual	Operational Management Manual	Annual Operation Plan (AOP) (Included in AOP)	Annual Operation Plan (AOP) (Included in AOP)	Monthly Operation Plan (Included in AOP)
Delivery Control (Entrant Control)	Inspection and Data MSW (Waste processing operation control)	Inspection and Data MSW (Waste processing operation control)	Annual Operation Plan (AOP) (Included in AOP)	Annual Operation Plan (AOP) (Included in AOP)	Monthly Operation Plan (Included in AOP)
2. Maintenance Management (Preventive)	Maintenance Management Manual	Maintenance Management Manual	Annual Maintenance Plan (Included in AOP)	Annual Maintenance Plan (Included in AOP)	Monthly Preventive Plan (Included in AOP)
Check and Renewal (Contractive Maintenance)	Overall Check and Inspection Plan	Overall Check and Inspection Plan	Annual Check and Inspection Plan (Included in AOP)	Annual Check and Inspection Plan (Included in AOP)	Annual Check and Inspection Report (Included in AOP)
Functional Inspection	Overall Functional Maintenance Plan	Overall Functional Maintenance Plan	Annual Functional Maintenance Plan (Included in AOP)	Annual Functional Maintenance Plan (Included in AOP)	Annual Functional Maintenance Report (Included in AOP)
3. Environmental Management (Environmental Protection)	Environmental Management Manual	Environmental Management Manual	Annual Environmental Protection Plan (Included in AOP)	Annual Environmental Protection Plan (Included in AOP)	Annual Environmental Protection Report (Included in AOP)
4. Emergency Response	Emergency Response Manual	Emergency Response Manual	Annual Emergency Response Plan (Included in AOP)	Annual Emergency Response Plan (Included in AOP)	Annual Emergency Response Report (Included in AOP)
5. Safety Management (Safety Management)	Safety Management Manual	Safety Management Manual	Annual Safety Management Plan (Included in AOP)	Annual Safety Management Plan (Included in AOP)	Annual Safety Management Report (Included in AOP)
6. Environmental Protection (Waste Environment Protection)	Waste Environment Protection Manual	Waste Environment Protection Manual	Annual Waste Environment Protection Plan (Included in AOP)	Annual Waste Environment Protection Plan (Included in AOP)	Annual Waste Environment Protection Report (Included in AOP)
7. Education and Training	Education and Training Manual	Education and Training Manual	Annual Education and Training Plan (Included in AOP)	Annual Education and Training Plan (Included in AOP)	Annual Education and Training Report (Included in AOP)

\*1. Daily reports should be attached.



### 5. Contract Management Phase

#### (7) Operation Monitoring / Monitoring and Corrective Action



### Draft Manual for the Planning, Formulation, Evaluation and Contract Management of WTE Projects

1. Rationale
2. Planning Phase
3. Formulation Phase
4. Evaluation Phase
5. Contract Management Phase
6. Dismantling of WTE-ACC
  - Chapter 6 Dismantling of WTE-ACC
  - 6.1 Dismantling of WTE-ACC
  - 6.2 Dismantling manual
  - 6.3 Estimation of dismantling costs and financial resources
7. Appendix

## 6. Dismantling of WTE-ACC

### Dismantling manual

- Revisions of the Occupational Safety and Health Regulations, Outline of Measures, and the Waste Incineration Facility Dismantling Work Manual

### Method of dismantling

- Dismantling work must be conducted according to the stipulation, starting with the maintenance of the promotion system as described in the Dismantling Manual and notifying the Labor Standards Inspection Office of the plan

### Estimation of dismantling costs and financial resources

- the number of companies dismantling and the actual records of dismantling work are increasing, and it is possible to estimate the appropriate level of cost.

## Draft Manual for the Planning, Formulation, Evaluation and Contract Management of WTE Projects

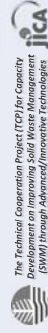
1. Rationale
2. Planning Phase
3. Formulation Phase
4. Evaluation Phase
5. Contract Management Phase
6. Dismantling of WTE-ACC

## 7. Appendix

### Chapter 7 Appendix

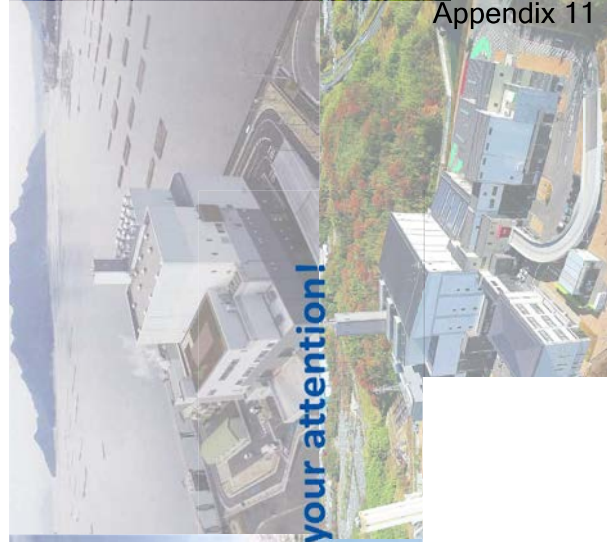
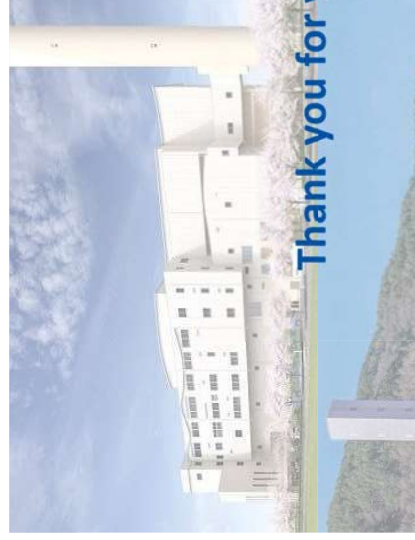
- A: Consignment of Professional Engineer
- B: Applications/Notifications to the Governments (Example in Japan)
- C: General Structure of WTE/WTF
- D: WTE-ACC as a Stable Power Source Cases in Japan
- E: Safety Measures
- F: Responsiveness to Disaster Waste

## 7. Appendix

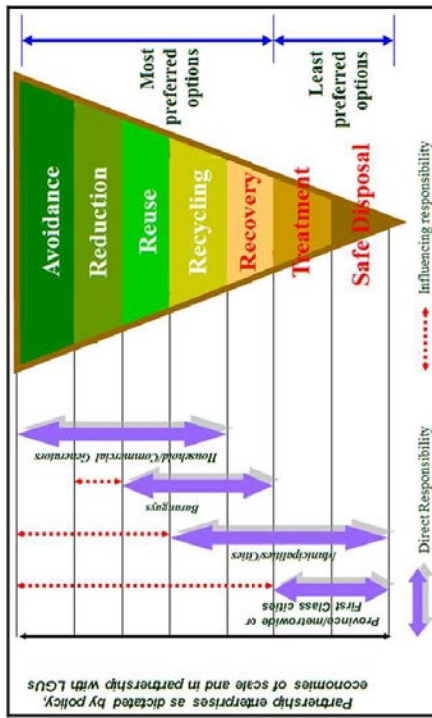


The following sections consist of the Appendix, which highlight the examples and suggestable issues associated in the development of this guide

- ❖ **A: Consignment of Professional Engineer**
- ❖ **B: Applications/Notifications to the Governments (Example in Japan)**
- ❖ **C: General Structure of WTE/WTF**
- ❖ **D: WTE-ACC as a Stable Power Source Cases in Japan**
- ❖ **E: Safety Measures**
- ❖ **F: Responsiveness to Disaster Waste**



## 2. Planning Phase



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FIGURE 1.2.3.1. ENGINEERING CONSULTANTS, INC.

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## 2. WTE Project Development, (2) Correct understanding of Waste Management PPP,

- ✓ There are 3 types of PPP projects, #1: Service provision, #2: Financially free-standing, and #3 Mixed,
- ✓ In general, waste treatment facilities are categorized in #1 and WTE is categorized in #3. They never fall into #2,
- ✓ However, in many private proposals say “no tipping fee”, “power tariff covers all CAPEX/OPEX”, etc. and never realize. LGUs shall have correct understanding of Waste-to-Energy financial situation in other countries.

**#1: Service Provision Type; Public pays fee to Private partner’s service provision incl. its CAPEX/OPEX**

Public → Project Agreement → Private → Service Provision → User

School, Government Building, Jail, Waste treatment facility, etc.

**#2: Financially free-standing Type; Project revenue covers CAPEX/OPEX / No financial support from Public**

Public → Project Agreement → Private → Service Provision → User

Toll Road, Airport, MRT, Parking, etc.

**#3: Mixture Type (Waste-to-Energy Projects); Project revenue is not enough to cover CAPEX/OPEX**

Public → Project Agreement → Private → Service Provision → Citizen → Off-taker

By-products, Tariff

FIGURE 1.2.3.2. ENGINEERING CONSULTANTS, INC.

2022/10/6

Birds Eye View Comparison between Verion 4.0 and 5.0

v4.0	
<b>Chapter 1 Rationale</b>	1.1 Background 1.2 Objective of this Manual (for the development of WTFs) 1.3 Definitions 1.4 Abbreviations
<b>Chapter 2 Positioning the various plans regarding the development of WTFs</b>	2.1 Purposes of formulation of plans 2.2 Legal requirement to LGUs in MSWM 2.3 Role of Waste Treatment Consultants for development of plans
<b>Chapter 3 The selection of candidate construction site</b>	3.1 Background 3.2 Laws for regulation of the potential construction site 3.3 Candidate site selection procedure 3.4 Conditions and criteria related to candidate site selection 3.5 Sample procedural flow for selection of candidate site 3.6 Considerations in the selection of candidate sites 3.7 Actions after the selection of candidate site
<b>Chapter 4 Study on PFI/PPP introduction</b>	4.1 Background and Importance of Study on PFI/PPP Introduction (as the Background) 4.2 PPP legal framework in the Philippines 4.3 Items of Study on PFI/PPP introduction
<b>Chapter 5 Selection of treatment technology</b>	5.1 Background 5.2 Procedure for the selection of treatment method
<b>Chapter 6 Development of Facility Basic Plan (FBP)</b>	6.1 Background 6.2 Ordering conditions relating to facility development 6.3 Planned Waste Quality 6.4 Structure of the Facility Basic Plan (FBP) 6.5 WTE-ACC as a Stable Power Source (Cases in Japan) 6.6 Measures against Disaster Waste Treatment
<b>Chapter 7 Core items in Waste Treatment Facility Design</b>	7.1 Notifications to Government Offices 7.2 The General Structure of the Waste Treatment Facility 7.3 Earthquake-resistant and Disaster Prevention Structure of Waste Treatment Facility 7.4 Measures in snow-covered cold regions and areas affected by salt
<b>Chapter 8 Safety Measures</b>	8.1 Accident at Waste Treatment Facilities 8.2 Facility Safety Measures 8.3 Formulating Accident Response Manual
<b>Chapter 9 Dismantling of Incineration Facility</b>	9.1 Dismantling of Incineration Facility 9.2 Dismantling manual 9.3 Estimation of dismantling costs and financial resources

v5.0	
<b>Chapter 1 Rationale</b>	1.1 Background 1.2 Objective of the Manual (for the development of WTFs) 1.3 Consignment of Professional Engineer <b>APPENDIX A</b> 1.4 Access to the Project Development Finances <b>NEW</b> 1.5 Definitions 1.6 Abbreviations
<b>Chapter 2 Planning Phase</b>	2.1 Components of the Planning Phase 2.2 Legal requirement to LGUs in MSWM 2.3 Positioning of 10-year Solid Waste Management Plans <b>UPGRADED</b> 2.4 Facility Conceptual Plan 2.5 The selection of candidate construction sites <b>DOWNGRADED</b>
<b>Chapter 3 Formulation Phase</b>	<b>BUNDLED</b> 3.1 Formulation of Feasibility Study (F/S) 3.2 Technology selection 3.3 Target Waste Amount 3.4 Target waste quality 3.5 Pollution prevention standards 3.6 Waste heat utilization <b>APPENDIX D</b> 3.7 Financial model (Case of BOT/BOO) 3.8 Business scheme 3.9 Role demarcation 3.10 Value Chain Analysis 3.11 Other Aspects <b>APPENDIX E</b> <b>APPENDIX F</b>
<b>Chapter 4 Evaluation Phase</b>	<b>NEW</b>
<b>Chapter 5 Contract Management Phase</b>	<b>NEW</b>
<b>Chapter 6 Dismantling of WTE-ACC</b>	6.1 Dismantling of WTE-ACC 6.2 Dismantling manual 6.3 Estimation of dismantling costs and financial resources
<b>Chapter 7 Appendix</b>	A: Consignment of Professional Engineer B: Applications/Notifications to the Governments (Example in Japan) C: General Structure of WTE/WTF D: WTE-ACC as a Stable Power Source Cases in Japan E: Safety Measures F: Responsiveness to Disaster Waste
<b>Chapter 8</b>	
<b>Chapter 9</b>	



# Activity 1-8

## Recommendations on the existing regulations of sanitary landfill where incineration ash will be Disposed of.

7th October 2022

Takuya KOKETSU, Final Disposal Expert

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



1. Challenges of sanitary landfill regulations in the Philippines
2. Challenges of existing sanitary landfills in the Philippines
3. Design sanitary landfill where incineration ash will be disposed of
4. Proposed regulations of sanitary landfill where incineration ash will be disposed of

## 1. Challenges of sanitary landfill regulations in the Philippines

The following table list the laws and regulations regarding sanitary landfill in the Philippines and a summary of these laws and regulations

Laws and Regulations	Title	Summary
DAO 1998-49	Technical Guidelines for Municipal Solid Waste Disposal	This is a technical guideline for municipal solid waste disposal. Final disposal sites are classified into four types: open dumping, controlled dumping sites, sanitary landfill level 1, and level 2, and the characteristics and regulations for each are presented.
DAO 1998-50	Adopting the Landfill Site Identification and Screening standard for Municipal Solid Waste Disposal Facilities.	The report presents evaluation items, standard, considerations, and data sources for selecting a site for a final disposal site.
RA 9003	Ecological Solid Waste Management Act of 2000	This is a law on solid waste management and, for final disposal sites, it prohibits open dumping (all open dump sites must be converted to controlled dump sites within three years and be operational within five years) and establishes standard for the suitable location, design, and operation of sanitary landfills.
DAO 2004-34	Implementing Rules and Regulations of RA 9003	Implementing Rules and Regulations (IRR) promulgated pursuant to Article 59 of RA 9003. For final disposal sites, the IRRs provide detailed rules for site selection, design, and operation of sanitary landfills.
DAO 2006-10	Guidelines on the Categorized Final Disposal Facilities (Sanitary Landfill)	Final disposal sites are classified into four categories according to the amount of waste delivered per day, and technical standards are specified for each category.
DAO 2013-22	Revised Procedure and Standards for the Management of hazardous Wastes (Revising DAO2004-36)	This is a revision of DAO 2004-36. Procedures and Standards for the Management of Hazardous Waste. It classifies hazardous waste by type and specifies categories. A through H for facilities that treat, store, and dispose of hazardous waste. Final disposal sites are classified as Category C.

## 1. Challenges of sanitary landfill regulations in the Philippines

### Structural standard for sanitary landfill liner in DAO 2001-34

DAO 2001-34 provides detailed structural standard for sanitary landfill liner. The structural standard for the liner are listed below:

- ❖ Landfills shall be provided with a base liner system consisting of clay and/or geosynthetic membranes (geomembrane).
- ❖ If clay is used, it shall have a minimum thickness of 0.75m and permeability of  $1 \times 10^{-5}$  cm/sec or less.
- ❖ Geomembranes shall be at least 1.5 mm thick with a permeability of  $1 \times 10^{-14}$  cm/sec or less.
- ❖ Geosynthetic Clay Liners (GCL) shall have a thickness of at least 6.4 mm and a permeability of  $1 \times 10^{-9}$  cm/sec or less.



## 1. Challenges of sanitary landfill regulations in the Philippines

### Structural standard for sanitary landfill liner in DAO 2006-10

DAO 2006-10 was promulgated after DAO 2001-34; DAO 2006-10 divides waste into four categories that show how much waste is delivered per day to the sanitary landfill.

	Category 1	Category 2	Category 3	Category 4
Daily waste disposal volume	≤15 TPD	> 15 TPD ≤75TPD	> 75 TPD ≤200TPD	< 200TPD

In DAO 2006-10, the standard are determined by the amount of waste delivered to the landfill per day, with category 4, which has the highest volume of waste delivered, having the most stringent standard.

## 1. Challenges of sanitary landfill regulations in the Philippines

### Structural standard for sanitary landfill liner in DAO 2006-10

DAO 2006-10 stipulates the standard for liners of categories 1 to 4 of sanitary landfills as follows: In DAO 2006-10, liner standards have become stricter as the volume of waste sent to landfills per day increases.

Category 1	Category 2	Category 3	Category 4
Clay liner should be at least 60cm thick and have a permeability of 10 <sup>-5</sup> cm/sec	Clay liner should be at least 75cm thick and have a permeability of 10 <sup>-5</sup> cm/sec	Clay liner should be at least 75cm thick and have a permeability of 10 <sup>-5</sup> cm/sec or better, or composite liner consisting of as least 1.5mm thick HDPE membrane over at least 60cm thickness of compacted fine material with permeability no more than 10 <sup>-5</sup> cm/sec	Synthetic liner should be at least 1.5mm thick HDPE membrane over at least 60cm thickness of compacted clay materials with permeability no more than 10 <sup>-5</sup> cm/sec
Clay liner at least 60cm thick, a permeability of 10 <sup>-5</sup> cm/sec	Clay liner at least 75cm thick, a permeability of 10 <sup>-5</sup> cm/sec	Clay liner at least 75cm thick, a permeability of 10 <sup>-5</sup> cm/sec or better or HDPE membrane liner at least 1.5mm thick Clay liner at least 60cm thick, a permeability no more than 10 <sup>-5</sup> cm/sec	HDPE membrane liner at least 1.5mm thick Compacted clay material liner at least 60cm thick, a permeability no more than 10 <sup>-5</sup> cm/sec

## 1. Challenges of sanitary landfill regulations in the Philippines

### Structural standard for sanitary landfill liner in DAO 2001-34 and DAO 2006-10

The challenge with the standards for liner for sanitary landfill is that DAO 2001-34 and DAO 2006-10 have the following differences:

- ❖ DAO 2001-34 states that a base liner system consisting of clay and/or geosynthetic membrane is required, but DAO 2006-10 does not allow liner consisting only of geosynthetic membrane.
- ❖ DAO 2001-34 states that if clay is used, it shall have a minimum thickness of 75cm and permeability of 1 × 10<sup>-6</sup>cm/sec or less. However, according to DAO 2006-10, for Category 1 liners, the clay liner is at least 60 cm thick and has permeability of 1 × 10<sup>-5</sup> cm/sec, both the thickness and permeability are less than the standards of DAO 2001-34.
- ❖ DAO 2001-34 allows the use of geosynthetic clay liners (GCL), but DAO 2006-10 does not allow the use of GCL.

## 1. Challenges of sanitary landfill regulations in the Philippines

### Structural standard for leachate collection and treatment facilities

In DAO 2001-34, the structural standard for leachate collection and treatment facilities are listed below:

- ❖ Leachate collection and removal system shall be provided and designed to minimize leachate buildup in the landfill while maintaining a leachate level of not more than 0.60 meters over the liner system.
- ❖ If leachate is discharged to a receiving body of water, the discharge shall meet effluent discharge and water quality standards prescribed by DENR.
- ❖ Leachate storage facilities shall be designed with containment systems to prevent leachate from spillage and its migration into underlying groundwater or nearby surface body of water.

In DAO 2006-10, there is no description of standard for leachate collection, and leachate treatment has the following standard for categories 1 to 4.

	Category 1	Category 2	Category 3	Category 4
Leachate treatment	Pond System	Pond System	Pond System	A combination of physical, biological and chemical treatment

**Structural standard for leachate collection and treatment facilities**

The standard for leachate collection and treatment facilities include the following challenges:

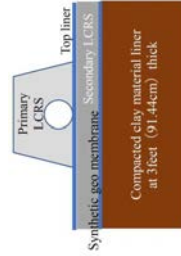
- ❖ DAO 2006-10 does not specifically address the design of leachate collection facility.
- ❖ For leachate treatment facility, categories 1 through 3 are defined as pond systems, which is a method of purifying leachate by storing leachate in ponds and aerating the ponds to purify the leachate with microorganisms. As shown above, the treatment system is specified by the amount of waste delivered per day, but since the quality of leachate varies depending on the type of landfill waste, **it is appropriate to specify the leachate treatment system according to the type of landfill waste as well.**

**Structure standard for hazardous waste landfill**

Structure standard of liner for a hazardous waste landfill is shown

- ❖ Ash generated from the WtE facility will be subjected to the TCLP test, and if ash is classified as hazardous waste, it will be disposed of in hazardous waste landfill in accordance with DAO 2013-22.
- ❖ For structural standard for a hazardous waste landfill, the Technical Guidelines for Specific Categories of Treatment, Storage, and Disposal (TSD) facilities 2015 EMB (“TSD facilities Technical Guidelines”), specify the following for liners:

The figure below shows the standard for liner and leachate collection stipulated in the technical guidelines of TSD facilities:



- ❖ According to the technical guidelines of TSD facilities, the top liner is the geomembrane and the lower liner is a composite liner of geomembrane and compacted clay liner, **in effect, triple liners.**
- ❖ The technical guidelines of TSD facilities do not specify the thickness or permeability of the geomembrane and compacted clay liner.
- ❖ Triple liners and LCRS are not currently used in the landfills for hazardous waste in operation because of the higher construction cost of LCRS.

1. Challenges of sanitary landfill regulations in the Philippines
2. **Challenges of existing sanitary landfills in the Philippines**
3. Design sanitary landfills where incineration ash will be disposed of
4. Proposed regulations of sanitary landfill where incineration ash will be disposed of

## 2. Challenges of existing sanitary landfills in the Philippines

### Summary of Sanitary Landfill Visits

Name	Location	Category	Ownership	Date of Visit
San Pascual Municipal Sanitary Landfill	San Pascual, Batangas	1	LGU	May 26, 2022
Bauan Solid Waste Management, Inc.	Malindig, Bauan, Batangas	2	Private	May 26, 2022
San Pablo City Sanitary Landfill	San Pablo City, Laguna	3	LGU	May 26, 2022
New San Mateo Sanitary Landfill	Guinayang, San Mateo, Rizal	4	Private	May 27, 2022
MetroClark Sanitary Landfill	Sito Kalangitan, Capas, Tarlac	4 / TSD	Private	May 23, 2022

PHOTO: JAPAN ENGINEERING CONSULTANTS, INC.

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2023/1/31

PHOTO: JAPAN ENGINEERING CONSULTANTS, INC.

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2023/1/31

The following are the results of field survey of categories 1-4 and hazardous waste landfill:

- ❖ The landfill in the Philippines is not collecting and draining leachate properly, which means that leachate is stored in the landfill. This causes leachate to accumulate in the landfill, **which causes bad smells and the breeding of mosquitoes.**
- ❖ The leachate collected in the leachate collection pipe is discharged into the leachate collection pit and pumped to the leachate pond. However, **the leachate pit was not collecting leachate, and the pump was not operating** due to lack of electricity.
- ❖ There were landfills that had the leachate collection pit but **no leachate pond.**

## 2. Challenges of existing sanitary landfills in the Philippines

The following are two examples where **there is no leachate pond**, and leachate collection pits where leachate has not collected.



PHOTO: JAPAN ENGINEERING CONSULTANTS, INC.

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2023/1/31

The following are examples of leachate not being collected.



Leachate flowing into the drainage around the landfill



Leachate accumulation in landfill

As mentioned above, the site survey of existing landfills conducted by JET showed that some landfills had problems in the collection and treatment of leachate.

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PHOTO: JAPAN ENGINEERING CONSULTANTS, INC.

2023/1/31

### 3. Design sanitary landfill where incineration ash will be disposed of

1. Challenges of sanitary landfill regulations in the Philippines
2. Challenges of existing sanitary landfills in the Philippines
3. **Design sanitary landfill where incineration ash will be disposed of**
4. Proposed regulations of sanitary landfill where incineration ash will be disposed of

### 3. Design sanitary landfill where incineration ash will be disposed of

In the past, solid waste generated from households were transported directly to landfill and disposed of in landfill. Most of the landfill waste was paper and plastic. However, when WTE facility is introduced, combustible waste will be incinerated. Since the incineration ash generated from WTE facility is landfilled, **the quality and quantity of landfill waste will change significantly.**

The points to consider when designing a sanitary landfill filled with incineration ash are as follows.

### 3. Design sanitary landfill where incineration ash will be disposed of

#### Setting the landfill capacity

The main landfill wastes after introduction of WTE facility are incineration ash, inert waste, and cover soil. **The amount of landfill wastes will be drastically reduced.** Therefore, the points to note when determining the landfill capacity are as follows.

- ❖ In Japan, about 10% bottom ash and about 3% fly ash are generated for the weight of incinerated waste. Since the specific gravity of ash is 1.0t/m<sup>3</sup>, incinerating the waste reduces the landfill capacity to about 1/10.
- ❖ On the other hand, the geomembrane laid in landfills deteriorates under the influence of ultraviolet rays, and its life span is about 20 years from the results of durability tests.
- ❖ Therefore, it is necessary to set the landfill capacity so that the landfill period does not exceed 20 years.
- ❖ The landfill amount of incineration ash for 20 years is calculated by the following formula:  
Incinerated waste weight/day (t) x 13% x WTE facility operating days/year (d) x 20 years x 1.0t/m<sup>3</sup>

### 3. Design sanitary landfill where incineration ash will be disposed of

#### Leachate treatment facility

The leachate generated from landfill where incinerated ash was disposed of will **have a different quality** than the leachate from landfills where solid waste was disposed of. Therefore, with reference to Japanese literature, the table below shows the quality of leachate from landfills where municipal solid waste is mainly disposed of and leachate from landfills where incineration and inert waste are disposed of.

Water quality	Municipal solid waste	Incineration ash and inert waste
BOD	1,200mg/L	50~250mg/L
SS	300mg/L	100~200mg/L
COD	480mg/L	50~200mg/L
T-N	480mg/L	50~100mg/L
Ca <sup>2+</sup>	—	500~3,000mg/L
Cl	—	2,000~20,000mg/L

As shown in this table, the following can be concluded.

- ❖ Quality of leachate from incineration ash and inert waste landfills is low in all items.
- ❖ When ash is disposed of, **it is necessary to consider Ca<sup>2+</sup> and Cl<sup>-</sup>.**
- ❖ This is because the flue gas treatment facility sprays slaked lime to remove HCl from the flue gas generated from the WTE facility, and the fly ash contains a large amount of CaCl<sub>2</sub>, which dissolves in leachate in the landfill and leaches out as Ca<sup>2+</sup> and Cl<sup>-</sup>.

### 3. Design sanitary landfill where incineration ash will be disposed of

#### Leachate treatment facility

- High calcium concentrations in leachate can cause scaling in pumps and other equipment, which can interfere with facility operation, and many leachate treatment facilities in Japan have adopted calcium removal equipment.
- If the leachate-treated water is discharged in agricultural canals, desalination treatment is necessary in some cases because the Cl in the leachate-treated water may cause crops to wither.



Normal paddy rice after rice planting      Start to wither due to salt damage      Withered rice

### 3. Design sanitary landfill where incineration ash will be disposed of

#### Leachate Treatment facility

As mentioned before, when ash generated from the WTE facility is disposed of in a landfill, it has a large impact on the leachate treatment facility. Therefore, two proposals regarding leachate treatment are made below.

#### Proposal 1

If ash generated from WTE facilities is to be disposed at a landfill where municipal solid waste is currently disposed, it would be realistic to measure the quality of the leachate periodically (about once/month) and consider adding treatment facilities, when items that worsen leachate quality are detected, since the ratio of ash to total landfilled waste is small and SS content may be filtered out in the process of leachate percolation through landfilled waste that has already been landfilled.

#### Proposal 2

Many landfills in the Philippines use lagoons for leachate treatment because of their superior economic efficiency. In the case of lagoons, leachate volume can be adjusted and treated together by aeration of the leachate pond. In contrast, if the SS concentration in the leachate increases due to the impact of disposing ash, it is necessary to add a coagulation sedimentation treatment facility or other equipment.

### 3. Design sanitary landfill where incineration ash will be disposed of

#### Leachate Treatment facility

Incineration ash includes heavy metals and dioxins. Heavy metals and dioxins are difficult to dissolve in water, the concentrations of heavy metals and dioxins in leachate are often low. But in Japan, there are cases in which concentrations of lead, zinc, and soluble iron in leachate exceed effluent standards. Therefore, there are many cases where the following heavy metals include in the effluent standards in Japan.

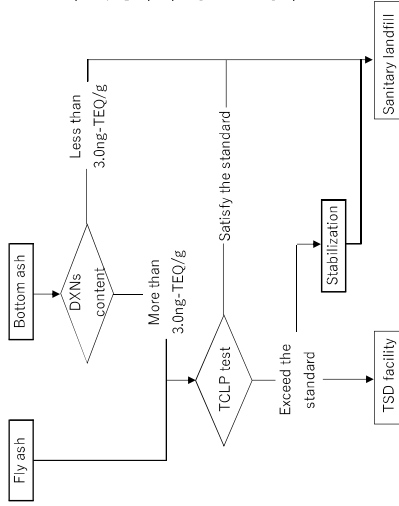
No	Item	Effluent standard	No	Item	Effluent standard
1	pH	5.8-8.6	15	Phosphorous	≤15mg/L
2	BOD	≤60mg/L	16	Alkyl mercury compounds	≤0.4mg/L <small>Shall not be detected</small>
3	COD	≤90mg/L	17	Mercury, alkyl mercury and other mercury compounds	≤3mg/L
4	SS	≤60mg/L	18	Cadmium and its compounds	≤0.005mg/L
5	n-hexane extract content (mineral oil content)	≤5mg/L	19	Lead and its compounds	≤0.02mg/L
6	n-hexane extract content (animal and vegetable oils content)	≤30mg/L	20	Organophosphorus compounds	≤0.06mg/L
7	Phenol content	≤5mg/L	21	Hexavalent chromium compounds	≤0.03mg/L
8	Copper content	≤3mg/L	22	Arsenic and its compounds	≤0.1mg/L
9	Zinc content	≤2mg/L	23	Cyanide	≤1mg/L
10	Soluble iron content	≤10mg/L	24	PCB	≤0.003mg/L
11	Soluble manganese content	≤10mg/L	25	Trichloroethylene	≤0.5mg/L
12	Chromium content	≤2mg/L	26	Tetrachloroethylene	≤0.3mg/L
13	Number of coliform bacteria	≤3,000 units/cm <sup>3</sup>	27	Dichloromethane	≤0.2mg/L
14	Nitrogen content	≤120mg/L	28	Carbon tetrachloride	≤0.02mg/L
			29	1,2-dichloroethane	≤0.04mg/L
			30	1,1-dichloroethylene	≤0.2mg/L
			31	Cis 1,2-dichloroethylene	≤0.4mg/L
			32	1,1,1-trichloroethane	≤0.06mg/L
			33	1,1,2-trichloroethane	≤0.06mg/L
			34	1,3-dichloropropane	≤0.06mg/L
			35	Thiuram	≤0.06mg/L
			36	Simazine	≤0.03mg/L
			37	Benthocarb	≤0.2mg/L
			38	Benzene	≤0.1mg/L
			39	Selenium and its compounds	≤0.1mg/L
			40	1,4-Dioxane	≤0.5mg/L
			41	Boron and its compounds	≤50mg/L
			42	Fluorine and its compounds	≤15mg/L
			43	Ammonia, ammonia compounds, nitrite compound and nitrate compounds	≤700mg/l
			44	Dioxins	≤10ng-TEQ/nm

### 4. Proposed regulations of sanitary landfill where incineration ash will be disposed of

- Challenges of sanitary landfill regulations in the Philippines
- Challenges of existing sanitary landfills in the Philippines
- Design sanitary landfills where incineration ash will be disposed of
- Proposed regulations of sanitary landfill where incineration ash will be disposed of

#### 4. Proposed regulations of sanitary landfills where incineration ash will be disposed of

The following is a flow chart of how bottom ash and fly ash generated from WTE facility will be disposed of in landfill.



Bottom ash will be disposed of in the sanitary landfill if the Dioxins test is conducted, and the concentration is  $3\text{ng-TEQ/g} \leq$ . On the other hand, bottom ash exceeding  $3\text{ng-TEQ/g}$  in the Dioxins test can be disposed of at a sanitary landfill if the TCLP test satisfies the standard. If the standard is exceeded, it will be disposed of in the hazardous waste landfill (TSD facility). In addition, fly ash will undergo a TCLP test, and ash exceeding the standard can be disposed of at the TSD facility, and ash below the standard to the sanitary landfill.

#### 4. Proposed regulations of sanitary landfills where incineration ash will be disposed of

As mentioned above, incineration ash will undergo a TCLP test, and if it is below the standard, it will be disposed of in the sanitary landfill, and if it exceeds the standard, it will be disposed of in the TSD facility. On the other hand, the structural standard for sanitary landfill is DAO 2006-10, and the structural standard for TSD facilities is TSD facilities Technical Guidelines. Therefore, referring to two structural standards structural standards for the main facilities of the sanitary landfill and the TSD facility for the disposal of incineration ash are shown. The main facilities mentioned here are the liner, leachate collection facility, drainage facility, gas control and recovery system, and leachate treatment facility.

#### 4. Proposed regulations of sanitary landfill where incineration ash will be disposed of

Table Structural standards for sanitary landfill

Facility	Draft structural standard	Remark
Liner	<b>Double Liner</b> Synthetic liner should be at least 1.5mm thick HDPE membrane over at least 60cm thickness of compacted clay materials with permeability no more than $1 \times 10^{-7}\text{cm/sec}$	Adopted the structure in category 4 in DAO 2006-10
Leachate collection facility	<b>Adopted semi-aerobic landfill</b> Install a pipe that can drain with a cross-section of 1/2 against leachate generated by rainfall with a probability of 10 years	Adopted the structure in JICA Technical Guidebook on Solid Waste Disposal Design Operation & Management
Drainage facility	Install a facility that can drain rainfall with a probability of 25 years	Adopted the structure in Technical Guidelines for Specific Categories of TSD Facilities
Gas control and recovery system	A series of vertical wells or horizontal trenches containing permeable materials and perforated piping placed in the landfill to collect gas for treatment or productive use as an energy source	Adopted the structure in RA 9003
Leachate treatment facility	<b>Treatment Method</b> Combination of physical, biological & chemical <b>Facility scale</b> The combination of the leachate pond and leachate facility can handle rainfall with a probability of 20 years.	Adopted the structure of category 4 in DAO 2006-10 Adopted the structure in JICA Technical Guidebook on Solid Waste Disposal Design Operation & Management

#### 4. Proposed regulations of sanitary landfill where incineration ash will be disposed of

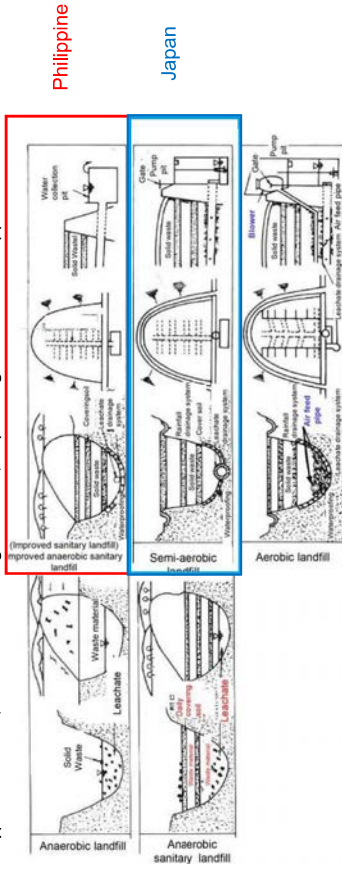
Table Structural standards for TSD facility

Facility	Draft structural standard	Remark
Liner	<b>Double Liner</b> Must consist of a top liner to prevent migration of hazardous constituents into the liner and a composite bottom liner consisting of a synthetic geo membrane and three feet of compacted soil material	Adopted the structure in Technical Guidelines for Specific Categories of TSD Facilities
Leachate collection facility	<b>Double Leachate Collection and Removal System (LCRS)</b> <b>Adopted semi-aerobic landfill</b> Install a pipe that can drain with a cross-section of 1/2 against leachate generated by rainfall with a probability of 10 years	Adopted the structure in Technical Guidelines for Specific Categories of TSD Facilities and JICA Technical Guidebook on Solid Waste Disposal Design Operation & Management
Drainage facility	Install a facility that can drain rainfall with a probability of 25 years	Adopted the structure in Technical Guidelines for Specific Categories of TSD Facilities
Gas control and recovery system	A series of vertical wells or horizontal trenches containing permeable materials and perforated piping placed in the landfill to collect gas for treatment or productive use as an energy source	Adopted the structure in RA9003
Leachate treatment facility	<b>Treatment Method</b> Combination of physical, biological & chemical <b>Facility scale</b> The combination of the leachate pond and leachate facility can handle rainfall with a probability of 20 years.	Adopted the structure of category 4 in DAO 2006-10 Adopted the structure in JICA Technical Guidebook on Solid Waste Disposal Design Operation & Management

#### 4. Proposed regulations of sanitary landfill where incineration ash will be disposed of

##### What is semi-aerobic landfill ?

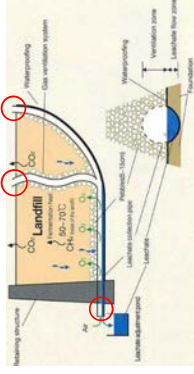
There are five types of landfills, as shown in the figure below, depending on how air is supplied to the landfill:



The semi-aerobic landfill structure (Fukuoka Method) is used for final disposal sites in Japan.

#### 4. Proposed regulations of sanitary landfill where incineration ash will be disposed of

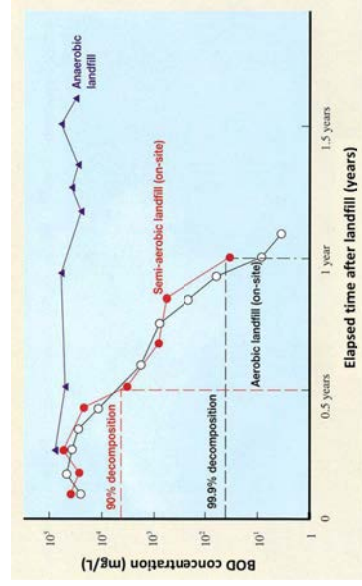
A cross-sectional view of a semi-aerobic landfill structure is shown below:



- The diameter of the leachate collection pipe is enlarged to drain leachate in half its cross-section, and the end of the leachate collection pipe, indicated by the red circle, is opened to allow air (oxygen) to be supplied through this pipe into the landfill.
- When the landfill is in an anaerobic atmosphere, methane is generated from the decomposition of landfill waste, but by supplying air to the landfill to create an aerobic atmosphere, CO<sub>2</sub> is generated instead of CH<sub>4</sub>. Since the greenhouse effect of CO<sub>2</sub> is about 1/25 that of methane, the introduction of a semi-aerobic landfill structure is an anti-global warming measure.
- The semi-aerobic landfill structure is also economical because it can be introduced by opening the ends of the pipes and securing the air circulation cross section in the leachate collection pipes (increasing the pipe diameter).

#### 4. Proposed regulations of sanitary landfill where incineration ash will be disposed of

A graph of the change in BOD concentration of leachate in anaerobic and semi-aerobic landfill structures is shown below.



BOD concentration in leachate generated from semi-aerobic landfill have dropped sharply over a year, indicating that landfill waste is quickly stabilizing.

*Thank you for your attention!*

# Appendix 11-3: Sub-group Meeting for Output 2

11-3-1 : 1<sup>st</sup> SG2

11-3-2 : 2<sup>nd</sup> SG2

11-3-3 : 3<sup>rd</sup> SG2



# Appendix 11-3: Sub-group Meeting for Output 2

11-3-1 : 1<sup>st</sup> SG2



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

## NOTICE OF MEETING

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

### Selected Concerned Government Agencies

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

### Local Government Units (LGUs)

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

### EMB Central Office

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

### Project Output Coordinators

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

### All SWMD-PMO Staff

FROM : **THE EMB DIRECTOR**

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

SUBJECT : **1<sup>st</sup> 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**

**1<sup>st</sup> 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](mailto:dimernelie@yahoo.com) or [deth25760945@gmail.com](mailto: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**



## 1<sup>st</sup> 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

13<sup>th</sup> February 2020 (Thursday) 10:00 a.m.

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

1

## Agenda

- 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

## 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

## 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
<b>Output 2</b>	<b>The enhancement of Target LGUs' capacity for Planning, Evaluation, Formulation and Supervision of WTE project.</b>
Output 3	The enhancement of the National government's capacity of environmental monitoring for WTE project
<b>Output 4</b>	<b>The enhancement of the National Governments and target LGUs' capacity to identify issues and provide suggestions/ recommendations for other SWM technologies other than WTE.</b>

## 2. Objectives of the meeting

### □ Members for Sub-Group for Output 2&4

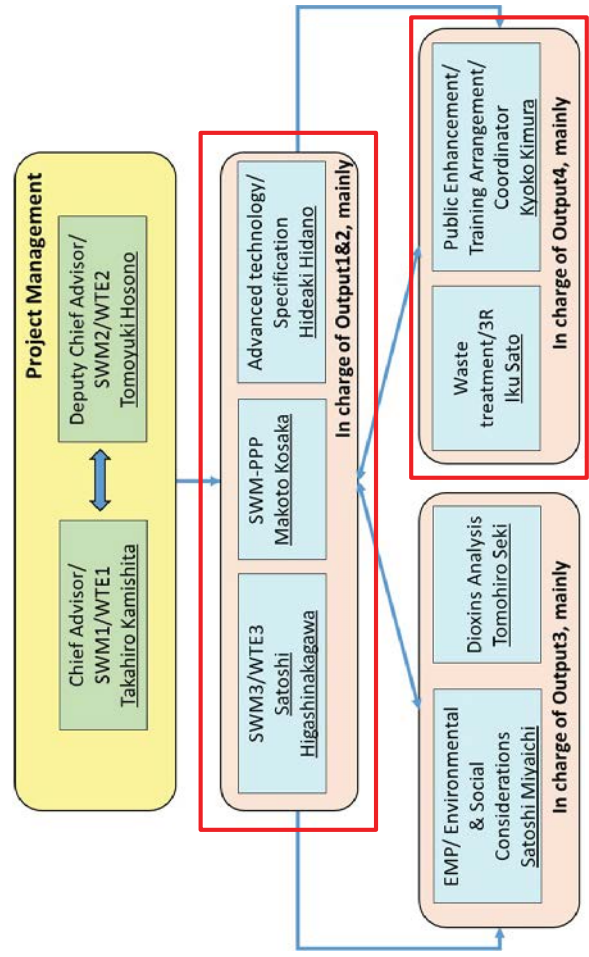
	Agency/Office	Members
Selected Concerned Government Agencies	DOST-Industrial Technology Development Institute	Engr. Reynaldo Esguerra
	DOE-REMB	Ms. Ruby De Guzman
	PPP Center	Ms. Justine Padiernos
	DILG	Mr. Carlo Mari Crisostomenald C. Tan
EMB Central Office	EMB-EQMD-Air Quality Management Section	Engr. 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 27<sup>th</sup> 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"> <li>Target setting for waste reduction</li> <li>Analysis on WTE projects in LGUs</li> </ul>	<ul style="list-style-type: none"> <li>Technical specification of WTE facilities in each target LGU</li> <li>Inputs to Output 1</li> </ul>	

#### □ Deliverables

- ✓ Project report, Monitoring sheet, Specification of WTE

### 3. Outline of the Specific Activities under Project Output 4

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

#### □ 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.

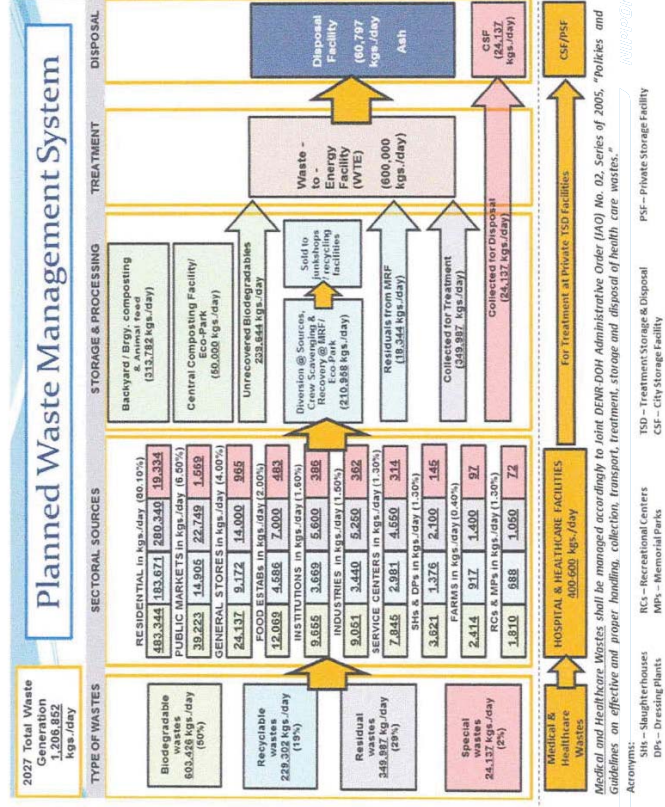
## Summary of WMB in Davao City

Waste material balance	2017	2022	2027
<b>a) Waste Generation (kg/day)</b>	<b>990,703</b>	<b>1,099,623</b>	<b>1,208,544</b>
<b>b) Waste Collection (kg/day)</b>	<b>712,726</b>	<b>690,014</b>	<b>710,624</b>
<b>c) Waste Diversion (kg/day)</b>	<b>306,507</b>	<b>451,742</b>	<b>1,115,475</b>
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
<b>d) Waste Disposal (kg/day)</b>	<b>684,195</b>	<b>647,882</b>	<b>93,069</b>
Diversion rate	31%	41%	92%

## WTE project in the 10-year SWM plan

	Quezon City	Davao City	Cebu City
<b>Evaluation by NSWMC</b>	Approved in August 2018	Deliberation has undergone (TBC)	Deliberation has undergone (TBC)
<b>Identification of WTE project</b>	<ul style="list-style-type: none"> <li>WTE is considered to adopt.</li> <li>Detailed information facility is missing</li> <li>Investment by private sector for WTE is counted</li> </ul>	<ul style="list-style-type: none"> <li>Planned to operate WTE(600tpd) in 2022</li> <li>Waste amount to be treated is quantified</li> <li>Operation cost is counted.</li> </ul>	<ul style="list-style-type: none"> <li>WTE(500tpd) is mentioned w/o detailed information</li> <li>Investment cost is counted</li> </ul>
<b>Consistency with land use plan</b>	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
<b>Waste Material Flow</b>	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) <b>Waste Generation (m<sup>3</sup>/day)</b>	10,511	11,165	15,739
a) <b>Waste Generation (t/day)</b>	2,796	2,970	4,187
b) <b>Waste Collection (t/day)</b>		2,873	
c) <b>Waste Diversion (t/day)</b>	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) <b>Waste Disposal (t/day)</b>	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"> <li>• Delivery of daily waste (specific amount)</li> <li>• T/F</li> <li>• ROW acquisition</li> </ul>	? 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"> <li>• Delivery of daily waste (specific amount and calorific value)</li> <li>• WTE site</li> <li>• Disposal of ash</li> </ul>	? 20
Cebu City	Negotiation with OPS	Private	? 800 tpd (WTE)	<ul style="list-style-type: none"> <li>• Delivery of daily waste (specific amount)</li> </ul>	? 28

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

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

## 4.b. Output 4

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

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

#### Quezon City

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

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

#### Quezon City

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

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

#### Davao City

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

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



##### □ Davao City

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

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

##### □ Cebu City

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

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

##### □ Cebu City

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

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

##### □ Challenges for SWM in target LGUs

###### Budget of Waste Management

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

###### Next Step

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

###### Waste Generation Quantity and Quality

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

###### Next Step

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

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

##### □ Challenges for SWM in target LGUs

###### Collection and Transportation of Waste

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

###### Intermediate treatment facility /3R

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

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

##### □ Challenges for SWM in target LGUs

###### Landfill

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

###### Education of Waste Management

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

#### 4.b.iii. Future activities of Output 4

##### □ Schedule

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

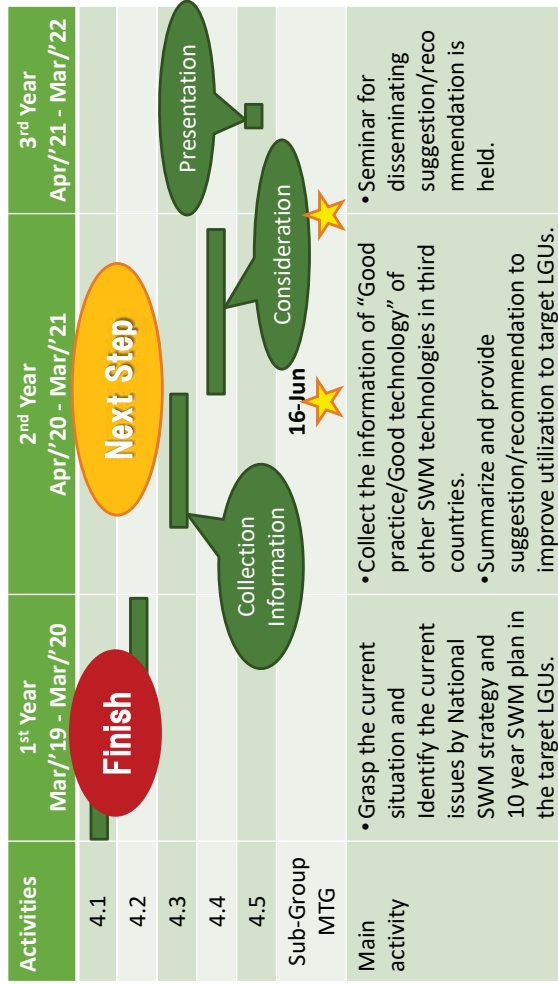
#### 4.c. Future activities of Output 4

##### □ Allocation of the Activity 3

Item	Research for "Good practice/Good technology"	The Organization in Charge
Budget	<ul style="list-style-type: none"> <li>➢ methods to obtain budget and funding in other countries</li> </ul>	PPPC
Waste Generation Quantity and Quality	<ul style="list-style-type: none"> <li>• WACS methods and data management in other countries</li> </ul>	DOST
Collection and Transportation	<ul style="list-style-type: none"> <li>• Good example of segregation and separate collection of other countries</li> </ul>	Cebu City
Intermediate treatment facility /3R	<ul style="list-style-type: none"> <li>• Method of recycling for each kinds of waste in LGU</li> <li>• The scheme of implementation; e.g. subsidy from national government, PPP and selling a by-product</li> </ul>	DOST PPPC
Landfill	<ul style="list-style-type: none"> <li>• Identify needs the rehabilitation or new landfill</li> </ul>	Davao City
Education (IEC)	<ul style="list-style-type: none"> <li>• List the item for SWM that should be understood by residents</li> <li>• The IEC method for the items listed above</li> </ul>	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 1<sup>st</sup> 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 Greeting	1	-	-
1.1 Greeting from EMB	0.5	EMB	21th-Feb.2020
1.2 Greeting from JET	0.5	JET	21th-Feb.2020
2 Outline of SWM-AIT Project	5	-	-
2.1 About SWM-AIT Project	0.4	PMO	21th-Feb.2020
2.2 About TCP	0.4	JICA	21th-Feb.2020
2.3 PDM	0.2	JET	21th-Feb.2020
(1) Output 1	1	Sub-Group1	25th-Feb.2020
(2) Output 2	1	Sub-Group2	25th-Feb.2020
(3) Output 3	1	Sub-Group3	25th-Feb.2020
(4) Output 4	1	Sub-Group4	25th-Feb.2020
3 The Member of SWM-AIT Project	1	JET	21th-Feb.2020
3.1 Organization Chart			
(1) JCC			
(2) Project Team			
(3) ITWG			
(4) JICA Expert Team			
TOTAL	8		

- Allocated 1 page
- Deadline: 25<sup>th</sup> Feb

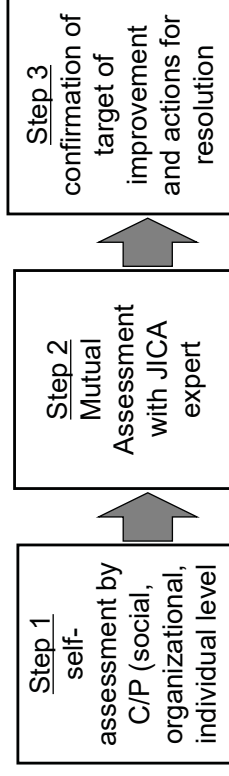
#### 4.d. Participants in 1<sup>st</sup> Training in Japan

- 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><b><u>Selected Government Agencies</u></b></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><b><u>Local Government Units (LGUs)</u></b></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><b><u>EMB Central Office</u></b></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><b><u>JICA Expert Team</u></b></p> <p>Mr. Takahiro Kamishita, Chief Advisor Mr. Makoto Kosaka, SWM-PPP Ms. Kyoko Kimura, Expert of Public Enhancement, Training Arrange &amp; 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><b>Presentation/Introduction of Subgroup and Specific Activities</b></p> <ul style="list-style-type: none"> <li>▪ 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.</li> </ul> <p><b>Discussions</b></p> <ul style="list-style-type: none"> <li>▪ 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:</li> </ul> <p><b>For Output 2:</b></p> <p><b>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></b></p> <ul style="list-style-type: none"> <li>▪ 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"> <li>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.</li> <li>2. Cebu City: According to CCENRO, the SWM Plan needs to be updated and yet to be finalized.</li> <li>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.</li> </ol> </li> <li>▪ 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.</li> </ul> <p><b>b. <i>Status of WTE projects in the target LGUs</i></b></p> <ul style="list-style-type: none"> <li>▪ 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.</li> </ul> <p><b>b-1. Quezon City</b></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"> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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"> <li>&gt; 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.</li> </ul> </li> <li>▪ PPPC inquired if there is a transfer station. <ul style="list-style-type: none"> <li>&gt; 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.</li> </ul> </li> </ul> <p><b>c. Other matters (definition of Residual, Diversion Rate, etc.), Way forward</b></p> <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ 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"> <li>&gt; DOST clarified that the Diversion Rate equals the Waste Diverted divided by the Waste generated. <math>(DR = WD \div WG)</math> Wherein the Waste diverted is equal to the Waste Generation minus Waste dumped to SLF.</li> <li>&gt; 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.</li> <li>&gt; Mr. Kamishita explained that there is also a difference between Generation and collection waste.</li> <li>&gt;DOST projected that NSWMC is now discussing about the expansion of the</li> </ul> </li> </ul>
--	---

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"> <li>➤ Mr. Kamishita of JET mentioned that EMB has supported to develop MRF in the barangays.</li> <li>➤ Davao City responded that funds are lacking because some barangays have small budget and there are no such allocations for SWM/SLFs.</li> <li>➤ 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.</li> <li>➤ DOST also mentioned that China had stopped pet bottles manufacturing and only Coca-Cola is manufacturing as of the moment.</li> <li>➤ Davao stated that the city has been segregating but there is no economic value for the recyclables.</li> <li>➤ DOST specified that QC has PPP Activity, Davao has JICA's assistance, and Cebu has JET's assistance.</li> <li>➤ Ms. Kimura of JET cited that each LGU could arrive to a profitable measure.</li> </ul> <p><u>WACS</u></p> <ul style="list-style-type: none"> <li>➤ NSWMC prepared the draft WACS Guideline.</li> </ul> <p><u>Intermediate treatment facility /3R</u></p> <ul style="list-style-type: none"> <li>➤ 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.</li> <li>➤ 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.</li> <li>➤ DOST cited that it is a part of the strategy but has not yet approved.</li> <li>➤ 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.</li> <li>➤ 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.</li> </ul> <p><u>Landfill</u></p> <ul style="list-style-type: none"> <li>➤ 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.</li> <li>➤ 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.</li> </ul> <ul style="list-style-type: none"> <li>• 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"> <li>➤ 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.</li> <li>➤ Organization in charge of research of good practice and good technologies</li> </ul> </li> </ul> <table border="1" data-bbox="582 1899 1401 1975"> <thead> <tr> <th data-bbox="582 1899 839 1975">Item</th> <th data-bbox="839 1899 1197 1975">Research for "Good practice/Good technology"</th> <th data-bbox="1197 1899 1401 1975">The Organization in Charge</th> </tr> </thead> <tbody> <tr> <td data-bbox="582 1975 839 1975"></td> <td data-bbox="839 1975 1197 1975"></td> <td data-bbox="1197 1975 1401 1975"></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"> <li>➤ The audiences are selected agencies of about 40 participants and not the general public. The invitation letters will be sent by PMO (Official Invitations).</li> </ul> <p><b>IV. Capacity Assessment of Sub-group members</b></p> <ul style="list-style-type: none"> <li>• For the Capacity Assessment: <ul style="list-style-type: none"> <li>➤ The members of the Subgroup for Output 2 &amp; 4 shall fill-up the Capacity Assessment form to be submitted to PMO(EMB-SWMD) within the week.</li> </ul> </li> </ul> <p><b>3. Finalization of the Comments/Agreements/Timelines</b></p> <p><b>4. Ways Forward</b></p> <p>For the Newsletter (Output 2 &amp; 4), the target readers will be the General Public.</p> <p><b>Adjournment</b></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"> <li>• Capacity Assessment Evaluation</li> <li>• Newsletter Title Proposal and Articles from specified writers</li> </ul>
Request by Subgroup Output 3	<ul style="list-style-type: none"> <li>• Continuous evaluation and support from JET.</li> </ul>
References / Materials Presented	<ul style="list-style-type: none"> <li>• Meeting Agenda prepared by PMO (EMB-SWMD)</li> </ul>
Prepared by	Ms. Cynthia Rose C. Faylogna

# Appendix 11-3: Sub-group Meeting for Output 2

11-3-2 : 2<sup>nd</sup> SG2

## LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED ATTENDEES
<b>CONCERNED GOVERNMENT AGENCIES</b>			
1	Mr. Nonilo Peña/Emelita A. Dimapilis	DOST-PCIEERD	
	Mr. Reynaldo L. Esguerra/Engr. Rochelle Retamar/Engr. Dante Vergara	DOSI-ITDI	
2	Ms. Ruby de Guzman/Mr. Romeo M. Galamgam (Yong)/Ms. Charisse Pascual	DOE-REMB	✓ Ms. Ruby De Guzman ✓ Ms. Charisse Jane D. Pascual
3	Mr. Carlo Mari Crisregionald C. Tan/Atty. Ma. Rhodora Flores/Ms. Maria Clarisol L. Agas	DILG-BLGS/NAPOLCOM Center	
4	Ms. Justine E. Padiernos/Atty. Phebean Belle A. Ramos-Lacuna/Ms. Maria Beatriz N. Quintos	PPP Center	✓ Ms. Justine E. Padiernos

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

2<sup>nd</sup> SUB-GROUP MEETING FOR PROJECT OUTPUT 2

ENHANCEMENT OF TARGET LGUs' CAPACITY FOR PLANNING, EVALUATION, FORMULATION AND SUPERVISION OF WASTER-TO-ENERGY (WtE) PROJECT

16 July 2020, Thursday, 9:00 AM (via MS Teams)

## LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED ATTENDEES
<b>LOCAL GOVERNMENT UNITS</b>			
5	Mr. Vincent Ferdinand Paul G. Vinarao/Mr. David John S. Vergara	LGU Quezon City	✓
6	Atty. Dwight Domingo/Engr. Elisa Madrazo/Engr. Lakandiwa Orcullo	LGU Davao City	✓ Atty. Zuleika T. Lopez & Engr. Elisa Madrazo
7	Ms. Glory Rose Manatad	LGU Cebu City	✓
<b>EMB FOCAL PERSONS</b>			
	Ms. Consolacion Crisostomo/Ms. Meyeth Ofiaza	EMB-PPPDD	✓ Ms. Consolacion Crisostomo
8	Engr. Jundy T. Del Socorro/Engr. Wyona Kay C. Rativo	EMB-HWMS	✓ Engr. Wyona Kay C. Rativo

2<sup>nd</sup> SUB-GROUP MEETING FOR PROJECT OUTPUT 2  
ENHANCEMENT OF TARGET LGUs' CAPACITY FOR PLANNING, EVALUATION, FORMULATION AND SUPERVISION OF WASTE-TO-ENERGY (WtE) PROJECT

16 July 2020, Thursday, 9:00 AM (via on-line)

## TENTATIVE AGENDA

1. Call to Order/Meeting Objectives/Acknowledgement of Attendees and Adoption of Agenda - by EMB-SWMD-PMO
2. Summary of discussions during the last Sub-group Meeting - by JET
3. Presentations under Activity 2-4 (in coordination with LGU Cebu City):
  - a. JET Review on the proposal by a private company - Engr. Makoto Kosaka, JET
  - b. Verification of Waste Amount to be Fed to WtE - by LGU Cebu City
4. Presentations of LGU Quezon City and LGU Davao City:
  - Lessons learned in the formulation of WtEs
  - Updating of the 10-year SWM Plans with Waste Flow and Consistency between the Project Site and Land Use Plan
5. Presentation on the Tentative Observations and Suggestions under Activity 2-5 - Engr. Takahiro Kamishita, JET
6. Discussions on the Updates/Status on the Preparation of the TCP Newsletter
7. Wrap-up (Required Actions/Agreements/Timelines) - Ms. Nikka Sales, JET
8. Other Matters



## 2<sup>ND</sup> SUB-GROUP MEETING FOR PROJECT OUTPUT 1

ENHANCEMENT OF NATIONAL GOVERNMENT'S CAPACITY FOR SUPPORTING AND COORDINATING OF LGU'S WTE PROJECT UNDER THE TECHNICAL COOPERATION PROJECT (TCP) RE CAPACITY DEVELOPMENT ON IMPROVING SOLID WASTE MANAGEMENT THROUGH ADVANCED/INNOVATIVE TECHNOLOGIES

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

### ADJOURNMENT

### LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED ATTENDEES
<b>PROJECT COORDINATORS</b>			
9	Dir. Angelito V. Fonatamilla/Mr. Eddie Abugan/Ms. Marianica Philina Obmerga Engr. Nolan B. Francisco/Ms. Elvira S. Pausing	DENR-FASPS EMB-SWMD-PMO	✓ Ms. Marianica Philina Obmerga ✓ Ms. Elvira S. Pausing
<b>EMB-SWMD-PMO</b>			
10	Ms. Raquel Rosario Reyes Ms. Nelie Dimer Engr. Jedidiah Mangubat Engr. Roxanne Barcenas Ms. Rodeth Antonio Ms. Kris Jan Morada	EMB-SWMD EMB-SWMD-PMO EMB-SWMD EMB-SWMD EMB-SWMD-PMO EMB-SWMD	✓ ✓ ✓ ✓ ✓

### LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED ATTENDEES
<b>JICA EXPERTS TEAM (JET)</b>			
11	Engr. Takahiro Kamishita Engr. Makoto Kosaka Engr. Satoshi Higashinakagawa Ms. Kyoko Kimura Engr. Nikka Sales Ms. Nikole Andrei Louise Mallare Mr. Eric Cea	JICA Experts Team (JET) JICA Experts Team (JET) JICA Experts Team (JET) JICA Experts Team (JET) JICA Experts Team (JET) JICA Experts Team (JET) JICA Experts Team (JET)	✓ ✓ ✓ ✓ ✓ ✓ ✓

**How to setup the Capacity of WTE**  
**- in the Prep. of WTE conceptual plan -**  
**Result of Survey during 9<sup>th</sup> to 11<sup>th</sup>**

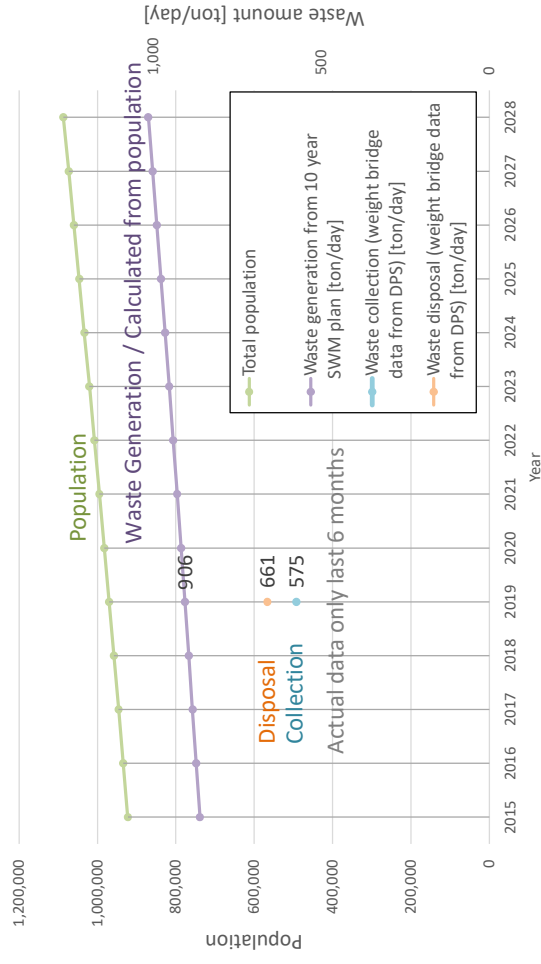
JICA Expert Team (JET)

Technical Cooperation Project for Capacity Development on  
 Improving Solid Waste Management through  
 Advanced/Innovative Technologies

## WTE Conceptual Plan

1. Confirmation of existing MSWM in the city,
  - (1) Trends in population / waste generation,
  - (2) Present waste treatment system (Waste Mass Flow),
  - (3) Present issues in MSWM,
 Facility Development Concept,
2. Facility Development Concept,
  - (1) Define the Target Waste to be combusted,
  - (2) New waste treatment system (Waste Mass Flow)
 Setup the quantity to be treated by facility,
3. Projection of population / waste generation per capita, future projection of waste quantity,
  4. Setup the capacity of WTE facility,
5. Consideration of WTE facility site,
6. Setup the processing methods in WTE/MRF,
7. Utilization of excess heat
8. WTE project management plan

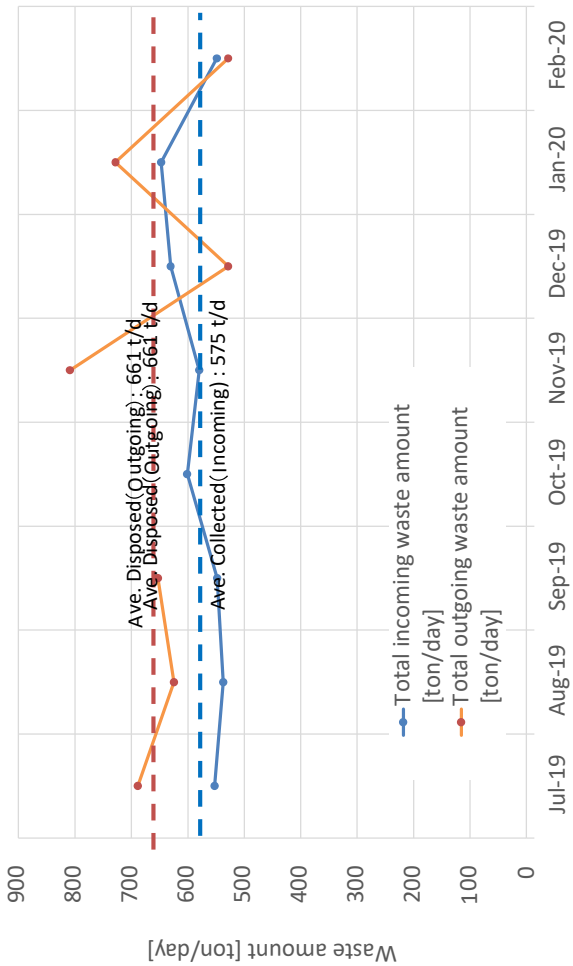
## Population and waste amount



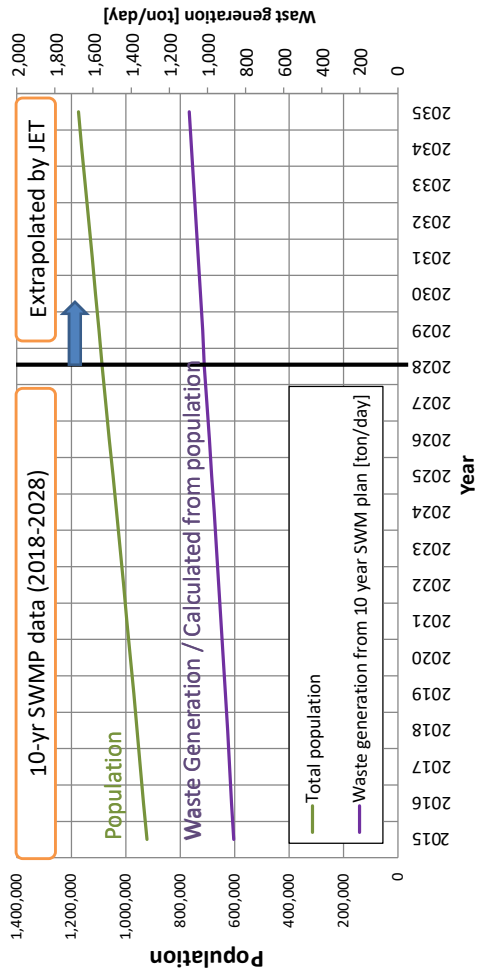
### Waste Quantity

- Generation -
- Collection -
- Disposal -

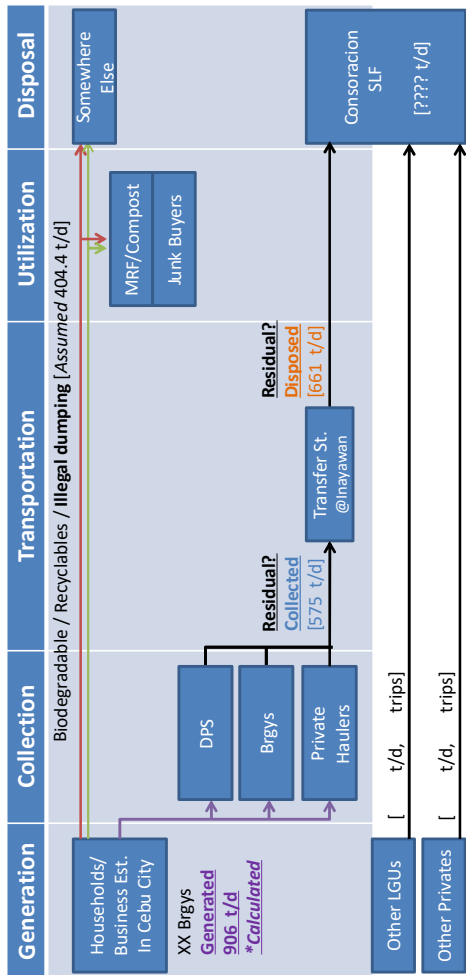
### Daily Waste (Collected/Disposed) from Weight Bridge data at Inayawan T/S



### Population and waste generation (10 year SWM-Plan and Future Extrapolation)



### Waste Mass Flow (WMF) in Cebu City (As of 2019)



LEGEND → : Recyclables, → : Collected as "Residual", → : Biodegradable, → : Residual? to be dumped.

### Waste Quality (Composition)

# Outline of ADB-WACS Mar2018

Who	WACS team arranged by CCENRO supported by Motto McDonald <ul style="list-style-type: none"> <li>✓ 8 temp staffs</li> <li>✓ 2 sorting teams = (4 waste pickers + 2 spare pickers) x 2?</li> <li>✓ A waste specialist from Motto McDonald</li> </ul>
When	13 – 19 March 2018 (7 continuous days: 1 rainy + 6 sunny)
Where	Shed Yard nearby Inayawan T/S (deemed as Mansel Yard)
What	WACS (Waste Analysis and Characteristic Survey): 14 Categories, Lab. Analysis (3 components): Combustible, Ash and Water Lab. Analysis (Ultimate): C, S, Cd, Pb, Hg
Why	???
How	Sampling at Inayawan T/S and deliver it to the Yard (See next page)
How many	32 samples (each day 4-6 samples)

Source: Solid Waste Management PPP Project (Cebu) (49407-005) Interim Report - Appendices "2. Methodology"

# How to sample the target waste

It's fundamentally important where and how to sample the waste because meanings of data vary depending on the sampling point.

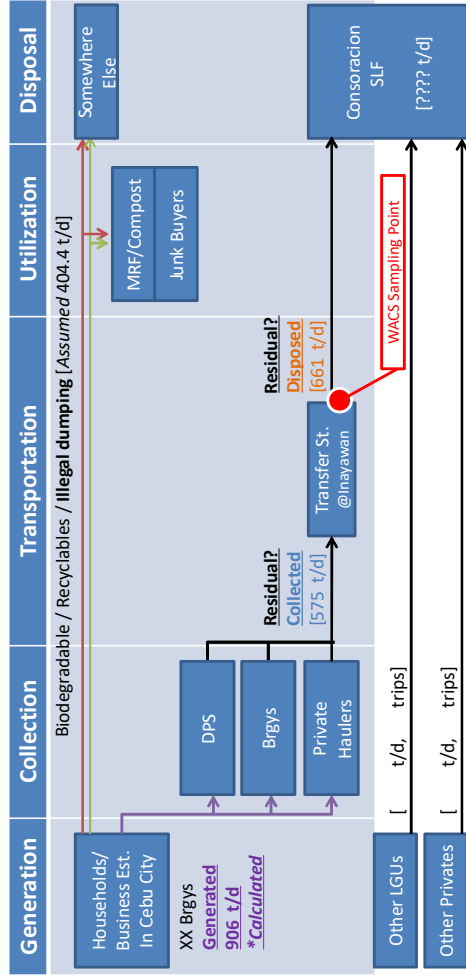
Stockpile in Transfer Station (Ready for sending to SLF)

off from the stockpile in T/S  
100-200kg/sample x 32 samples/7days)

Bring to Segregation Table

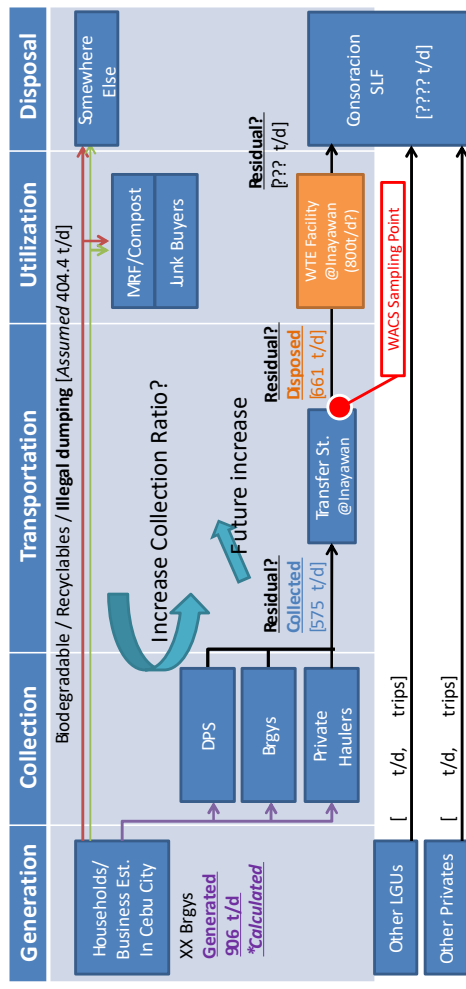
- 14 categories + Fines (under 40mm),

# Waste Mass Flow (WMF) in Cebu City (As of 2019)



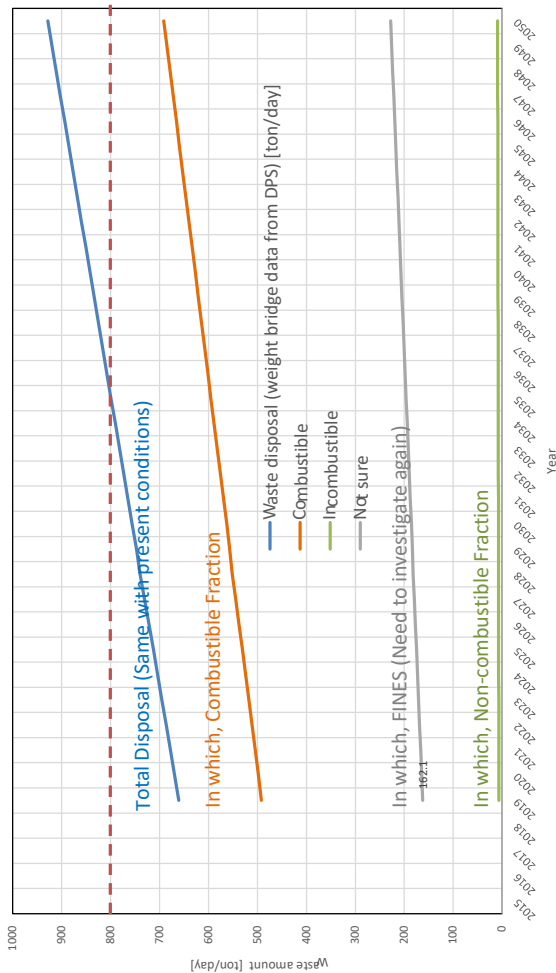
LEGEND → : Recyclables, → : Collected as "Residual", → : Biodegradable, → : Residual? to be dumped.

# Waste Mass Flow (WMF) in Cebu City (In Target Year of 20XX)

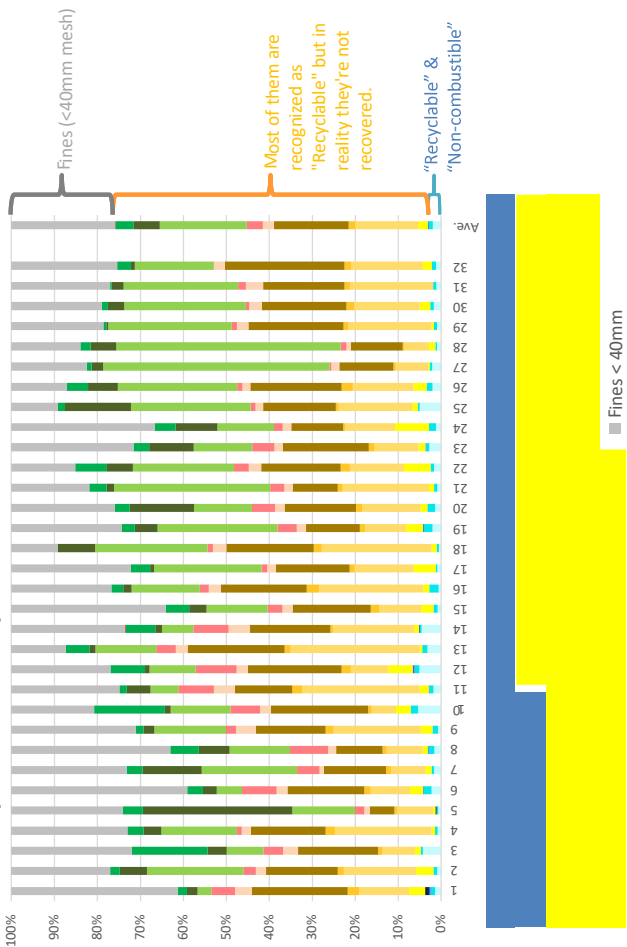


LEGEND → : Recyclables, → : Collected as "Residual", → : Biodegradable, → : Residual? to be dumped.

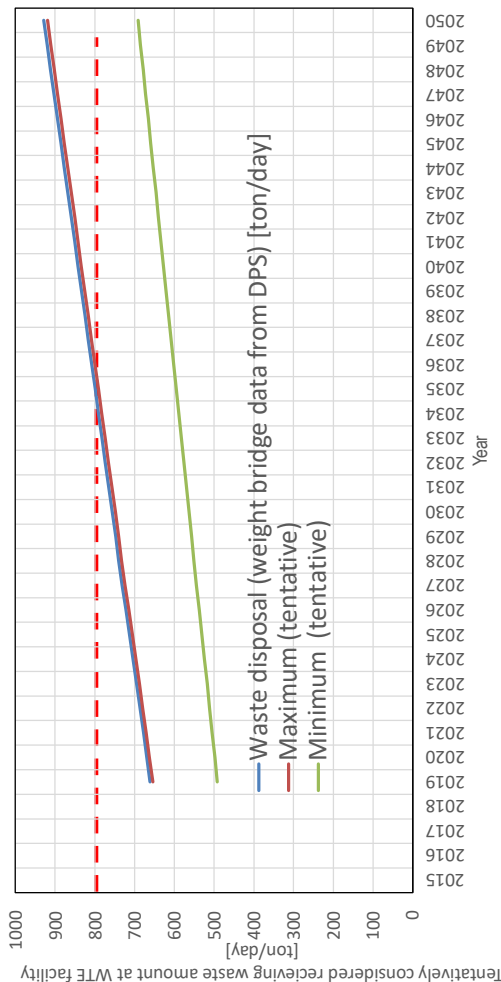
# Future Projection of Each Category of Waste



# Physical Composition Result of ADB-WACS




# Comparison with 800t/d of WTE facility



# Identified Issues and Recommendation (No. 1)

- (1) Data management
    - It is difficult to receive the data smoothly
    - Possibility of counting durably
    - Outgoing data is more than incoming data in most of monthly data from July to December
- ➔
- Sharing electric data and unifying format
  - Checking system of double counting (e.g. card by record of operation time, registration, etc)

## Identified Issues and Recommendation (No.2)

- (1) 10 year SWM plan for WTE introduction
  - It is necessary to prepare the 10 year SWM plan in line with WTE facility
  - In this time, it is difficult to grasp how much waste is diverted at T/S, MRFs and at waste generation sources as well as illegal dumping, especially no collection area
- 
- Prepare the format to measure the data of waste diversion.
  - Necessary of continuous implementation of WACS at generation source

### Categories under WACS of ADB

Item	Combustible or Incombustible	Item	Combustible or Incombustible
Paper and card	Combustible	Textiles	Combustible
Glass	Non-combustible	Food Waste	Combustible
Ferrous and non-ferrous metals	Non-combustible	Garden Waste	Combustible
Plastic bottles	Combustible	Other Putrescibles	Combustible
Plastic film	Combustible	Household Hazardous	Non-combustible
Dense plastics	Combustible	WEEE	Non-combustible
Miscellaneous combustibles	Combustible	Fines < 40mm	Not sure
Miscellaneous non-combustibles	Non-combustible		

## Summary of Study

- JET implemented preliminary study to consider incineration capacity based on ADB F/S study and current collected and disposal waste
  - Basically, according to the contact with the private company of WTE, there is no lower limit of receiving waste amount and no limit of lower calorific value and the private company all the waste generated in Cebu City.
  - It will be necessary to plan the waste amount receiving at incinerator considering in aspect of combustible or non-combustible
  - It will be also necessary to consider the future waste treatment system based on the projections of waste
- ### Next Step
- JET assists the review of the draft contract with the private company for Cebu City
  - If necessary, please contact with JET for supporting the WTE project in Cebu City

# QUEZON CITY



## BACKGROUND

- The Quezon City 10-Year Solid Waste Management (SWM) Plan was **approved by the NSWMC on October 22, 2010**.
- The thrust of the Plan is on waste reduction / diversion by encouraging the participation of different sectors of society especially by mobilizing the barangay councils to implement an ecological solid waste management program to manage recyclable and bio-degradable waste.
- The Plan update includes the strategies and initiatives to enhance overall compliance to the provisions of RA 9003



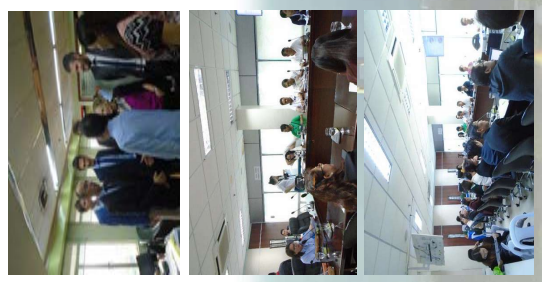
# I. Updating the City's 10-Year SWM Plan



## BACKGROUND

- One of the major components of the 10-Year SWM Plan update is the establishment of a **Waste-to-Energy Facility**
- The City received three (3) Foreign Technical Assistance that were completed in 2017 to determine the feasibility of different Waste-to-Energy technologies suitable for the City.

TITLE	IMPLEMENTING AGENCY
Feasibility Study for the Sustainable Development of Municipal & Organic Waste to Energy Plants	French Government through EiffAGE International / Kosmos Energies
Feasibility Study for the Implementation of the Waste to Energy Project in Quezon City	Ministry of the Environment, Japan through Hitachi Zosen Corp., Inc. / EX Research Institute Ltd.
TA 8566 Reg: Mainstreaming Integrated Solid Waste Management in Asia	Asian Development Bank



**VISION**

**2010 Vision**

The vision of EPWMD is for Quezon City to be:

- A model city where all of its barangays are practicing waste segregation at source and segregated collection;
- A city with a model disposal facility where solid wastes are processed and converted to other useable resources;
- A city where solid waste avoidance and volume reduction is commonly practiced by the general public;
- A city where only residual waste are being collected by the City Contracted Haulers; and,
- A city where residents and transients comply with environmental laws and policies.

**Update**

"A model City for efficient, modernized and world-class solid waste management that utilizes innovative and cutting-edge systems and technologies to effectuate reliable waste reduction, segregation, recycling, composting, processing, collection and disposal while promoting sustainable development and ensuring overall compliance to pertinent laws, achieved through the active participation of environmentally-conscious stakeholders."

**PLAN STRATEGY**

**"Promoting sustainable development and ensuring overall compliance to pertinent laws, achieved through the active participation of environmentally-conscious stakeholders"**

- Implementation of enhanced programs, projects and activities promoting comprehensive solid waste management.
- Strengthen partnerships and coordination with barangays and increase their capacities through regular conduct of dialogues, summits, orientations, seminars, workshops and similar activities as well as extend support for proper solid waste management in their respective jurisdiction specifically on segregation, recycling, composting, maintaining cleanliness, formulation and updating of solid waste management plan as well as establishment of materials recovery facility or system.
- Identify possible locations for barangay MRFs such open spaces, public schools, public markets and other City government-owned properties and assist barangay officials
- Identify and develop markets for recyclables, compost and other non-traditional wastes such as e-waste and link barangays to potential partners
- Introduce new technologies and systems on waste minimization, recycling, composting and resource recovery to barangay officials and the general public



**WASTE DIVERSION TARGETS**

**2005 to 2014**

Year	Vol of Waste Gen/ Capita/ day with increase of 1.92% or 2% Growth based on WACS	Projected Population with 1.92% Growth	Daily Waste Gen Based on Population	Waste Diversion Target (%)	Volume to be Diverted (ton)	Target Residual (%)	Target Disposal Volume (ton)	WACS	
								Biodegradable (48%)	Recyclable (39%)
2005	2,392,791	1,651,700	20	330,119	65	1,320,771	845,376		
2006	2,483,591	1,716,226	25	424,077	75	1,297,211	623,915		
2007	2,483,599	1,734,119	29	517,411	71	1,266,777	605,413		
2008	2,535,063	1,654,719	33	612,068	67	1,242,771	585,330		
2009	2,601,188	2,034,446	41	827,485	59	1,182,694	562,151		
2010	2,681,689	2,083,719	45	937,770	55	1,146,006	542,051		
2011	2,793,120	2,106,225	49	1,037,140	51	1,104,776	524,001		
2012	2,769,596	2,251,937	53	1,182,541	47	1,066,442	507,940		
2013	2,839,005	2,341,106	57	1,334,411	43	1,006,690	475,022		

- For the Plan update, the aim is to divert more than **50%** of its waste generation for the next ten (10) years
- The diversion target set for 2018 to 2020 is 65%

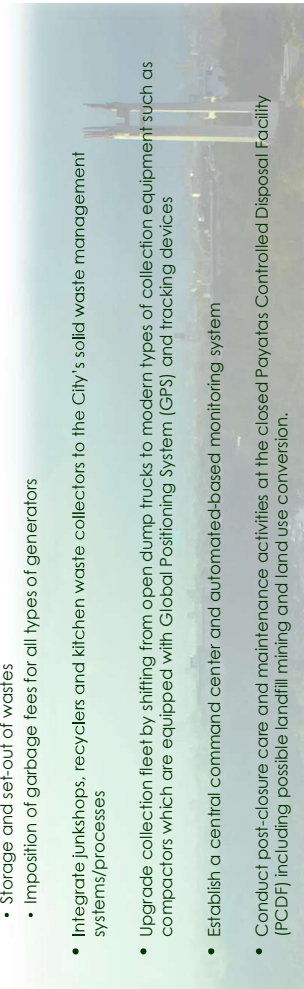
**2015 to 2024**

Year	Waste Generation per Capita per Day With Annual Increase of 3.33% (kilograms)	Projected Population (based on 2015 Census)	Daily Waste Generation Based on Projected Population		Waste Diversion Target %	Waste to be Diverted Per Day		Waste to be Diverted Per Year	
			tons	cum.		tons	cum.	tons	cum.
2015	0.9396	2,936,116	2,759	10,371	56.37%	1,555	5,846	567,619	2,133,907
2016	0.9709	2,975,876	2,889	10,862	53.31%	1,540	5,790	563,734	2,119,300
2017	1.0032	3,016,277	3,026	11,376	59.81%	1,810	6,804	660,593	2,483,431
2018	1.0366	3,057,322	3,169	11,915	65.00%	2,060	7,745	751,917	2,826,754
2019	1.0711	3,099,050	3,320	12,479	65.00%	2,158	8,112	787,560	2,960,751
2020	1.1068	3,141,444	3,477	13,071	65.00%	2,260	8,496	827,178	3,109,691
2021	1.1437	3,184,525	3,642	13,692	70.00%	2,549	9,584	930,545	3,498,288
2022	1.1818	3,228,305	3,815	14,342	70.00%	2,671	10,040	974,751	3,664,476
2023	1.2211	3,272,795	3,996	15,024	70.00%	2,798	10,517	1,021,090	3,838,685
2024	1.2618	3,318,009	4,187	15,739	75.00%	3,140	11,804	1,149,214	4,320,352

**PLAN STRATEGY**

**"A model City for efficient, modernized and world-class solid waste management that utilizes innovative and cutting-edge systems and technologies to effectuate reliable waste reduction, segregation, recycling, composting, processing, collection and disposal"**

- Establish networks and linkages with other cities through membership in international organizations
- Engage local and international non-governmental organizations (NGOs), academe, private institutions and other relevant stakeholders
- Establish a state of the art Waste-To-Energy Facility
- Conduct research and studies on the following for future policy formulation:
  - Alternative for plastic bags, paper bags, other carry-out bags and packaging
  - Storage and set-out of wastes
  - Imposition of garbage fees for all types of generators
- Integrate junkshops, recyclers and kitchen waste collectors to the City's solid waste management systems/processes
- Upgrade collection fleet by shifting from open dump trucks to modern types of collection equipment such as compactors which are equipped with Global Positioning System (GPS) and tracking devices
- Establish a central command center and automated-based monitoring system
- Conduct post-closure care and maintenance activities at the closed Payatas Controlled Disposal Facility (PCDF) including possible landfill mining and land use conversion.





## PLAN STRATEGY

***"Promoting sustainable development and ensuring overall compliance to pertinent laws, achieved through the active participation of environmentally-conscious stakeholders"***

- Implement strategic Information, Education and Communication (IEC)
- Encourage the general public to actively participate in the City's environmental initiatives and in the conceptualization or formulation of programs, projects and activities
- Strengthen enforcement of environmental laws and ordinances by increasing environmental enforcers at the City and Barangay levels through the conduct of deputation seminars.
- Continuously engage the police force to provide assistance in the implementation of environmental laws and ordinances.
- Establish incentive mechanisms for the different stakeholders.
- Develop systems and mechanisms that will enable the City Contracted Haulers to strictly monitor and enforce the dedicated collection of biodegradable and non-biodegradable wastes.

## FRAMEWORK

- Covers all sectors and addresses problems especially in the implementation of enhanced PPAs
- Ensure overall compliance to pertinent laws while promoting a comprehensive and sustainable solid waste management.
- Reliable waste reduction /diversion through segregation, recycling, composting, and processing activities
- Active participation of environmentally-conscious stakeholders at the barangay and community levels.
- Waste reduction and diversion
- Forming partnerships with other cities and municipalities, both national and international
- Harmonization with NGOs, academes, and other concerned stakeholders
- Incentives and awards program

## SOLID WASTE MANAGEMENT SYSTEMS

- ✓ **Waste Reduction / Avoidance Initiatives**
- ✓ **Recycling and Composting Programs**
- ✓ **Proper Management of Special Wastes**
- ✓ **Awareness Campaign**
- ✓ **Modernization Strategies**
  - Waste-to-Energy
  - Biogas Facility
  - Automated-based Monitoring System
  - Collection Equipment modernization

## MILESTONES

- 100% Barangay Compliance in establishing a Materials Recovery Facility/System
- All Barangays have an existing and active Barangay Solid Waste Management Committee and Solid Waste Management Plan
- Improved and intensified IEC campaigns inclusive of social and mass media avenues
- 100% junkshop, recyclers and kitchen waste collectors integration to the City's solid waste management systems/processes
- Institutionalized source reduction/avoidance or waste minimization strategies, policies and programs
- Established a Specialized drop-off facilities for Household Hazardous Waste (HHW)
- Successful implementation of a Disaster Waste Management project in the City
- Established a central command center and automated-based monitoring system

- > Upgraded solid waste management collection fleet
- > Established an effective, cost-efficient and environment friendly Waste-to-Energy Facility
- > Reduced Greenhouse Gas Emissions in compliance to the City's international commitments
- > Increased private sector and international organization partnerships as well as improved stakeholder participation
- > Effective implementation and availability of incentive programs for barangays
- > Successful Rehabilitation and Conversion of Payatas Controlled Disposal Facility and Quezon City Sanitary Landfill

**Revising and Updating of the SWM Plan**

The process of SWM plan review should be regularly undertaken in a planned and scheduled fashion. A regular review of the progress with implementation of the action program is necessary to ensure that targets are being met in terms of service delivery, performance, diversion, etc.

- Submit an annual report to the National Solid Waste Management Commission for updates including PPAs implemented
- Regular Board Meeting of the City Solid Waste Management Board
- Monitoring of the MRF/MRS Projects in the Barangay
- Monitoring of the Waste Segregation Compliance by the Stakeholders
- Monitoring of the Collection and Transport of Wastes
- Monitoring of the Quantity of Waste Collected
- Monitoring of processed wastes
- Monitoring of the Disposal of Waste and of the Disposal Facility

## II. Lessons in Formulation of WTE

## The Unsolicited Proposal

- Background
- Project Components:

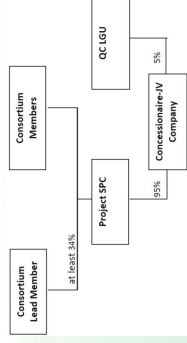
- The consortium composed of Metro Pacific Investments Corporation, Covanta Energy LLC, and Macquarie Capital Limited submitted the Project as an unsolicited proposal to the LGU
- The Consortium was able to submit an Unsolicited Proposal as the QC Government has enacted its own PPP Code

<b>Biodegradable Source Separated Waste (SSO) Treatment Technology</b>	Bio-degradable Organic Fraction
<b>Residual Combustible Waste (RCF) Treatment Technology</b>	Residual Combustible Non-Organic Fraction

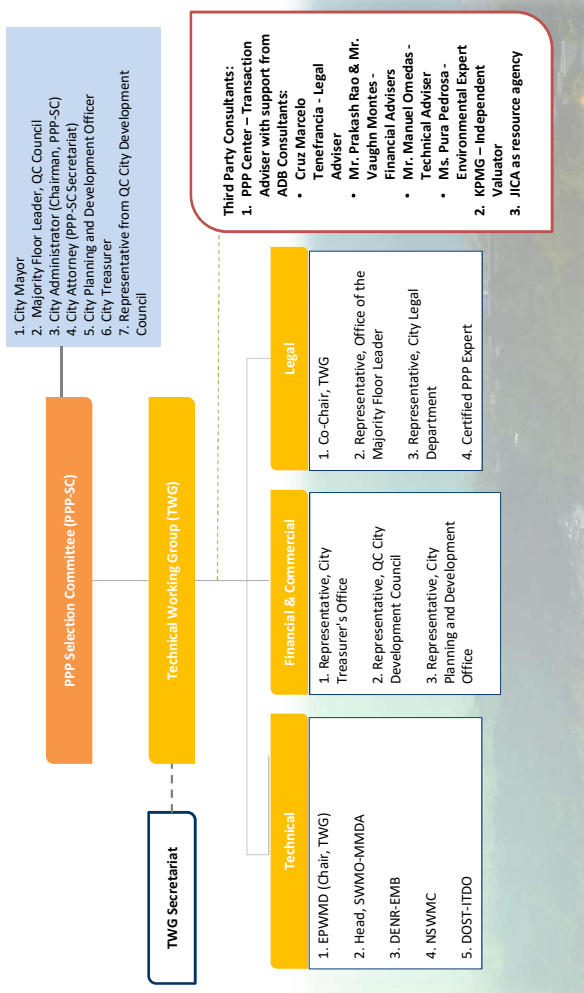
**Others**

Monofill for fly ash disposal  
 Other ancillary facilities, including continuous emission monitoring system, administration building, scale house, transmission lines, and utility systems and connections

- PPP-JV Structure



# PPP-SC and TWG-WTE



# Unsolicited PPP Process



**THANK YOU!**



# UPDATING OF 10-YEAR SWM PLAN FOR WTE

CITY GOVERNMENT OF DAVAO



## UPDATING OF THE 10-YEAR SWM PLAN FOR WTE

### Background

Serious challenges in current solid waste management system:

- Limited landfill capacity to receive increasing amount of waste
- Risk of health hazard and pollution from the final disposal site
- Lack of facilities to reduce the volume of waste through recovery/recycling activities and intermediate treatment

## UPDATING OF THE 10-YEAR SWM PLAN FOR WTE

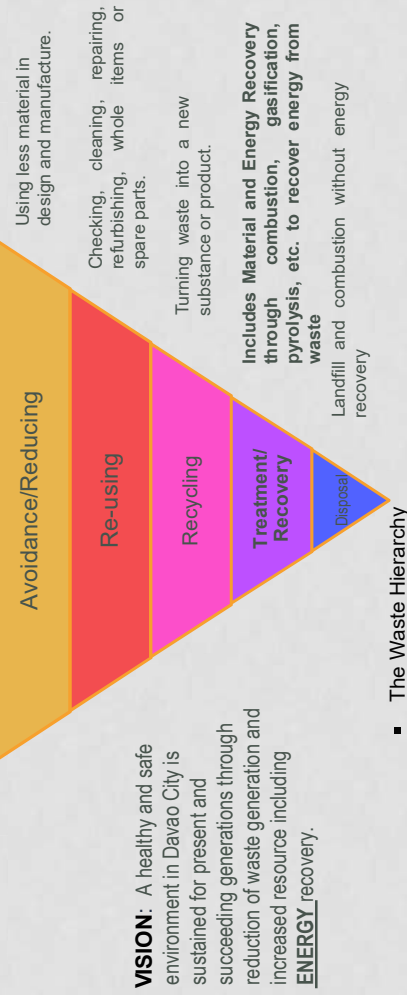
### WTE AS VIABLE TECHNOLOGY

- Expected benefits in introducing WTE to the City
  - Short-term benefits
    - Extending the life of landfill; and
    - Improving sanitary and environment condition
  - Medium and long-term benefits
    - Reduction of greenhouse gases (CO<sub>2</sub> and CH<sub>4</sub>) in comparison with the current landfill emission;
    - Expansion of business opportunities and creating new jobs through the WTE; and
    - Utilization of additional 11 megawatt of power derived from WTE.



## UPDATING OF THE 10-YEAR SWM PLAN FOR WTE

### DAVAO CITY 10-YEAR SOLID WASTE MGT. PROGRAM (2018-2027)



# UPDATING OF 10-YEAR PLAN FOR WTE

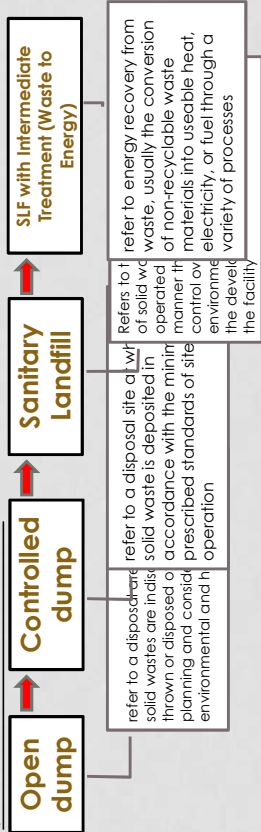
DAVAO CITY 10-YEAR SOLID WASTE MGT. PROGRAM (2018-2027)

## Why WTE?

### MISSION

In collaboration with key stakeholders and waste generators, Davao City will have an effective, efficient, SWM organization **utilizing advanced SWM systems** serving all its barangays.

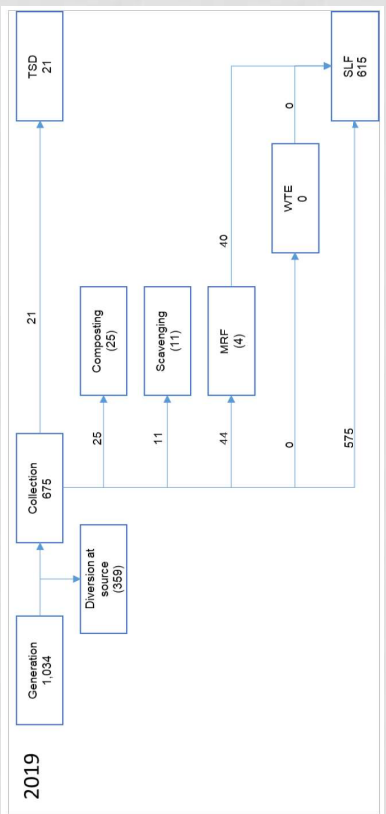
### TRENDS IN SW DISPOSAL



# UPDATING OF 10-YEAR PLAN FOR WTE

DAVAO CITY 10-YEAR SOLID WASTE MGT. PROGRAM (2018-2027)

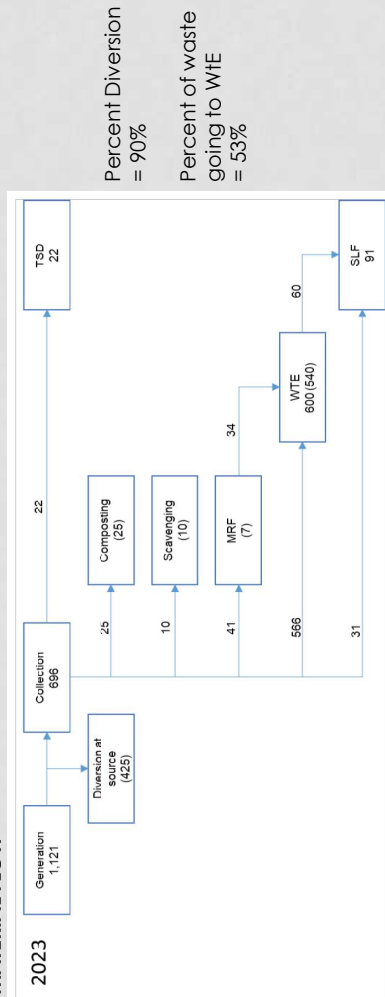
### MATERIAL FLOW



# UPDATING OF 10-YEAR PLAN FOR WTE

DAVAO CITY 10-YEAR SOLID WASTE MGT. PROGRAM (2018-2027)

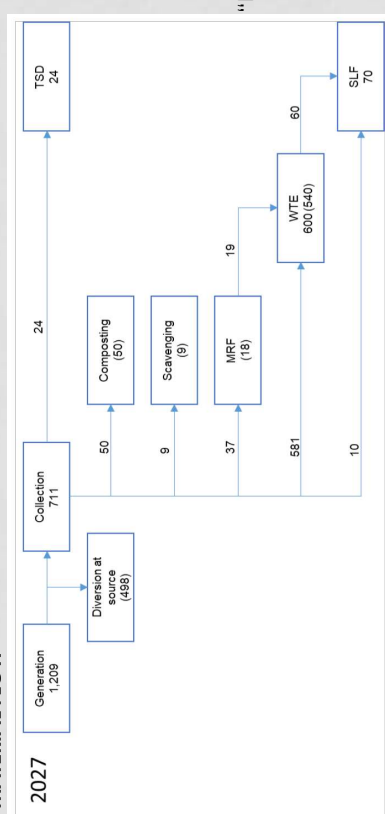
### MATERIAL FLOW



# UPDATING OF 10-YEAR PLAN FOR WTE

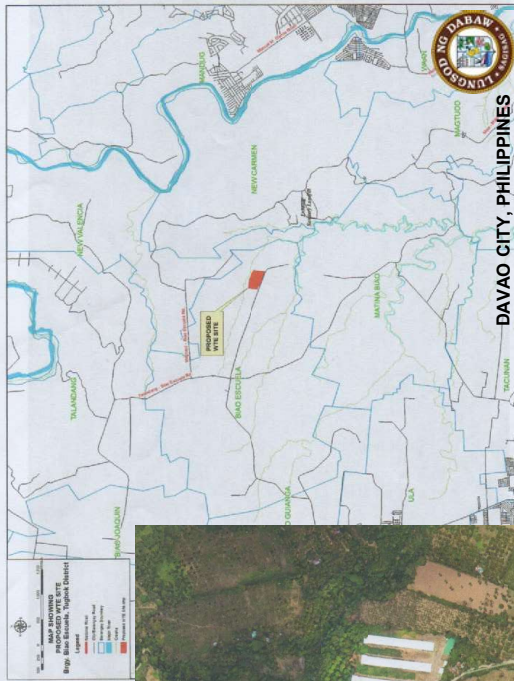
DAVAO CITY 10-YEAR SOLID WASTE MGT. PROGRAM (2018-2027)

### MATERIAL FLOW



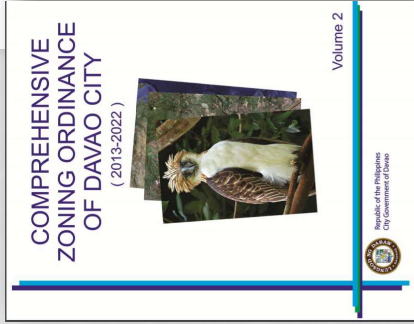
**“PROJECT FOR THE CONSTRUCTION OF WASTE-TO-ENERGY FACILITIES IN DAVAO CITY”**

Project Site: Brgy. Biao Escuela, Tugbok Dist.  
 Current zoning classification:  
 Prime Agricultural Land  
 With on-going application for reclassification



**“PROJECT FOR THE CONSTRUCTION OF WASTE-TO-ENERGY FACILITIES IN DAVAO CITY”**

Project Site: Brgy. Biao Escuela, Tugbok Dist.  
 Current zoning classification:  
 Prime Agricultural Land  
 With on-going application for reclassification



**SECTION 8: WASTE MANAGEMENT ZONE:**

- 9.1. Definition: Areas intended for waste re-orientation, separating the waste for treatment of medical, toxic and hazardous solid and liquid waste before proper disposal, for composting of biodegradable waste; for disposal of waste as source of energy (Fig. 2.12)
- 9.2. The following are the Allowable Uses/Activities in Waste Management Zone
  - 9.2.1. Dumping Site/Sanitary landfill
  - 9.2.2. Hospital/Medical waste treatment facility
  - 9.2.3. Other solid and liquid waste treatment facility
  - 9.2.4. Sewage treatment facility
  - 9.2.5. Sewerage Treatment Facility and Composting Plant/Facility
  - 9.2.6. Sludge Waste Treatment Facility
  - 9.2.7. Natural Recovery Facility (NRF) Projects
- 9.3. Special Requirements: No Location Clearance shall be issued unless the following conditions are met:
  - 9.3.1. Location Clearance shall be issued unless the reclassification are obtained from the different concerned agencies:
  - 9.3.1.1. Barangay Council Resolutions of the Objecting Barangay
  - 9.3.2. Development Council Resolution favorably endorsing the project
  - 9.3.3. City Engineer's Office for drainage clearance
  - 9.3.4. City Engineer's Office and Natural Resources for solid waste management plan
  - 9.3.5. City Health Office for sanitation clearance
  - 9.3.6. City Treasurer's Office for realty tax clearance
  - 9.3.7. City Treasurer's Office for realty tax clearance
  - 9.3.8. Davao City Water District for certification of water supply availability
  - 9.3.9. Davao City and Power Company for certification of power supply availability
  - 9.3.10. Mines and Geosciences Bureau for certification for possible mineral resources
  - 9.3.11. DENR-Environmental Management Bureau for waste treatment facilities and permit to discharge effluents
- 9.4. Additional Requirement: Affidavit of no objection from all adjoining adjacent lotland owner.

THANK YOU!



## 2nd Sub Group Meeting



## Contents

1. Tentative Observation and Suggestion
2. Comments from SG members

### “Tentative observations and suggestions”

**Activity 2-5** Define points & issues to be addressed for formulating WTE projects in the target LGUs

16<sup>th</sup> July 2020 (Thursday)

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

1

# 1. Tentative Observation and Suggestion

NIPPON KOEI  
EJEC 3

## 1. Tipping fees for waste

### Observation

- Present SWM cost shouldered by LGUs is NOT enough/reasonable to support desirable SWM
- Thus, some SWM components can not be improved to be appropriate level
- LGUs can not accept further increase of T/F (tipping fees) associated with WTE

### Suggestion

- Cost for appropriate SWM shall be estimated based on actual needs and prices and be reflected in 10-year SWM plan as well as budgetary plan of LGUs
- T/F shall be reasonably decided based on the estimated cost above

## 2. Misunderstanding on SWM-PPP including WTE

### Observation

- "Through PPP scheme, the waste can be converted to the money" is not true.
- Two types of PPP projects
  1. revenue generated and revenue sharable PPP project (such as toll road, power generation, water distribution projects)
  2. service fee payment based PPP
- SWM project is 2<sup>nd</sup> type, where service fee (T/F) shall be paid by LGU to private entity

### Suggestion

- In SWM-PPP projects, LGUs shall pay T/F in the project period to private investor to recover their initial investment.
- Total government expenditure through project period is mostly same in both government-own and PPP in BOT or DBO. (it is called as "Public Sector Comparator" in Japan)

## 3. Responsibility of LGUs

### Observation

- The meaning of "primarily responsibility of LGU" in RA9003 are really understood by LGUs?
- Waste Treatment and Cleanness Law (1970) of Japan
  - "even if LG contract out the construction, O&M of SWM to private entities, LGU still have all responsibilities of it."

### Suggestion

- Any suspension of SWM is failure of LGU
  - private company failed to comply with environmental standard
  - bankrupt and cease operation
- All risks shall be removed in procurement of WTE project
  - Proper evaluation both technical and financial aspects
  - Avoidance/recovery plan before the start of SWM facility operation, so as to ensure non-stop operation of SWM
- LGUs shall continuously monitor performance of the WTE, while EMB regional office is in charge of monitoring too.

## 4. Needs of technical expertise in LGUs

### Observation

- No experts on WTE technology in LGUs
  - LGUs need expertise to evaluate proposed projects that sometimes misleading and unrealistic
- LGUs that don't have technical capability, they tend to contract out all SWM activities to one private company.
  - Too much reliance on one company has much risks such as;
    - private company may cease the operation by their discretion if project is no longer profitable,
    - To find out successor of operation in particular patented/complex facility is not possible in short time,
    - private company requests LGUs to increase processing cost (T/F) and LGU is compelled to agree it

### Suggestion

- LGU shall be prepared to have technical capability
- To hire experienced WTE expert in other countries
- NSWMC/DENR to train/educate/support for WTE projects

## 5. Solicited Approach based on SWM plan

### Observation

- Difficulties for LGUs to evaluate unsolicited proposal without idea of "proper" development approach of WTE.

### Suggestion

- LGUs to realize what SWM they need
- LGUs can specify and require what SWM they need by solicited approach
- Solicited approach for WTE to be considered, same like other public service infrastructure
  - Waste Quality and Quantity:
    - LGUs must know its MSW stream and how much of waste, what kind waste they can supply to the WTE
  - Scope of project:
    - LGUs to clarify components that LGU manages and private sector will be in charge of



## 6. Definition of waste category, 7. segregation in RA9003 8. Waste category in WACS

### Observation

- IRR of RA9003.
- In Rule VIII: "Waste segregation and collection shall be conducted at the barangay level specifically for **biodegradable/compostable** and **reusable/recyclable** wastes. The collection and disposal of **non-recyclable/non-recoverable** materials and special wastes shall be the responsibility of the city or municipality."
- In Rule IX: The requirement for the segregation; "**R**esponsibility for sorting and segregation of **biodegradable** and **non-biodegradable** wastes shall be at the household level"
- Some terms in these provision are not clear
  - Difference between "**non-recyclable/non-recoverable**" and "**residual**"?
  - "**Residual**" waste generated in LGUs commonly contains not only "**non-recyclable/non-recoverable**" materials but also "**biodegradable**", **reusable/recyclable**" material in case of neither appropriate segregation/recovery system nor sufficient demand in the local market of recyclables and compost

## 6. Definition of waste category, 7. segregation in RA9003 8. Waste category in WACS

### Suggestion

- Definition of "residual waste"
  - "waste which can not be reduced, reused and recycled, in economically and/or technically, in the LGU's waste treatment system including material recovery and utilization industries and other circumstances"
- LGUs to define **materials** classified into the residual waste in their SWM plan.
- LGUs understand the meanings and necessity of WACS for "residual waste" to consider how to control/manage/minimize their "residual waste".
- Waste category in WACS shall be in **material** basis and not the **usage** basis so that treatment/recycling options by material can be studied.

## 9. Accumulated data of solid waste quantity and quality

### Observation

- LGUs do not have waste quantity and quality data
  - with sufficient period
  - with weekly, seasonal and annual fluctuations

### Suggestion

- LGUs to have "at least" statistic quantity data of MSW disposal because SWMI processing facility shall need the information of "target waste" quantity, in planning any facility such as WTE or MRF
- Waste category in WACS in continuous manner is also required to prepare appropriate project capacity.
- In addition, simple WACS result is not enough/usable.
- Study report which includes implemented period (season, time), detail sampling and analytical procedure, etc. should be available for technical analysis

## 10. Address to Environmental NGOs

### Observation

- The environmental NGOs, they sometimes put all incineration technologies in one basket. When they hear burning, they are automatically against it.

### Suggestion

- Program must be developed to educate the LGUs how to consult with the NGOs.

## 1.1. Change of administration/Long-term WTE development plan

### Observation

- Political risk (e.g. New elected government official might cause a change of decision) is the one of biggest risks for the private investor. It shall be taken by LGU side (and guaranteed by NG, etc.) for long-term contract.
- In case of QC, MPIC's proposal was evaluated and agreed with previous administration, but not yet agreed with present Mayor. This affects city's sanitation continuity plan as well as budget for MSWM.
- Similar change on the decision for WTE is observed for Cebu City due to change of city administration.

### Suggestion

- LGUs to have a consistent long-term MSWM Plan including WTE development backed by LGUs' budgetary plan
- Long term plan to be disclosed so that citizens, politicians and investors can be aware of it

Any Comments from members?

**PROJECT ACTIVITY : 2<sup>nd</sup> SUB-GROUP MEETING FOR PROJECT OUTPUT 2 (ENHANCEMENT OF TARGET LGUs' CAPACITY FOR PLANNING, EVALUATION, FORMULATION AND SUPERVISION OF WASTETO-ENERGY PROJECT)**

**DATE/TIME : 16 July 2020, 9:00AM – 12:15PM (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"> <li>Ms. Elvira Pausing of EMB-SWMD-PMO established the meeting which was duly called and declared a quorum based on the attendance of 10 out of 11 member agencies.</li> </ul>		
2.) Adoption of the Agenda	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Agenda was moved for adoption with no comments and suggestions from the participants.</li> </ul>	
3.) Acknowledgement of Attendees	<ul style="list-style-type: none"> <li>Acknowledgement of Subgroup members of Project Output 2 members by Ms. Pausing.</li> </ul>		
4.) Summary of discussions during the last Sub-group Meeting	<ul style="list-style-type: none"> <li>Engr. Takahiro Kamishita of JET gave a brief review of the discussions during the last Subgroup Meeting for Project Output 2 held last February 13, 2020.</li> </ul>	<ul style="list-style-type: none"> <li>➤ No clarifications and/or alterations raised by the sub-group members.</li> </ul>	

<p>5.) Presentation and discussions on the topics under:</p> <p>Activity 2-4:</p> <p>a.) JET's Review on the Proposal of a Private Company for Cebu City's WTE</p>	<p>Engr. Makoto Kosaka of JET discussed the recommendations and comments of JET to the proposal of a private company for the WTE facility in Cebu City, as written on the March 2020 Progress Report of JET.</p> <p>From the presentation of Engr. Kosaka, the following discussions and agreements were defined:</p> <ul style="list-style-type: none"> <li>➤ Ms. Justine Padiernos of PPPC asked if the ADB study of Cebu City's SWM had been provided to JET.</li> <li>➤ Engr. Kosaka confirmed that Cebu City provided the ADB study. However, he mentioned that the LGU did not follow the recommendations with regard to the location, capacity, etc. in the ADB study.</li> <li>➤ Ms. Padiernos then added a comment that Cebu City would have a difficulty proceeding with the WTE project if relevant information, as discussed by Engr. Kosaka, has not been confirmed and clarified yet. The mentioned information are requirements of the LGU to the proponent.</li> <li>➤ Engr. Kosaka also added a comment that JET recommends Cebu City to</li> </ul>	<ul style="list-style-type: none"> <li>➤ JET recommends to conduct more discussions with LGU Cebu City (Admin Office &amp; CCENRO) to confirm and clarify some matters on the draft contract of the private company.</li> </ul>	<ul style="list-style-type: none"> <li>➤ JET recommends to conduct more discussions with LGU Cebu City (Admin Office &amp; CCENRO) to confirm and clarify some matters on the draft contract of the private company.</li> </ul>
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<p>Activity 2-4: b.) Verification of Cebu City's Waste Amount to be Fed to WTE</p>	<p>make a facility plan as a part of solicited approach so that the city can compare the conformity with private proposal. He also shared the concerns on the technical capability of the current proponent.</p> <ul style="list-style-type: none"> <li>➤ Ms. Padiernos suggested JET to discuss with PPPC, on a separate meeting, regarding further concerns on the Cebu City's progress on its WTE project.</li> </ul>	<ul style="list-style-type: none"> <li>➤ JET &amp; PPPC to further discuss on the following meeting some confirmations about the progress of the WTE project in Cebu City.</li> </ul>	<ul style="list-style-type: none"> <li>➤ JET &amp; PPPC to further discuss on the following meeting some confirmations about the progress of the WTE project in Cebu City.</li> </ul>
<p>Activity 2-4: b.) Verification of Cebu City's Waste Amount to be Fed to WTE</p>	<p>Originally, this should have been presented by Engr. Glory Manatad of Cebu City ENRO. However due to an urgent meeting, Engr. Satoshi Higashinakagawa (Higashi) of JET explained the presentation in lieu of Engr. Manatad.</p> <p>Engr. Higashi mainly discussed the result of the March 2020 field visit of JET to Cebu City for the verification of the waste amount proposed by private firm to be fed to the LGU's WTE.</p>	<ul style="list-style-type: none"> <li>➤ JET to invite LGU Cebu City for further discussion to confirm and clarify information on the waste generation of Cebu City.</li> </ul>	<ul style="list-style-type: none"> <li>➤ JET to invite LGU Cebu City for further discussion to confirm and clarify information on the waste generation of Cebu City.</li> </ul>
<p>LGU Quezon City's Presentation on: a) Updating of the 10-year SWM Plan with Waste Flow and Consistency between the Project Site and Land Use Plan b) Lessons learned in the formulation of WTEs</p>	<p>Mr. David Vergara of LGU Quezon City led the presentation. He informed the sub-group members that some information cannot be shared due to the non-disclosure agreement of the WTE project.</p> <p>From the presentation of Mr. Vergara, the following discussions and agreements were defined:</p>		

	<ul style="list-style-type: none"> <li>• <i>Clarification on March 2020 Progress Report</i> <ul style="list-style-type: none"> <li>➤ Mr. Vergara addressed a minor clarification regarding the March 2020 Progress Report of JET, specifically on Table 2.18. He explained that for the case of Quezon City, increase in tipping fee had been anticipated and the same scheme for tipping fee implemented by MMDA will be adopted by the LGU.</li> <li>➤ Engr. Kamishita acknowledged the clarification and mentioned that he would discuss some of the contents of the March 2020 Progress Report on his presentation.</li> </ul> </li> <li>• <i>Capacity of Incineration &amp; Biodegradable Treatment Facility</i> <ul style="list-style-type: none"> <li>➤ Engr. Kosaka asked LGU Quezon City how did they set up the capacity of the incineration facility and the biodegradable treatment facility.</li> <li>➤ Mr. Vergara answered that since the WTE Project was an unsolicited proposal; the capacity had already been identified by the proponents. According to Mr. Vergara, the consortium made due diligence on why they propose such capacity. The consortium also conducted their own WACS which supported their</li> </ul> </li> </ul>	
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	<p>proposed capacity. He added that there were more than one WACS conducted.</p> <ul style="list-style-type: none"> <li>➤ Mr. Vergara further mentioned that the minimum delivery commitment / requirement of LGU Quezon City to the WTE is 1700 t/d., which has already incorporated the LGU's collection scheme.</li> <li>➤ Engr. Kosaka further asked for a clarification regarding of the current waste generation/capacity of Quezon City.</li> <li>➤ Mr. Vergara explained that the 1700 t/d was identified at the time of the proposal which was in 2016. He added that this capacity amount is not final yet since impacts of the City ordinances towards waste reduction will still be determined.</li> <li>➤ Engr. Kosaka then reiterated his question about the capacity of the biodegradable treatment facility.</li> <li>➤ Mr. Vergara clarified that the capacity of the biodegradable treatment facility is already part of the 1700 t/d.</li> </ul> <ul style="list-style-type: none"> <li>• <i>Clarifications on Monofil Fly Ash and Aid on Technical Assistance</i> <ul style="list-style-type: none"> <li>➤ Engr. Kamishita then asked if whether the monofil for fly ash had been proposed by the MPIC JV without prior consultation/request with the LGU.</li> </ul> </li> </ul>		
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	<ul style="list-style-type: none"> <li>➤ Mr. Vergara gave an affirmation to the question and explained that it is already included on the unsolicited proposal.</li> <li>➤ Engr. Kamishita then asked if whether PPP-SC for WTE of Quezon City had seek assistance of technical expertise, especially on combustion technology, from third-party consultants.</li> <li>➤ Ms. Padiernos then answered that before the unsolicited proposal was submitted, there were various studies (e.g ADB, NEDA) for Quezon City's SWM, which served as bases and verification of the proposal. She added that the LGU has its own daily monitoring of waste generation so they were able to negotiate the capacity proposed by the proponents based on their own WACS.</li> <li>➤ Ms. Padiernos stated that there was an approval from PPP-JVSC to adopt the proposal of the proponent of LGU Quezon City.</li> </ul> <ul style="list-style-type: none"> <li>• <i>Waste Collection Status under COVID-19 in Quezon City &amp; Japan</i> <ul style="list-style-type: none"> <li>➤ Engr. Kamishita then moved on by asking Mr. Vergara regarding the status of waste collection service in Quezon City under the COVID-19 pandemic. He added a follow up if</li> </ul> </li> </ul>	
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	<p>whether there were any protection measures employed.</p> <ul style="list-style-type: none"> <li>➤ Mr. Vergara responded that the inquiry is under the mandate of a dedicated task force and as of the moment, he does not have the specific details to answer it. He promised to give an update to JET regarding the inquiry once he gets confirmation from the dedicated task force.</li> <li>➤ Ms. Padiernos asked JET what are the effects of the COVID-19 pandemic to waste generation in Japan.</li> <li>➤ Engr. Kamishita answered that the amount of domestic waste generated increased. Protection measures were also employed especially for the waste collection workers. However, most of waste is incinerated in Japan so there is no significant effect in the treatment and final disposal facilities.</li> </ul> <ul style="list-style-type: none"> <li>• <i>Clarifications on EPC Company</i> <ul style="list-style-type: none"> <li>➤ Engr. Satoshi Higashinakagawa (Higashi) asked LGU Quezon City if an EPC company had already been identified for the incineration facility and the biodegradable treatment facility.</li> <li>➤ Mr. Vergara answered that as of the moment, EPC Company for the technologies has not been identified yet.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>➤ QC LGU to provide updates or share information to JET regarding the waste collection and disposal of QC under the COVID-19 Pandemic, once clarified from responsible persons.</li> </ul>	<ul style="list-style-type: none"> <li>➤ QC LGU to provide updates or share information to JET regarding the waste collection and disposal of QC under the COVID-19 Pandemic, once clarified from responsible persons.</li> </ul>
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<p>LGU Davao City's Presentation on:</p> <p>a) Updating of the 10-year SWM Plan with Waste Flow and Consistency between the Project Site and Land Use Plan</p>	<ul style="list-style-type: none"> <li>• <i>Request for Detailed Timeline of the LGU Quezon City's WTE Project</i> <ul style="list-style-type: none"> <li>➤ Ms. Pausing then asked if there is any detailed timeline, which LGU Quezon City can share to the meeting, on the completion/implementation of the LGU's WTE Project.</li> <li>➤ Mr. Vergara answered that due to the COVID-19 situation, they cannot provide a detailed timeline as of the moment. But he updated that the proposal is currently being reviewed.</li> </ul> </li> </ul>		
<p>LGU Davao City's Presentation on:</p> <p>a) Updating of the 10-year SWM Plan with Waste Flow and Consistency between the Project Site and Land Use Plan</p>	<p>Engr. Lakandiwa Orcullo of LGU Davao City led the presentation. He confirmed that he would only be elaborating on the updates of the 10-year SWM Plan since preparing for WTE project is a whole new lesson for the LGU.</p> <p>From the presentation of Mr. Engr. Orcullo, the following discussions and agreements were defined:</p> <ul style="list-style-type: none"> <li>• <i>Updates for LGU Davao City's WTE Project</i> <ul style="list-style-type: none"> <li>➤ Engr. Kamishita asked for updates on the status of the LGU's WTE project.</li> <li>➤ Engr. Elisa Madrazo of LGU Davao City answered that as of the moment, they are waiting for the finalization of the feasibility study of consultant. The LGU also had a meeting with the</li> </ul> </li> </ul>		

	<p>Department of Finance (DOF) recently and Engr. Madrazo added that they are just waiting for the subsidy approval.</p> <ul style="list-style-type: none"> <li>➤ Ms. Consolacion Crisostomo of EMB-PPPDD informed the participants that the said subsidy would come from EMB. She then requested the LGU to share the findings of their feasibility study.</li> <li>➤ Engr. Madrazo answered that revisions had been made on the feasibility study due to some concerns raised by the DOF. A recommendation by the DOF of increasing the tipping fee to 1,000 PHP/t was also discussed. She added that the executive and legislative branches of the LGU would have to discuss the recommendation first. She mentioned that the consultants were given two months to finish the feasibility study.</li> <li>➤ Ms. Crisostomo inquired if whether the LGU had been coordinating with the EMB Regional Office.</li> <li>➤ Engr. Madrazo gave an affirmation to the inquiry and added that they are seeking assistance especially on the processing of the WTE's ECC.</li> <li>➤ Ms. Pausing also mentioned that the LGU Davao City and the EMB Regional offices are also coordinating with the DENR-FMS for the possibilities on the provision of</li> </ul>	<ul style="list-style-type: none"> <li>➤ As per Ms. Crisostomo of EMB-PPPDD's request, LGU Davao provide update or to share findings of the feasibility study to EMB and to the project, once available.</li> </ul>	<ul style="list-style-type: none"> <li>➤ As per Ms. Crisostomo of EMB-PPPDD's request, LGU Davao City to provide update or to share findings of the feasibility study to EMB and to the project, once available.</li> </ul>
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	<p>subsidy as requested by LGU Davao City. She also mentioned that pertinent documents have been prepared by DENR for the said request, however, it will still be up to the DBM's consideration and approval.</p> <ul style="list-style-type: none"> <li>➤ Ms. Crisostomo then reminded LGU Davao City to share the findings of the feasibility study, once available.</li> </ul> <ul style="list-style-type: none"> <li>• <i>Other Clarification</i> <ul style="list-style-type: none"> <li>➤ Ms. Raquel Rosario R. Reyes of EMB-SWMD asked about the type of incinerator that the LGU will use for its WTE project.</li> <li>➤ Engr. Orcullo answered that the moving grate type will also be used by the LGU.</li> </ul> </li> </ul>		
<p>Activity 2-5: Presentation on the Tentative Observations and Suggestions under Activity 2-5</p>	<p>Engr. Takahiro Kamishita of JET discussed the tentative observations and suggestions for formulating WTE projects in the target LGUs which was written in the progress report 1 of TCP.</p> <p>From the presentation of Engr. Kamishita, the following discussions and agreements were defined:</p> <ul style="list-style-type: none"> <li>➤ Engr. Madrazo requested JET to share with the subgroup members the presentation file of Engr. Kamishita after the meeting. She justified that the</li> </ul>		

	<p>points discussed from the presentation will not only be helpful for the formulation of the WTE Project but also with the other projects of the LGUs.</p> <ul style="list-style-type: none"> <li>➤ Mr. Kamishita agreed to the request and supported Engr. Madrazo's comment.</li> <li>• <i>Support to the Suggestion of JET (10-year SWM Plan integration with LGU's Development Plan, Definition of Residual Waste)</i> <ul style="list-style-type: none"> <li>➤ Ms. Crisostomo asked for a validation from the present LGUs if whether measures written on their respective 10-year SWM Plan are being implemented at the LGU level. She justified that the 10-year SWM Plans are already approved by the NSWMC and so the LGUs are required to implement the measures stipulated on the plan and should be incorporated on the City's Development Plan.</li> <li>➤ Mr. Vergara answered that LGU Quezon City's 10-year SWM Plan is part of its Development Plan and that the City has been implementing it. With regard to the WTE, it is a technology-based disposal solution but the technology of incineration has not been specified yet. LGU Quezon</li> </ul> </li> </ul>	
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	<p>City's plan is to just generally mention the WTE to the 10-year SWM Plan.</p> <ul style="list-style-type: none"> <li>➤ Engr. Madrazo mentioned that the WTE Project has been planned for the last 5 years already and that the community is already aware of the project, but the WTE Project's specific concerns will be decided by the TWG. She updated that one of the main concerns of the project is the financial subsidy from the EMB Central Office. The LGU had already been awarded with the grant by Japan, but they are just waiting for the additional subsidy. She mentioned that other neighboring LGUs are already asking about the implementation of the WTE Project. But as of the moment, LGU Davao City is working on site development plan, with consultation from other agencies.</li> <li>➤ Ms. Crisostomo added a comment that specifying such matter (e.g. technology to be used) is something to be considered by the LGU.</li> <li>➤ Ms. Reyes opened a new discussion by expressing her support on JET's suggestion to specify the definition of residual waste. She mentioned that there is no specific definition of residual waste in the existing laws. She</li> </ul>	
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	<p>suggested that this matter be taken up to the NSWMC.</p> <ul style="list-style-type: none"> <li>• <i>Other Recommendations from JET</i> <ul style="list-style-type: none"> <li>➢ Engr. Kosaka requested LGUs Quezon City to compare the tipping fees presently applied and in future for WTE.</li> <li>➢ Mr. Vergara mentioned that LGU Quezon City relied on the computation of the PPPC.</li> <li>➢ Ms. Padiernos elaborated that the current cost of tipping fee in LGU Quezon City is 600 PHP and is shouldered by MMDA. The proponent's proposed tipping fee was higher compared to the current cost. She mentioned that the proponent justified that this increased fee will offset the hauling costs and will be beneficial in the long term. She added that the increased fee is bounded by the non-disclosure agreement, thus, it cannot be shared as of the moment.</li> </ul> </li> <li>• <i>Clarification on Subsidy Grant to LGU Davao City</i> <ul style="list-style-type: none"> <li>➢ Engr. Kamishita asked for a confirmation if DENR is discussing whether to grant subsidy to LGU Davao City for the WTE Project. He added a follow up if whether DENR has created a cost sharing scheme with</li> </ul> </li> </ul>	<p><u>Supplemental note on T/F by JET</u>  <i>Firstly, Davao is presently dumping all the waste in their own New Carmen Landfill at free, which doesn't fully comply with the environmental standards in terms of leachate treatment, etc. But it should be considered if this landfill shall be rehabilitated to meet the standard, how much additional capital cost and operational cost will be needed.</i>  <i>So, DC shall compare this additional cost and proposed T/F (P1,000/t) for WTE because WTE will be of course fully complied with the standards.</i>  <i>On the other hand, MMDA is now paying P600/t for landfilling cost of QC. Then, proposed T/F for WTE (which was not discussed in this meeting, P1,400/t) shall be compared with this P600/t. Then, as Ms. Justine said, present transportation cost (to Rizal) can be mitigated this price difference then provide benefit to the city.</i></p>	
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<p>6.) Discussions on the Updates/Status on the Preparation of the TCP Newsletter</p>	<p>LGU's as such from the subsidy to Davao City.</p> <ul style="list-style-type: none"> <li>➤ Ms. Crisostomo clarified that DENR proposed to give assistance to Davao City. But the proposed budget is yet to be approved by the Congress. Upon approval, next actions will be administered by DENR.</li> <li>➤ Ms. Pausing added that DENR is already preparing the pertinent documents to be submitted to the Department of Budget and Management (DBM). She mentioned that a copy of the DENR memorandum stating that the requested subsidy is already included in the 2021 DENR budget proposal.</li> <li>➤ Ms. Crisostomo further clarified that no legislative action had been made yet for the proposed budget.</li> </ul>		
	<p>Mr. Eric Cea of JET updated the subgroup members regarding the progress on the TCP Newsletter preparation</p> <ul style="list-style-type: none"> <li>➤ Ms. Pausing asked for a follow up on the requested assessment of the current progress of the Newsletter preparation.</li> <li>➤ Mr. Cea updated that a follow up email regarding the submission of articles had already been sent.</li> <li>➤ Engr. Sales added that only a few articles had been received yet.</li> </ul>	<ul style="list-style-type: none"> <li>➤ JET to send another follow up regarding the submission of deliverables.</li> </ul>	<ul style="list-style-type: none"> <li>➤ JET to send another follow up regarding the submission of Newsletter deliverables.</li> </ul>



	<ul style="list-style-type: none"> <li>➤ Ms. Pausing reiterated her request during the last meeting regarding JET's assessment on the extent of the Newsletter preparation using the available information submitted by the sub-group members and to inform the group on the other important information/data to complete/finalize the said Newsletter.</li> <li>➤ Engr. Kamishita suggested that they will share the preparation progress once substantial submissions had been received.</li> <li>➤ Ms. Pausing updated that the assigned article regarding the DENR's Role on Waste-to-Energy Projects" is already on the process of review and approval. It will be shared to JET once approved.</li> </ul>	<ul style="list-style-type: none"> <li>➤ EMB-SWMD-PMO to send assigned article for DENR, once approved.</li> </ul>	<ul style="list-style-type: none"> <li>➤ EMB-SWMD-PMO to send assigned article for DENR, once approved.</li> </ul>
<p>7.) Wrap-up/Required Actions/Agreements</p>	<p>Engr. Nikka Sales of JET wrapped up the earlier discussions and reiterated the agreed arrangements.</p> <ul style="list-style-type: none"> <li>➤ Ms. Crisostomo suggested JET and EMB-SWMD-PMO to share with the meeting attendees all the presentation files and the meeting record for today's meeting.</li> <li>➤ Ms. Pausing reminded the presenters to send the presentation files to JET and EMB-SWMD-PMO for consolidation.</li> <li>➤</li> </ul>	<ul style="list-style-type: none"> <li>➤ LGUs Quezon City and Davao City to send their presentation files to JET/EMB-SWMD-PMO.</li> <li>➤ JET/EMB-SWMD-PMO to consolidate and share the presentations and the meeting record to the subgroup members.</li> </ul>	<ul style="list-style-type: none"> <li>➤ LGUs Quezon City and Davao City to send their presentation files to JET/EMB-SWMD-PMO.</li> <li>➤ JET/EMB-SWMD-PMO to consolidate and share the presentations and the meeting record to the subgroup members.</li> </ul>

<p>8.) Way forward, Schedule of the next meeting</p>	<ul style="list-style-type: none"> <li>● Ms. Pausing discussed the proposed schedule for the next subgroup meeting. <ul style="list-style-type: none"> <li>➤ Ms. Pausing mentioned that originally, there is a proposed subgroup meeting for Output 2 which will be on Sept 10.</li> <li>➤ Engr. Kamishita then confirmed that as of the moment, an exact date for the next subgroup meeting for Project Output 2 cannot be decided yet. He justified that JET needs to communicate with the 3 LGUs first, especially with Cebu City. Therefore, the September 10 proposal is just tentative and that JET will update the subgroup members before the said date.</li> <li>➤ Engr. Kamishita reminded the meeting participants that confidential information is included on the presentations during the meeting; Thus, this information cannot be shared to the public same as the progress report of TCP.</li> </ul> </li> <li>● Adjournment <ul style="list-style-type: none"> <li>➤ There be no other matters to be discussed, Ms. Pausing adjourned the</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>➤ JET to communicate with the 3 LGUs first, then update the subgroup members for the next subgroup meeting for Project Output 2.</li> </ul>	<ul style="list-style-type: none"> <li>➤ JET to communicate with the 3 LGUs first, then update the subgroup members for a proposed date for the next subgroup meeting for Project Output 2.</li> </ul>
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	meeting at 12:15 PM by extending her appreciation to all the Sub-group members and other participants who joined the meeting.		
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# Appendix 11-3: Sub-group Meeting for Output 2

11-3-3 : 3<sup>rd</sup> SG2

# 3rd SGOP2 on 28May2021 Technical Presentation

Makoto KOSAKA, SWM-PPP Expert



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



# Technical Presentation 3rd SGOP2 on 28May2021

1. Info-sharing of discussions in preparation of WTE Technical Standards in SGOP1,
  - (1) Use the word of "Incineration",
  - (2) Definition of "WTE Feedstock" as the target waste,
2. WTE Project Development
  - (1) Necessity of facility plan for the proper evaluation of unsolicited proposal,
  - (2) PPP project type / Correct understanding of WTE finance / Service provision Type PPP,
  - (3) Responsibility of LGU,
3. Confirmation of the remaining activity of Output 2 Activity 2-6 Sharing the status/discussions with PPPC Activity 2-7 (draft specifications): Confirmation of LGU needs

1. Info-sharing of discussions in preparation of WTE Technical Standards in SGOP1,
  - (1) Use the word of "Incineration",

Final Draft WTE Technical Standards (JCC Approved)



Republic of the Philippines  
Department of Environment and Natural Resources  
**ENVIRONMENTAL MANAGEMENT BUREAU**  
DENR Compound, Visayas Avenue, Diliman, Quezon City 1116  
Telephone Nos: 927-15-17, 928-20-96  
Email: emb@emb.gov.ph

EMB MEMORANDUM CIRCULAR  
No. 2020 - \_\_\_\_\_

SUBJECT : **GUIDELINES FOR THE TECHNICAL STANDARDS OF WASTE-TO-ENERGY FACILITY ON APPROPRIATELY CONTROLLED COMBUSTION WASTE INCINERATION WITH POWER GENERATION**

1. Info-sharing of discussions in preparation of WTE Technical Standards in SGOP1,
  - (1) Use the word of "Incineration",

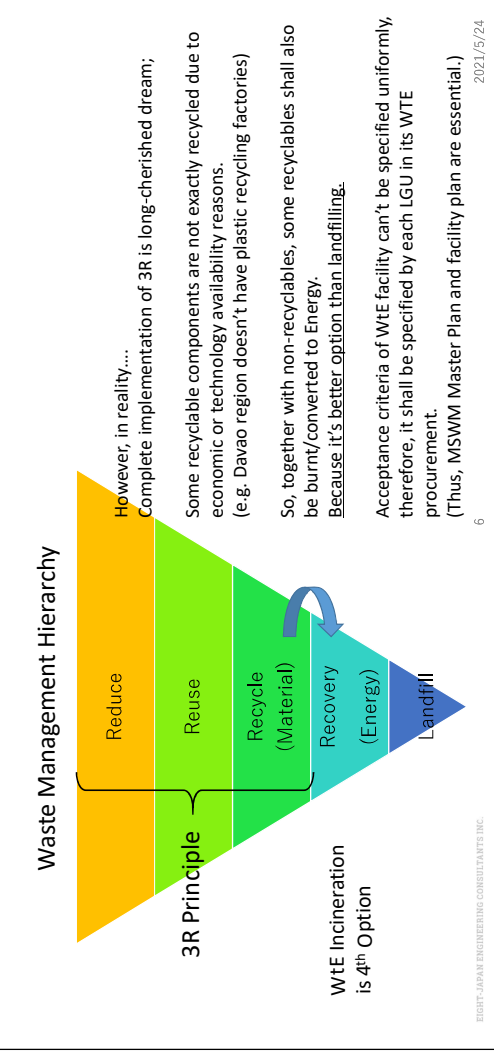
Discussed with ;  
DOST-ITDI, DENR-SWMD,  
NEDA-IPG, PPPC, DOE-REMB

Cat.	Items	Commenter	Comments
	Waste-to-Energy Facilities on <del>Waste Incineration</del>	DOST-ITDI DENR-EMB-SWMD	As the conclusion of 6th SGOP1 on 14Oct2020; Removal of the term "incineration" and substituting "Appropriately controlled combustion" instead to avoid controversial matter > Then it was removed in 2nd draft.
Title	<del>Waste Incineration</del> <u>Appropriately Controlled Combustion</u> with Power Generation	NEDA-IPG DOE-REMB DOE-REMB PPPC	Suggest to clearly delineate the types of WTE technologies (e.g., incineration) WTE facility involves not only power applications but also for non-power and other emerging WTE technologies. On 14Oct2020, it was concluded not to use the term incinerate/incineration in the draft due to the social acceptability of said term. However, the said term is used in Senate Bill No.1789. Suggest to define "appropriately controlled combustion with power generation"

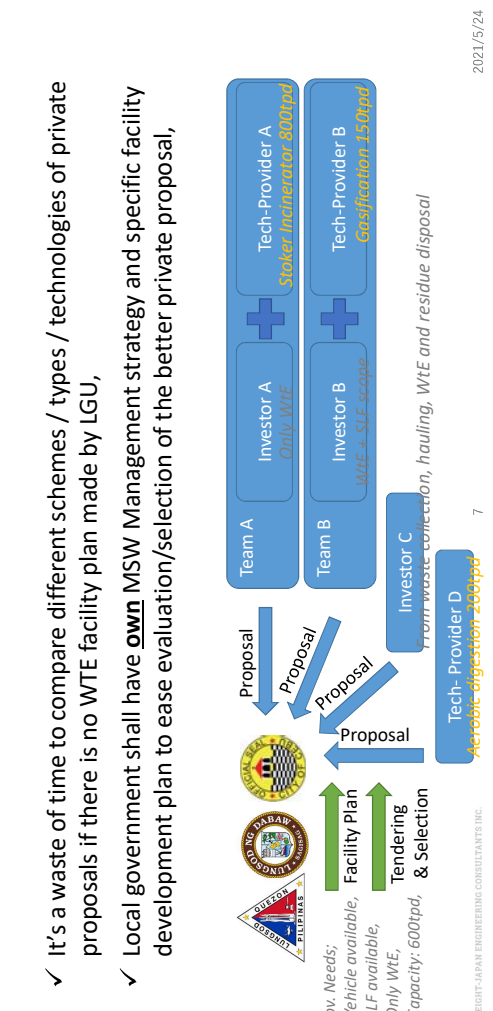
**1. Info-sharing of discussions in preparation of WTE Technical Standards in SGOP1, (2) Definition of "WTE Feedstock"**

Source	Definitions of "WTE feedstock"	JET comments
DAO2019-21	<b>Feedstock</b> refers to the segregated biodegradable or residual waste materials supplied to the WTE facility to generate heat or electricity	As stated in next slide, in many cases WtE has no choice to receive other than "segregated biodegradable or residual waste materials" (e.g. recyclables) so it shall be a bit more flexible.
Senate Bill 1789	<b>Residual Waste</b> shall refer to any material generated after the implementation of 3Rs (Reduce, Reuse, Recycle) with fuel value.	The intention is to limit only 3R residuals with fuel value can be fed to WtE as "feedstock". But this definition doesn't consider about 3R residuals w/o fuel value, such should also be generally categorized as "residual waste".
JET proposed definition in draft T/S	<b>WTE feedstock</b> refers to the waste materials with calorific value that are taken in for WTE processing in a WTE facility <b>WTE Feedstock</b> shall refer to any residual waste after the implementation of 3Rs (Reduce, Reuse, Recycle) by LGUs at optimum economical extent to be supplied to the facility for the purpose of recovering its thermal energy.	In contrast with above, this definition lead recyclables to be fuel even if there is still opportunity for material recycle. The concept of this is that LGUs have to design and implement maximum effort for the 3Rs at that moment. WTE can accept such remainings which has value to be energy as the feedstock.

**1. Info-sharing of discussions in preparation of WTE Technical Standards in SGOP1, (2) Definition of "WTE Feedstock"**



**2. WTE Project Development, (1) Necessity of appropriate facility plan for the proper evaluation of unsolicited proposal**



**2. WTE Project Development, Comparison of WtE Project Development [Typical procedure for MSW Incineration (WtE) facility development]**

Phase	Japan	Indonesia	Philippines	Thailand
Concept/ Master Plan	MSWWM* Master Plan (Long term plan) Waste characteristic survey	MSWWM* Master Plan (Long term plan) Waste characteristic survey	MSWWM* Master Plan (Long term plan) Waste characteristic survey	MSWWM* Master Plan (Long term plan) Waste characteristic survey
Study/Design Permits/ Facility Plan	Site Selection EIA/Permits/Public invol Facility Plan/Tech select	IBC (Pre-FS) EIA/Permits/Public invol FBC (FS)	Feasibility Study BA/Permits/Public invol Facility Plan/Tech select	Feasibility Study EIA/Permits/Public invol facility Plan/Tech select
Procurement Bid/Order	PPP applicability study Bid/Selection	Bid/Selection	PPP applicability study Unsolicited Proposal Swiss Challenge	PPP applicability study Bid/Selection
Construction	Construction	Construction	Construction	Construction
Operation	Operation	Operation	Operation	Operation

\*MSW (Municipal Solid Waste) Management

**2. WTE Project Development, (2) Correct understanding of Waste Management PPP,**

- ✓ There are 3 types of PPP projects, #1: Service provision, #2: Financially free-standing, and #3 Mixed, and #3 Mixed.
- ✓ In general, waste treatment facilities are categorized in #1 and WTE is categorized in #3. They never fall into #2,
- ✓ However, in many private proposals say "no tipping fee", "power tariff covers all CAPEX/OPEX", etc. and never realize. LGUs shall have correct understanding of Waste-to-Energy financial situation in other countries.

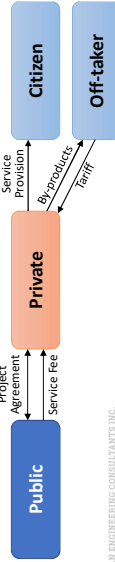
**#1: Service Provision Type:** *Public pays fee to Private partner's service provision incl. its CAPEX/OPEX*



**#2: Financially free-standing Type:** *Project revenue covers CAPEX/OPEX / No financial support from Public*



**#3: Mixture Type (Waste-to-Energy Projects):** *Project revenue is not enough to cover CAPEX/OPEX*



**2. WTE Project Development, (3) Responsibility of LGU**

- Extraction from Progress Report (2);
- It is necessary to clarify the real meaning of "primarily responsibility of LGU" in RA9003,
- Waste Treatment and Cleaness Law (1970) in Japan stated that "even if LG contract out the construction, O&M of SWM activities to private entities, LGU still have all responsibilities of it." This means that LGU shall have prevention/recovery plan before the commercial operation of SWM facility so as to keep continuous provision SWM to citizens at any cases if private company failed to comply with environmental standard or is bankrupt and cease to operate in any reasons.
- LGU shall realize the responsibility securing the environmental compliance of private partner in the SWM-PPP project while EMB regional office is one of the organizations for monitoring.

**2. WTE Project Development, (2) Correct understanding of Waste Management PPP,**

- ✓ There are 3 types of PPP projects, #1: Service provision, #2: Financially free-standing, and #3 Mixed, and #3 Mixed.
- ✓ In general, waste treatment facilities are categorized in #1 and WTE is categorized in #3. They never fall into #2,
- ✓ However, in many private proposals say "no tipping fee", "power tariff covers all CAPEX/OPEX", etc. and never realize. LGUs shall have correct understanding of Waste-to-Energy financial situation in other countries.

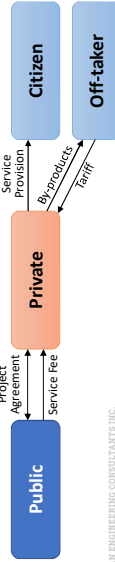
**#1: Service Provision Type:** *Public pays fee to Private partner's service provision incl. its CAPEX/OPEX*



**#2: Financially free-standing Type:** *Project revenue covers CAPEX/OPEX / No financial support from Public*



**#3: Mixture Type (Waste-to-Energy Projects):** *Project revenue is not enough to cover CAPEX/OPEX*



**3. Confirmation of the remaining activity of Output 2, Activity 2-6 /**

- To be provided by PPPC,

**3. Confirmation of the remaining activity of Output 2, Activity 2-7 / Formulate the Technical Specification of WTE**

- Confirmation of LGU needs
- Right table shows the progress of WTE projects as of April 2019;
- Based on recent updates, are there any technical supports which LGUs expect to JET to provide?
  - Such as;
    - (1) Tech specification,
    - (2) Tender support,
    - (3) FS (Facility plan),
    - (4) Engineered M/P,
    - (5) Monitoring Manual, etc.

LGU	M/P	Concept, F/S	Plan, B/D	R/P, ITB	Proposal	Contract	Const.	Operation
Quezon City	ADB (2018-2027)	Unclear	Unclear	Adopt Unsolicited Proposal 2018.10-2019.3	Swiss Challenge 2019.3-2022 (3yrs)	2019-2022 (3yrs)	2022-2057 (35yrs)	
Davao City	2008-2017	Unclear	Unclear	Japan subsidized BOT	Not Yet Fixed			
Cebu City	2017-2026	Under Study	Not Yet Fixed	JICA (2016)	Not Yet Fixed			

Expected Implementation Period of JICA TCP (2019.2-2022.3)

**PROJECT ACTIVITY : 3<sup>rd</sup> SUB-GROUP MEETING FOR PROJECT OUTPUT 2 (ENHANCEMENT OF TARGET LGU'S CAPACITY PLANNING, EVALUATION, FORMULATION AND SUPERVISION OF WASTE-TO-ENERGY PROJECT**

**DATE/TIME : 25 May 2021, 9:00AM - 12:00AM (Philippine Time)**

**VENUE : Video Conference through Microsoft Teams**

**MATERIALS : <https://bit.ly/3rdOP2SGMtg>**

Agenda Topics	Issues/Discussions/Actions	Comments/Agreements/ Timelines	Required Actions/Responsible Agency/Person
1.) Call to Order/ Meeting Objectives/Acknowledgement of Attendees (Ms. Elvira Pausing, EMB-SWMD-PMO)	<ul style="list-style-type: none"> <li>● Ms. Elvira Pausing of EMB-SWMD-PMO commenced the 3rd subgroup meeting for Project Output 2 when quorum was reached, and all presenters for the meeting have signed in.</li> <li>● Ms. Pausing presented the agenda and asked the subgroup members if anything else needed to be discussed.</li> <li>● Ms. Pausing acknowledged the presence of the participants, and briefly ran through the proceedings of the last subgroup meeting held</li> </ul>	<ul style="list-style-type: none"> <li>● Agenda was moved for adoption with no comments and modifications from the participants.</li> </ul>	
2.) Review of the previous discussions from the last subgroup meeting (Takahiro Kamishita, JET)	<ul style="list-style-type: none"> <li>● Mr. Takahiro Kamishita presented the meeting summary of the 2nd OP2 Subgroup Meeting.</li> <li>● In the last meeting, JET discussed their review of the proposal of a private company for Cebu City's WTE, and presented preliminary recommendations to the said proposal.               <ul style="list-style-type: none"> <li>○ QC LGU was also able to share updates to the WTE Project.</li> <li>○ Presentation and tentative recommendations were also presented aligned to Activity 2-5.</li> </ul> </li> </ul>		
3a.) Technical Presentations and Discussions: WTE Target Waste (Mr. Takahiro Kamishita, Mr. Makoto Kosaka, JET)			



<ul style="list-style-type: none"> <li>• Information sharing of discussions in preparation of WTE Technical standards in SGOP1.</li> <li>- Use of the word <b>incineration</b></li> <li>- Definition of <b>WtE Feedstock</b></li> </ul>	<ul style="list-style-type: none"> <li>• Mr. Kosaka discussed the Draft WTE Technical Standards (TS) under Output 1. Currently already approved in the JCC Meeting, the following details were underscored from the TS: <ul style="list-style-type: none"> <li>• Mr. Kosaka shared that the term “<b>Appropriately Controlled Combustion</b>” was used instead of “incineration” to avoid the negative connotation that comes with the term “incineration.”</li> <li>• He then proceeds in the discussion of the definition of WTE Feedstock, emphasizing its difference with the definition under DAO 2019-21 and SB 1789. In the Draft TS, he discusses that the definition highlights that 3Rs must first be implemented and exhausted, and all remaining residual waste shall be the WtE feedstock to recover its thermal energy. Aligned with this he also presented the Waste Management Hierarchy, emphasizing that WTE incineration is a latter option only done after the 3Rs are executed.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Mr. Kosaka opened the floor for comments for the definitions presented (Appropriately Controlled Combustion, WTE Feedstock). <ul style="list-style-type: none"> <li>○ Ms. Pausing asked if the presented information has been incorporated in the Draft TS, and clarifies on how the comments from the body affect the Draft TS.</li> <li>○ Mr. Kosaka clarifies that the objective of discussing this with the LGUs is to ensure alignment of understanding especially with Cebu City and Davao City, given that Quezon City was already part of the subgroup that developed the TS.</li> <li>○ Engr. Madrazo asked about the calorific value that can be fed into the facilities. She clarifies that later on, they expect plastic use to decline and raises that this might affect the sustainability of the WTE facility.</li> <li>○ Mr. Kosaka goes back to the objective of the facility which is to manage wastes so should waste generation decline over</li> </ul> </li> </ul>	
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		<p>the years, then the facility will have already served its purpose. However, he clarifies that plastic use may not completely be avoided but plastic reduction strategy shall be reflected in the Facility Plan.</p> <ul style="list-style-type: none"> <li>○ Ms. Pausing requests for JET to provide the details of the calorific value given that this concern was also raised in the last OPI SG Meeting.</li> <li>○ Mr. Kamishita shares a table from the Draft BAT/BEP Guidelines showing the range of lower calorific values from the case studies.</li> <li>○ Ms. Pausing inquired if JET has a more specific lower calorific value per material type and requested for JET to provide this in the next subgroup meeting.</li> </ul> <ul style="list-style-type: none"> <li>● Mr. Kamishita asked the LGU representatives for confirmation on the alignment of understanding on the WTE feedstock definition.             <ul style="list-style-type: none"> <li>○ Mr. Kamishita explains that materials such as low quality plastics, and other residual matters which do not have market value can be incinerated depending on the LGU's plan.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● [JET] PMO requests for JET to provide further details on the lower calorific value for different material types, to be presented in the next subgroup meeting.</li> <li>● [Cebu City LGU] Provide confirmation to the WTE Feedstock definition.</li> </ul>
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<ul style="list-style-type: none"> <li>• WTE Project Development</li> <li>- Necessity of facility plan for the proper evaluation of unsolicited proposal</li> </ul>	<ul style="list-style-type: none"> <li>• Mr. Kosaka explains that a Facility Plan should be made by LGUs, to ease the process of evaluation and selection of MSW Management proposals from private entities.</li> <li>• He further discusses that in the Philippines, most of the facility development proposals come in an unsolicited approach, making it</li> </ul>	<ul style="list-style-type: none"> <li>o Engr. Louie Sabater of QCTFSWM agrees with the WTE Feedstock definition. He inquired on whether construction waste, a type of residual waste, may be fed into the facility as well.</li> <li>o Mr. Kamishita responds that for construction materials, it would depend on the waste but is generally not combustible, and that waste amount reduction is not expected through incineration.</li> <li>o Mr. Kosaka clarifies that technically, it may be accepted, but is not ideal given that cement and soil is not combustible and not reduced through processing. Mr. Kosaka suggests for pre-treatment to be done to the collected wastes if the incombustible portion would be higher than 20% of the total waste volume.</li> </ul>	
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<p>- PPP project type/ correct understanding of WtE finance/ Service provision type PPP</p>	<p>more important to clarify the LGU's strategies to ensure that the evaluation of unsolicited proposals is aligned with the masterplan of the LGU.</p> <ul style="list-style-type: none"> <li>Mr. Kosaka discusses the three PPP Project types: (1) Service provision, (2) Financially free-standing, and (3) mixed. From JET's experience with the BAT/BEP case reviews, all of the WTE-PPP Projects fall under either Type 1 or Type 3.</li> </ul>		
<p>3b.) Technical Presentations and Discussions: Remaining activities under Project Output 2</p> <ul style="list-style-type: none"> <li>Activity 2-6: Sharing of the status/discussions with PPPC (Ms. Justine Padiernos, PPPC)</li> </ul>	<ul style="list-style-type: none"> <li>Ms. Justine Padiernos of PPPC provided a background on the current scope of assistance that JET provides to PPP Center, and on the expanded scope of the partnership.</li> <li>Back in 2020, JET's assistance is limited to the review of SWM PPP Guide and projects of the three target LGUs.</li> <li>With the expanded partnership, JET confirmed that technical assistance will also be provided for other LGUs other than the 3 targets by the TCP. JET shall also provide Knowledge Sharing Sessions and capacity development for PPP Center employees and other implementing agencies.</li> <li>PPPC shall provide JET the pertinent materials on the WTE projects, along with the PPP Guide on Unsolicited Joint Venture WTE projects for LGUs to solicit technical feedback from JET.</li> </ul>	<ul style="list-style-type: none"> <li>Ms. Pausing clarified the extent of the consent to be solicited from the implementing agencies. <ul style="list-style-type: none"> <li>Ms. Padiernos clarified that this consent shall cover clarifying the extent by which JET will be involved, and the depth of information that shall be allowed to be shared with JET. In a nutshell, PPPC shall serve as a middleman to filter the inquiries and requests to JET, and the information requested from the involved agencies.</li> </ul> </li> <li>Ms. Pausing also asked if a timeline has already been established on this expanded partnership. <ul style="list-style-type: none"> <li>Ms. Padiernos shared that the current timeline spans until Dec 2020, and that the more detailed work plan and schedules are still being</li> </ul> </li> </ul>	

<ul style="list-style-type: none"> <li>Activity 2-7 Preparation of technical specifications for WTE in each of the target LGUs; and Confirmation of LGUs' needs (Mr. Takahiro Kamishita, Mr. Makoto Kosaka, JET)</li> </ul>	<ul style="list-style-type: none"> <li>Mr. Kamishita would like to confirm the needs of the LGUs with respect to Activity 2-7. Considering that confidentiality concerns and current progress on the WTE Projects make it difficult to share pertinent information with JET, especially for Quezon City, Cebu City, and Davao City, JET would like to know if JET may be able to support them through other means such as: <ul style="list-style-type: none"> <li>Technical specification</li> <li>Tender support</li> <li>Facility Plan</li> <li>Engineering M/P</li> <li>Monitoring Manual, etc</li> </ul> </li> </ul>	<p>settled between PPPC and JET.</p> <ul style="list-style-type: none"> <li>Engr. Madrazo of Davao City LGU shares that they are just waiting for DENR for the subsidy to be provided for their WTE Project. They are also waiting for DOF to give them instructions on how to proceed. Consultants have already sent the FS to DOF for their review. <ul style="list-style-type: none"> <li>Ms. Kamishita clarified on the next steps if DOF decides positively on the matter, if their LGU can already move to a tender with the technical specification formulated by the FS consultant team. <ul style="list-style-type: none"> <li>Engr. Madrazo mentions that DENR subsidy is still being requested at the moment.</li> </ul> </li> <li>Engr. Sabater shares that they are still awaiting for DENR on further instructions and are also still waiting for further turnover from Mr. Vergara. <ul style="list-style-type: none"> <li>Engr. Sabater clarifies that since they are still new to this engagement, they are still in the learning and turnover process in coordination with Mr. Vergara.</li> <li>Ms. Pausing proposes for PMO and JET to meet with the team of Engr. Sabater separately to clarify these matters and to orient them properly to the TCP.</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>[Cebu City LGU, Quezon City LGU] Confirm the needs of their respective LGU aligned to Activity 2-7.</li> <li>[PMO, JET, Quezon City LGU] Setup a separate meeting to clarify the official representatives of QC LGU to the TCP.</li> </ul>
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<p>4.) Wrap-up, Required Actions, and Agreements</p>	<p>Ms. Andrei Mallare of JET wrapped up the earlier discussions and reiterated the arrangements and timelines as agreed:</p> <ul style="list-style-type: none"> <li>● [JET] PMO requests for JET to provide further details on the lower calorific value for different material types, to be presented in the next subgroup meeting.</li> <li>● [Cebu City LGU] Provide confirmation to the WTE Feedstock definition.</li> <li>● [Cebu City LGU, Quezon City LGU] Confirm the needs of their respective LGU aligned to Activity 2-7.</li> <li>● [PMO, JET, Quezon City LGU] Setup a separate meeting to clarify the official representatives of QC LGU to the TCP.</li> </ul>	<ul style="list-style-type: none"> <li>● Ms. Pausing clarifies with Engr. Sabater if Mr. Vergara will be replaced by the team of Engr. Sabater, or if they will just serve as supplementary support to the TCP. <ul style="list-style-type: none"> <li>○ Engr. Sabater replies that turnover of assignment to the TCP to their office is already facilitated, but are still unsure if they will serve as the new point person or just supplementary to the team of Mr. Vergara.</li> <li>○ He further mentions that only the MOU and Records of Discussions have been shared with them with regards to the TCP.</li> </ul> </li> </ul>	
<p>5.) Way forward, Schedule of the next meetings</p>	<ul style="list-style-type: none"> <li>● Ms. Pausing announced that the schedule of the next OP2 Subgroup Meeting is on July 14, 2021.</li> </ul>		

# Appendix 11-4: Sub-group Meeting for Output 3

11-4-1 : 1<sup>st</sup> SG3

11-4-2 : 2<sup>nd</sup> SG3

11-4-3 : 3<sup>rd</sup> SG3

11-4-4 : 4<sup>th</sup> SG3

# Appendix 11-4: Sub-group Meeting for Output 3

11-4-1 : 1<sup>st</sup> SG3



## **NOTICE OF MEETING**

**TO : ALL SUB-GROUP MEMBERS (PROJECT OUTPUT 3)**

**Selected Concerned Government Agencies**

Engr. Reynaldo Esguerra – DOST-ITDI  
Ms. Letty Abella – DOE-ECCD

**EMB Regional Focal Persons**

Engr. Alma Ferrareza - EMB NCR  
Mr. John Roy Kyamko - EMB Region VII  
Ms. Socorro A. Mallari - EMB Region XI

**EMB Central Office**

Engr. Jundy T. Del Rosario – EMB-EQD- AQMS  
Engr. Marcelino N. Rivera, Jr. - EMB-EQMD

**Project Output Coordinators**

Ms. Fatima Anneglo R. Molina – EMB- ERLSD  
Engr. Nolan B. Francisco – EMB-SWMD  
Ms. Elvira S. Pausing – EMB-SWMD  
Mr. Takahiro Kamishita – JICA/JET  
Mr. Satoshi Miyaichi – JICA JET

**All SWMD-PMO Staff**

**FROM : THE EMB DIRECTOR**

**DATE/TIME/VENUE: 10 February 2020 (Monday)/ 2:00 PM/ EMB-AQMTC Bldg.**

**SUBJECT : *1<sup>st</sup> SUB-GROUP MEETING: ENHANCEMENT OF THE NATIONAL GOVERNMENT'S CAPACITY OF ENVIRONMENTAL MONITORING FOR WTE PROJECT 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 3
3. Presentation on the Outline of the Specific Activities under Project Output 3 including deliverables based from the Inception Report
4. Presentation and discussions on the following:
  - a. Results of review of the current capacity and gap analysis in EMB Central and Regional offices
  - b. Proposed activities based on the gap analysis
  - c. Training Plan in Japan related to Dioxins and Furans in ambient air, emission gas, and Soil/Surface water/Sediments
  - d. Proposed outline of the TCP Newsletter (*Sub-group members may provide proposals for the title of the Newsletter*)
  - e. Capacity Assessment of Sub-group members (*Kindly fill up the attached checklist and send to the Secretariat via email ([dimernelie@yahoo.com](mailto:dimernelie@yahoo.com) or [deth25760945@gmail.com](mailto:deth25760945@gmail.com)) by Friday 07 February 2020*)
5. Finalization of the Comments/Agreements/Timelines
6. Way Forward

Your participation/attendance is enjoined.

**ENGR. WILLIAM P. CUÑADO**



### 1<sup>st</sup> Sub Group Meeting for Output 3:

Enhancement of The National Government's Capacity of Environmental Monitoring for WTE Project under

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

10<sup>th</sup> February 2020 (Monday) 2:00 p.m.  
EMB-AQMTC Bldg.

1

2

## Agenda

1. Call to Order
2. Objectives of the Meeting
3. Presentation on the Outline of the Specific Activities under Project Output 3 including deliverables based on the Inception Report
4. Presentation and discussions on the following:
  - a. Results of review of the current capacity and gap analysis in EMB Central and Regional offices
  - b. Future activities based on the gap analysis
  - c. Training Plan in Japan related to Dioxins and Furans in ambient air, emission gas, and Soil/Surface water/Sediments
  - d. Proposed outline of the TCP Newsletter
  - e. Capacity Assessment of Sub-group members
5. Finalization of the comments/agreements/Timelines
6. Way Forward

## 2. Objectives of the meeting

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

Sub group	Objectives
Output 1	The enhancement of National Project Government's capacity for supporting and coordinating of LGU's WTE project
Output 2	The enhancement of Target LGUs' capacity for Planning, Evaluation, Formulation and Supervision of WTE project.
<b>Output 3</b>	<b>The enhancement of the National government's capacity of environmental monitoring for WTE project</b>
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.

3

## 2. Objectives of the meeting

### Members for Sub-Group for Output 3

	Agency/Office	Members
Selected Concerned Government Agencies	DOST-Industrial Technology Development Institute	Engr. Reynaldo Esguerra
	DOE-Energy Cooperation and Coordination Division	Ms. Letty Abella
EMB Central Office	EMB-EQMD-Air Quality Management Section	Engr. Juncdy T. Del Socorro
	EMB-Environmental Quality Management Division	Engr. Marcelino N. Rivera, Jr.
EMB Regional Office	EMB National Capital Region	Engr. Alma Ferrareza
	EMB Region VII	Mr. John Roy Kyamko
	EMB Region XI	Ms. Socorro A. Mallare
Project Output Coordinators	DENR-Foreign Assisted and Special Project Service	Director Angelito V. Fontanilla
	EMB- Environmental Research and Laboratory Services Division	Ms. Fatima Anneglo R. Molina
	EMB-Solid Waste Management Division/ Project Management Office	Engr. Nolan B. Francisco
	EMB-Solid Waste Management Division/ Project Management Office	Ms. Elvira S. Pausing
	JICA Experts Team	Mr. Takahiro Kamishita
	JICA Experts Team	Mr. Satoshi Miyauchi

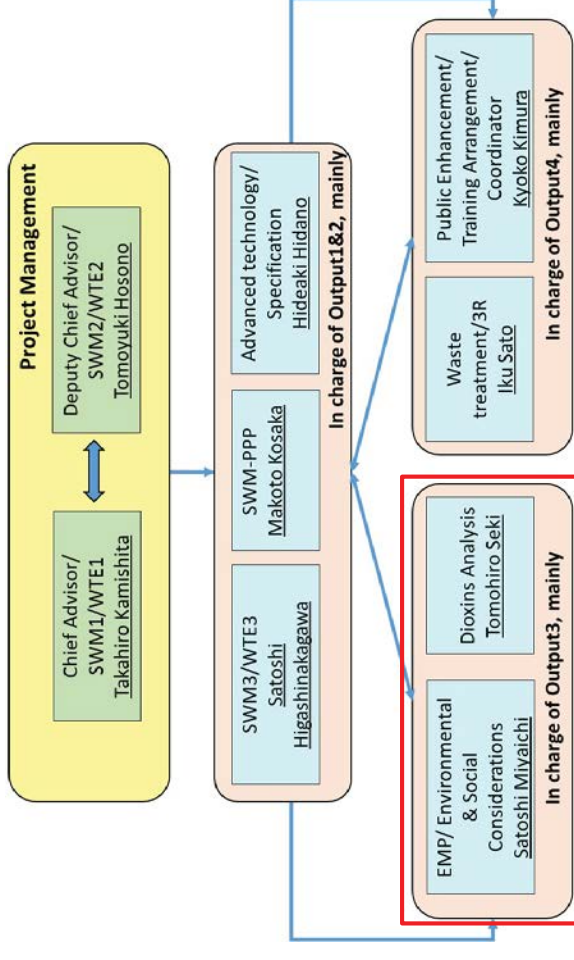
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## 2. Objectives of the meeting

- Objectives of the meeting:
  - **Kick-off** of the sub-group meeting
  - **Share the specific activities** of Output 3
  - **Explain/discuss the progress** of Output 3
    - a. Results of review of the current capacity and gap analysis in EMB Central and Regional offices
    - b. Future activities based on the gap analysis
    - c. Training Plan in Japan related to Dioxins and Furans in ambient air, emission gas, and Soil/Surface water/Sediments
    - d. Proposed outline of the TCP Newsletter
    - e. Capacity Assessment of Sub-group members
  - Others

## 3. Outline of the Specific Activities under Project Output 3

### □ Composition of the JICA Expert Team



## 3. Outline of the Specific Activities under Project Output 3

### □ Specific activities

- 3.1 **Review the current capacity/activities** for sampling/analysis/QA/QC of Dioxins and Furans (D&F) in ambient air, emission gas and other media (Soil/Surface water/Sediments) in Central and Regional EMB
- 3.2 **Analyze gap** between the present capacity of the central EMB and required capacity for proper sampling/analysis/QA/QC of D&F in ambient air, emission gas and other media (Soil/Surface water/Sediments) and **formulate the training plan**
- 3.3 **Prepare Standard Operation Procedures (SOP)** for sampling/analysis/QA/QC of D&F in **ambient air** and **emission gas**
- 3.4 **Conduct training of sampling/analysis/QA/QC** of D&F in **ambient air** and **emission gas** in central EMB
- 3.5 **Prepare Sampling Plan (Design)** for the collection of D&F in **ambient air**
- 3.6 **Implement sampling/analysis/QA/QC** of D&F in **ambient air** and **emission gas** by central EMB at existing SWM facilities based on SOP in output 3.3.

## 3. Outline of the Specific Activities under Project Output 3

### □ Schedule

	1 <sup>st</sup> Year Mar/'19 - Mar/'20	2 <sup>nd</sup> Year Apr/'20 - Mar/'21	3 <sup>rd</sup> Year Apr/'21 - Mar/'22
3.1	■		
3.2	■		
3.3		■	
3.4		■	
3.5		■	
3.6			■
Main activity	<ul style="list-style-type: none"> <li>• Formulating training plan based on the gap analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting preparation of the SOPs</li> <li>• Training for sampling, analysis and QA/QC</li> <li>• Supporting preparation of the sampling plan</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting implementation of sampling, analysis and QA/QC</li> <li>• Supporting modification of the SOPs</li> </ul>

### □ Deliverables

- ✓ Project report, Monitoring Sheet, SOP, Training reports

## 4.a. Results of review of the current capacity and gap analysis

- Current capacity was reviewed in terms of experiences, monitoring activities of compounds similar to D&F, sampling technique, quality management system, and organization & human resources.
- Gap analysis was conducted by comparing required capacity and current capacity at each monitoring process shown below:
  - ✓ Monitoring Planning
  - ✓ Sampling
  - ✓ Pretreatment
  - ✓ Analysis
  - ✓ QA/QC
  - ✓ Common items for monitoring(SOP, etc.)
  - ✓ Continuity of monitoring

□ In summary, basic knowledge and technique which are required for D&F monitoring have already been acquired sufficiently. In fact, some training have already been started ahead of the schedule.

## 4.a. Results of review of the current capacity and gap analysis

### □ Key findings

**Sampling: Some gaps found, but not significant**

<Sampling>

- Ambient air: Similar type of samplers for D&F have been used for periodical monitoring of particulate matters such as PM and Lead by Regional offices, AQMS and ERLSD. Same type of samplers for D&F monitoring have been used for POPs monitoring by ERLSD, but not very often.
  - Emission gas: Isokinetic sampling can be conducted by Regional offices and AQMS, moreover, Sampling Assessment Team is appointed by EMB Special Order No. 296/2018 and they can conduct Isokinetic sampling training. For ERLSD, sampling equipment for D&F has been procured but no experience of sampling. As of now, D&F samplings are conducted by accredited testers in Philippine.
  - Water: Equipment already procured, sampling technique is same as POPs.
  - Sediment, Soil: Manual is not prepared yet, but sampling technique is same as POPs.
- <Transportation>
- Contamination control measures are not sufficient (not described in the existing manuals).
- <Storage>
- Storage room for D&F samples is prepared in ERLSD laboratory. Contamination control measures are not sufficient.

## 4.a. Results of review of the current capacity and gap analysis

### □ Key findings

Underline: identified gaps

**Monitoring Planning: Small gaps found, but not significant**

- Ambient air: Manual has been prepared. Periodical monitoring has been conducted, moreover monitoring for special events such as Pyro Olympic has been conducted based on the air quality simulation results.
- Emission gas: Manual has been prepared. Periodical monitoring has been conducted. Target facilities are identified clearly (Regulated by law or EIA type project)
- Water: Manual has been prepared. Periodical monitoring has been conducted.
- Sediment, Soil: Manual is now under preparation.

## 4.a. Results of review of the current capacity and gap analysis

### □ Key findings

**Pretreatment: Some gaps found**

<Conditioning capturing/adsorbent material>

- ERLSD has some experience of analysis of POPs, and methodology is similar to D&F. For preparation of capturing/adsorbent material for ambient air (PUF) and emission gas (XAD), ERLSD has experience but not enough.
- <Extraction>
- Ambient air, Water, sediment and soil: ERLSD has basic operation technique by POPs analysis.
  - Emission gas: No experience.
  - Some equipment for D&F analysis (e.g. Automated Soxhlet Extractor) which has not been used in practical project yet.
- <Cleanup>
- ERLSD has basic operation technique by POPs analysis.
  - Some equipment for D&F analysis (e.g. Automated clean up system) which has not been used for practical project yet.
- <Others>
- Some difficulties of acquiring organic solvent (dichloromethane: now applying for approval of import, nonane: no supplier in Philippine).

## 4.a. Results of review of the current capacity and gap analysis

### □ Key findings

#### Analysis: Some significant gaps found

- Operation of the GC/HRMS>  
Before starting the training for D&F analysis, some verifications (calibration curve, detection limit, etc.) need to be done.
- DIOK (D&F analysis program) is very unique software, it will take some time to get used to it. It seems that the operation of the software controls/limits the operation verifications of the GC/HRMS.
- Experiences of operation/maintenance of the GC/HRMS are not enough.
- Now the GC can accommodate only one column, but the EPA method requires two types of column, so the lead time will be longer than the GC which has double column interface. (Column exchange will take almost one day)
- Others>
- ERLSD has a plan to analyze DL-PCBs in future (for research purpose) and standard solutions have already been procured. Samples of sediment or soil might contain high amount of DL-PCBs and they will behave as an interfering substance for D&F analysis, and affect the accuracy. Ideally, capacity of analysis of DL-PCBs also should be enhanced.

## 4.a. Results of review of the current capacity and gap analysis

### □ Key findings

#### Common items for monitoring: Some gaps found, but not significant

- <Track records form>
- Emission gas sampling: Detailedly defined in the Stack Testing Manual
- Ambient air sampling: Some of the track records are defined in the Air Quality Monitoring Manual, but not so detail as emission gas.
- Laboratory analysis: Track records for analysis are well managed by ERLSD, but since the D&F analysis hasn't been started, track records form for D&F analysis hasn't developed yet.

#### SOPs: Some gaps found, but not significant

- Emission gas sampling: There is no specific SOP for stack gas sampling, but procedures and track records are detailedly described in the Stack Testing Manual.
- Ambient air sampling: There is no specific SOP for air quality sampling.
- Laboratory Analysis: Documentation management (preparation, review, approval) is appropriately conducted. For the existing SOP, sometimes descriptions are lacking in concreteness. As for the D&F analysis hasn't been started, SOPs for D&F analysis haven't developed yet.

## 4.a. Results of review of the current capacity and gap analysis

### □ Key findings

#### QA/QC: Some gaps found, but not significant

- Internal QA/QC  
<AQMS>
- Ambient air, emission gas: AQMS manages the calibration of sampler and measuring instruments. For calibrator of the stack sampler, it is not possible to receive the inspection which required in EPA method, in Philippine.  
<ERLSD>
- Certified Reference Materials (CRM) of D&F have been procured for soil, clay loam and water. (water is for HRGC/MS/MS analysis)
- QA/QC for POPs analysis has been conducted appropriately, but since the D&F analysis hasn't been started, QA/QC method for D&F analysis hasn't developed yet.
- External QA/QC  
<AQMS>
- All the stack sampling plans and results (conducted by accredited organization) are reviewed by AQMS and Regional office. Some of the samplings are conducted in the presence of staffs from AQMS and Regional office.  
<ERLSD>
- Recognized laboratories must have an audit by ERLSD every year.

## 4.a. Results of review of the current capacity and gap analysis

### □ Key findings

#### Continuity of monitoring: Some gaps found

- <AQMS>
- Basically, stack samplings are conducted by the accredited organization. As of now, there are 3 to 4 accredited organization which can conduct D&F sampling (EPA method 23).
- Key technique for D&F is isokinetic sampling. EMB has some staffs who can conduct isokinetic sampling. (Sampling Assessment Team members can conduct training for isokinetic sampling)  
<ERLSD>
- As of now, D&F analysis is conducted in abroad.
- In future, ERLSD will analyze D&F samples, whereas there is only one GC/HRMS. In case the GC/HRMS malfunction, lead time will be much longer.
- Organics laboratory unit in ERLSD will be in charge of D&F analysis. Ability of each staff is very high, but the number of staffs might not be sufficient if D&F monitoring started.

#### 4.b. Future activities based on the gap analysis

- Training programs should be developed based on the result of the gap analysis.
- Though the gaps are not so many, some of them are significant or not negligible: <Significant Gaps>
  - Handling the GC/HRMS (Operation and inspection of GC/HRMS, Operation of DIOK software)
  - <Gaps (not negligible)>
    - Pretreatment (especially for D&F-specific technique)
    - Monitoring continuity
- Trainings for filling the gaps above mentioned should be enhanced.



□ JET would like to **prioritize the training for ERLSD, especially for practical aspects of D&F pretreatment and analysis.**

- For sampling technique, most of the key issues can be handled by internal training in EMB, with AQMS cooperation. (Of course, JET will provide knowledge and experience of Japan.)

#### 4.b. Future activities based on the gap analysis

- Just for the information, some training/advice have started ahead of the schedule.
- ◆ **Recommendations for D&F analysis rooms and equipment**  
JET provide some recommendations for ERLSD laboratory based on the inspection/interview:
  - Air ventilation system: Air intake facility is necessary for the rooms which have draft chamber
  - Exhaust gas treatment system: Effluent from the exhaust gas treatment device should be separately collected from rainwater.
  - Sample storage room: Ambient air samples (PUF) shouldn't be stored in the sample storage/ preparatory room, they should be stored in the cleanup room for low concentration samples.
  - HRMS room: Creating the separate space (such as ante room) in front of the door on the HRMS room, and installing air conditioner and dehumidifier.
  - Stack gas sampler: Especially for the nozzle, collection tube and the filter paper holder should be used separately for high concentration samples.
  - GC/HRMS: If double column GC interface is procured and installed, efficiency of the analysis will be higher and running cost will be cheaper. In case of GC/HRMS malfunction, another GC/HRMS is necessary if all the D&F samples will be analyzed in Philippine.

#### 4.b. Future activities based on the gap analysis

- Just for the information, some training/advice have started ahead of the schedule.
- ◆ **GC/HRMS operation verification**  
According to analysis result of standard solutions, JET found some problems that necessary to be solved:
  - Changing calibration range to lower than the requirement of EPA method [essential]
  - Reducing the amount of PFK introduced into HRMS [essential]
  - Setting m/z for 37Cl- T4CDD [essential]
  - Shortening the sampling time for some congeners as long as detection limits are satisfied [recommended]
- ◆ **GC/HRMS troubleshooting**  
When the mass resolution power became lower than the required value, JET identified the problem was caused by the filament of HRMS that was newly exchanged. JET provided some notes for exchanging a filament of HRMS.
- ◆ **Introducing regulation values for sediments**  
JET provided standard values for bottom sediments in Japan.
  - Environmental standards (2002)
  - Provisional removal standards (1975)
  - Judgement criteria for land reclamation (1973)

#### 4.c. Training Plan in Japan related to Dioxins and Furans

- Tentatively scheduled **24th May (Sun) to 6th June (Sat): two weeks** including travel days
  - Curriculum for SWM/WTE and Dioxin monitoring are planned.
  - Number of attendees from EMB is expected within 15 in total, **ERLSD staffs are about 3** among them.
  - Out of 10 days training, **5.5 days will be allocated for dioxin-specific curriculum:**

Component	Term	Contents
National level	1 day	Dioxins management and researches at national level
	0.5 day	Dioxins analysis certification system
Local government level	1 day	Dioxins management and researches at local government level
Private lab. level	3 days	1 day for explaining outline of the lab. and QMS 2 days for analysis (including practical training)

- Especially for the private lab. level training programs, specific requests are welcomed. Please inform us as soon as possible.

#### 4.d. 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	The Member of SWM-AIT Project	21th-Feb.2020
3.1		Organization Chart	
(1)		JCC	
(2)		Project Team	
(3)		ITWG	
(4)		JICA Expert Team	
TOTAL	8		

- Allocated 1 page
- Deadline: 25th Feb

#### 4.d. Proposed outline of the TCP Newsletter

What topics are eligible for the 1<sup>st</sup> newsletter???

- About Dioxins and Furans
  - ✓ What is Dioxin?
  - ✓ Necessity of appropriate monitoring
- Introduction of AQMS
  - ✓ Isokinetic sampling
- Introduction of ERLSD (about renovated laboratory)
  - ✓ How to analyze Dioxin
  - ✓ Renovated laboratory

#### 4.e. Capacity Assessment of Sub-group members

No.	Capacity to be Developed	Related Activity
Q3-1	Member of ITWG subgroup for output3 understands its current capacity on dioxins & furans analysis in the central and regional EMB.	Activity 3-1
Q3-2	Member of ITWG subgroup for output3 can identify gaps between current and required capacity on dioxins & furans analysis in the central EMB.	Activity 3-2
Q3-3	Member of ITWG subgroup for output3 can formulate training program on dioxins & furans analysis in ambient air and emission gas for staff in the central laboratory of EMB based on the capacity gap analysis.	Activity 3-2
Q3-4	Member of ITWG subgroup for output3 can prepare SOP for sampling, analysis and QA/QC of dioxins & furans in ambient air and emission gas.	Activity 3-3
Q3-5	Staffs in the DENR-EMB (AQMS and ERLSD) receive training on dioxins & furans sampling & analysis in ambient air and emission gas.	Activity 3-4
Q3-6	DENR-EMB can formulate sampling plan (design) on dioxins & furans in ambient air.	Activity 3-5
Q3-7	DENR-EMB implements sampling, analysis and QA/QC of dioxins & furans in ambient air and emission gas in compliance with the SOPs.	Activity 3-6
Q3-8	DENR-EMB has a capacity to conduct analysis and QA/QC of dioxins & furans (including matrices other than ambient air and emission gas) 300 samples per year.	Activity 3-6

#### 5. Finalization of the comments/agreements/Timelines

#### 6. Way Forward

Schedule of ITWG and sub-group meeting for output 3 is tentatively agreed with PMO:

- ITWG
  - 23<sup>rd</sup> April, 16<sup>th</sup> July, 16<sup>th</sup> September
- Sub-group meeting for output 3
  - 14<sup>th</sup> May, 8<sup>th</sup> Oct



**Meeting Record**

Title	Meeting with Subgroup Members for Project Output 3
Date and Time	2:10 PM, February 10, 2020
Place/Venue	Environmental Planning and Policy Division (EPPD) Building, Department of Environment and Natural Resources Compound, Visayas Avenue, Diliman, Quezon City, 1101 Metro Manila
Organizer	JICA Expert Team, PMO (DENR EMB-SWMD), DENR EMB-ERLSD
Participants (name & title)	<p><b><u>Selected Government Agencies</u></b></p> <p>[DOST/ITDI/ERD] Engr. Reynaldo T. Esguerra, Chief SRS</p> <p>[DOE/EPPB/ECCD/ECCS] Ms. Letty G. Abellla, Senior SRS</p> <p><b><u>EMB Regional Offices</u></b></p> <p>[DENR/EMB NCR] Ms. Alma P. Ferarezza, Senior EMS</p> <p>[DENR-EMB VII] Ms. Angelli Marie Jacynth Egar, EMS I</p> <p>[DENR-EMB XI] Ms. Maria Socorro A. Mallare, Supervising EMS</p> <p>[FASPS/PMD] Ms. Marianica Philina Obmerga, PEO</p> <p><b><u>EMB Central Office</u></b></p> <p>[DENR-EMB Central/EQMD/AQMS] Ms. Wyona Kay C. Rativo, EMS II Engr. Manuel Martin C. Escasura, Engineer II</p> <p>[DENR/EMB/ERLSD] Mr. Roger C. Evangelista Jr., SRS II</p> <p>[DENR-EMB SWMD/PMO] Ms. Elvira S. Pausing, Supervising EMS Ms. Rodeth F. Antonio, MO Ms. Nelie A. Dimer, EMS II</p> <p><b><u>JICA Expert Team</u></b></p> <p>Mr. Takahiro Kamishita, Chief Advisor Mr. Satoshi Miyaichi, Environmental Monitoring/Environmental &amp; Social Considerations Mr. Eric Cea, Project Secretary Ms. Cynthia Rose C. Faylogna, Project Assistant</p>
Main contents of the meeting	The meeting started at 2:10 PM with Ms. Elvira S. Pausing discussing the meeting agenda prepared by the EMB-SWMD in coordination with JET. She then asked the members of the Subgroup for any additional comments and other matters which may be included in the discussions. Engr. Esguerra of DOST moved for the adoption of the agenda with no additional topics to be discussed and seconded by Ms. Ma. Socorro Mallare of EMB-XI.

	<p><b>1.Presentation/Introduction of Subgroup and Specific Activities</b></p> <p>Ms. Pausing of EMB-SWMD-PMO introduced the members of the Subgroup and then the members of the PMO while Mr. Takahiro Kamishita introduced the JET members.</p> <p>Mr. Satoshi Miyaichi of JET presented the outline of the specific activities under Project Output 3 including deliverables.</p> <p><b>2.Discussions</b></p> <p>The following discussions took place during the meeting.</p> <p><b><i>a. Results and review of the current capacity and gap analysis in EMB Central and Regional offices</i></b></p> <ul style="list-style-type: none"> <li>➤ Ms. Pausing inquired about the recommendations from DOST regarding the expansion of the coverage for the analysis of dioxins and furans. <ul style="list-style-type: none"> <li>• Engr. Reynaldo Esguerra of DOST recommended to include other potential sources of dioxins (e.g. biota) to be analyzed.</li> </ul> </li> <li>➤ Ms. Letty Abella of DOE inquired about the manuals on how to monitor dioxins and furans. <ul style="list-style-type: none"> <li>• Mr. Miyaichi assured to provide information on how to analyze the dioxins for other matrices at the training in Japan.</li> </ul> </li> <li>➤ Engr. Esguerra of DOST suggested that there should be an establishment of the tolerable daily intake of dioxin in the Philippines. <ul style="list-style-type: none"> <li>• Mr. Miyaichi explained that the Capacity of the EMB-Laboratory is essential for this.</li> </ul> </li> <li>➤ Engr. Esguerra of DOST asked if the equipment for the analysis is to be provided as a part of the entire project. <ul style="list-style-type: none"> <li>• Mr. Miyaichi clarified that the central laboratory has one and JICA will not provide any equipment under this project.</li> </ul> </li> </ul> <p><b><i>b. Proposed activities based on gap analysis</i></b></p> <p>The following were discussed based on gap analysis:</p> <ol style="list-style-type: none"> <li>1. <i>Sampling and Analysis Composition</i> <ul style="list-style-type: none"> <li>➤ Engr. Esguerra of DOST emphasized that there was a project in preparing or deriving the emission factor from open burning. The project was supposedly to be implemented, however, there were no bidders for the project. He continued to clarify if the analysis will be a combination of ambient air and emission sampling. <ul style="list-style-type: none"> <li>• Mr. Miyaichi of JET affirmed to this.</li> </ul> </li> <li>➤ Engr. Esguerra of DOST also highlighted the contribution of open burning as a major source of dioxins and furans, and the EMB-ERLSD's role in Dioxins and Furans Analysis for Proficiency Testing. <ul style="list-style-type: none"> <li>• No further objections had been made, hence, the statement was accepted.</li> </ul> </li> </ul> </li> <li>2. <i>Trainings for EMB-Regional Laboratory personnel</i> <ul style="list-style-type: none"> <li>➤ Ms. Ma. Soccoro Mallare of EMB-XI inquired if the Regional Offices' Capacity was reviewed. She highlighted that since the three regions will be dealing with the WTE Project in the future, the capacity must also be evaluated (not only in the Central Office). <ul style="list-style-type: none"> <li>• Mr. Miyaichi of JET explained that sampling will be done by both central and regional offices, and the analysis of the samples will be done solely by the Central laboratory.</li> </ul> </li> <li>➤ Ms. Mallare of EMB-XI asked if the samples will be transported to the Central laboratory for testing or analysis. The JET affirmed to this.</li> </ul> </li> </ol>
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	<ul style="list-style-type: none"> <li>• Mr. Takahiro Kamishita of JET explained that some steps should be undertaken by EMB for training. In this project, the trainings be focused on the central EMB and will be conducted in the central laboratory. In the future after this project, trainings will be initiated by EMB central for the regional offices' laboratory personnel.</li> </ul> <ul style="list-style-type: none"> <li>➤ Ms. Mallare of EMB-XI emphasized that there were no such trainings conducted by the Central to the Regional Offices.       <ul style="list-style-type: none"> <li>• Mr. Evangelista of EMB-ERLSD clarified that trainings have been conducted by the central laboratory to the regional laboratories every year. The trainings include extraction, analysis, etc.</li> </ul> </li> <li>➤ Ms. Mallare of EMB-XI inquired if there were examinations for the trainees' evaluation after the seminar/training.       <ul style="list-style-type: none"> <li>• EMB-ERLSD accepted the recommendation to have examinations after the training, so as to evaluate the skills and knowledge that were transferred during the said activity.</li> </ul> </li> </ul> <p>3. <i>Capacity of EMB-Central and EMB-Regional laboratories</i></p> <ul style="list-style-type: none"> <li>➤ Engr. Esguerra of DOST inquired if there is a plan to have laboratories on all the EMB-regional offices.       <ul style="list-style-type: none"> <li>• Mr. Roger Evangelista of EMB-ERLSD mentioned that there is no available testing for organic pollutants yet.</li> </ul> </li> <li>➤ Ms. Mallare queried if there is a possibility of the re-establishment of the Center of Excellence.       <ul style="list-style-type: none"> <li>• Mr. Evangelista responded that the plans in reviving the Center of Excellence per region is still yet to be capacitated. For dioxins, it is mainly for the central laboratory for now since the equipment and capacity is readily available only in the central laboratory.</li> </ul> </li> <li>➤ Ms. Pausing inquired about the status of the regional laboratory for the equipment needed for the analysis of the dioxins and furans.       <ul style="list-style-type: none"> <li>• Mr. Evangelista clarified that EMB-VII submitted a proposal for the budget to the DENR for the laboratory equipment. He emphasized that there is a goal in capacitating everyone in the laboratory.</li> </ul> </li> </ul> <p>4. <i>Transporting of samples from Regional to Central laboratories</i></p> <ul style="list-style-type: none"> <li>➤ Ms. Mallare was concerned about the transporting of the samples. She believed that since the three regions will be having the WTE facility, it will be practical that the samples will be analyzed on the host region.       <ul style="list-style-type: none"> <li>• Engr. Esguerra suggested that it should be a step by step process, however, if the region could support itself so it will be good to procure such equipment for analysis.</li> </ul> </li> <li>➤ Ms. Mallare said that it would be better if the plan will include the monitoring of the progress of the projects.       <ul style="list-style-type: none"> <li>• Engr. Esguerra agreed to this and clarified that all the money that will be paid to DOST will be transferred to the National Treasury.</li> </ul> </li> <li>➤ Engr. Esguerra also explained that the budgets had been included in the yearly expenses, and there is no supplier yet for such kind of equipment.       <ul style="list-style-type: none"> <li>• Mr. Evangelista raised the issue on rare manufacturing for such kind of equipment. He was also concerned that if all the regional offices will be provided but cannot be sustained in the future, then it will just be wasted.</li> </ul> </li> </ul> <p>5. <i>Central Laboratory Capacity for the Analysis of Samples</i></p>
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	<ul style="list-style-type: none"> <li>➤ Ms. Pausing inquired if there is a specific recommendation for the analysis. <ul style="list-style-type: none"> <li>• Mr. Miyaichi emphasized that the team provided some comments and recommendations to the laboratory and will further continue to comment based on the JET's evaluation on the progress.</li> </ul> </li> <li>➤ Engr. Esguerra inquired about the status of the Physical Rearrangement of the laboratory. <ul style="list-style-type: none"> <li>• Mr. Miyaichi explained that the laboratory layout is good but some modifications were necessary.</li> </ul> </li> <li>➤ Mr. Evangelista explained that such recommendations made by JET have already been undertaken. The equipment needed are already in the procurement stage, and it will be operating 24/7. <ul style="list-style-type: none"> <li>• Ms. Abella highlighted that a third party will be required to analyze the samples apart from EMB-Central Laboratory, and inquired about the participants for the training in Japan.</li> </ul> </li> </ul> <p><b><i>c. Training Plan in Japan related to Dioxins and Furans in ambient air, emission gas, and Soil/Surface water/Sediments</i></b></p> <p>The scope of the training was presented by Mr. Miyaichi of JET. The discussions and agreements for the training were the following.</p> <ul style="list-style-type: none"> <li>➤ Ms. Mallare asked if the LGU concerned will be included and emphasized that for the WTE Project in Davao, LGUs have been attending countless of trainings in Japan already; so, she recommended to send trainees from outside of the LGU. <ul style="list-style-type: none"> <li>• Ms. Abella however explained that LGUs need to attend also because of the policy side. Such formulations of policies will soon be needed for the full implementation of the project.</li> </ul> </li> <li>➤ Mr. Kamishita suggested that the LGU and National Government can share the experience of training in Japan and discuss the WTE Project in the Philippines.</li> <li>➤ Since there were no questions and additional suggestions on the scope of the training, the presented scope will be adopted.</li> </ul> <p><b><i>d. Proposed Outline of the TCP Newsletter (Sub-group members may provide proposals for the title of the Newsletter)</i></b></p> <ul style="list-style-type: none"> <li>➤ The Outline of the Newspaper was presented by Mr. Miyaichi, and Engr. Esguerra inquired who will be the target readers of the Newsletter. <ul style="list-style-type: none"> <li>• Mr. Miyaichi responded that the General Public will be the target readers.</li> </ul> </li> <li>➤ The following members of Subgroup for Output 3 had been assigned as writers per specific topic: <ul style="list-style-type: none"> <li>• DOST-Engr. Reynaldo Esguerra <ul style="list-style-type: none"> <li>○ About Dioxins and Furans <ul style="list-style-type: none"> <li>▪ What is Dioxin?</li> <li>▪ Necessity of appropriate monitoring</li> </ul> </li> </ul> </li> <li>• AQMS-Ms. Wyona Kay C. Rativo <ul style="list-style-type: none"> <li>○ Introduction of AQMS</li> <li>○ Isokinetic sampling</li> </ul> </li> <li>• ERLSD-Mr. Roger C. Evangelista Jr. <ul style="list-style-type: none"> <li>○ Introduction of ERLSD (about the renovated laboratory)</li> </ul> </li> </ul> </li> </ul>
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	<ul style="list-style-type: none"> <li>○ How to analyze Dioxin</li> <li>○ Renovated laboratory</li> </ul> <p><b>e. Capacity Assessment of Sub-group members</b></p> <ul style="list-style-type: none"> <li>➤ The checklist/questionnaire was presented by JET for the members of the subgroup to answer. Some of the members submitted it during the meeting and the remaining agreed to send it via email.</li> </ul> <p><b>3. Finalization of the Comments/Agreements/Timelines</b> There were no objections on the agreements, and the schedules for the submission of the required documents were declared final.</p> <p><b>4. Ways Forward</b> The submission of the checklist for Capacity Assessment shall be on Wednesday (12<sup>th</sup> of February 2020).</p> <p><b>Adjournment</b> With no other important matters to discuss, the meeting was adjourned at 4:00 PM.</p>
Request by JET	<ul style="list-style-type: none"> <li>● Submission of filled-up Capacity Assessment Evaluation sheet</li> </ul>
Request by Subgroup Output 3	<ul style="list-style-type: none"> <li>● Continuous support from the JET for the evaluation.</li> </ul>
References / Materials Presented	<ul style="list-style-type: none"> <li>● Notice of Meeting prepared by PMO</li> <li>● Meeting materials presented by JET</li> </ul>
Prepared by	Ms. Cynthia Rose C. Faylogna
Reviewed by	<p><b>Elvira S. Pausing</b> Assistant Project Manager, SWMD-PMO</p> <p><b>Takahiro Kamishita</b> Chief Advisor, JET</p>
Noted by	<p><b>Engr. Nolan B. Francisco</b> OIC-Chief, SWMD</p>