

添付資料 11-2: 成果1サブグループ会議

11-2-4 : 4th SG1

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

**4th SUB-GROUP MEETING FOR
PROJECT OUTPUT 1**

**ENHANCEMENT OF NATIONAL GOVERNMENT'S
CAPACITY FOR SUPPORTING AND COORDINATING
OF LGUS' WTE PROJECT**

07 July 2020, Tuesday, 9:00 AM (via MS Teams)

4th SUB-GROUP MEETING FOR PROJECT OUTPUT 1

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

07 July 2020, Tuesday, 9:00 AM (via on-line)

TENTATIVE AGENDA

- Call to Order/Meeting Objectives/Acknowledgement of Attendees and Adoption of Agenda (20 mins) - Ms. Elvira S. Pausing, EMB-SWMD, PMO
- Technical Presentations by JET:
 - Under Activity 1-2: Outline of EU Directive 2000/76/EC on the Incineration of Waste - Mr. Tomoyuki Hosono (Presentation 15 mins + Q&A 10 mins)
 - Under Activity 1-4: Draft WTE Standards - Mr. Makoto Kosaka (Presentation 20 mins + Q&A 10 mins)
 - Under Activity 1-5: Draft WTE Ash Treatment Methods- Mr. Takahiro Kamishita (Presentation 10 mins + Q&A 10 mins)
 - Under Activity 1-1: Updates on data collection of BAT/BEP - Mr. Satoshi Higashinakagawa (Presentation 10 mins + Q&A 5 mins)
- Wrap-up/Required Actions/Agreements/Timelines - Ms. Nikka Sales, JET (Presentation/discussions/comments 15 mins)
- Schedules of the next meetings - Ms. Elvira S. Pausing, EMB-SWMD-PMO (Presentation/discussions/comments 15 mins)
- Other Matters

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED ATTENDEES
CONCERNED GOVERNMENT AGENCIES			
1	Mr. Nonilo Peña/Emelita A. Dimapilis	DOST-PCIEERD	
	Mr. Reynaldo L. Esguerra	DOSI-ITDI	
2	Ms. Ruby de Guzman/Mr. Romeo M. Galamgam (Yong)/Ms. Charisse Pascual	DOE-REMB	*cannot attend*
3	Mr. Carlo Mari Crisregionald C. Tan/Atty. Ma. Rhodora Flores/Ms. Maria Clarisol L. Agas	DILG-BLGS/NAPOLCOM Center	
4	Mr. Aldwin U. Urbina/Mr. Kevin Gilbert M. Manzano/Mr. Gilbert V. Kintanar, Jr.	NEDA IPG	
5	Dir. Justine E. Padiernos/Atty. Phebean Belle A. Ramos-Lacuna/Ms. Maria Beatriz N. Quintos	PPP Center	✓

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED ATTENDEES
LOCAL GOVERNMENT UNITS			
6	Mr. Vincent Ferdinand Paul G. Vinarao/Mr. David John S. Vergara	LGU Quezon City	
EMB FOCAL PERSONS			
7	Ms. Consolacion Crisostomo/Ms. Meyeth Ofiaza Mr. Geri Sanez/Ms. Leonie Ruiz/Mr. Ivie Cadarona /Mr. Spentiel Quintos	EMB-PPDD EMB-HWMS	
PROJECT COORDINATORS			
8	Dir. Angelito V. Fonatanilla/Mr. Eddie Abugan/Ms. Marianica Philina Obmerga	DENR-FASPS	*cannot attend*
9	Engr. Nolan B. Francisco/Ms. Elvira S. Pausing	EMB-SWMD-PMO	

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED ATTENDEES
EMB-SWMD-PMO			
10	Ms. Nelia Dimer	EMB-SWMD-PMO	
	Ms. Rodeth Antonio	EMB-SWMD-PMO	
	Ms. Joan Flores	EMB-SWMD	*cannot attend*
	Engr. Jedidiah Mangubat	EMB-SWMD	
	Engr. Roxanne Barcenas	EMB-SWMD	
	Ms. Kris Morada	EMB-SWMD	

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED ATTENDEES
JICA EXPERTS TEAM (JET)			
11	Engr. Takahiro Kamishita	JICA Experts Team (JET)	✓
	Engr. Tomoyuki Hosono	JICA Experts Team (JET)	✓
	Engr. Makoto Kosaka	JICA Experts Team (JET)	✓
	Engr. Satoshi Higashinakagawa	JICA Experts Team (JET)	✓
	Engr. Hideaki Hidano	JICA Experts Team (JET)	✓
	Ms. Kyoko Kimura	JICA Experts Team (JET)	✓
	Engr. Nikka Sales	JICA Experts Team (JET)	✓
	Mr. Eric Cea	JICA Experts Team (JET)	✓

PROPOSED SCHEDULE OF MEETINGS for CY 2020

PROJECT OUTPUT	JUNE	JULY	AUG	SEPT	OCT	NOV
OP 1	4 (Thu)	7 (Tue)	20 (Thu)		12 (Mon)	5 (Thu)
OP 2		16 (Thu)		10 (Thu)		
OP 3					8 (Thu)	
OP 4	24 (Wed)		7 (Fri)			
ITWG		16 (Thu)		16 (Wed)	22 (Thu)	
JCC					15 (Thu)	

OP1 – meeting dates from Aug to Nov were the original meeting schedules except for 7 July which was proposed by JET (May 20 email by Mr. Kamishita)
 OP 2 – meeting dates from July & Sept were the original meeting schedules. However, these dates will be decided after confirmation with the representatives from LGUs Cebu City and Davao City (*due difficulty in internet connection*).
 OP3 - Meeting schedules for OP3 will be decided based from the progress of activities and discussion with ERLSD.
 OP4 – Meeting dates for June 24 was proposed by JET (May 20 email by Mr. Kamishita).

2ND 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

Outline of EU Directive 2000/76/EC On the Incineration of Waste

July 2020
JICA Expert Team

Table of Contents

- EU Directive on the incineration of waste

- Article 1: Objectives
- Article 2: Scope
- Article 3: Definitions
- Article 4: Application and permit
- Article 5: Delivery and reception of waste
- Article 6: Operating conditions
- Article 7: Air emission limit value
- Article 8: Water discharges from the cleaning of exhaust gas
- Article 9: Residues
- Article 10: Control and monitoring
- Article 11: Measurement requirements

3

Major EU Directives on SWM

- Directive 2008/98/EC, on waste
- Directive 1999/31/EC, on the landfill of waste
- [Directive 2000/76/EC, on the incineration of waste](#)
- Directive 1994/62/EC, on packaging and packaging waste
- Directive 2000/53/EC, on end-of-life vehicles
- Directive 2002/96/EC, on WEEE
- Directive 2006/66/EC, on batteries and accumulators and waste batteries and accumulators

2

Table of Contents (cont.)

- Article 12: Access to information and public participation
- Article 13: Abnormal operating conditions
- Article 14: Review clause
- Article 15: Reporting
- Article 16: Future adaptation of the directive
- Article 17: Regulatory committee
- Article 18: Repeal
- Article 19: Penalties
- Article 20: Transitional provisions
- Article 21: Implementation
- Article 22: Entry into force
- Article 23: Addresses

4

Article 4: Application and permit

- No incineration or co-incineration plant shall operate without a **permit** to carry out these activities.
- The permit for an incineration plant shall:
 - list explicitly the categories of waste which may be treated;
 - include the total waste incinerating and co-incinerating capacity of the plant;
 - specify the sampling and measurement procedures used to satisfy the obligations imposed for periodic measurement of each air and water pollutants

5

Article 4: Application and permit (cont.)

- The permit using hazardous waste shall in addition to the previous paragraph:
 - list the quantities of the different categories of hazardous waste which may be treated;
 - specify the minimum and maximum mass flows of those hazardous wastes, their lowest and maximum calorific values and their maximum contents of pollutants.

6

Article 5: Delivery and reception of waste

- The operator shall determine the mass of each category of waste prior to accepting the waste.
- Prior to accepting hazardous waste, the operator shall have available information about the waste that cover:
 - all the administrative information on the generating process;
 - the physical and chemical composition of the waste and all other information necessary to evaluate its suitability for the intended incineration process;
 - the hazardous characteristic of waste, the substances with which it cannot be mixed, and the precautions to be taken in handling the waste.

7

Article 5: Delivery and reception of waste (cont.)

- Prior to accepting hazardous waste, at least the following reception procedures shall be carried out by the operator:
 - the checking of those documents on the supervision, and control of shipments of waste;
 - the taking of representative samples to verify conformity with the information provided.These samples shall be kept for at least one month after incineration.

8

Article 6: Operating conditions

- Incineration plants shall be operated in order to achieve a level of incineration such that:
 - **TOC (Total Organic Carbon) content of slag and bottom ash is less than 3%;** or
 - **IL (Ignition Loss) of slag and bottom ash is less than 5%.**
- Incineration plants shall be designed, equipped, built and operated in such a way that **the gas resulting from the process is raised to a temperature of 850°C for 2 seconds.**
- If hazardous wastes with a content of more than 1% of halogenated organic substances are incinerated, the temperature has to be raised to **1100°C at least for 2 seconds.**

9

Article 6: Operating conditions (cont.)

- Each line of the incineration plant shall be equipped with at **least one auxiliary burner.** This burner must be switched on automatically when the temperature of the combustion gases falls below 850°C or 1100°C. It shall also be used during plant start-up and shut-down operations in order to **ensure that the temperature of 850°C or 1100°C is maintained at all time.**
- Incineration plant shall have and operate **an automatic system to prevent waste feed** whenever **the temperature of 850°C or 1100°C is not maintained or any emission limit value is exceeded.**

10

Article 7: Air emission limit values (Annex V)

(a) Daily average values

Total dust	10 mg/m ³
Gaseous and vaporous organic substances (as TOC)	10 mg/m ³
Hydrogen chloride (HCl)	10 mg/m ³
Hydrogen fluoride (HF)	1 mg/m ³
Sulphur dioxide (SO ₂)	50 mg/m ³
Nitrogen monoxide (NO) & nitrogen dioxide (NO ₂) (as NO ₂)	200 mg/m ³ (> 6 ton/day or new plant) 400 mg/m ³ (< 6 ton/day)

11

Article 7: Air emission limit values (Annex V)

(b) Half-hourly average values

	100%	97%
Total dust	30 mg/m ³	10 mg/m ³
TOC	20 mg/m ³	10 mg/m ³
HCl	60 mg/m ³	10 mg/m ³
HF	4 mg/m ³	2 mg/m ³
SO ₂	200 mg/m ³	50 mg/m ³
NO ₂	400 mg/m ³	200 mg/m ³

12

Article 7: Air emission limit values (Annex V)

(c) Average values over the sample period

	30 minutes	8 hours
Cadmium (Cd)	total 0.05 mg/m ³	total 0.1 mg/m ³
Thallium (Tl)		
Mercury (Hg)	0.05 mg/m ³	0.1 mg/m ³
Antimony (Sb)	4 mg/m ³	2 mg/m ³
Arsenic (As)	200 mg/m ³	50 mg/m ³
Lead (Pb)	total 0.5 mg/m ³	total 1 mg/m ³
Chromium (Cr)		
Cobalt (Co)		
Copper (Cu)		
Manganese (Mn)		
Nickel (Ni)		
Vanadium (V)		

13

Article 8: Water discharges from the cleaning of exhaust gases

- **Emission limit values** for discharges of waste water from the cleaning of exhaust gases: Annex IV
- The operator shall take appropriate **mass balance calculations**.
- The permit shall set **operational control parameters** for waste water **at least for pH, temperature and flow**.
- Incineration plant site shall be designed to prevent the unauthorized and accidental release of any polluting substances into soil, surface water and groundwater.
- Storage capacity shall be provided for contaminated rainwater run-off from the incineration plant site or for contaminated water arising from spillage or fire-fighting operations.

15

Article 7: Air emission limit values (Annex V)

(d) The emission limit value refers to DXNs

over a sample period of a minimum 6 hours and a maximum of 8 hours

Dioxins and furans	0.1 ng-TEQ/m³
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14

Article 8: Waste water emission limit values (Annex IV)

Polluting substances	Emission limit values expressed in mass concentration for unfiltered samples	
	30 mg/L (95%)	45 mg/L (100%)
Total suspended solids (TSS)		
Mercury (Hg)		0.03 mg/L
Cadmium (Cd)		0.05 mg/L
Thallium (Tl)		0.05 mg/L
Arsenic (As)		0.15 mg/L
Lead (Pb)		0.2 mg/L
Chromium (Cr)		0.5 mg/L
Copper (Cu)		0.5 mg/L
Nickel (Ni)		0.5 mg/L
Zinc (Zn)		0.15 mg/L
Dioxins and furans		0.3 mg/L

16

Article 9: Residues

- Residues resulting from the operation of the incineration plant shall be **minimized in their amount and harmfulness**.
- Residues shall be recycled where appropriate.
- Transport and intermediate storage of dry residues in the form of dust shall take place to prevent dispersal in the environment e.g. in closed containers.
- Prior to determining the routes for the disposal or recycling of the residues, appropriate test shall be carried out.
- The analysis shall concern the total soluble fraction and heavy metals soluble fraction.

17

Article 11: Measurement requirements

- The following measurement of **air pollutant** shall be carried out:
 - **Continuous measurements** of the polluting substances: NO_x, CO, total dust, TOC, HCl, HF, SO₂;
 - **Continuous measurements** of the process operation parameters: temperature near the inner wall, concentration of oxygen, pressure, temperature and water vapor content of the exhaust gas;
 - **At least 2 measurements per year** of heavy metals, dioxins and furans (once in 3 months for the first year).
- The resilience time as well as the minimum temperature and the oxygen content of the exhaust gas shall be subject to appropriate verification.

19

Article 10: Control and monitoring

- **Measurement equipment shall be installed and techniques used in order to monitor the parameters, conditions and mass concentrations relevant to the incineration process.**
- **The measurement requirements shall be laid down in the permit.**
- **The appropriate installation and the functioning of the automated monitoring equipment shall be subject to control and an annual surveillance test.**

18

Article 11: Measurement requirements (cont.)

- The following measurement shall be carried out at the point of **waste water discharge**:
 - **Continuous measurements** of the operational control parameters: pH, temperature and flow;
 - **Spot sample daily measurements** of: total suspended solids (TSS);
 - **At least monthly measurements** of the polluting substances: Hg, Cd, Tl, As, Pb, Cr, Cu, Ni, Zn;
 - **At least every 6 months measurements** of dioxins and furans (once in 3 months for the first year).

20

Thank you.



4th Sub Group Meeting

Progress of Activity 1-4

“Preparation of draft technical standards for WTEs”

Makoto KOSAKA
MSW-PPP Expert
07 July 2020 (Tue)

1

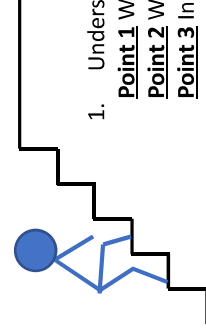
1. Re-Confirm the Necessity of Tech Standards for WTEs

Philippines legal requirement for WTE (as of May2020) as the background;

- ✓ CAA1999, Supreme Court Decision for Jancom, (controlled incineration is not banned.)
- ✓ NSWMC Resolution 669 in 2016, and recently issued DENR DAO 2019-21 for WTE GL,
*There are not enough specific Structural/Operational requirements except EIS.



2. [Formulation of Philippines WTE Tech Standards as MC of DAO2019-21](#)
Point 4 Is it necessary for DAO to be supplemented by MC?
Point 5 Japanese standards can be utilized in Philippines with minor change?



2. Discussion Points #0 to #15

- #0 Authority of WTEs construction and operation,

Discussion Basis	Discussion Points
In Japan, WTEs construction permit will be issued by Provincial Governor, who shall examine the consistency between applied plan with required standards.	<p>Responsible Agencies: Who will authorize the permit for WtE construction?</p> <ul style="list-style-type: none"> • LGUs (in building, land use, waste delivery), • DOE (for power generation from Waste), • DOST (for incineration technologies), • DENR (for pollution control, waste management?) <p>How about others? E.g. Provincial Gov., DILG?</p>

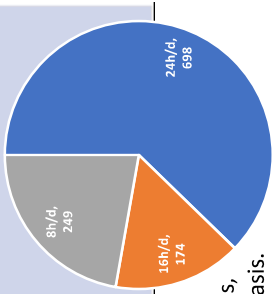
Contents

1. Re-confirm the necessity,
2. Introduction of Japanese Tech Standards for WTEs,
*WTEs: Waste Treatment Facilities,
3. Formulation of Philippines WTE Tech Standards,
4. Next Step,

2. Discussion Points #0 to #15

#1 Coverage of Standards / Intermittent Running Incinerators??

Discussion Basis	Discussion Points
In Japan, because of polluter's responsibility, all LGUs basically has to treat/dispose MSW generated in their jurisdiction. Thus, even for small LGUs are having own Waste incinerators, even less than 50t/d capacity with intermittent running (8h/d or 16h/d).	How to deal with intermittent running incinerator (batch type), which will be assumed to have small capacity? > frankly, they're against the economic principle.

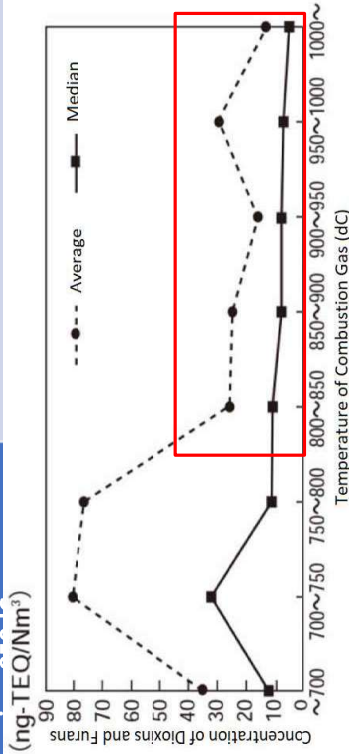


Reference;
In Japan, out of 1,127 waste incineration plants, 423 (38%) plants are intermittent operation basis.

2. Discussion Points #0 to #15

#3 Required combustion gas temperature / 800dC or 850dC or 850dC?

Discussion Basis	Discussion Points
With regard to the temperature of combustion gas, for the complete combustion, Japanese S/S and OP/S requires 800dC and GL for DXNs generation prevention from Waste Disposal requires 850dC. Other hazardous waste incineration requires 850dC.	Combustion Temperature: At what temperature of combustion should be adopted in the Philippines? > JET recommends 850 dC.



2. Discussion Points #0 to #15

#2 Required quality of bottom ash / LOI or TOC, 5% or 10%?

Discussion Basis	Discussion Points
With regard to the required quality of bottom ash, Loss of Ignition (LOI) as the indicator of complete combustion is widely used. In Japan, 10% of LOI is upper limit in OP/S and 5% in National Subsidy. Other hand, EU incineration directive requires 5% of LOI or 3% of TOC.	LOI (Loss on Ignition), TOC (Total Organic Carbon) in Ash: Which criteria and level should be adopted for the Philippines? > JET recommends 5% of LOI.

[NOTE] The problem using LOI is that organic carbon remaining in the ash is measured by the deduction amount after complete burning of ash in the lab., so in case if submerged ash conveyor is applied, a small amount of inorganic hydrate reduction will be contributed.
On the other hand, TOC can identify only Organic Carbon in the bottom ash, however, it only uses 1g as the sample, so "unburned organic material" in the case may be; thick book, block of wood, etc. is found in the ash, it shall be grained/mixed up to the said 1g of sample, it's a bit tough to take appropriate sample. In LOI measurement procedure in Japan, take 10kg for the analysis of LOI.

2. Discussion Points #0 to #15

#4 Coverage of Standards / Hazardous Waste??

Discussion Basis	Discussion Points
EU incineration directive as well as Japanese PCB treatment standard require combustion gas temperature for Hazardous Waste incineration as 1,100 dC.	Hazardous Waste: This technical standards waste should not include hazardous waste at this moment. (Any comments/inputs?)

2. Discussion Points #0 to #15

#5 Coverage of Standards / RDF/RPFs??

Discussion Basis	Discussion Points
In Japanese WTEs S/S and OM/S, requirements for RDF (Refuse Derived Fuel) and RPF (Refused Plastic and Paper Fuel) production facility as well as quality of them are stipulated.	Coverage of RDF/RPF: Is it necessary to include RDF (Refuse Derived Fuel)/RPF (Refuse derived paper & plastics densified fuel) facility?

2. Discussion Points #0 to #15

#9 Coverage of Standards/ Transport Pipelines?

Discussion Basis	Discussion Points
In Japanese WTEs S/S and OM/S, Facilities are stipulated.	Is it necessary to include requirements for crushing/shredding facilities in the WTE guidelines?

#8 Coverage of Standards/ Crushing and Shredding Facilities?

Discussion Basis	Discussion Points
In Japanese WTEs S/S and OM/S, requirements for Waste Transport Facilities are stipulated.	Is it necessary to include requirements for waste transport pipeline in the WTE guidelines?

2. Discussion Points #0 to #15

#6 Coverage of Standards/ Gas Reforming Facility, Elec. Furnace?

Discussion Basis	Discussion Points
In Japanese WTEs S/S and OM/S, requirements for Gas Reforming Facility with Gasifier and Electric Furnace incinerator are stipulated.	Coverage of Gasification + Gas-Reforming Facility and Electric Furnace Gasification Facility, which are not commonly applied in the world.

2. Discussion Points #0 to #15

#10 Coverage of Standards/ Waste Sorting Facilities?

Discussion Basis	Discussion Points
In Japanese WTEs S/S and OM/S, Facilities are stipulated.	Is it necessary to include requirements for waste sorting facility in the WTE guidelines?

#11 Coverage of Standards/ RDF/RPF production facility?

Discussion Basis	Discussion Points
In Japanese WTEs S/S and OM/S, requirements for RDF/RPF production Facilities are stipulated.	*same with discussion #5*

2. Discussion Points #0 to #15

#12 Coverage of Standards/ Animal Feeds Production Facilities?

Discussion Basis	Discussion Points
Japanese National Subsidy Standards require some additional conditions to Animal Feeds Production Facilities.	Is it necessary to include requirements for animal feed production facility in the WTE guidelines?

#13 Coverage of Standards/ Methane Recovery Facility?

Discussion Basis	Discussion Points
Japanese National Subsidy Standards require some additional conditions to Methane Recovery Facilities.	The WTE Guideline (DAO) does not specify individual WTE Technical Standards. Is it necessary to include each WTE technical standard to the guidelines, especially for Methane Recovery Facility?

2. Discussion Points #0 to #15

#14 Coverage of Standards/ Biodiesel Fuel Production Facility?

Discussion Basis	Discussion Points
Japanese National Subsidy Standards require some additional conditions to Biodiesel Fuel Production Facilities	The WTE Guideline (DAO) does not specify individual WTE Technical Standards. Is it necessary to include each WTE technical standard to the guidelines, especially for Biodiesel Fuel Production Facility?

#15 Coverage of Standards/ Waste Material Production Facility?

Discussion Basis	Discussion Points
Japanese National Subsidy Standards require some additional conditions to Waste Derived Material Production (cement aggregates, etc.) Facilities.	Is it necessary to include a standard for Waste Derived Material Production Facility, since this tackles material recycling of incinerated residues, rather than WTE?

3. Formulation of WTE Tech Standards as MC of DAO2019-21



Next Step:

- ✓ Leader + Sub-Leader + JET;
- > Draft Tech Standards for WTE in Philippines by next SG-MTG
- ✓ SG Members;
- > Read Japanese Tech Standards and comment/advise if any,
- > Once Draft T/S for WTE in Phil is ready, Pls review it,

Thank you for your attention!!

Makoto KOSAKA

JICA Expert for SWM-PPP (Solid Waste Management – Public-Private Partnership),
Technical Cooperation Project for Capacity Development on
Improving SWM through Advanced/Innovative Technologies



4th Sub Group Meeting

"Issues of WTE Ash Treatment"

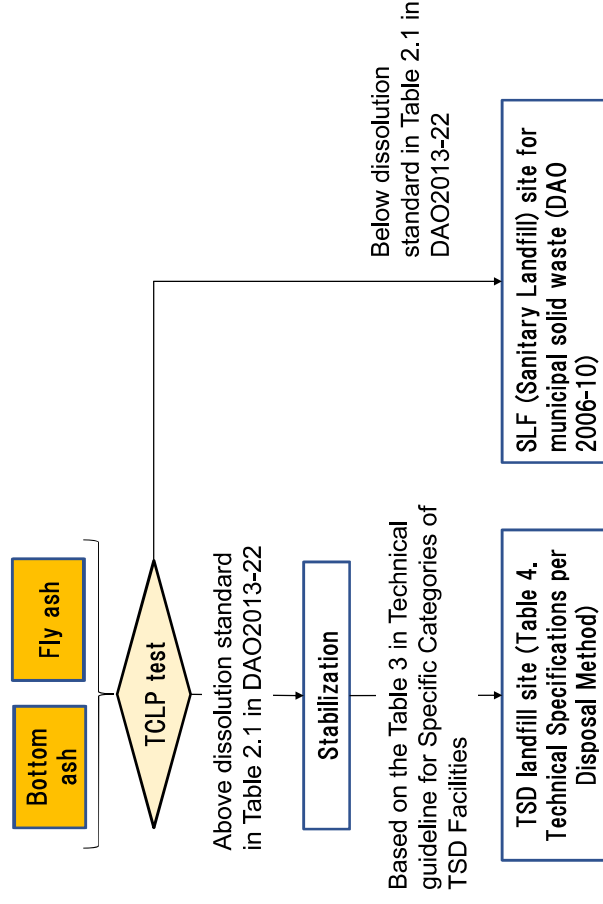
Activity 1-5: Prepare manual for management of bottom & fly ash discharged from WTE facility

Takahiro Kamishita
Chief Advisor, WTE

1. Recap on discussion in 3rd SG meeting

- ✓ Understanding:
 - ✓ Incineration residue (ash) is regulated by DAO2013-22* as process residue
 - * Revised Procedures and Standards for the Management of Hazardous Wastes
 - ✓ Some clarifications are required to regulate WTE Ash treatment, such as:
- ✓ Amend of DAO2013-22 is being discussed in HWMS
 - ✓ WTE fly ash could be disposed of at sanitary landfill after stabilization process?
- ✓ Practices in the existing industries should be collected through EMB regional office.
 - being tried under GCO

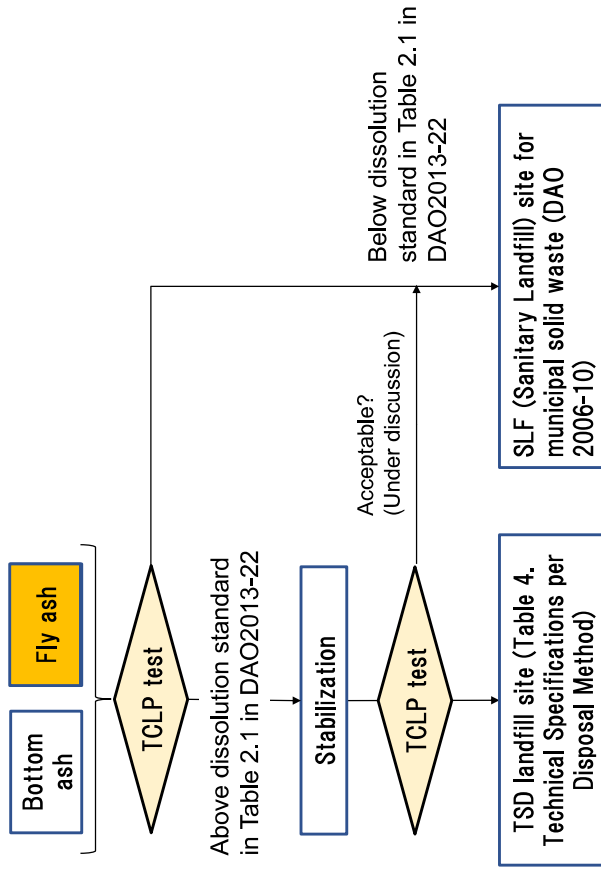
2. Handling procedure of WTE Ash in the Philippines



Contents

1. Recap on discussion in 3rd SG meeting
2. Possible methods of WTE Ash Treatment
3. WTE technical standards/manual under TCP and the amend of DAO2013-22

2. Handling procedure of WTE Ash in the Philippines



5

2. Possible methods of WTE Ash Treatment

1. Cement solidification
 - ✓ Forming a chemically stabilized compound that does not elute heavy metals
 - ✓ Mineral composition of cement such as calcium silicate adsorb and solubilize harmful substances through a hydration reaction and hardens.
2. Chemical treatment
 - ✓ Forming insoluble compound through reaction between heavy metals in fly ash and chemicals
 - ✓ Chelate reagent which captures heavy metals is commonly used.
3. Melting
 - ✓ Conversion of WTE ash to slag through thermal process which does not elute heavy metals
4. Calcination
 - ✓ Mixing WTE ash with material such as bentonite or silica sand
 - ✓ Molding it into granules or bricks, and then firing it at about 1,100 degree.

3. WTE technical standards/manual under TCP and the amend of DAO2013-22

Document	Description
Revised Procedures and Standards for the Management of Hazardous Wastes (DAO2013-22)	<ul style="list-style-type: none"> • Standard values to evaluate toxicity • To stipulate methods of disposal of hazardous waste <ul style="list-style-type: none"> - Stabilized fly ash can be delivered to sanitary landfill? - Stricter standards would be applied for TCLP test for stabilized WTE ash?
WTE technical standards including necessary treatment of WTE ash	<ul style="list-style-type: none"> • Ash separation and storage facility/function • Facility/function enable homogeneous mixing in cement solidification or chemical treatment of WTE fly ash • Recommended Treatment methods of fly ash and these procedure
** Guidelines on the categorized Final Disposal Facilities (DAO 2006-10)	<ul style="list-style-type: none"> • Treated leachate treatment quality is to be reviewed based on the nature of WTE ash. • Structural and operational requirement of sanitary landfill is to be reviewed.

4. Handling procedure of WTE Ash in Japan

Comparison of standard values of test

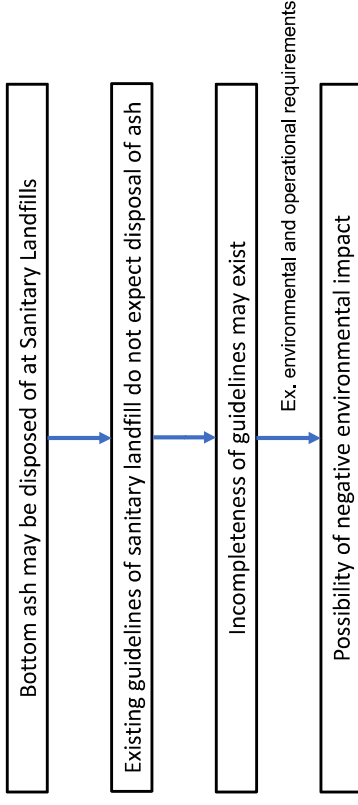
Parameter	Unit	DAO2013-22	Japan
Selenium	mg/L	1.0	0.3
Arsenic	mg/L	1.0	0.3
Cadmium	mg/L	0.3	0.09
Chromium	mg/L	5.0	1.5
Lead	mg/L	1.0	0.3
Mercury	mg/L	0.1	0.005

Thank you for your attention!

3. Issues of Ash Treatment in WTE operation

- ✓ Possible difficulties in practice of Ash management

[Negative Environmental Impact]



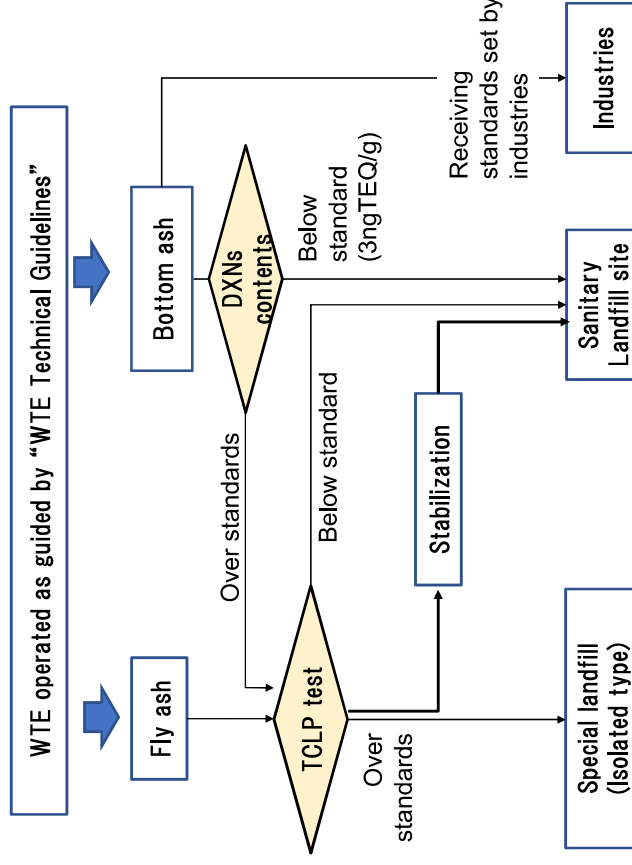
3. Issues of Ash Treatment in WTE operation

- ✓ Requirement for TSD landfill

Facility	Specifications
Double Liner	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
Double Leachate Collection and Removal System (LCRS)	<ul style="list-style-type: none"> Primary LCRS must be located above the top liner, while secondary LCRS must be located between the liners immediately above the bottom composite liner Secondary LCRS, which also serves as the leak detection system, must be: <ul style="list-style-type: none"> Designed with a bottom slope of at least one percent Made of materials chemically resistant to the wastes placed in the unit Able to remove the liquids Must be designed to collect liquids in a sump and subsequently pump out those liquids
Others	Must have storm water run-on and runoff controls to prevent migration of hazardous constituents for at least a 25-year storm and a cover to prevent wind dispersal

Source: Technical Guidelines for Specific Categories of TSD Facilities, 2015, DENR

4. Handling procedure of WTE Ash in Japan



5. Proposal and Confirmations

JET proposal

- ✓ To prepare guidelines (manual) for management of both bottom ash and fly ash of WTE
 - ✓ Definition and classification of bottom ash and fly ash
 - ✓ Classification of hazardous or non-hazardous
 - ✓ Treatment method of fly ash
 - ✓ Treatment method of bottom ash
- ✓ Technical guidelines (Activity1-4) of WTE can include guidelines for ash management
- ✓ Technical guidelines would be effective as Memorandum Circular of DAO2019-21

Confirmations

- ✓ How to interpret interrelation between RA6969 and RA9003 regarding management of incineration ash
- ✓ Any schedule to update DAO2006-10 and IRR (Guidelines on the Categorized Final Disposal Facilities (Sanitary landfills))

5. Proposal and Confirmations

Proposal on Work Schedule

Activity/Works	Status	June					July				
		1st Wk	2nd Wk	3rd Wk	4th Wk	5th Wk	1st Wk	2nd Wk	3rd Wk	4th Wk	5th Wk
11-5 Understanding on the existing regulations on hazardous waste	Done										
21-5 Interview to EMB-NCR regarding practice of ash management in Philippines											
31-5 Preparation of explanation material of possible problems											
41-5 Proposal on method of Ash management											
51-4 Proposal on Technical Guidelines of WTE											
61-5 Incorporation of method of ash management into technical guidelines (Activity 1-4)											
71-4 Updating the proposal based on comments from subgroup members											
81-4 Completion of 1st draft of technical standards (manual)											
1-5											
Meetings											
Subgroup meeting											
1-5 Discussion with subgroup members in charge including HWMS											
1-4 Meeting with Policy and Planning dept											
1-5											



4th Sub Group Meeting for

Output 1-1

[“Updates on data collection of BAT/BEP”](#)

7th July 2020 (Tuesday)

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

1

Presumption Condition of Case Study of BA/BEP

Selection criteria of BAT/BEP

Area	<ul style="list-style-type: none"> - WtE technology is different from the area (ex. Most of WtE in Japan is relatively small or medium scale incinerator, In EU, pyrolysis or MBT is developed as well as relatively large scale incinerators) <p>⇒ Cover all the area including Asia, EU and USA</p>
Type of WtE	<ul style="list-style-type: none"> - Main WtE technology is incinerator and there are other WtE technologies like biogas, pyrolysis or RDF <p>⇒ Mainly the cases of incineration will be collected and if sub-group member is interested, the other cases will be added</p>
Type of case study	<ul style="list-style-type: none"> - Normally, good practice is publicized and bad practice or lesson may not be openly publicized. <p>⇒ Basically good practice will be firstly collected</p>
Capacity of WtE	<ul style="list-style-type: none"> - The target capacity for the case studies will be suitable for future WtE facilities for the Philippines with consideration of waste generation <p>⇒ See next page</p>

Presumption Condition of Case Study of BA/BEP

Waste Amount of WtE in the Philippines

- WtE, requiring big amount of initial cost, would be a solution of especially for big LGUs that struggle huge amount of waste like 3 target LGUs of TCP
- In addition, with consideration of population of most LGUs in the Philippines, potential waste amount to be treated by WtE is estimated as follows.

Category	Less than 100 [ton/day]	100-200 [ton/day]	200-300 [ton/day]	More than 300[ton/day]
Number of LGU	34	43	20	23

- The WtE facility more than 100 [ton/day] will be targeted for large cities including metropolitan area as priority.
- In addition, small scale WtE facilities are not low power generation efficiency and may not provide power generation for selling.

Contents of Today's Presentation

1. Progress of collection of cases of BAT/BEP
2. Brief explanation of main salient feature
3. Future Step

Summary of Current Progress of Collected BAT/BEP (Part of Collection)

Region	Country	Name of facility	Capacity	Salient Feature
Asia	Japan	Shinkoto Incineration Plant	1800 [t/d]	<ul style="list-style-type: none"> - Relatively small operation cost - Utilization of surplus heat after electricity generation
Asia	Japan	Maishima Incineration Plant	900 [t/d]	<ul style="list-style-type: none"> - Artificial and harmonized design IEC with surrounding community
Asia	Japan	Tobuki incineration plant	300 [t/d]	<ul style="list-style-type: none"> - Utilization of thermal energy - Effective utilization of residue
Asia	Singapore	Tuas South Incineration Plant	3000 [t/d]	<ul style="list-style-type: none"> - Build trust in the relationship with residents by stricter standard - Material recycle in bottom ash or slag
Asia	Singapore	Keppel Seghers Tuas WTE Plant	800 [t/d]	<ul style="list-style-type: none"> - Compact facility - Continuous service with PPP scheme
Asia	China	Laogang solid waste treatment plant	3000 [t/d]	<ul style="list-style-type: none"> - One of large scale WtE incineration facilities in China
Asia	Vietnam	Can Tho SWT Plant	400 [t/d]	<ul style="list-style-type: none"> - First commercial operating facility of waste to energy in Vietnam

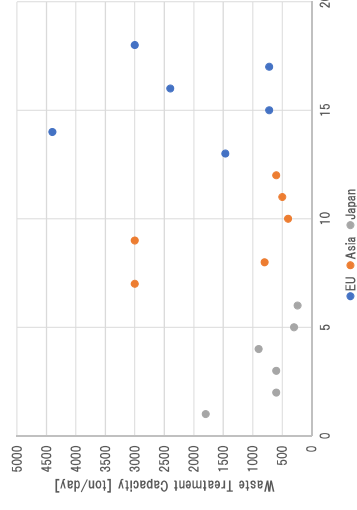
Summary of Current Progress of Collected BAT/BEP (Part of Collection)

Region	Country	Name of facility	Capacity	Salient Feature
Asia	Thailand	Nong Khaem WTE plant	500t/d	<ul style="list-style-type: none"> - First WtE plant in Metropolitan Bangkok
Asia	India	Jabalpur WtE facility	600t/d	<ul style="list-style-type: none"> - Automated operation of WtE - Pollution control under Indian's standard
Europe	France	Isseane WTE plant	1464[t/d]	<ul style="list-style-type: none"> - Compact design - Stricter standard for environmental pollution
Europe	Netherlands	Afval Energie Bedrijf Amsterdam	4400 [t/d]	<ul style="list-style-type: none"> - High Thermal Efficiency - Material recovery
Europe	Spain	Bizkaia WTE Plant	720 [t/d]	<ul style="list-style-type: none"> - High Thermal Efficiency
Europe	Italy	Brescia WTE plant	2,400 [t/d]	<ul style="list-style-type: none"> - High Thermal Efficiency - Data Transparency
Europe	Austria	Wien-Spittelau WTE plant	720 [t/d]	<ul style="list-style-type: none"> - Public acceptance via innovative architectural treatments
USA	USA	Palm Beach WTE Plant	3000 [t/d]	<ul style="list-style-type: none"> - High Capacity - Waster Utilization

Major Salient Features

Scale of incineration

- Generally, the capacity of incinerator is large in Europe,
- On the other hand, the capacity of incinerator is small in Japan.
- In case of Asia, the capacity of incinerators in China or Singapore is normally large but other countries is small scale.

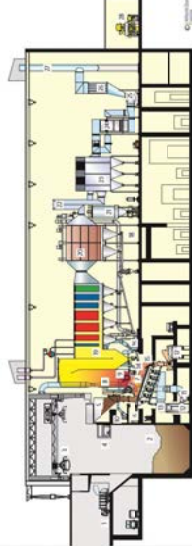


Major Salient Features

Compact design due to limited area

- Utilization of limited area (Case of Singapore)
The WTE facility was developed with the compact design with the limitation of land availability. The total area is 1.6 ha for the WTE capacity of 800 ton/day in case of Keppel Seghers Tuas.
- Lower height of stack (Case of France)
The plant is built on the side of the River Seine in the centre of Paris and the building only has a vertical profile of 27 metres as 30 metres of the plant is below ground. The exhaust stacks only protrude 5 metres above the building rooftop.

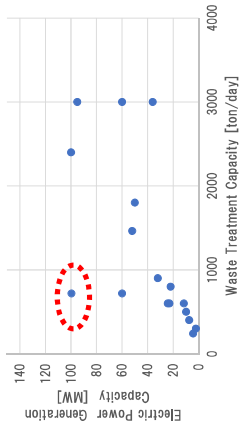
Country	Name of facility	Capacity[t/d]	Area [ha]
Japan	Shinkoto Incineration Plant	1800	6.1 [ha]
Japan	Maishima Incineration Plant	900 [t/d]	3.3 [ha]
Singapore	Tuas South Incineration Plant	3000 [t/d]	10.5 [ha]
Singapore	Keppel Seghers Tuas WTE Plant	800 [t/d]	1.6 [ha]
Spain	Zabalgarbi / Bizkaia WtE Plant	720[t/d]	2.7[ha]



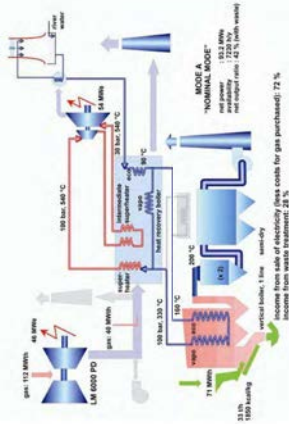
Major Salient Features

High electricity generation efficiency

- Electric power generation efficiency basically depends on the capacity of WtE
- However, pressure or temperature of the entrance of turbine generator or the utilization of surplus heat energy such as combined cycle affects the efficiency



- In the WtE plant in Spain, exhausted gas from gas turbine of natural gas is used for heating the vapor from boiler through super heater (up to 100 bar, 540 °C) to enhance the electric power generation efficiency
- Also, reheat recovery equipment such as economizer is installed to utilize surplus heat



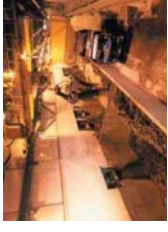
Income from sale of electricity (less costs for gas purchased): 72 %
Income from waste treatment: 28 %

Major Salient Features

Material recycle in bottom ash or slag

Material recycle in bottom ash or slag

- Ferrous scrap metal in bottom ash is separated up by electro-magnetic separators to sell local steel mill factory.



Ash utilization

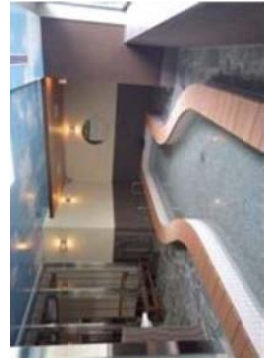
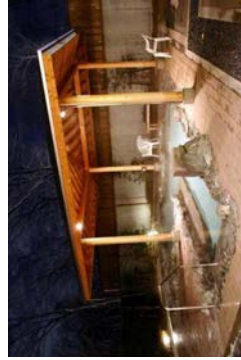
- Ash is utilized for road construction material after melting
- Bottom ash is utilized for cement ingredient after removing chloride composition.



Major Salient Features

Utilization of surplus heat after electricity generation

- Utilization of surplus heat after utilization of electric power generation
- District heating
- Hot bath for community
- Botanical garden
- Sky resort
- Pool, etc



Major Salient Features

Stricter standard for environmental pollution

Japan (Shinkoto)	Japanese Law	Facility standard	Actual
NOx [ppm]	250	60	36 - 41
HCl [ppm]	430	15	<2
SO2 [ppm]	Area basis	20	<1
HF [ppm]	-	-	-
Particulates [g/Nm3]	0.08	0.02	<0.001
Mercury [μg/Nm3]	50	-	<5
DXNs [ng/Nm3]	0.1	-	<0.00005

France (Isseane)	EU & French Law	Facility standard
NOx [mg/Nm3]	200	65
HCl [mg/Nm3]	10	5
SO2 [mg/Nm3]	50	17
HF [mg/Nm3]	1	0.8
Particulates [mg/Nm3]	10	3
Mercury [μg/Nm3]	50	30
DXNs [ng/Nm3]	0.1	0.07

Exhausted Gas	EU (0.7-12%)	Japan (0-12%)
NOx [ppm]	87.7	250
HCl [ppm]	5.5	430
SO2 [ppm]	15.7	28
Particulates [mg/Nm3]	9	80
Mercury [μg/Nm3]	45	50
DXNs [ng/Nm3]	0.09	0.1

- Prepare stricter standard for facility in Japan and EU
- The national standard in EU is generally stricter than in Japan
- Facility standard or actual data in Japan satisfies the EU standard generally

- Further Survey
- Necessary of further collection of cases in Japan, other Asian and European countries
 - Positive participation of subgroup member is better.
 - Until next subgroup meeting, please collect your recommendation of BAT/BEP

Examples of useful information site regarding WtE (Especially, EU or USA countries)

- ISWA home page (<https://www.iswa.org/>)
- Waste Management World home page (<https://waste-management-world.com/>)
- Global WtERT Council home page (<http://gwcouncil.org>)

Name	Suginami Incineration Plant	Location	Suginami ward, Tokyo, Japan	Footprint	3.6 ha	Heat Usage	Power 24.2MW	Waste Quality	10363 KJ/kg (Year 2020)	History	
										Dev. Plan	Demolish
Impl. Body	Clean Authority of TOKYO										
Capacity	600t/d (300 x 2lines)										
Target Waste	Source segregated "Combustible Waste"										
Original	-	-	-	-	-	-	-	-	-	-	-
Actual	-	-	-	-	-	-	-	-	-	-	-
Capex	??? B-JPY	Source	NG Subsidy + Bond + LG								
Opex	1.01 B-JPY/yr (2019)	Source	LG + TF + Energy								
Fin. Scheme	Public Build (DB) and Own	Dev. approach	Solicited								
Coverage (SOW)	Collection	Transp.	Incineration	Power sale	Bottom ash	Fly ash					
	LG	LG	LG (DB)	LG	LG (Cement)	LG > Province					
Process Type	Incineration (Stoker)	EPC / Tech	Hiz (JPN)	(Build)							
Pollution Control	Exhaust Gas	Wastewater	Bottom ash	Fly ash	Other						
	Stricter Standard (Scrubber + SCR + Bag Filter)	Discharge to Sewage	Eco-cement or SLF	SLF after treatment	Comply with local ordinances						

Please describe salient features of the Project
WHY you'd like to research/study this project as BAT/BEP?

Thank you very much for your attention.

If you have any further clarification or questions, please contact to the following e-mail address.

Salient Features


1. Relatively small operation cost
2. Utilization of surplus heat after electricity generation

Explanation

The WTE facility was developed with largest capacity WTE in Metropolitan Tokyo. The operation cost is lower than other WTEs in Metropolitan Tokyo.

The surplus heat after electricity generation is utilized by providing adjacent public facilities such as hot water pool, botanical garden, cultural center.

Tentative Format for BAT/BEP / Researcher:

Name	Tobuki Incineration Plant	Location	Hachioji City		
Impl. Body	Hachioji City	Footprint	2.1 ha		
Capacity	300 t/day	Heat Usage	2.1MW ele. Thermal ene.		
Target Waste	Combustible waste	Waste Quality	? KJ/kg		
History	Plan	Bid	Const. St/Fin	Op. Start/Fin	Demolish
	Original	-	-	-	-
	Actual	-	1994	-	-
Capex	? Mil USD	Fund Source	Hochioji city (LG) with subsidy from NG		
Opex	15723 JPY / ton (2018)	Fund Source	LG		
Fin. Scheme	Public Build (DB) and Own	Dev. approach	Solicited		
Coverage (SOW)	Collection	Transp.	Processing	Energy sale	Fly ash
	LG	LG	LG	LG	LG
Process Type	Incineration (Stoker)	EPC / Tech	Nippon steel, (JFE)	(Remarks if any)	
	Exhaust Gas	Wastewater	Bottom ash	Fly ash	Other
Pollution Control	Far below the national standard value (Less than 10%)	Discharge to sewerage	Utilized as eco-cement	Utilized as eco-cement after agent treatment	

EJEC 17


Tentative Format for BAT/BEP

Please describe salient features of the Project
WHY you'd like to research/study this project as BAT/BEP?

Salient Features	Explanation
1. Utilization of thermal energy	Steam produced using the heat from waste combustion is utilized for air conditioning and heated water supply within the plant. In addition, the heat is supplied to the Incombustibles Treatment Center and to the neighboring waste heat utilization facilities. Power is also generated by a steam turbo-generator with an output of 2,080 kW, which will compensate for the power consumption in the plant.
2. Effective utilization of residue	Bottom ash is utilized for eco-cement and fly ash is utilized for the material of eco cement after regent treatment.

NIPPON KOEI
EJEC

Tentative Format for BAT/BEP / Researcher:

Name	Nong Khaem WTE plant	Location	Nong Khaem, Thailand		
Impl. Body	C&G Environmental Protection Holdings Limited (C&G)	Footprint	? ha		
Capacity	500 t/day	Heat Usage	Power 9.8MW		
Target Waste	Municipal solid waste	Waste Quality	? KJ/kg		
History	Plan	Bid	Const. St/Fin	Op. Start/Fin	Demolish
	Original	-	-	2014	2034
	Actual	-	-	-	-
Capex	THB900 million	Fund Source	BMA ?		
Opex	1000 Bahts/ton	Fund Source	Tipping fee from BMA + energy sale ?		
Fin. Scheme	BOT	Dev. approach	Solicited		
Coverage (SOW)	Collection	Transp.	Processing	Energy sale	Fly ash
	C&G	C&G	C&G	BMA ?	BMA ?
Process Type	Stoker type ?	EPC / Tech	New Sky ?	(Remarks if any)	
	Exhaust Gas	Wastewater	Bottom ash	Fly ash	Other
Pollution Control	? ?	? ?	? ?	? ?	? ?

NIPPON KOEI
EJEC 19

Tentative Format for BAT/BEP

Please describe salient features of the Project
WHY you'd like to research/study this project as BAT/BEP?

Salient Features	Explanation
1. First WtE plant in Metropolitan Bangkok.	This is first WtE plant in Metropolitan Bangkok which operates until now. However, it is not sufficiently disseminated about operation and maintenance information such as environmental monitoring or receiving waste amount or characteristics, etc

NIPPON KOEI
EJEC

Tentative Format for BAT/BEP / Researcher:

Name	Wien-Spittelau	Location	Spittelau, Vienna, Austria
Impl. Body	Fernwärme Wien GmbH (private)	Footprint	? ha
Capacity	Data for 1971 Plant, 1993 Plant: (also same with 2015 Plant) 250, 000 t/y (360 t/d x 2 lines= 720 t/d)	Heat Usage	Data for 1993 Plant: Thermal Capacity: 76.66 MW Gross Power: 6MW _e , 60MW _t Steam Output: 90 t/h @ 33 bar (max: 55 x 2 t/h @ 34 bar)
Target Waste	Municipal Waste (domestic waste and industrial wastes similar to household waste)	Waste Quality	Data for 1993 Plant: Ave. Heating Value: 9,500 kJ/kg [Waste Thermal Value: 8,200 – 9,600 kJ/kg]
History		Plan	Original
		Bid	
		Const. St./Fin	Op. Start/Fin
		2009	2012
Capex	€144 million (2015 Plant Modernization)	Fund Source	European Investment Bank (EIB): €70 million+?
Opex	?	Fund Source	?
Fin. Scheme	PPP (BOT or BOO, etc?)	Dev. approach	Solicited ?

Tentative Format for BAT/BEP (Wien-Spittelau)

Please describe salient features of the Project
WHY you'd like to research/study this project as BAT/BEP?

Salient Features	Explanation
1. Public acceptance via innovative architectural treatments	This plant is the first facility that used architectural treatment to gain public acceptance. The age of the plant would exclude it from inclusion based on performance. However, public perception and acceptance of WtE plants is very important.



Tentative Format for BAT/BEP / Researcher:


Name	Zabalgarbi / Bizkaia WtE Plant	Location	Bilbao, Province of Bizkaia, Spain
Impl. Body	Zabalgarbi S.A. (Private 65%, Public 35%)	Footprint	2.7 ha (plant only)
Capacity	220,000 – 250,000 t/y (720 t/d)	Heat Usage	Power 99.5 MW _e (Net 95MW _e) Elec. Efficiency: 42%
Target Waste	M/SW	Waste Quality	LHV: 8,000 kJ/kg Thermal energy from wastes: 73,52 MWh
History		Plan	Original
		Bid	
		Const. St./Fin	Op. Start/Fin
		1996*	2004
Capex	154M-EUR	Fund Source	Equity: 55M-EUR + Debt: 99M-EUR (Private 65%, Public 35%)
Opex	?	Fund Source	?
Fin. Scheme	PPP (Joint Venture?)	Dev. approach	?
Coverage (SOW)		Collection	LG contract private
		Transp.	Zabalgarbi private
		Processing	Zabalgarbi
		Energy Sale	Zabalgarbi
		Bottom ash	Zabalgarbi Use for const.
Process Type	Moving Grate (Martin)	EPC / Tech	CNIM+SENER

Tentative Format for BAT/BEP (Zabalgarbi)

Please describe salient features of the Project
WHY you'd like to research/study this project as BAT/BEP?

Salient Features	Explanation
1. High Efficiency	This facility is an example of a modern plant utilizing the exhaust heat from an adjacent gas turbine power plant to perform reheating of the steam produced by the heat recovery boiler (combined-cycle) and operate with a thermal efficiency >40%.

Tentative Format for BAT/BEP / Researcher:


Name	ASM Brescia 'Termouutilizzatore'	Location	Brescia, Italy	
Impl. Body	AZA S.p.A (Public Enterprise)	Footprint	16 ha (2.3ha for WTE)	
Capacity	2,400t/d (800,000 t/yr) (3-lines)	Heat Usage	100MW/e 150MW/t	
Target Waste	MSW, Industrial Waste, Biomass & Dried Sludge	Waste Quality	6300 - 13800 kJ/kg (LHV)	
History	Plan	Bid	Const. St/Fin	Op. Start/Fin
	Original			
	Actual			1998(MSW), 2005 (Biomass)/
Capex	350M EUR (=€320M)	Fund Source	CIP6 (Subsidy from National Gov. for RE)	
Opex	7,179 M-EUR/yr	Fund Source	CIP6 (Subsidy from National Gov. for RE)	
Fin. Scheme	Public own and operate??	Dev. approach	Solicited??	
Coverage (SOW)	Collection	Transp.	Processing	Energy Sale
	AZA	AZA	AZA	AZA
Process Type	Moving reverse thrust grate	EPC / Tech	Ansaldo, Martin, and ABB (Equipment)	Fly ash
				AZA
Pollution	Exhaust Gas	Wastewater	Bottom ash	Other

Tentative Format for BAT/BEP (Termouutilizzatore)

Please describe salient features of the Project
WHY you'd like to research/study this project as BAT/BEP?

Salient Features	Explanation
1. High Thermal Efficiency	The link-up with the existing Lamarmora plant makes it possible to operate the district heating section "in series" with the heat exchangers of the existing turbo-generators. This optimises the global efficiency of the entire plant. The plant has >27% electrical net efficiency.
2. Data Transparency	To ensure transparency for information on the operations of the plant, the City Council of Brescia established a "Waste Incinerator Observatory", for monitoring and communicating its activities.

Tentative Format for BAT/BEP / Researcher:

Name	Palm Beach Renewable Energy Facility 2 (PBREF #2)	Location	Florida, West Palm Beach, USA	
Impl. Body	Owner: Solid Waste Authority (SWA) of Palm Beach County (Province) Operator: Palm Beach Resource Recovery Corporation	Footprint	9.71 ha	
Capacity	3000 t/d (3 lines x 1000 t/d)	Heat Usage	*Electric Power Capacity: 95MW *284,400 lb/h (per boiler) x 3 Boilers	
Target Waste	Unprocessed Municipal Solid Waste	Waste Quality	Net Electric Energy Generation divided by Total Processed Waste: 575 net kWh/ton Processed Waste (FY 2019 Goal)	
History	Original	Bid	Const. St/Fin	Op. Start/Fin
	Actual	2007	2011	2012
Capex	~\$672,000,000	Fund Source	Bond 90% and 10%?	2035
Opex	\$2 5,322,389 (2017 actual cost for Operating Contract Expense)	Fund Source	?	

Tentative Format for BAT/BEP (PBREF #2)

Please describe salient features of the Project
WHY you'd like to research/study this project as BAT/BEP?

Salient Features	Explanation
High Capacity	3000 t/d* (still needs elaboration)
Waster Utilization	REF 2 features a unique rooftop rainwater collection system that includes a 2 million gallon cistern. This system provides a portion of the water necessary to operate the facility, reducing REF 2's use of treated water.
Wider waste management system	Connections to local authorities? How much of the area is necessary?

PROJECT ACTIVITY : 4th SUB-GROUP MEETING FOR PROJECT OUTPUT 1 (ENHANCEMENT OF NATIONAL GOVERNMENTS' CAPACITY FOR SUPPORTING AND COORDINATING OF LGUs' WTE PROJECT)

DATE/TIME : 7 July 2020, 9:00AM - 11:50AM (Philippine Time)

VENUE : Video Conference through Microsoft Teams

Agenda Topics	Issues/Discussions/Actions	Comments/Agreements/ Timelines	Required Actions/Responsible Agency/Person
<p>1.) Call to Order</p> <p>2.) Adoption of the Agenda</p> <p>3.) Acknowledgement of Attendees</p>	<ul style="list-style-type: none"> • Ms. Elvira Pausing of EMB-SWMD-PMO formally opened the meeting which was duly called. • Ms. Pausing presented the agenda, but no adoption was established due to the absence of a quorum during the meeting. Only 3 (i.e. DOST, PPPC, LGU QC) out of the 9 of subgroup members are present during the meeting. • Acknowledgement of Subgroup Output 1 members and representatives from EMB-Hazardous Waste Management Section (HWMS) by Ms. Pausing. 	<p>➤ No clarifications and/or alterations raised by the sub-group members.</p>	
<p>4.) Presentation and discussions on the topics under:</p> <p>Activity 1-2: Outline of EU Directive 2000/76/EC On the Incineration of Waste</p>	<p>Mr. Tomoyuki Hosono of JET discussed the directive, giving more emphasis on the substantial requirements/articles that are assumed to be relevant for the project. Discussed articles will be reference same as the Japanese requirements/standards to</p>		

<p>Activity 1-4: Draft WTE Standards</p>	<p>prepare WTE technical standards appropriate for the Philippines.</p> <p>From the presentation of Mr. Hosono, no questions or comments were raised by the subgroup members.</p>	<p>➤ No clarifications and/or alterations raised by the sub-group members.</p>	
<p>Mr. Makoto Kosaka of JET mainly discussed the progress on the preparation of the draft technical standards for WTE. Discussion points, which will be deliberated separately between JET, the leader (EMB-SWMD-PMO) and the sub-leader (DOST-ITDI) of Activity 1-4, were shared with the subgroup members.</p> <p>From the presentation of Mr. Kosaka, the following discussions and agreements were defined:</p> <ul style="list-style-type: none"> ● <i>Inputs/Comments on the Discussion Points drafted by Mr. Kosaka</i> <ul style="list-style-type: none"> ➤ Mr. Kosaka requested the subgroup members to check the meeting materials, especially the discussion points about Activity 1-4, so that comments and inputs can be solicited. ➤ He mentioned that the formulation of the WTE Technical Standards for the Philippines will be continued and the draft will be presented at the next subgroup meeting for Output1 on August 20, 2020. 			

	<ul style="list-style-type: none"> ➤ Mr. Kosaka elaborated the comment into an inquiry of which government agency will be responsible for checking or utilizing the WTE guidelines as an attachment of the DAO 2019-21. He asked if DENR-EMB will be the user of such guidelines. ➤ Engr. Esguerra stated that since permits for WTE will mostly be environmental permits, issuance of such permits will be the responsibility of DENR. ➤ Ms. Pausing responded that the issuance of permits will not only be limited to DENR; there are also other prerequisites prior to the approval of the said permits. ➤ Engr. Esguerra raised another point that DENR will not provide the national subsidies for WTE, rather, he suggested that this concern might be the mandate of Department of Finance. ➤ Atty. Phebean Belle A. Ramos-Lacuna of PPPC asked for clarification if the national subsidy mentioned by Mr. Kosaka and Engr. Esguerra is the National Government Financial Assistance to LGUs. ➤ Engr. Esguerra affirmed to the comment of Atty. Lacuna. ➤ Ms. Pausing suggested to schedule a separate meeting between JET, EMB- 		
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	<p>SWMD, and DOST-ITDI to further discuss the mentioned concerns. She also suggested to include EMB-HWMS since there are discussion points that also tackle hazardous wastes.</p> <ul style="list-style-type: none"> ➤ Mr. Takahiro Kamishita of JET suggested to schedule the meeting between JET, EMB-SWMD, and DOST-ITDI on Friday, July 10 at 10:00 AM (Philippine Time). He also clarified that only one discussion point tackles hazardous wastes, so it would be better to have a separate meeting with HWMS at another time. <ul style="list-style-type: none"> • <i>Other Clarifications</i> <ul style="list-style-type: none"> ➤ Ms. Justine Padiemos of PPPC asked for a clarification from Mr. Kosaka if the clustering of small WTE facilities outside Tokyo in Japan has already been explored when these facilities were developed. ➤ Mr. Kosaka clarified that the clustering of small WTE facilities was indeed explored from 1997. He explained that in Japan's case – primarily all LGUs have to treat their waste by themselves (self-treatment principle). Most of WTE facilities constructed by then is not considered clustering. Furthermore, aside from economic efficiency, there are also other 	<ul style="list-style-type: none"> ➤ JET, EMB-SWMD, and DOST-ITDI to have a meeting regarding Activity 1-4 on July 10 (Friday) at 10 AM. 	<ul style="list-style-type: none"> ➤ JET, EMB-SWMD, and DOST-ITDI to have a meeting regarding Activity 1-4 on July 10 (Friday) at 10 AM.
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	<p>important aspects such as distance from the city to the facility, political connection, etc. Japan follows the principle that all LGUs shall treat and manage all the waste appropriately even if it cost much.</p> <ul style="list-style-type: none"> ● <i>Updates on the Pending WtE Bills from Atty. Lacuna of PPPC</i> <ul style="list-style-type: none"> ➤ There is an ongoing senate hearing today (July 7, 2020), which is the 5th Technical Working Group meeting already for the said Bills. ➤ The Senate Committee on Energy is already consolidating these Bills, and the PPP Center has seen the current draft consolidated bill. The draft consolidated bill is still undergoing discussions and is therefore not final yet. ➤ In the current draft of the consolidated bill, the National Solid Waste Management Commission (NSWMC) is given the role to determine and review the guidelines, standards, etc. for WtE projects, among others, while the Department of Energy (DOE) is given the role of issuing the applicable permits for WtE facilities. The Department of Environment and Natural Resources (DENR) is also given a specific role but she does not remember already what those roles are. 		
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	<p>Atty. Lacuna emphasized that these are not final yet and may still change as the draft consolidated bill is being finalized.</p> <ul style="list-style-type: none"> ➤ Atty. Lacuna then proceeded to her main point, suggesting that the consistency of the WTE Bills and the technical standards being drafted through this technical cooperation project should be considered. ➤ Engr. Esguerra affirmed the update of Atty. Lacuna regarding operationalizing the NSWMC in terms of their role under the proposed WtE Bill. ➤ Mr. Kosaka requested PPPC to further provide JET specific updates (i.e. agenda, timeline, involvement of experts/consultants) regarding the TWG meeting on the WtE Bills. He agreed with the suggestion of Atty. Lacuna that consistency between the WtE Bills and the outputs of this technical cooperation project should be considered; thus, specific agenda and timelines from the TWG meeting will be very helpful to JET. ➤ Atty. Lacuna accepted the request of Mr. Kosaka and promised to provide updates, as soon as she gets the information. ➤ Ms. Pausing added that part of the suggestion of Ms. Ruby de Guzman of 	<ul style="list-style-type: none"> ➤ PPPC to provide JET with updates on the progress of the TWG meetings for the WTE Bills. 	<ul style="list-style-type: none"> ➤ PPPC to provide JET with updates on the progress of the TWG meetings for the WTE Bills.
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<p>Activity 1-5: Draft WTE Ash Treatment methods</p>	<p>DOE-REMB during the last Sub-group meeting was to wait for the outcome of the Senate Bills prior to the finalization of the MC, however, it was also agreed that the preparation of the said MC can also be paralleled to the progress of the WTE Bills currently being discussed by the Senate.</p>		
<p>Activity 1-5: Draft WTE Ash Treatment methods</p>	<p>Mr. Takahiro Kamishita of JET discussed the issues that need to be clarified for the preparation of draft manual for management of bottom & fly ash discharged from WTE facility.</p> <p>From the presentation of Mr. Kamishita, the following discussions and agreements were defined:</p> <ul style="list-style-type: none"> ➢ Mr. Kamishita reminded the sub-group members that the progress of the preparation of the draft manual will be shared on the next Sub-group meeting on August 20, 2020. • <i>Discussion with EMB-HWMS</i> <ul style="list-style-type: none"> ➢ Mr. Santini Quiocson of EMB-HWMS clarified that only ash categorized as hazardous waste will be regulated by DAO 2013-22. ➢ Mr. Kamishita accepted the comment and proposed to have a separate meeting with HWMS. 		

	<ul style="list-style-type: none"> ➤ Mr. Quiocson suggested JET to provide them with a schedule through their email: hazwaste@emb.gov.ph. ➤ Mr. Kamishita agreed with the suggestion of Mr. Quiocson and proposed to have a meeting early next week (July 13-17). • <i>Other Matters</i> <ul style="list-style-type: none"> ➤ Ms. Padiernos asked for a clarification if PPPC is a permanent subgroup member for Project Output 1. She mentioned that activities for Output 1 tackles technical aspects of the project, which might be distantly related from the mandates of PPPC. ➤ Mr. Kamishita justified that Activity 2 of Output 1 would tackle WTE policies including financial mechanisms and that JET believes PPPC will be much interested. ➤ Ms. Padiernos accepted the clarification. ➤ Mr. Kosaka added that PPPC might also be interested on the Activity 4 of Output 1, especially with the guidelines being drafted. ➤ Ms. Padiernos also noted on the justification of Mr. Kosaka. She explained that before accepting the membership to the subgroup for Output 1, PPPC will have to discuss 	<ul style="list-style-type: none"> ➤ JET to propose a schedule for next week (July 13-17) for a separate meeting with HWMS. Proposal shall be coordinated with EMB-SWMD-PMO and through the email of HWMS. 	<ul style="list-style-type: none"> ➤ JET to propose a schedule for next week (July 13-17) for a separate meeting with HWMS. Proposal shall be coordinated with EMB-SWMD-PMO and through the email of HWMS.
<ul style="list-style-type: none"> ➤ PPPC to inform JET and EMB-SWMD-PMO if they accept membership for subgroup for Project Output 1. 	<ul style="list-style-type: none"> ➤ PPPC to inform JET and EMB-SWMD-PMO if they accept membership for subgroup for Project Output 1. 		

	the matter internally with the PPPC management first. PPPC will just inform JET and EMB-SWMD-PMO of their confirmation once they have the final decision.		
Activity 1-1: Updates on data collection of BAT/BEP	<p>Mr. Satoshi Higashinakagawa (Higashi) of JET discussed the progress on the data collection of candidate BAT/BET cases, especially the major salient features, for Activity 1 of Output 1.</p> <p>From the presentation of Mr. Higashi, the following discussions and agreements were defined:</p> <ul style="list-style-type: none"> • Mr. Higashi stated that the collection of candidate BAT/BEP cases will still continue and that the subgroup members are reminded to also continue collecting and sending candidate BAT/BEP cases to JET. • Mr. Kamishita supported the reminder of Mr. Higashi and expressed that JET is expecting inputs from the Sub-group members. 	<p>➤ Subgroup members of Output 1 to also collect candidate BAT/BEP cases and send to JET.</p> <p>➤ Subgroup members of Output 1 to also collect candidate BAT/BEP cases and send to JET.</p>	<p>➤ Subgroup members of Output 1 to also collect candidate BAT/BEP cases and send to JET.</p>
5.) Wrap-up/Required Actions/Agreements	<ul style="list-style-type: none"> • Ms. Nikka Sales of JET wrapped up the earlier discussions and reiterated the arrangements and timelines as agreed. 	<p>➤ No clarifications and/or alterations raised by the subgroup members.</p>	
6.) Way forward, Schedules of the next meetings	<ul style="list-style-type: none"> • Ms. Pausing discussed the proposed schedule for the next subgroup meetings. 		

	<ul style="list-style-type: none"> ➤ Proposed schedule for the next Subgroup 1 Meeting is August 20. ➤ Ms. Pausing mentioned that the proposed subgroup meeting for Output 2 will be on July 16. She also reconfirmed that JET will assure the participation of the 3 LGUs (Quezon City, Cebu City, and Davao City). ➤ Ms. Pausing mentioned that the schedule for the next subgroup meeting for Output 3 is on October 8. ➤ Proposed schedule for the next subgroup meeting for Output 4 is on August 7. ➤ Ms. Pausing also discussed the proposed schedules of ITWG and JCC meetings that were moved to October 15, 2020 and November 4, 2020, respectively. • Adjournment ➤ There be no other matters to be discussed, Ms. Pausing adjourned the meeting at 11:50 AM by extending her appreciation to all the Sub-group members and other participants who joined the meeting. 	<ul style="list-style-type: none"> ➤ The 5th Subgroup Meeting for Output 1 will be on August 20, 2020. ➤ JET to consult with the 3 LGUs for their participation for the next Subgroup Meeting for Output 2 on July 16. 	<ul style="list-style-type: none"> ➤ JET to consult with the 3 LGUs for their participation for the next Subgroup Meeting for Output 2 on July 16.
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添付資料 11-2: 成果1サブグループ会議

11-2-5 : 5th SG1

5TH SUB-GROUP MEETING FOR PROJECT OUTPUT 1

ENHANCEMENT OF NATIONAL GOVERNMENT'S CAPACITY FOR SUPPORTING AND COORDINATING OF LGUs WtE PROJECTS

20 August 2020, Thursday, 9:00 AM-1:00 PM
(via Teams)

5TH SUB-GROUP MEETING FOR PROJECT OUTPUT 1

ENHANCEMENT OF NATIONAL GOVERNMENT'S CAPACITY FOR SUPPORTING AND COORDINATING OF LGUs WtE PROJECT

20 August 2020, Thursday, 9:00 AM - 1:00 PM (via Teams)

TENTATIVE AGENDA

- Call to Order/Meeting Objectives/Acknowledgement of Attendees and Adoption of Agenda - Ms. Elvira S. Pausing, EMB-SWMD-PMO
- Summary of discussions during the last meeting - Engr. Takahiro Kamishita, JET
- Latest Updates on the TWG discussions on WtE Bills - Atty. Phebean Belle A. Ramos-Lacuna, PPEMS, Public-Private Partnership Center (PPPC) & Ms. Ruby De Guzman, REMB, DOE
- Technical Presentations by JET:
 - Under Activity 1-4: Updates on the Draft Memorandum Circular on WtE Technical Standards relative to DAO 2019-21 - Engr. Makoto Kosaka, JET
 - Updates/progress on the Activity 1-1 (BAT/BEP Guidelines) and Activity 1-5 (Management of WtE Ash Treatment)- Mr. Takahiro Kamishita, JET
- Wrap-up/Required Actions/Agreements/Timelines - Ms. Nikka Marie Sales, JET
- Other Matters

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED
CONCERNED GOVERNMENT AGENCIES			
1	Mr. Nonilo Peña	DOST-PCIEERD	
	Ms. Emelita A. Dimapilis	DOST-PCIEERD	✓
2	Mr. Reynaldo L. Esguerra	DOSH-ITDI	cannot attend (informed thru email)
	Mr. Dante C. Vergara	DOST-ITDI	✓
	Engr. Rochelle L. Retamar	DOSH-ITDI	
3	Ms. Ruby De Guzman	DOE-REMB	✓
	Mr. Romeo M. Galangam	DOE-REMB	
	Ms. Charisse Jane Pascual	DOE-REMB	✓
4	Mr. Carlo Mari Crisregienald C. Tan	DILG-BLGS/NAPOLCOM Center	
	Atty. Ma. Rhodora Flores	DILG-BLGS/NAPOLCOM Center	
	Ms. Maria Clarisol L. Agas	DILG-BLGS/NAPOLCOM Center	
5	Mr. Aldwin U. Urbina	NEDA-IPG	
	Mr. Kevin Gilbert M. Manzano	NEDA-IPG	✓
	Mr. Gilbert V. Kintanar, Jr.	NEDA-IPG	✓

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED
CONCERNED GOVERNMENT AGENCIES			
6	Ms. Justine E. Padernos	PPP Center	cannot attend (informed thru email)
	Atty. Phebean Belle A. Ramos-Lacuna	PPP Center	✓
	Ms. Maria Beatriz N. Quintos	PPP Center	✓
LOCAL GOVERNMENT UNITS			
7	Mr. David John S. Vergara	LGU Quezon City	✓
	Mr. Vincent Ferdinand Paul G. Vinarao	LGU Quezon City	
DENR-EMB FOCAL PERSONS			
8	Ms. Consolacion P. Crisostomo	EMB-PPPPD	✓
	Ms. Mary Esther D. Ofiaza	EMB-PPPPD	✓
9	Mr. Geri Sanez	EMB-HWMS	
	Mr. Irvin Cadavona	EMB-HWMS	
	Mr. Santini Quiocson	EMB-HWMS	✓
	Engr. Wyona Kaye Rativo	EMB-AQMS	✓

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED
PROJECT OUTPUT COORDINATORS			
10	Dir. Angelito V. Fontanilla	DENR-FASPS	
	Mr. Eddie Abugan	DENR-FASPS	
	Ms. Marianica Philina Obmerga	DENR-FASPS	✓
11	Ms. Ma. Delia Valdez	EMB-SWMD-PMO	✓
	Ms. Eivira S. Pausing	EMB-SWMD-PMO	✓
EMB-SWMD-PMO			
12	Ms. Raquel Rosario Reyes	EMB-SWMD	
	Ms. Nelie Dimer	EMB-SWMD-PMO	
	Engr. Jedidiah Mangubat	EMB-SWMD	✓
	Ms. Rodeth Antonio	EMB-SWMD-PMO	✓
	Engr. Roxanne Barcenas	EMB-SWMD	✓
	Ms. Kris Morada	EMB-SWMD	✓
	Ms. Joan Flores	EMB-SWMD-PMO	✓

SCHEDULE OF SUB-GROUP MEETINGS for CY 2020

PROJECT OUTPUT	JUNE	JULY	AUG	SEPT	OCT	NOV
OP 1	4 (Thu)	7 (Tue)	20 (Thu)		12 (Mon)	5 (Thu)
OP 2		16 (Thu)		10 (Thu)		
OP 3					8 (Thu)	
OP 4	24 (Wed)		26 (Wed) tbc			
ITWG					15 (Thu)	
JCC						4 (Wed)

LIST OF PARTICIPANTS

NO	NAME	AGENCY/OFFICE	CONFIRMED
JICA EXPERTS TEAM (JET)			
13	Mr. Takahiro Kamishita	JICA Experts Team (JET)	✓
	Mr. Satoshi Higashinakagawa	JICA Experts Team (JET)	✓
	Mr. Makoto Kosaka	JICA Experts Team (JET)	✓
	Ms. Kyoko Kimura	JICA Experts Team (JET)	✓
	Mr. Tomoyuki Hosono	JICA Experts Team (JET)	✓
	Engr. Nikka Sales	JICA Experts Team (JET)	✓
14	Engr. Nikole Andrei Louise Mallare	JICA Experts Team (JET)	✓
	Mr. Eric Cea	JICA Experts Team (JET)	✓
	JAPAN INTERNATIONAL COOPERATION AGENCY		
	Ms. Momoko Otsuka	JICA	✓
	Mr. Christian Vic Perez	JICA	
	Ms. Florida Chan	JICA	

2ND 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

LEGISLATIONS: 18th Congress

■ Senate

Bill No.	Title	Filed By
363	<i>An Act Establishing a National Energy Policy and Regulatory Framework for Facilities Utilizing Waste-to-Energy Technologies</i>	Senator Sherwin T. Gatchalian
401	<i>An Act Allowing the Use of Waste-to-Energy Technology in Electricity, Fuel and Heat Generation and for Other Purposes</i>	Senator Francis N. Tolentino

Public Hearings (2)

L 28 January 2020
L 11 February 2020

TWG Meetings(5)

L 09, 16, 23 and 30 June 2020
L 07 July 2020

Legislation for Waste-to-Energy (WtE) Technology

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

5th Subgroup Meeting for Project Output 1 20 August 2020

ENGR. RUBY B. DE GUZMAN

Chief, Biomass Energy Management Division
Renewable Energy Management Bureau
DEPARTMENT OF ENERGY

LEGISLATIONS: 18th Congress

■ Waste-to-Energy Act

“An Act Establishing a National Energy Policy and Regulatory Framework for Facilities Utilizing Waste-to-Energy Technologies”

Update/Status

L-Committee Report for signature of Senate Members

Thank You!



Contents

1. Re-confirm the necessity,
2. Progress of drafting Tech Standards,
(Summary of discussion among PMO, DOST-ITDI and JET)
 - (1) Authority of WTEs construction and operation,
 - (2) Intermittent/small capacity of WTEs,
 - (3) Numerical Standards / LOI, Temperature of combustion gas, etc.
 - (4) Coverage/Scope of this MC,
3. Next Step,

4th Sub Group Meeting

Progress of Activity 1-4

“Preparation of draft technical standards for WTEs”

Makoto KOSAKA
MSW-PPP Expert
20 Aug 2020 (Thu)

1

1. Re-Confirm the Necessity of Tech Standards for WTEs

- ✓ CAA1999, Supreme Court Decision (controlled incineration is not banned.)
- ✓ NSWMC Resolution 669 in 2016, and DENR AO 2019-21 for WTE GL,
- ✓ There are not enough specific Structural/Operational requirements for WTEs,
- ✓ LGUs, who procures WTEs, doesn't have enough knowledge, thus,
- ✓ NG shall prepare minimum technical requirement for controlling quality of WTEs,
- ✓ JET listed requirements in Japan and EU to discuss how to apply in Philippines,
- ✓ E.g., authorized body, procedure, coverage of tech standards,
- ✓ Exhaust gas limit, Loss of Ignition (LOI), temperature of combustion chamber, etc.
- ✓ Tech Standards will be used as **check list** for both applicant and authorized body,
- ✓ Tech Standards will be integrated in **EIS process** (according to MC2020-23),
- ✓ Necessity to **harmonize with Senate Bills** recently discussed separately,
- ✓ Present status; first draft by JET,
- ✓ PMO (SWMD-EMB-DENR) and DOST-ITDI are now reviewing,
- ✓ Tentative target for the completion of draft Final is 12Oct, next SG-MTG for OPI,

2. Progress of drafting Tech Standards

(Summary of discussion among PMO, DOST-ITDI and JET)

- (1) Authority of WTEs construction and operation, <ref: MC2020-23>
 - Upon the construction, ECC shall be secured,
 - For the air/water/hazwaste generation, annual permit shall be secured,
- (2) Intermittent/small capacity of WTEs, <ref: draft MC>
 - So far don't exclude but they're not realistic.
- (3) Numerical Standards / LOI, Temperature of combustion gas, etc.
 - LOI 5% with sampling/analytical standards,
 - 850 dC x 2 sec, temp. of combustion gas,
- (4) Coverage/Scope of this MC,
 - Exclude: Hazwaste intake, Production of RDF/RPF, Compost, Animal Feed, Waste Material, and Transport Pipeline,
 - Under discussion: Gas reforming, Methane recovery, BDF production (with DOE) , Sort/Crush/Shredding (with DENR),

3. Next Step

To be brushed up by next SG-MTG for OP1 on 12Oct with PMO/DOST

SG MTGs in 2020	1 st	2 nd	3 rd	4 th	5 th	6 th	2021
Date	18Feb	05Mar	15May	20Aug	12Oct	05Nov	(cont.)
Team Setup	X						
Consideration of structure of standards		X					
Preparation of standards							
Preparation of draft standards			✖	X			
Report at dis. Seminar			✖				
Finalization of standards				✖	X		

Thank you for your attention!!

Makoto KOSAKA

JICA Expert for SWM-PPP (Solid Waste Management – Public-Private Partnership),
**Technical Cooperation Project for Capacity Development on
 Improving SWM through Advanced/Innovative Technologies**

Activity1-1: Preparation of BAT/BEP Guidelines (Information collection of WTE facilities for BAT/BEP)

Progress

- Collected cases [total cases to date (cases after 4th SG meeting)]
 - Asia:20 (4) (Japan, Singapore, Taiwan, China, India, Thailand, Vietnam)
 - Other regions:16 (2) (EU[France, Italy, Spain, Netherland, Denmark], USA)
- Analyzed information:
 - treatment capacity, area, exhaust gas emission standard, utilization of residue (bottom ash or fly ash), energy and heat recovery, etc.
 - Some specific information can not be obtained through internet.
 - A few inputs from SG members

Way forward

- Adding more cases (Target number of cases)
 - Asia +20 cases(40 in total)
 - Other regions[EU/USA] +4cases(20 in total)
- To analyze the collected data with consideration toward future utilization
- Consolidation as Guidelines

Activity1-5: Manual of WTE Ash (Fly ash and bottom ash)

Progress

- Meeting with EMB-HWMS held on July 14th (one week after 4th SG meeting)
 - Amend of DAO2013-22 (Procedures and Standards for the Management of Hazardous waste): to be completed in yr2020, while consultation with stakeholders at TWG had been postponed due to COVID-19.
 - HWMS suggestion: JET to prepare a **position paper of recommendations** to be included on the amendments of DAO 2013-22
 - Possibility of disposal of stabilized fly ash in sanitary landfills of MSW
 - Setting stricter standards in TCLP test for the practice mentioned above
 - JET request:
 - Sharing previous TWG meeting records on the amend of DAO2013-22

Way forward

- Delivery of JET's Position Paper on management/treatment of WTE to TWG of DAO2013-22 amendment
- Consultation with HWMS and the said TWG
- Incorporate the methodologies in position paper to the WTE technical standards as TCP proposal

PROJECT ACTIVITY : 5th SUB-GROUP MEETING FOR PROJECT OUTPUT 1 (ENHANCEMENT OF NATIONAL GOVERNMENTS' CAPACITY FOR SUPPORTING AND COORDINATING OF LGUs' WTE PROJECT)

DATE/TIME : 20 August 2020, 9:00AM -11:00AM (Philippine Time)

VENUE : Video Conference through Microsoft Teams

Agenda Topics	Issues/Discussions/Actions	Comments/Agreements/ Timelines	Required Actions/Responsible Agency/Person
<p>1.) Call to Order</p>	<ul style="list-style-type: none"> • Ms. Elvira S. Pausing of EMB-SWMD-PMO established the meeting which was duly called and declared a quorum based on the attendance of 10 subgroup members out of 12 invited participants. • Ms. Ma. Delia Cristina Valdez of EMB-SWMD-PMO was introduced as the new OIC Chief of SWMD, and was welcomed as the new Project Manager of the TCP. 		
<p>2.) Adoption of the Agenda</p>	<ul style="list-style-type: none"> • Ms. Pausing presented the agenda and asked the members if there are other matters that they need to discuss. She also reiterated the sequence of the meeting and later asked for the adoption of the agenda and the presence of a quorum. 	<p>➤ Agenda was moved for adoption with no comments and suggestions from the participants.</p>	
<p>3.) Acknowledgement of Attendees</p>	<ul style="list-style-type: none"> • Ms. Pausing acknowledged the presence of the subgroup members of Project Output 1. 		
<p>4.) Summary of discussions during the last Sub-group Meeting</p>	<ul style="list-style-type: none"> • Engr. Takahiro Kamishita of JET gave a brief review of the discussions during the last Subgroup Meeting for Project Output 1 held last July 07, 2020. 		

	<ul style="list-style-type: none"> ● Engr. Kamishita raised the pending membership and participation of PPPC in the TCP. ➢ Atty. Phebean Ramos-Lacuna of PPPC confirmed the PPPC’s participation in subgroup OP 1, their coordinator being Ms. Justine Padiernos of PPPC. For further concerns, Atty. Phebean Belle Ramos-Lacuna and Maria Beatriz Quintos will also be available to assist. As a rule of thumb, all three of them must be looped into all discussions moving forward. ➢ Ms. Pausing asked how the responsibilities will be divided among the three PPPC representatives. ➢ Atty. Ramos-Lacuna stated that for subgroup OP 1, all three of them will actively participate; while for the other subgroups, Ms. Padiernos will be the main representative of PPPC. 	<p>➢ PPPC officially confirmed their membership to Subgroup of Project Output 1 with Ms. Justine Padiernos as the main coordinator.</p>	
<p>5.1) Latest Updates on the TWG Discussions of WTE Bills (by PPPC)</p>	<p>Atty. Phebean Belle A. Ramos-Lacuna reported that PPPC provided quick updates to JET and PMO last July 24, 2020 through email. She then reiterated and discussed the said updates as follows:</p> <ul style="list-style-type: none"> ● The TWG only conducted five (5) TWG meetings and the last one was on July 7, 2020. ● Up to this date, no new meeting and updates had been received by PPPC yet. ● PPPC is assuming that the Senate is still on the process of discussing the bills. 		

<p>5.2) Latest Updates on the TWG Discussions of WTE Bills (by DOE-REMB)</p>	<p>From the updates provided by Atty. Ramos-Lacuna, the following discussions and agreements were defined:</p> <ul style="list-style-type: none"> ➢ Engr. Kamishita asked if there were comments from other stakeholders during the past TWG discussions. ➢ Unfortunately, Atty. Ramos-Lacuna informed that they are not allowed to share the comments of other stakeholders. ➢ Engr. Kamishita then asked for the comments of PPPC instead. ➢ According to Atty. Ramos-Lacuna, there is no assurance that PPPC's comments will be adopted. Currently, the draft WTE bill is undergoing finalization and the last version that PPPC was able to review might not be the latest version as of the moment. But when the final draft is shared to PPPC, Atty. Ramos-Lacuna promised to share relevant information to JET. 	<p>➢ PPPC to share to the TCP information about the progress on WTE Bills discussion once final draft has been shared to PPPC.</p>	
	<p>Engr. Ruby De Guzman of DOE-REMB discussed the following updates on the TWG discussions of the WTE Bills with presentation document:</p> <ul style="list-style-type: none"> • Two (2) WTE bills had been filed to the senate by Sen. Sherwin Gatchalian and by Sen. Francis Tolentino. • Two (2) public hearings and five (5) TWG meetings, held every week, were conducted. The last TWG meeting was held last July 7, 2020. Afterwards, the two (2) filed bill will be consolidated into one. 		

	<ul style="list-style-type: none"> ● The latest update from the Committee on Energy informs that the committee report had already been finalized and is up for signature of the Senate members. ● Next steps will be waiting for the final bill from the House of Representatives and consolidation into one (1) WTE Act, entitled - An Act Establishing a National Energy Policy and Regulatory Framework for Facilities Utilizing Waste-to-Energy Technologies <p>From the updates provided by Engr. De Guzman, the following discussions and agreements were defined:</p> <ul style="list-style-type: none"> ➢ Engr. Kamishita noted that the bills are mostly concerned about energy generation and usage and not much about waste management. ➢ Engr. De Guzman clarified that the details on waste management are well incorporated in the bill. ➢ Engr. De Guzman promised to share a copy of the consolidated bill to the TCP once available. ➢ Engr. Makoto Kosaka of JET asked if there is available detailed timeline of future TWG discussions or signing. He explained that this will be very helpful for the TCP. He then asked if this timeline can be shared to the TCP. ➢ Engr. De Guzman informed that they do not have such information. Instead she said that they will request from the 	<ul style="list-style-type: none"> ➢ DOE to share to the TCP a copy of the consolidated bill once provided to DOE. ➢ DOE to provide updates regarding the timeline on the TWG enactment once the Committees on Energy of Rep and Senate provided information to DOE. 	<ul style="list-style-type: none"> ➢ DOE to share to the TCP a copy of the consolidated bill once provided to DOE. ➢ DOE to provide updates regarding the timeline on the TWG enactment once the Committees on Energy of the House of Rep and Senate provided information to DOE.
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<p>6.) Presentation and discussions on the topics under:</p> <p>Activity 1-4: Updates on the Draft Memorandum Circular on WTE Technical Standards relative to DAO 2019-21</p>	<p>Committee on Energy of the House of Representatives (HoR) and Senate when will this bill be enacted. She promised to share to the TCP once the information is provided. She added that the committee will have to wait from the version from the HoR. The last meeting conducted by the HoR was before the lockdown due to COVID-19.</p> <ul style="list-style-type: none"> ➤ Engr. Kamishita then requested DOE-REMB for a copy of the presentation of Engr. De Guzman. ➤ Ms. Andrej Mallare of JET confirmed that the presentation file had already been shared to JET through email. 		
	<p>Engr. Makoto Kosaka of JET discussed the updates and status of the draft WTE Technical Standards relative to DAO 2019-21 and the related draft Memorandum Circular. He also reiterated the necessity for establishing technical standards in setting up the waste-to-energy facilities, and that the national government must proactively gather expertise to prepare the minimum technical standards for permitting and managing of WTEs.</p> <p>From the presentation of Engr. Kosaka, the following discussions and agreements were defined:</p>	<ul style="list-style-type: none"> ➤ EMB-SWMD to provide, at least next week, the complete clarifications for the set of queries sent by Mr. Kosaka regarding the draft MC and discussion points on Activity 1-4. ➤ DOE-REMB to share to JET the omnibus guidelines regarding the operational guidelines on BDF, RDF/RPF and Biogas facilities, etc. 	<ul style="list-style-type: none"> ➤ EMB-SWMD to provide, at least next week, the complete clarifications for the set of queries sent by Mr. Kosaka regarding the draft MC and discussion points on Activity 1-4. ➤ DOE-REMB to share to JET the omnibus guidelines regarding the operational guidelines on BDF, RDF/RPF and Biogas facilities, etc.

	<ul style="list-style-type: none"> ➤ Ms. Pausing informed the subgroup members that the presentation of Engr. Kosaka serves as an orientation to the draft MC as of the moment. She then asked if the subgroup members have any comment or input. ➤ Engr. Wyona Rativo of EMB-AQMS commented that based on the Clean Air Act, the current emission standard for dioxins and furans is 0.1ng-TEQ/Nm³. If changes will be suggested, the RA should be reviewed or amended. So, for now with the draft technical standards, she suggested to stick to the current emission standard. Nonetheless, she mentioned that she understands that the current standard is not practical for small WTE facilities and that the recommendations of JET can be considered in the future. ➤ Engr. Kosaka understood the comment of Engr. Rativo and explained that only the 0.1ng-TEQ/Nm³ will be mentioned to the technical guidelines that JET is drafting. ➤ Ms. Pausing informed the subgroup members about the detailed discussions of JET and PMO regarding Activity 1-4. She also informed JET that, for the another set of queries sent by Engr. Kosaka, they (PMO) will provide clarifications next week – but clarifications between JET and PMO are still ongoing. ➤ Engr. Kosaka then asked DOE-REMB if they have structural requirements on fuel facilities which relate to the BDF, RDF/RPF and biogas production. He also 	<ul style="list-style-type: none"> ➤ DOE-REMB to share to JET the omnibus guidelines regarding the operational guidelines on BDF, RDF/RPF and Biogas facilities, etc. 	
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<p>Activity 1-1: Updates/progress on the implementation of Activity 1-1 (BAT/BEP Guidelines)</p>	<p>requested for a separate consultation regarding the matter.</p> <ul style="list-style-type: none"> ➤ According to Engr. De Guzman, they have structural and operational requirements on Biogas facilities. She asked for confirmation is the feedstock for these facilities will be MSW? ➤ Engr. Kosaka confirmed that the feedstock will be MSW. ➤ Engr. De Guzman added that last October 2019, DOE issued an omnibus guideline on the operation requirements of the said facilities. She promised to provide a copy of the department circular to JET, which has already been received by the team as of August 24. This is not applicable yet! ➤ JET, together with PMO and DOST-ITDI, will brush up draft technical standards then final draft will be presented to sub group members before scheduled sub group members, 12Oct.20 <p>Engr. Takahiro Kamishita of JET mainly discussed the current updates or progress on the implementation of Activity 1-1 (BAT/BEP Guidelines).</p> <p>From the presentation of Engr. Kamishita, the following discussions and agreements were defined:</p> <ul style="list-style-type: none"> ➤ Engr. Kamishita reiterated that the subgroup members should also provide information on candidate BAT/BEP cases for data collection. 	<p>➤ Subgroup members of Project Output 1 to also provide candidate cases of BAT/BEP from Asia and other countries.</p>	<p>➤ Subgroup members of Project Output 1 to also provide candidate cases of BAT/BEP from Asia and other countries.</p>
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<p>Activity 1-5: Updates/progress on the implementation of Activity1-5 (Management of WtE Ash Treatment)</p>	<ul style="list-style-type: none"> ➤ Ms. Pausing asked JET for the timeline of the collection of BAT/BEP cases. She then asked of the current number of collected cases is not yet enough. ➤ Engr. Kosaka presented the timeline which was provided during the March 5 subgroup meeting. ➤ Engr. Kamishita explained that the collection will be until October 2020. Based on the work flow, he explained that JET plans to collect 20 more cases from Asia and 4 more cases from other regions. Afterwards, he informed that JET will discuss with PMO how the collected cases will be consolidated. He also added that several adjustments may be incorporated in the timeline given the current status of the activities. ➤ Mr. Kamishita reiterated that the inputs and efforts of other subgroup members are needed to complete the guidelines ➤ Engr. Kosaka informed that the draft guideline might come later since collection of cases takes time. ➤ Engr. Kamishita added that the finalization of guideline is scheduled on March 2021. He explained that the draft guideline may be delayed but the finalization schedule will still be the same. <p>Engr. Takahiro Kamishita of JET discussed the updates/progress on the implementation of Activity1-5 (Management of WtE Ash Treatment).</p>	<p>➤ JET to present Draft BAT/BEP guideline on October 2020.</p>	<p>➤ JET to present Draft BAT/BEP guideline on October 2020 and agreed finalization is on March 2021. (Note: The October 2020 is the agreed schedule for the presentation to the SG members of the draft Technical Standards)</p>
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	<p>From the presentation of Engr. Kamishita, the following discussions and agreements were defined:</p> <ul style="list-style-type: none"> ➤ Engr. Santini Quiocson of EMB-HWMS asked JET for the timeline of the requested position paper containing the recommendations of JET to be included on the amendment of DAO 2013-22. ➤ Engr. Kamishita responded that JET will send the position paper by September 11, 2020. ➤ Engr. Kamishita then asked for the status of the TWG discussions on the amendment of DAO 2013-22. He explained that JET also needs to consider the timeline of the TWG. ➤ According to Engr. Quiocson, the TWG is still on the process of consolidating the comments from other stakeholders. ➤ Ms. Pausing then asked Engr. Quiocson if he agrees with the provided schedule of JET. ➤ Engr. Quiocson mentioned that he will need to consult first with his EMB-HWMS colleagues regarding the exact timeline, so that he can confirm the schedule provided by JET. 	<ul style="list-style-type: none"> ➤ JET to deliver position paper of recommendations to EMB-HWMS on September 11, 2020 and to continue consultation with the EMB-HWMS. ➤ EMB-HWMS to share to JET the timeline and the previous TWG meeting records on the amendment discussion of DAO 2013-22. 	<ul style="list-style-type: none"> ➤ JET to deliver position paper of recommendations to EMB-HWMS on September 11, 2020 and to continue consultation with the EMB-HWMS. ➤ EMB-HWMS to share to JET the timeline and the previous TWG meeting records on the amendment discussion of DAO 2013-22.
<p>7.) Wrap-up/Required Actions/Agreements</p>	<p>Ms. Nikka Sales of JET wrapped up the earlier discussions and reiterated the agreed arrangements. She also presented the pending requests by JET.</p> <p>From the presentation of Ms. Sales, the following discussions and agreements were defined:</p>	<ul style="list-style-type: none"> ➤ PPPC to provide inputs, until at least the first week of September, regarding the 	<ul style="list-style-type: none"> ➤ PPPC to provide inputs, until at least the first week of September,

	<ul style="list-style-type: none"> ➤ Atty. Ramos-Lacuna promised that PPPC will provide inputs within two weeks regarding the pending request on Activity 1-2 (examples of study policies, mechanisms, & cost sharing schemes to promote WTE used by PH & other countries). ➤ Ms. Pausing also updated that EMB-SWMD-PMO already sent the letter of request for the CLUP of LGU Quezon City (LGU QC). ➤ According to Ms. David Vergara of LGU QC, the letter had been submitted to the City Planning and Development Office, and that he will provide updates within the day. ➤ Ms. Sales also mentioned that Engr. Kamishita requested, through email, for the land use map of Davao City to Engr. Roxanne Barcenas of EMB-SWMD-PMO. ➤ Ms. Pausing then responded that PMO will provide updates through email. ➤ Lastly, Ms. Momoko Otsuka of JICA gave a closing message to the meeting participants. She expressed her gratitude to everyone's participation and the continuation of the activities of this TCP amidst the COVID-19 pandemic. ➤ Engr. Kamishita also expressed his gratitude to the subgroup members and mentioned that JET will prepare for the next subgroup meetings. 	<p>pending request on Activity 1-2 (examples of study policies, mechanisms, & cost sharing schemes to promote WTE used by PH & other countries).</p> <ul style="list-style-type: none"> ➤ QC LGU to provide updates regarding the requested CLUP. ➤ PMO to update JET regarding additional request (Land Use Map) to Davao City. <p>➤ Request for the Land Use Map already sent to Davao LGU (Engr. Madrazo and Engr. Orcullo) through email</p>	<p>regarding the pending request on Activity 1-2 (examples of study policies, mechanisms, & cost sharing schemes to promote WTE used by PH & other countries).</p> <ul style="list-style-type: none"> ➤ QC LGU to provide updates regarding the requested CLUP. ➤ PMO to update JET regarding additional request (Land Use Map) to Davao City.
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<p>8.) Way forward, Schedule of the next meeting</p>	<p>Ms. Pausing discussed the proposed schedule for the next subgroup meeting:</p> <ul style="list-style-type: none"> ➤ Ms. Pausing mentioned that originally, the proposed next subgroup meeting for Output 1 will be on Oct 12. ➤ She also mentioned that the next subgroup meeting for Project Output 4 will be on August 27. • Adjournment ➤ There be no other matters to be discussed, Ms. Pausing adjourned the meeting at 11:00 AM by extending her appreciation to all the Sub-group members and other participants who joined the meeting. 		
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添付資料 11-2: 成果1サブグループ会議

11-2-6 : 6th SG1

6TH SUB-GROUP MEETING FOR PROJECT OUTPUT 1

ENHANCEMENT OF NATIONAL GOVERNMENT'S
CAPACITY FOR SUPPORTING
AND COORDINATING OF LGUs WtE PROJECTS

12 October 2020, Monday, 9:00 AM-12:00 AM
(via Teams)

6TH SUB-GROUP MEETING FOR PROJECT OUTPUT 1 ENHANCEMENT OF NATIONAL GOVERNMENT'S CAPACITY FOR SUPPORTING AND COORDINATING OF LGUs WtE PROJECT

TENTATIVE AGENDA

- Call to Order/Meeting Objectives/Acknowledgement of Attendees and Adoption of Agenda - Ms. Elvira S. Pausing, EMB-SWMD-PMO
- Summary of discussions during the last meeting - Engr. Takahiro Kamishita, JET
- Technical Presentations by JET:
 - Under Activity 1-4: Updates on the Draft Memorandum Circular on WtE Technical Standards relative to DAO 2019-21 - Engr. Makoto Kosaka, JET
 - Updates/progress on the Activity 1-1 (BAT/BEP Guidelines) - Engr. Satoshi Higashinakagawa, JET
- Wrap-up/Required Actions/Agreements/Timelines - Engr. Andrei Mallare, JET
- Other Matters

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED
CONCERNED GOVERNMENT AGENCIES			
1	Mr. Nonilo Peña	DOST-PCIEERD	
	Ms. Emelita A. Dimapilis	DOST-PCIEERD	
2	Mr. Reynaldo L. Esguerra	DOSH-ITDI	
	Mr. Dante C. Vergara	DOST-ITDI	
	Engr. Rochelle L. Retamar	DOSH-ITDI	
3	Ms. Ruby De Guzman	DOE-REMB	
	Mr. Romeo M. Galangam	DOE-REMB	
	Ms. Charisse Jane Pascual	DOE-REMB	
4	Mr. Carlo Mari Crisregienald C. Tan	DILG-BLGS/NAPOLCOM Center	
	Atty. Ma. Rhodora Flores	DILG-BLGS/NAPOLCOM Center	
	Ms. Maria Clarisol L. Agas	DILG-BLGS/NAPOLCOM Center	
5	Mr. Aldwin U. Urbina	NEDA-IPG	
	Mr. Kevin Gilbert M. Manzano	NEDA-IPG	
	Mr. Gilbert V. Kintanar, Jr.	NEDA-IPG	

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED
CONCERNED GOVERNMENT AGENCIES			
6	Ms. Justine E. Padernos	PPP Center	
	Atty. Phebean Belle A. Ramos-Lacuna	PPP Center	
	Ms. Maria Beatriz N. Quintos	PPP Center	
LOCAL GOVERNMENT UNITS			
7	Mr. David John S. Vergara	LGU Quezon City	
	Mr. Vincent Ferdinand Paul G. Vinarao	LGU Quezon City	
DENR-EMB FOCAL PERSONS			
8	Ms. Consolacion P. Crisostomo	EMB-PPPDD	
	Ms. Mary Esther D. Ofiaza	EMB-PPPDD	
9	Mr. Geri Sanez	EMB-HWMS	
	Mr. Irvin Cadavona	EMB-HWMS	
	Mr. Santini Quiocson	EMB-HWMS	
	Engr. Wyona Kaye Rativo	EMB-AQMS	

LIST OF PARTICIPANTS

NO.	NAME	AGENCY/OFFICE	CONFIRMED
PROJECT OUTPUT COORDINATORS			
10	Dir. Angelito V. Fontanilla	DENR-FASPS	
	Mr. Eddie Abugan	DENR-FASPS	
	Ms. Marianica Philina Obmerga	DENR-FASPS	
11	Ms. Ma. Delia Valdez	EMB-SWMD-PMO	
	Ms. Eivira S. Pausing	EMB-SWMD-PMO	
EMB-SWMD-PMO			
12	Ms. Raquel Rosario Reyes	EMB-SWMD	
	Ms. Nelie Dimer	EMB-SWMD-PMO	
	Engr. Jedidah Mangubat	EMB-SWMD	
	Ms. Rodeth Antonio	EMB-SWMD-PMO	
	Engr. Roxanne Barcenas	EMB-SWMD	
	Ms. Kris Morada	EMB-SWMD	
	Ms. Joan Flores	EMB-SWMD-PMO	

SCHEDULE OF SUB-GROUP MEETINGS for CY 2020

PROJECT OUTPUT	JUNE	JULY	AUG	SEPT	OCT	NOV	Dec
OP 1	4 (Thu)	7 (Tue)	20 (Thu)		12 (Mon)	5 (Thu)	
OP 2		16 (Thu)		10 (Thu)			
OP 3					8 (Thu)		
OP 4	24 (Wed)		26 (Wed) tbc				
ITWG						2 nd week	
JCC							1 st week

LIST OF PARTICIPANTS

NO	NAME	AGENCY/OFFICE	CONFIRMED
JICA EXPERTS TEAM (JET)			
13	Mr. Takahiro Kamishita	JICA Experts Team (JET)	
	Mr. Satoshi Higashinakagawa	JICA Experts Team (JET)	
	Mr. Makoto Kosaka	JICA Experts Team (JET)	
	Ms. Kyoko Kimura	JICA Experts Team (JET)	
	Mr. Tomoyuki Hosono	JICA Experts Team (JET)	
	Engr. Nikole Andrei Louise Mallare	JICA Experts Team (JET)	
	Mr. Eric Cea	JICA Experts Team (JET)	
JAPAN INTERNATIONAL COOPERATION AGENCY			
	Ms. Momoko Otsuka	JICA	
	Mr. Christian Vic Perez	JICA	
	Ms. Florida Chan	JICA	

2ND 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



6th Sub Group Meeting for

Output 1-1 “Updates/progress on the Activity 1-1 (BAT/BEP Guidelines)”

14th Oct 2020 (Wednesday)

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

1

Summary of Current Progress of Collected BAT/BEP (Part of Collection)

Table of Contents

1. Introduction
2. General Description of WtE facility
3. Analysis of Case Studies
 - 3.1 Technical Aspects
 - 3.1.1 Size /Capacity (Capacity, Area)
 - 3.1.2 Waste Characterization (Lower Calorific Value)
 - 3.1.3 Type and Manufacturer of Incinerator
 - 3.1.4 Energy Recovery (Electricity/Thermal)
 - 3.1.5 Environmental Pollution Abatement (Exhausted Gas, Wastewater)

Table of Contents

- 3.1.6 Residual Handling (Bottom and Fly Ash)
- 3.2 Institutional / Financial Aspects
 - 3.2.1 Project Implementation (Schedule, Scheme, Scope)
 - 3.2.2 Financial (CAPEX, OPEX, Cost Sharing Scheme)
 - 3.2.3 Public Participation
4. Salient Feature of Case Studies
5. Conclusion and Recommendation

Contents of Today’s Presentation

1. Draft table of contents of BAT/BEP guideline and overall progress
2. Brief explanation of analysis result of case studies
3. Summarization of progress and next step

Summarize of Current Progress

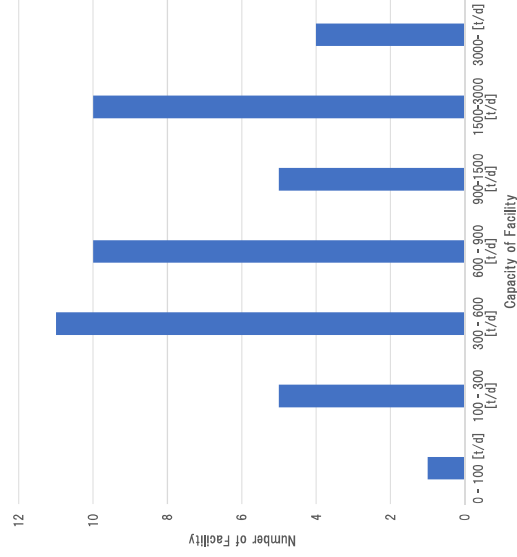
- 46 case studies have been collected with 20 Japanese, 9 the other Asian countries and 17 EU and USA countries.
- In the collected case studies, it is difficult to collect some types of the information such as CAPEX and OPEX including cost sharing scheme, project implementation period or detail technical information through web sites.
- There are some lack of data in web sites, even though it should be publicized.



Though currently we implement data collection based on some websites and other sources, it might be considered of other methods for data collection except web sites.

Size and Capacity of Incinerator

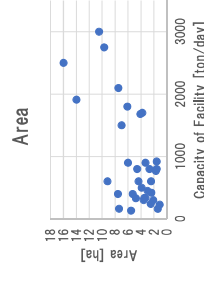
- Most of selected facilities are 300 [t/d] to 3000 [t/d]
- Generally, the capacity of incinerator is large in Europe,
- On the other hand, the capacity of incinerator is small in Japan.
- In case of Asia, the capacity of incinerators in China or Singapore is normally large but other countries is small scale.



Area and Size of Incinerators

- Utilization of limited area (Case of Singapore)

The WTE facility was developed with the compact design with the limitation of land availability. The total area is 1.6 ha for the WTE capacity of 800 ton/day in case of Keppel Seghers Tuas.



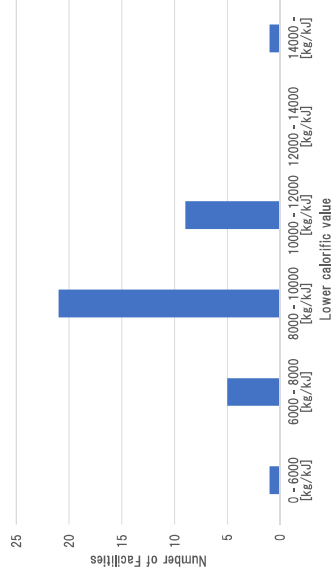
At least, approximately 2 - 4 [ha]/1000 [ton/day] will be necessary.



- Lower height of stack (Case of Japan)
The plant is built on Iwakuni city in Hiroshima prefecture. Because an airport is near the site, the stack is only 25 m height due to the requirement.

Waste Characterization (Lower calorific value)

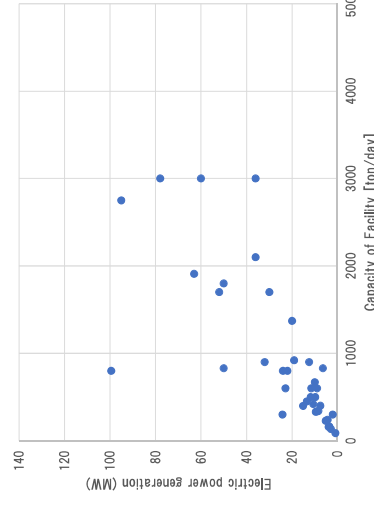
- In most of WtE facilities, the average lower calorific value is around 8,000 to 10,000 [kJ/kg]
- However, there are some facilities which can receive the waste of less than 6,000 [kJ/kg] or more than 14,000 [kJ/kg]



Basically, around 6000 to 14000 [kJ/kg] is acceptable for WtE facility.

Energy Recovery (as Power Generation)

- Electric power generation efficiency basically depends on the capacity of WtE
- However, pressure or temperature of the entrance of turbine generator or the utilization of surplus heat energy such as combined cycle affects the efficiency



- Basically, the electricity generation capacity is approximately 20MW/1000 [ton/day].
- However, it may depend on the energy recovery technique.

Energy Recovery (as Power Generation)

Item	Technology	Explanation
- Optimum heat exchange	- Reduction of boiler exit temperature	- Utilization of lower temperature economizer cause large amount of heat exchange in the process
	- Lower air ratio combustion or exhausted gas circulation	- Use of enhanced process control will maximize combustion efficiency to control optimum air ratio and exhausted gas circulation
- Effective utilization of steam	- No utilization of steam for reheating of exhausted gas after cooling	- In case of wet exhausted gas treatment system or prevention of white fume, exhausted gas is necessary of reheating which cause the reduction of power generation efficiency
	- No utilization of wastewater closed system	- In case of utilization of closed system of water usage, the temperature at boiler exit will be set as higher temperature.
- Increase of the efficiency of steam turbine system	- Introduction of high temperature and pressure boiler	- Increasing steam pressure and temperature will allow greater energy to be recovered in the steam turbine.
	- Integration with fossil fueled fired power plant (external superheating)	- Exhausted gas from gas turbine generator will add to the energy by combustion gas from WtE, which cause the increase of energy efficiency

Material recycle in bottom ash or slag

Material recycle in bottom ash or slag	- Ferrous scrap metal in bottom ash is separated up by electro-magnetic separators to sell local steel mill factory.
Ash utilization	- Ash can be utilized for road construction material after melting - Bottom ash can be utilized for cement ingredient after removing chloride composition.



Energy Recovery (as Thermal Utilization)



Utilization of surplus heat after utilization of electric power generation

- District heating
- Hot bath for community
- Botanical garden
- Sky resort
- Pool, etc



Environmental Pollution Abatement Process

Exhausted Gas Standard

	Japanese Law	Facility standard	Actual
Japan (Shinkoto)			
NOx [ppm]	250	60	36 - 41
HCl [ppm]	430	15	<2
SO2 [ppm]	Area basis	20	<1
HF [ppm]	-	-	-
Particulates [g/Nm3]	0.08	0.02	<0.001
Mercury [μg/Nm3]	50	-	<5
DXNs [ng/Nm3]	0.1	-	<0.00005

	EU (0.7-12%)	Japan (0.7-12%)
Exhausted Gas		
NOx [ppm]	87.7	250
HCl [ppm]	5.5	430
SO2 [ppm]	15.7	28
Particulates [mg/Nm3]	9	80
Mercury [μg/Nm3]	45	50
DXNs [ng/Nm3]	0.09	0.1

	EU & French Law	Facility standard
France (Isseane)		
NOx [mg/Nm3]	200	65
HCl [mg/Nm3]	10	5
SO2 [mg/Nm3]	50	17
HF [mg/Nm3]	1	0.8
Particulates [mg/Nm3]	10	3
Mercury [μg/Nm3]	50	30
DXNs [ng/Nm3]	0.1	0.07

- Prepare stricter standard for facility in Japan and EU
- The national standard in EU is generally stricter than in Japan
- Facility standard or actual data in Japan satisfies the EU standard generally

Environmental Pollution Abatement Process

Major Pollution Prevention Techniques

Pollutant	Typical Abatement Techniques
Particulates	Bag filters, Electrostatic precipitators, Cyclones
Oxides of Nitrogen (NOx)	Flue gas recirculation, SNCR and SCR
Acid Gases (Sulphur Dioxide, Hydrogen Chloride, Hydrogen Fluoride)	Wet, Semi-dry or Dry scrubbers, Bag filters
Heavy Metals (Mercury, Cadmium, Lead, Copper etc)	Bag filters, Activated carbon injection
Dioxins and Furans	Flue gas recirculation, Bag filters, Activated carbon injection

Summarization of Progress

- 46 case studies have been collected but some data collection is difficult.
- Plant capacity or power generation data is collected relatively easily
- However, the collection of the financial data such as CAPEX or OPEX and detail technical information only from web site are difficult.

Next Step

- Consideration of implementation of questionnaire survey by delivering survey sheet to implementation organization or relevant stakeholders (Data collection until end of this year)
- Continuously data analysis and guideline preparation will be implemented until end of March in next year.

Maraming salamat po !

PROJECT ACTIVITY : 6th SUB-GROUP MEETING FOR PROJECT OUTPUT 1 (ENHANCEMENT OF NATIONAL GOVERNMENTS' CAPACITY FOR SUPPORTING AND

COORDINATING OF LGUs' WTE PROJECT)

DATE/TIME : 14 October 2020, 9:00AM - 11:00AM (Philippine Time)

VENUE : Video Conference through Microsoft Teams

Agenda Topics	Issues/Discussions/Actions	Comments/Agreements/ Timelines	Required Actions/Responsible Agency/Person
<p>1.) Call to order / Meeting Objectives/ Acknowledgement of Attendees and Adoption of Agenda (Ms. Elvira Pausing)</p>	<ul style="list-style-type: none"> • Ms. Elvira Pausing of EMB-SWMD-PMO commenced the 6th subgroup meeting for Project Output 1 when quorum was reached and all presenters for the meeting have signed in. • Ms. Pausing presented the agenda and asked the members if there are other matters that they need to discuss, and later moved the adoption of the agenda and the presence of a quorum. • Ms. Pausing acknowledged the presence of the subgroup members of Project Output 1 	<p>→ Agenda was moved for adoption with no comments and modifications from the participants.</p>	
<p>2.) Summary of discussions during the last sub-group meeting for OPI (Mr. Takahiro Kamishita)</p>	<ul style="list-style-type: none"> • Engr. Takahiro Kamishita of JET gave a brief review of the discussions during the last Subgroup Meeting for Project Output 1 held last August 20, 2020. • Engr. Kamishita raised the pending action points from the last meeting: <ul style="list-style-type: none"> DOE to provide updates regarding the timeline on the TWG enactment once the Committees on Energy of the House of Rep and Senate provided information to DOE. <p>Subgroup members of Project Output 1 to also provide candidate cases of BAT/BEP from Asia and other countries.</p>		<ul style="list-style-type: none"> • [DOE] DOE to provide updates regarding the timeline on the TWG enactment once the Committees on Energy of the House of Rep and Senate provided information to DOE. • [SG1 members] All subgroup members of Project Output 1 are enjoined to provide candidate cases of BAT/BEP from Asia and other countries.

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<p>3.1) Technical Presentations by JET: Updates on Activity 1-4 (Mr. Makoto Kosaka)</p>	<p>JET to deliver a position paper of JET’s recommendations to EMB-HWMS to be considered in the amendment of DAO 2013-22.</p> <p>EMB-HWMS to share to JET the timeline and the previous TWG meeting records on the amendment discussion of DAO 2013-22.</p> <p>Engr. Makoto Kosaka of JET discussed the updates and status of the draft WTE Technical Standards relative to DAO 2019-21 and the related draft Memorandum Circular.</p> <p>The whole draft MC was discussed, going through each point and soliciting comments from the subgroup. Here are the points of discussion in the presented draft:</p> <ul style="list-style-type: none"> • (Title) Removal of the term “incineration” per discussion with PMO and DOST and substituting “Appropriately controlled combustion” instead • (Scope) Confirmation with DOE on existing functional/operational requirements for Biofuel/Biogas/RDF/RPF Production facilities 	<p>→ Pending activity for JET; JET has an outstanding request for consultation to look into ash disposal practices in the Philippines that has not been reverted back to yet.</p> <p>→ Ms. Pausing suggested for “Appropriately controlled combustion” to be appropriately defined in Section 2: Definition of Terms</p> <p>→ Ms. Charisse Pascual of DOE-REMB mentioned that omnibus guidelines have already been provided, detailing the requirements for application. On the functional/operational standards, none exist. Mr. Kosaka mentioned</p>	<ul style="list-style-type: none"> • [JET] JET to deliver a position paper of recommendations to EMB-HWMS • [EMB-HWMS] EMB-HWMS to share to JET the timeline and the previous TWG meeting records on the amendment discussion of DAO 2013-22.

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	<ul style="list-style-type: none"> ● [Section 4.3] Exhaust Gas Control- Parameters in exhaust gas monitoring, and monitoring frequency ● [Section 4.2.4] Clarification on Allowances for Variance of WTE facilities 	<p>that the technical standards established here</p> <p>→ Ms. Pascual clarified if the other thermal treatment systems be covered for the technical standards, to which Mr. Makoto mentioned that only incineration will be covered. Engr. Kamishita further elaborated that the bounds of this Activity1-4 in the TCP only covers incineration, which was the basis for the decision to restrict the scope.</p> <p>→ Mr. Irvin Cadavona of EMB-HWMS suggested for AQMS to be tapped in the discussion of the monitoring frequency and exhaust gas monitoring. Engr. Roxanne Barcenas of EMB-SWMD-PMO responded by saying that consultations with AQMS are already being facilitated</p> <p>→ In a previous consultation with Engr. Esguerra of DOST-ITDI, he mentioned that AQMS has an old document/protocol that details the allowances provided by AQMS in assessing gas emissions while waiting for the facility to run in steady state</p> <p>→ According to Engr. Barcenas per her consultation with Ms. Wyona</p>	<ul style="list-style-type: none"> ● [AQMS through Engr. Barcenas] Mr. Kosaka would like to know from AQMS if more frequent monitoring activities are done on top of the quarterly and semi-annual submission of reports being prepared. ● [JET to Engr. Esguerra] For further consultation to verify the legislation he was pertaining to on variance during the earlier consultation of JET with DOST.

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	<ul style="list-style-type: none"> ● [Section 4.3.3 and Section 4.5.1] Validation of the Legislations cited: RA 8749 Section 19 for Section 4.3.3 RA 6969 and DAO 2013-22 for Section 4.5.1 ● [Section 4.6.1] Noise Control ● [Section 4.6.1] Prevention of Vibration ● [Section 4.6.2] Offensive Odor Management ● [Section 4.5] Ash Management ● [Section 2] Definition of terms- Residual Waste 	<p>Ratavo of EMB-AWMS, RA 8749 does not stipulate variance, only of the overall operation of the facility, citing table 2 of the DAO 2000-81.</p> <p>→ Furthermore, Engr. Barcenas mentioned that Ms. Ratavo promised to send her comments on the draft technical standards to Engr. Barcenas.</p> <p>→ Legislations cited in the technical standards were validated by Engr. Jedidah Mangubat and Ms. Nelie Dimer of EMB-SWMD-PMO.</p> <p>→ For Noise Control, Engr. Mangubat has provided the reference that is observed in the Philippines in controlling noise pollution.</p> <p>→ According to Engr. Mangubat, there are no standards on vibration management.</p> <p>→ According to Engr. Mangubat, there are no existing standards on offensive odor management.</p> <p>→ Mr. Cadavona mentioned that the appropriateness of RA 6969 for ash management will be determined by the content of the ash upon analysis.</p> <p>→ Mr. David Vergara of QC LGU asked if sending wastes to WTE</p>	<ul style="list-style-type: none"> ● [Engr. Barcenas] Share to Mr. Kosaka the comments that will be sent by Ms. Ratavo on the technical standards prepared. ● [HWMS] Mr. Cadavona promised to share comments on the Section 4.5 to ensure proper compliance to HWMS protocols and use of proper terminologies. ● [PMO] For further verification from PMO to be provided by Engr. Mangubat and Engr. Barcenas.

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		<p>facilities can be considered as part of cities' waste diversion efforts.</p> <p>→ Ms. Joan Flores of EMB-SWMD-PMO responded that residuals processed in WTE facilities can be considered as residuals with potential for diversion, citing the WACS guidelines mentioning that: “residuals with potential for recycling refers to wastes that would normally be considered for disposal in a sanitary landfill due to economic viability but may eventually be recycled if feasible techniques or technologies would be available to an LGU provided these are dry and not contaminated by hazardous or food wastes”</p>	<ul style="list-style-type: none"> • [JET] Ms. Racquel Reyes of EMB-SWMD-PMO proposed for JET to incorporate this in the revised definition of “residual waste” in the draft MC. • [JET] Mr. Kosaka shall send the clean version of the file, and asks for the subgroup members to submit their comments on the file on or before October 28. A formal request from JET will be sent to formalize the solicitation of comments from the subgroup members.
<p>3.2) Technical Presentations by JET: Updates on Activity 1-1 (Mr. Satoshi Higashinakagawa)</p>	<p>Mr. Satoshi Higashinakagawa of JET discussed the updates and status of the collection of BAT/BEP for Activity 1-1.</p> <ul style="list-style-type: none"> • In his presentation, Mr. Higashinakagawa summarized the findings from the 46 BAT/BEP cases that have been collected so far. In his discussion, he highlighted that populating the table summary for each BAT/BEP case proved to be challenging because of several missing information that were not gathered during data collection from websites and existing documents. • Mr. Higashinakagawa would like to propose the direct correspondence with the 		<ul style="list-style-type: none"> • [JET] Request meeting with PMO to ask help in reaching out to the implementation bodies to verify the

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	<p>implementing body of the BAT/BEP examples by asking them to fill up a survey sheet to verify the data collected by JET, and supply the missing information. To execute this, Mr. Higashinakagawa asked for the help of PMO in contacting the implementing body to answer the survey. Ms. Pausing agreed to this alternative data collection method, and further details shall be discussed in a personal email or in another meeting.</p> <ul style="list-style-type: none"> ● Ms. Pausing pointed out that JET is still 14 cases short from the target 60 BAT/BEP cases and expressed concern if JET will be able to deliver to the October 2020 deadline for the BAT/BEP guidelines. Mr. Kamishita pointed out that the deadline for this activity has been changed to March 2021 based on previous discussions. Mr. Kamishita assured the subgroup that the March deadline will give more than enough time for the remaining 14 examples to be collected. 		<p>collected data, and supply missing information not gathered from research.</p>

<p>5.) Wrap-up, Required Actions, and Agreements</p>	<ul style="list-style-type: none"> Ms. Andrei Mallare of JET wrapped up the earlier discussions and reiterated the arrangements and timelines as agreed. In summary, the following requests/ points of action are requested based on the discussions: <ul style="list-style-type: none"> [All Subgroup Members] <ul style="list-style-type: none"> All subgroup members of Project Output 1 are enjoined to provide candidate cases of BAT/BEP from Asia and other countries. Send comments to the Technical Standards presented, on or before October 28. <p>[DOE]</p> <ul style="list-style-type: none"> DOE to provide updates regarding the timeline on the TWG enactment once the Committees on Energy of the House of Rep and Senate provided information to DOE. <p>[EMB-HWMS]</p> <ul style="list-style-type: none"> EMB-HWMS to share to JET the timeline and the previous TWG meeting records on the amendment discussion of DAO 2013-22. Mr. Cadavona promised to share comments on the Section 4.5 to ensure proper compliance to HWMS protocols and use of proper terminologies. <p>[AQMS through Engr. Barcenas]</p> <ul style="list-style-type: none"> Mr. Kosaka would like to know from AQMS if more frequent monitoring activities are done on top of the quarterly and semi-annual submission of reports being prepared. 	<p>→ No clarifications and/or alterations raised by the subgroup members.</p>	
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	<ul style="list-style-type: none"> ● Share to Mr. Kosaka the comments that will be sent by Ms. Rattivo on the technical standards prepared. <p>[PMO]</p> <ul style="list-style-type: none"> ● On the inquiry of Mr. David Vergara, for further verification from PMO to be provided by Engr. Mangubat and Engr. Barcenas. ● Set schedule of ITWG meeting per the availability of DENR key officials. <p>[JET]</p> <ul style="list-style-type: none"> ● JET to deliver a position paper of recommendations to EMB-HWMS ● For further consultation with Engr. Esguerra to verify the legislation he was pertaining to on variance during the earlier consultation of JET with DOST. ● Ms. Racquel Reyes proposed for JET to incorporate this in the revised definition of “residual waste” in the draft MC. ● Mr. Kosaka shall send the clean version of the file, and asks for the subgroup members to submit their comments on the file on or before October 28. A formal request from JET will be sent to formalize the solicitation of comments from the subgroup members. ● Request meeting with PMO to ask help in reaching out to the implementation bodies to verify the collected data, and supply missing information not gathered from research. 		

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6.) Way forward, Schedule of the next meetings	<p>Ms. Pausing discussed the proposed schedule for the next subgroup meeting:</p> <ul style="list-style-type: none"> - Ms. Pausing asked JET if the November subgroup meeting for OP1 will proceed as planned or if ITWG should push through first. - Mr. Kamishita replied by saying that JET would like to present with ITWG first before setting the next subgroup meeting. In line with this, Mr. Kamishita asks for the help of Ms. Pausing to solicit the availability of DENR key officials for the ITWG meeting so the dates can be finalized. - Per the next subgroup meeting for Output 3, Mr. Kamishita did not confirm yet if the November schedule will push through as planned, and will still depend on the progress of the communication of JET with ERLSD. • Adjournment <p>With no other matters to be discussed, Ms. Pausing adjourned the meeting at 11:00 AM by extending her appreciation to all the subgroup members and other participants who joined the meeting.</p>		