Evaluation Summary of the Suitable Technology

Based on the Booklet:
Good Practices and Technologies other than WTE

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Environmental Management Specialist
Cebu City Environment and Natural Resources Office

September 8, 2022

Outline of Topics

1. Cost recovery of SWM
2. Collection and transportation
3. Intermediate treatment/3R
4. Landfill
5. Information, Education, and Communication (IEC)
6. Waste Analysis and Characterization Study (WACS)

1. Cost Recovery

	Technical aspect	Economic aspect	Cultural aspect	Environmental aspect
Charge on a waste bag designated by local government	Solid waste will be disposed using a plastic bag regulated by the City.	It will provide income generation for the City for the charge on the waste bag, at the same time the City can regulate the collection of wastes.	Since cost on plastic bag is involved, residents are mindful of the waste they generate, thereby reducing waste generation. It will also habituate them to use their own re-usable bags or eco-bags.	Solid waste generation is minimized.

1. Cost Recovery

	Technical aspect	Economic aspect	Cultural aspect	Environmental aspect
Volume-based fee system using designated garbage bags	Solid wastes (segregated) are contained in garbage bags designed by the City, which are priced depending on its volume.	Since generators are paying by volume, it provides more income to the City, compared to the current amount of disposal fee.	People will become more mindful of the volume of waste they generate, because they pay more if they generate more waste volume.	Waste disposal is expected to be minimized, since people will be more mindful of the volume they generate.

1. Cost Recovery

	Technical aspect	Economic aspect	Cultural aspect	Environmental aspect
Sale of recyclables	Recyclable wastes is segregated from the waste stream. This initiative requires that an MRF be established and segregation must be strictly implemented.	Proceeds from the sale of recyclable wastes will provide additional income stream to the City, which can be used in solid waste management activities.	The residents will be more discipline in segregating recyclable wastes.	Disposal of recyclable wastes to the landfill can be minimized.

2. Collection and transportation

	Technical aspect	Economic aspect	Cultural aspect	Environmental aspect
Door-to-door collection	Each household is expected to take responsibility for the segregation of their wastes. Solid waste will be collected at an established time of collection. Other than allowed schedule, wastes will not be collected.		Households will be accountable of the waste they produce. Unsegregated wastes will not be collected.	While door-to-door collection takes time, it will ensure that solid wastes from the households are collected and disposed of properly. For this initiative, the DPS shall establish a regular schedule of collection.

2. Collection and transportation

	Technical aspect	Economic aspect	Cultural aspect	Environmental aspect
Station collection for recyclable wastes	Barangays or cluster of barangays may designate collection station for recyclable wastes.	The collected recyclable wastes can provide income generation to the City or Barangay.	The residents will be mindful of their solid waste generation and practice segregation of wastes.	It promotes segregation, diversion of wastes, and minimizes landfilling.

2. Collection and transportation

	Technical aspect	Economic aspect	Cultural aspect	Environmental aspect
Drop off sites for recyclable wastes and hazardous wastes (For this initiative, the City shall partner with an Accredited Waste Treatment Facility)	The City or Barangay may designate appropriate drop off stations for recyclable wastes or even household hazardous wastes.	This minimizes disposal costs since lesser amount of solid wastes are disposed of to the landfill. It will provide an income to the Barangay through sales of recyclable wastes.	The residents will be mindful of their solid waste generation and practice segregation of wastes.	Will ensure collection of recyclable wastes and households hazardous wastes, especially in Barangays where there is no Materials Recovery Facility.

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Accredited Garbage Haulers

Hauler	Equipment	Average volume hauled per month	Address of Disposal Facility
Mantech Management Services Corp.	2-garbage compactor 2-mini dump truck 2-open garbage truck 1-10 wheeler long dump truck	300 tons	Pangdan, Naga City, Cebu
Fortunato Hauling Services	Multicab		
Rmj Private Hauling Services	Multicab	2tons	
Annie's Hauling Services	Multicab		
Pinoy Basurero Corporation	2 compactor trucks 1 mini dump truck 1 sipnon (suction) truck		Binaliw 1 Sitiokainsikan, Brgy. Binaliw Cebu City
JCKA Junkshop	Elf truck Forward truck	2 tons (wet)	White Road Inayawan Binaliw Talamban Cebu City
Marjun A. Coleta Garbage Hauler	Boots Gloves Hat	400kg	
HaslilponiAro Construction	Mini Dump trucks Dump Trucks		

3. Intermediate treatment/3R

	Technical aspect	Economic aspect	Cultural aspect	Environmental aspect
Food Waste Recycling	The program will help divert food wastes and minimize wastes sent to landfill facilities.	Will significantly reduce the disposal costs, since lesser volume of waste is disposed to the landfill.	This will promote segregation of biodegradable wastes among City residents.	The activity is a good waste diversion initiative, in which the output may also be used as fertilizer for the farmers.

3. Intermediate treatment/3R

	Technical aspect	Economic aspect	Cultural aspect	Environmental aspect
Ecobrick Movement	Eco-brick utilizes plastic bottles which is tightly packed and used as stable block substitute.	The eco-brick may be used as a stable block substitute, or alternative construction material.	The residents will be encouraged to segregate bottles and plastics.	Plastics that will otherwise just be sent to landfill sites are turned into eco-bricks.

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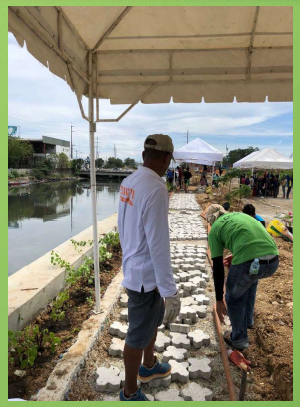
3. Intermediate treatment/3R

	Technical aspect	Economic aspect	Cultural aspect	Environmental aspect
Plastic for Rice Program	The program enables residents to receive rice in exchange for recyclable wastes.	The collected recyclable wastes will provide additional income stream for the City, which may be used for solid waste management activities.	The residents will habitually practice segregation, so they can exchange their segregated wastes for rice.	The initiative will promote segregation and minimized landfill disposal.

Other initiatives:
Plastic bottles into Bio-fence

Other initiatives:
Eco-pavements using shredded glass bottles

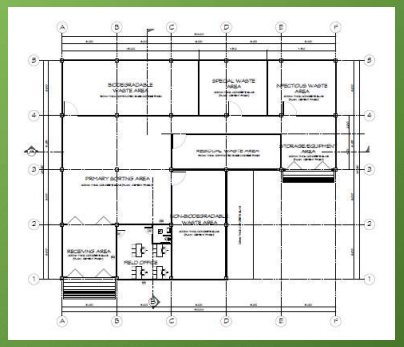


Other initiatives:
Biodegradable waste processing

Appendix 12

Other initiatives:
Operationalize the Plastic Shredding Facility

Other initiatives:
Future plan to establish an MRF



Other initiatives:
Future plan to implement the "No Segregation, No Collection Policy"

Section 21, RA No. 9003. Mandatory Segregation of Solid Wastes

The LGUs shall evaluate alternative roles for the public and private sectors in providing collection services, type of collection system, or combination of systems, that best meet their needs: Provided, That **segregation of wastes shall primarily be conducted at the source**, to include household, institutional, industrial, commercial and agricultural sources.

Other initiatives:
To Strengthen Enforcement of SW Ordinances

- CCENRO Enforcers
- City Environmental Sanitation and Enforcement Team (CESET)
- Barangay Environmental Officers (BEO)
- Deputized Enforcers

Appendix 12

4. Landfill

The practices and technologies provided therein are deemed appropriate such as, utilizing fences and retaining walls, dry soil cover, leachate management system, gas ventilation system, etc. – these are not applicable to the City since there is no City-owned landfill.

Cebu City Inayawan Sanitary Landfill

SAFE CLOSURE AND REHABILITATION PLAN

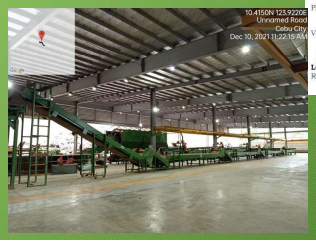
December 2018

Inayawan Sanitary Landfill Profile

ECC No:	9112-016-213C issued on April 3, 1993
Land area:	15.41 hectares
	11.73 hectares dumping area
	3.68 hectares service area
Start of Operation:	September 11, 1998
End of Operation:	December 16, 2016
Solid Waste Deposited:	1,191,871.54 m^3
Ave. density of SW deposit:	580 kg/m^3
Highest elevation:	15 m

Final Disposal Site

ARN Central Waste Management, Inc.
Brgy. Binaliw
Cebu City



MR. JOSELITO GULLAS
President
ARN Central Waste Management, Inc.
Barangay Binaliw, Cebu City

JUN 03 2020

Subject: 1st Amendment of Environmental Compliance Certificate (ECC No.: ECC-R07-1711-0010)

Dear Mr. Gullas,

This refers to the Environmental Compliance Certificate (ECC) amendment application for the **ARN Central Materials Recovery Facility and Sanitary Landfill** Projectlocated in Sitio Kalinsikan, Barangay Binaliw, Cebu City, Region VII.

After satisfying the requirements of the said application, this Bureau has decided to grant an ECC for the above-mentioned project.

With the issuance of this ECC, you are expected to implement the measures presented in the initial Environmental Examination Checklist (IEEAC), intended to protect and mitigate the project's adverse impacts on community health, welfare and the environment. Environmental considerations shall be incorporated in all phases and aspects of the project.

This Certificate does not create any right nor be used as an authorization to implement the project. Therefore, you are hereby reminded to secure all the necessary permits from other pertinent government agencies but not limited to as stated in Annex B of the original ECC. This Office shall be monitoring the project periodically to ensure strict compliance with the stipulations cited in the attached ECC.

Please be guided accordingly.

Very truly yours,

LORMELYN E. CLAUDIO, CESO IV
Regional Director

5. Information, Education, and Communication (IEC)

	Technical aspect	Economic aspect	Cultural aspect	Environmental aspect
Promotion of segregation; providing leaflet on waste segregation	The City will provide leaflet that details the schedule of collection for each type of wastes.	The City shall allocate budget for the IEC materials.	The residents can check the waste classification and the collection day using the leaflet.	The initiative will prevent improper waste disposal among residents, and promote segregation at source.

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5. Information, Education, and Communication (IEC)

	Technical aspect	Economic aspects	Cultural aspect	Environmental aspect
Promotion of SWM for private companies; requiring them to attend SWM course	The City will organize seminars to spread awareness of good solid waste management practices in which the private companies are required to attend as a pre-condition of the issuance of licenses.	The City will establish effective incentive systems to encourage the communities of companies to abide with the solid waste management practices and regulations.	The companies and its employees will be made aware of proper solid waste management practices.	This will ensure that solid waste management and environmental regulations are observed by the companies.

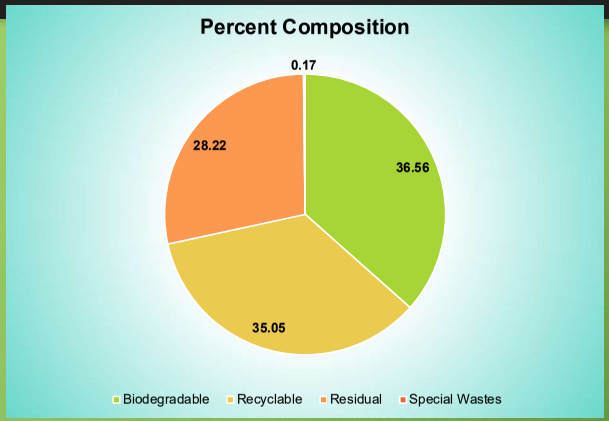
5. Information, Education, and Communication (IEC)

	Technical aspect	Economic aspect	Cultural aspect	Environmental aspect
IEC Events and Conferences	The LGU will organize an event which will raise awareness among residents, institutions, and economic parties on the city ordinances or environmental regulations.	The City must have a venue and allocate budget for such event and conferences.	The activity will raise awareness among participants/.	This will ensure that solid waste management and environmental regulations are observed by the residents, institutions, and stakeholders.

6. Waste Analysis and Characterization Study (WACS)

	Technical aspect	Economic aspect	Cultural aspect	Environmental aspect
WACS with a classification	In this study, the quantity of the different classification of wastes are identified. The data obtained can be used to improve the waste diversion and collection activities.			

Waste Analysis and Characterization Study (Cebu City, 2016)



Percent Composition by Classification	
Biodegradable	36.56%
Recyclable	35.05
Residual - For diversion - **For disposal**	28.22% - 13.70% - **14.52%**
Special wastes	0.17%
TOTAL	**100%**

Projected Waste Generation

Year	PCG	Population	Waste Generated (kg/day)
2015	0.934	922,611.00	861,718.67
2016	0.934	934,3\28.16	872,662.50
2017	0.934	946,194.13	883,745.31
2018	0.934	958,210.79	894,968.88
2019	0.934	970,380.07	906,334.99
2020	0.934	982,703.90	917,845.44
2021	0.934	995,184.24	929,502.08
2022	0.934	1,007,823.08	941,306.75
2023	0.934	1,020,622.43	953,261.35
2024	0.934	1,033,584.33	965,367.77
2025	0.934	1,046,710.85	977,627.94
2026	0.934	1,060,004.08	990,043.81
2027	0.934	1,073,466.13	1,002,617.37
2028	0.934	1,087,099.15	1,015,350.61

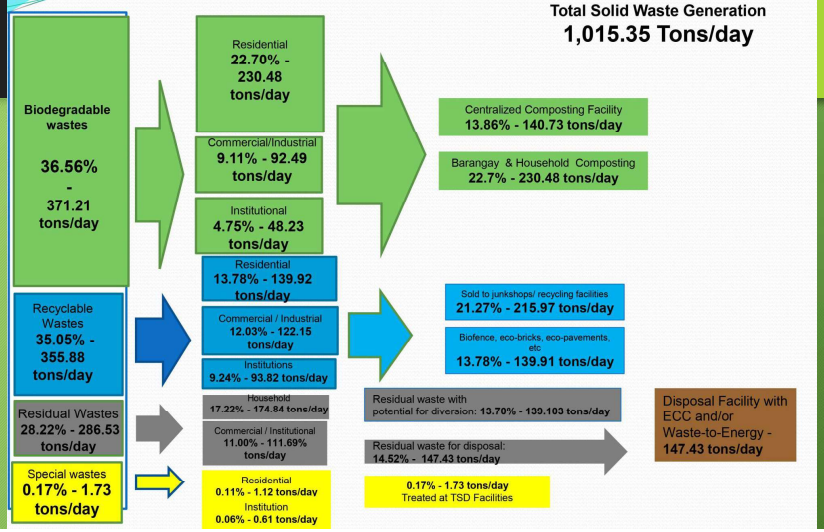
Percent Composition of Disposed Waste (based on WACS)

	Percent	Kg/Day	Kg/Year	Tons/Year
Biodegradable from Non-public market	23.00%	198,195.30	72,341,282.68	72,341.28
Recyclable	0.00%	-	-	-
Residual	14.52%	125,121.55	45,669,366.28	45,669.37
Special	0.17%	1,464.92	534,696.44	534.70
TOTAL	**37.69%**	**324,781.77**	**118,545,345.40**	**118,545.35**

6. Waste Analysis and Characterization Study (WACS)

	Technical aspect	Economic aspect	Cultural aspect	Environmental aspect
Regular Study and disclosure of WACS data to the public	The data from the updated WACS can be widely used for analysis, policy development, solid waste monitoring, and promotion of proper solid waste management.		The WACS shall be disclosed to the public, which will effectively raise resident's awareness of the solid waste generation trend in the community.	

Planned Waste Management System



Thank you.

Appendix 12

SWM Practices other than WtE

STATUS, PLANS & UPDATES

Lakandiwa Soliman R. Orcullo, ChE, RN, EnP
Acting Division Head , CENRO - Environmental Waste Mgt. Division

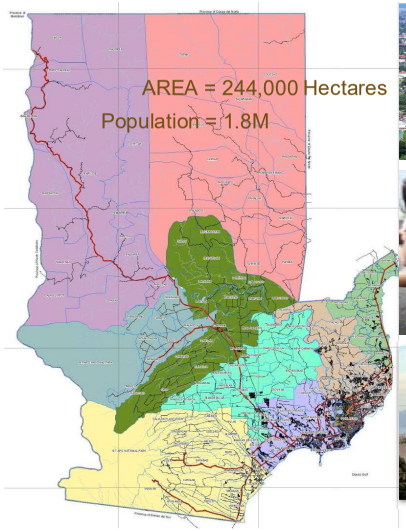
DAVAO CITY, PHILIPPINES

POLICY SUPPORT

1. **Republic Act No. 9003,** *"Ecological Solid Waste Management Act of 2009"*
2. **City Ordinance No. 044-02,** *"An Ordinance Creating the Davao City Ecological Solid Waste Management Board."*
3. **City Ordinance No. 0361-10,** *"Davao City Ecological Solid Waste Management Ordinance of 2009."*
4. **City Ordinance No. 0291-17,** *"2017 Revenue Code of the City of Davao."*
5. **City Ordinance No. 0500-21,** *"No to Single-Use Plastics Ordinance of 2021"*
6. **City Ordinance No. 0706-21**, *"An Ordinance amending City Ordinance No. 0361-10, introducing a 'No Contest Provision' and for other purposes."*
7. **NSWMC Resolution No. 1322 series of 2019,** *"A Resolution Approving the Ten Year Solid Waste Management Plan of Davao City"*
8. **City Ordinance No. 0658-21,** *"An Ordinance adopting and approving the 10-year Solid Waste Management Plan of Davao City"*

DAVAO CITY, PHILIPPINES

KEY CHALLENGES



Spread of Developments
↓
Scarcity of area for Landfilling

Increasing Population
↓
Increase in SW generation

Rapid Urbanization
↓
Need for more SWM Facilities

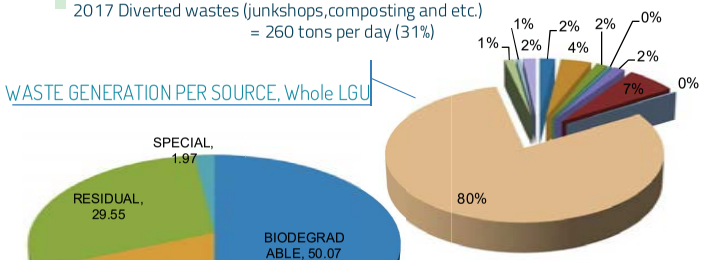
DAVAO CITY, PHILIPPINES

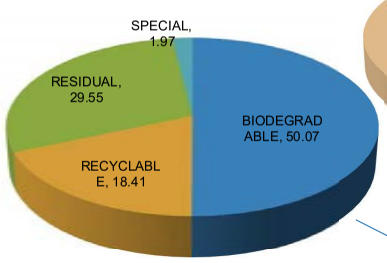
SOLID WASTE PROFILE

WASTE ANALYSIS & CHARACTERIZATION STUDY (WACS), 2017

- Average per capita generation = 0.58 kg/day
- 2017 Average waste generation, entire LGU (182 brgys) = 991 tons per day
- 2017 Ave. Waste generation, coll. Area (112 brgys) = 835 tons per day
- 2017 Ave. Disposal in the SLF = 575 tons per day (69%)
- 2017 Diverted wastes (junkshops,composting and etc.) = 260 tons per day (31%)

WASTE GENERATION PER SOURCE, Whole LGU





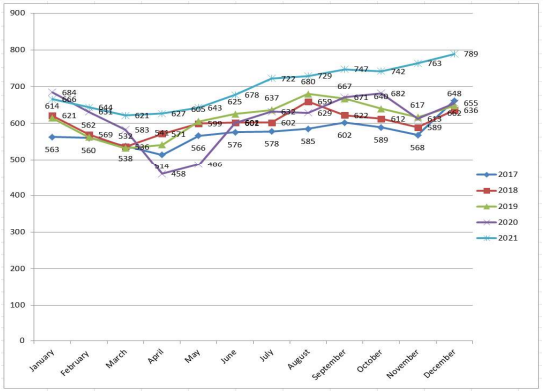
WASTE DISTRIBUTION PER TYPE, Weight. basis

DAVAO CITY, PHILIPPINES

CURRENT STATUS

Projected increase in waste generation *[Data from 10-Year SWM Plan (2018-2027)]*

YEAR	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
DAVAO CITY, Population per 2015 Census	1,708,109	1,745,667	1,783,226	1,820,785	1,858,344	1,895,903	1,933,461	1,971,020	2,008,579	2,046,138	2,083,697
Solid Waste Generation, Tons per day	991	1,012	1,034	1,056	1,078	1,100	1,121	1,143	1,165	1,187	1,209



Actual Average Disposal in SLF, Tons per day

	2017	2018	2019	2020	2021
January	563	621	614	684	666
February	560	569	562	631	644
March	538	536	532	583	621
April	514	571	541	458	627
May	566	599	605	486	643
June	576	602	625	601	678
July	578	602	637	632	722
August	585	659	680	629	729
September	602	622	667	671	747
October	589	612	640	682	742
November	568	589	617	613	763
December	662	636	648	655	789
AVERAGE	575	602	614	610	698

2021
No. of Brgys covered : 120
No. of Trucks per day: 140 Ave.

DAVAO CITY, PHILIPPINES

EXISTING MEASURES

MAXIMIZATION OF RESOURCES/ WASTE MINIMIZATION

ROLES & RESPONSIBILITIES

Section 23. ***Roles and Responsibilities of Barangays.***

Section 28. ***Materials Recovery Facility (MRF) and Buy-back Centers in barangays.***

Section 24. ***Composting by Barangays.***

Section 25. ***Composting by Households.***

Section 26. ***Composting by Establishments.***

CITY ORDINANCE 361-10
"Davao City Ecological Solid Waste Management Ordinance"


Materials Recovery Facility


Composting

DAVAO CITY, PHILIPPINES

EXISTING PRACTICES

RECYCLABLE WASTES


Old newspapers to eggtray
(Jomaray Pulp Packaging Industries)


Aluminum to Pots
(Tanduyan Metal Crafts)

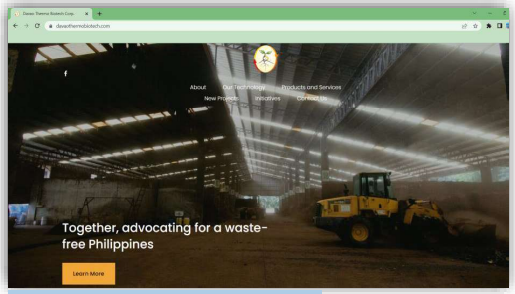

Cullets to new bottles
(Beverage Companies)


Waste plastics to New plastic products
(Envirotech Waste Recycling, Tamaraw Plastics)

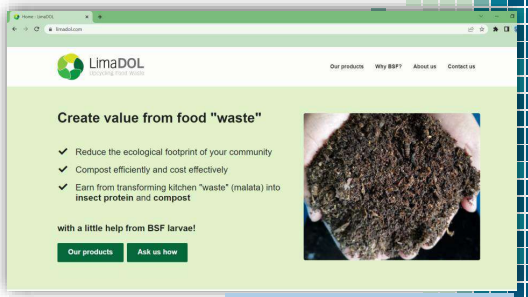
DAVAO CITY, PHILIPPINES

EXISTING PRACTICES

BIODEGRADABLE WASTES



DAVAO THERMOBIOTECH CORP.
Composting utilizing hyperthermophyllic bacteria



LimaDOL Upcycling Food Waste
Composting utilizing Black Soldier Fly larvae

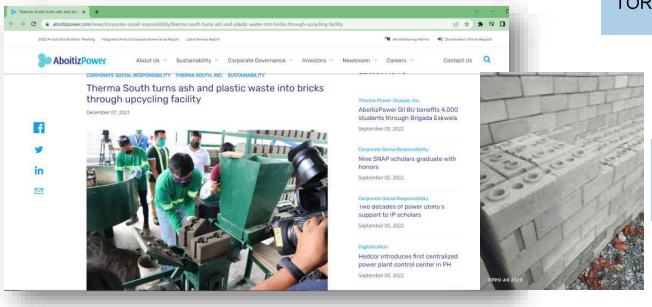

DAVAO SANITARY LANDFILL COMPOSTING
Rotary Drum Composters

DAVAO CITY, PHILIPPINES

EXISTING PRACTICES

RESIDUAL WASTES

TORIL KALAMBUAN WOMEN'S ASSOCIATION
Upcycling of wastes through Handicraft Making



BRICK Hub Project of TSI
-upcycling of TSI power plant's ash byproducts and the community's plastic waste into sustainable and high-value construction materials

EXISTING MEASURES

WASTE MINIMIZATION

Section 34.

AWARENESS CAMPAIGNS

Special Collection:
P5,000 per truckload
Tipping Fee:
P3.00 per kilo
Per Ordinance No. 0291-17 or "The 2017 Tax Revenue Code of Davao City

Section 21.

IMPOSITION OF SPECIAL COLLECTION AND TIPPING FEES FOR LARGE GENERATORS OF WASTES (3 cu.m. or more)

CITY ORDINANCE 0361-10

"Davao City Ecological Solid Waste Management Ordinance"

Section 41.

INCENTIVES AND REWARDS SYSTEM

EXISTING MEASURES

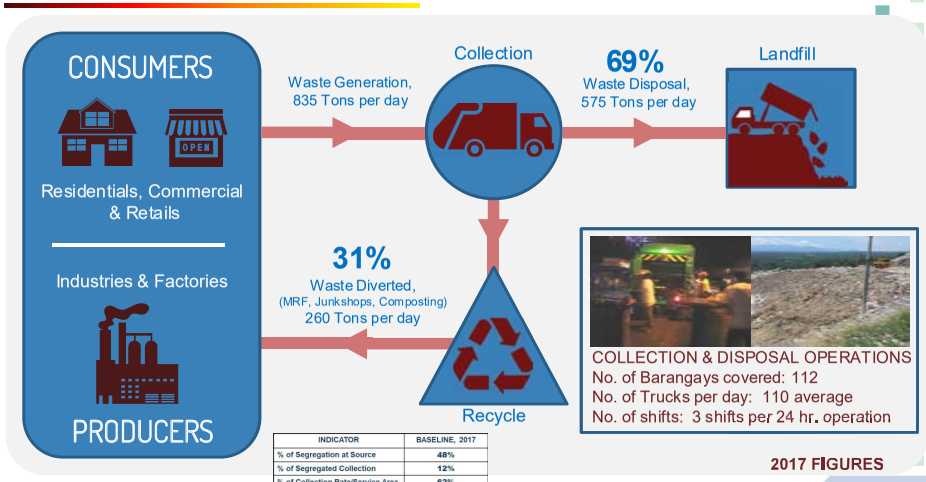
ENFORCEMENT

UPDATE ON THE ENFORCEMENT OF CITY ORDINANCE NO. 0361-10.

	PARTICULARS	January 2022	February 2022	March 2022	April 2022	May 2022	June 2022	July 2022	August 15, 2022	Total
1	No. of apprehended violators	397	361	132	388	407	385	318	107	2,495
2	No. of offenders that rendered community service	4	8	9	4	2	1	2	1	31
3	No. of offenders that paid the fine	190	194	53	182	180	218	176	74	1,267
4	Fines collected (Php)	95,000.00	97,000.00	61,000.00	104,500.00	94,500.00	122,500.00	108,000.00	37,000.00	Php 720,500.00
5	No. of cases filed in court	203	159	70	202	87	103	23	-	412

Section 49. Enforcement Unit. An Enforcement Unit shall be created under the City ENRO that shall be primarily responsible for the enforcement of the provisions of this Ordinance. The members of the Enforcement Unit, after undergoing the necessary training, shall have the power to apprehend violators of this Ordinance and issue citation tickets.

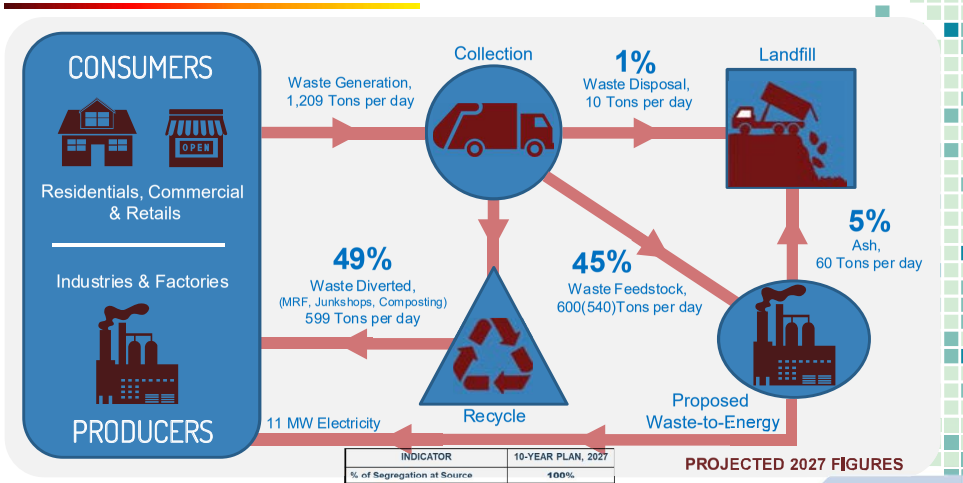
10-YR SOLID WASTE MGT. PLAN (2018-2027)



INDICATOR	BASELINE, 2017
% of Segregation at Source	48%
% of Segregated Collection	12%
% of Collection Rate/Service Area	62%
% Waste Diversion Rate	31%
Disposal facility (tons per day)	SLF 575 tons/day with an area of 38,000 sq.m.

2017 FIGURES

10-YR SOLID WASTE MGT. PLAN (2018-2027)

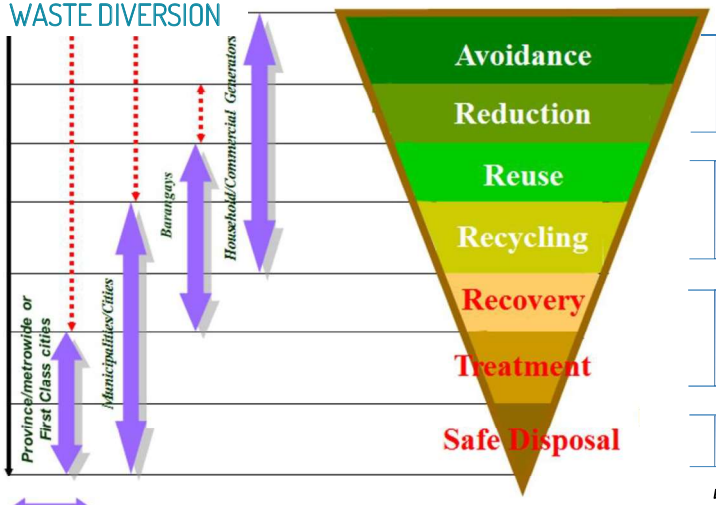


INDICATOR	10-YEAR PLAN, 2027
% of Segregation at Source	100%
% of Segregated Collection	100%
% of Collection Rate/Service Area	100%
% Waste Diversion Rate	92%
Disposal facility (tons per day)	SLF w/ WTE

PROJECTED 2027 FIGURES

DAVAO CITY, PHILIPPINES

WASTE DIVERSION



Overall policy of RA 9003
based on waste management hierarchy

MINIMIZATION/PREVENTION
- Waste Reduction Policies (i.e.Single-use plastic ban, Davao City SWM Ordinance)
- Strengthening of 3Rs & Segregation
- IEC Campaigns

RECYCLING
- Maximise resource recovery through Central MRF, Composting and Brgy. MRFs.
- Promote private investments (junkshops, buy-back centers, recyclers)

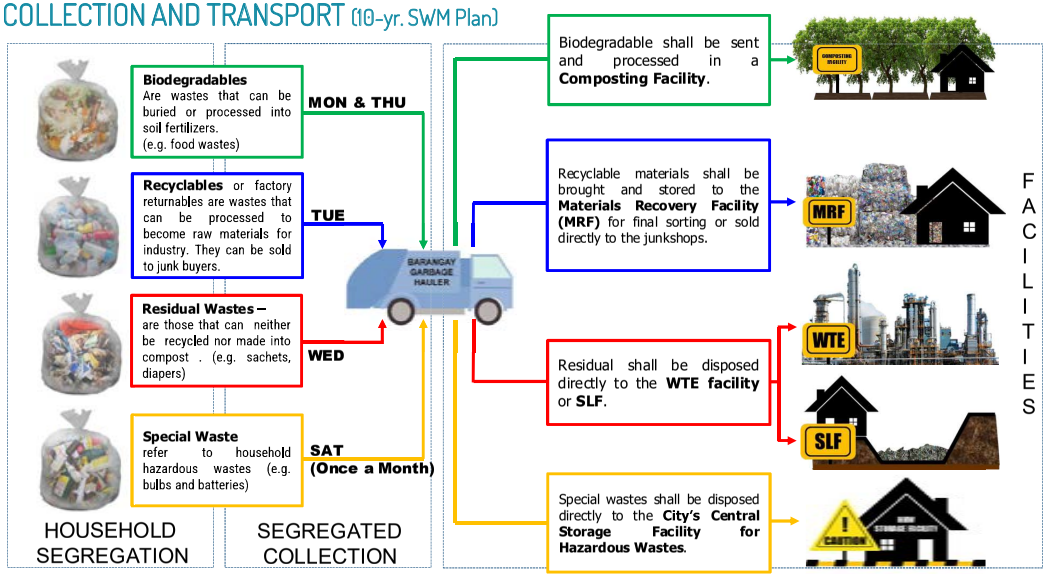
WASTE-TO-ENERGY/VOLUME REDUCTION
- Energy recovery from waste through WtE.
- Extending useful life of landfill through volume reduction

SANITARY LANDFILL
- 92 to 94% Target diversion

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

DAVAO CITY, PHILIPPINES

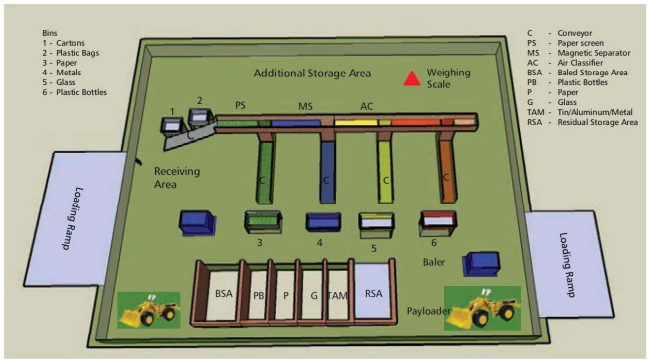
COLLECTION AND TRANSPORT (10-yr. SWM Plan)



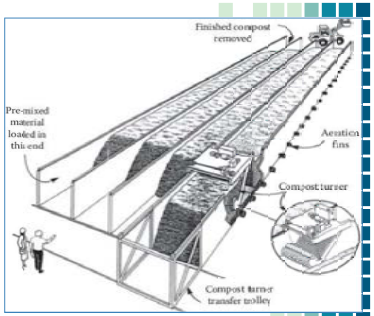
DISPOSAL MANAGEMENT (10-yr. SWM Plan)

Proposed Central Materials Recovery and Composting Facility
(Annual Development Fund 2023 – Php 90 M)

Figure 4 Diagram of an Automated Material Recovery Facility



Source: Asian Development Bank – Materials Recovery Facility Tool Kit

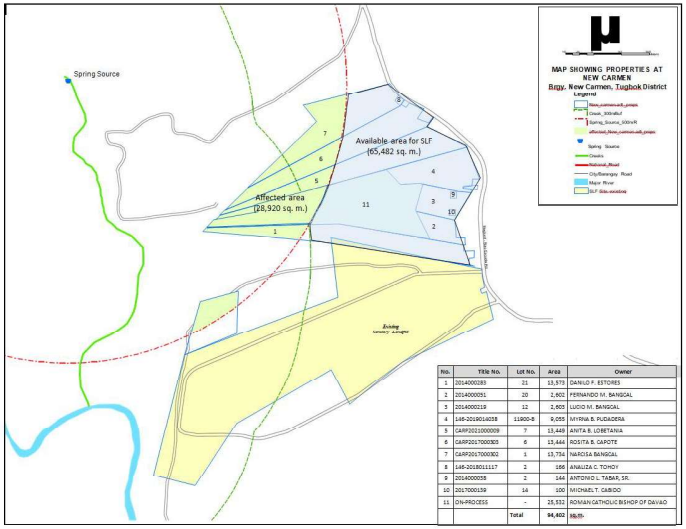


Sample illustration

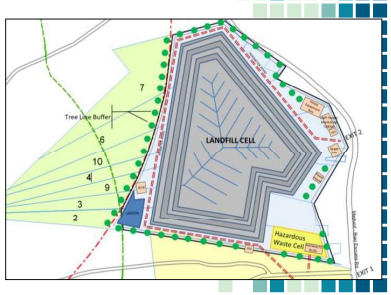
DAVAO CITY, PHILIPPINES

Appendix 12

DISPOSAL MANAGEMENT (10-yr. SWM Plan)



No.	Title No.	Lot No.	Area	Owner
1	2014000283	21	13,573	DANILO P. ESTORES
2	2014000051	20	2,602	FERNANDO M. BANGCAL
3	2014000219	12	2,603	LUCIO M. BANGCAL
4	146-2019014058	11900-B	9,055	MYRNA B. PUDADERA
5	CARP2021000009	7	13,449	ANITA B. LOBETANIA
6	CARP2017000305	6	13,444	ROSITA B. CAPOTE
7	CARP2017000302	3	13,734	NARCISA BANGCAL
8	146-2018011117	2	166	ANALIZA C. TOHOY
9	2014000058	2	144	ANTONIO L. TABAR, SR.
10	2017000159	14	100	MICHAEL T. CABIDO
11	ON-PROCESS	-	25,932	ROMAN CATHOLIC BISHOP OF DAVAO
		Total	84,402	sq.m.



Proposed Expansion of Sanitary Landfill with provision of Hazardous Waste Containment

DAVAO CITY, PHILIPPINES

Daghang Salamat!

DAVAO
LIFE IS HERE

Appendix 12-4:
Final Seminar

AGENDA
Technical Cooperation Project (TCP) for the Capacity Development on Improving Solid Waste Management (SWM) through Advanced/ Innovative Technologies Project
Final Dissemination Seminar

Time	Content/Topic	Person-in-charge
08:30 – 09:00	Registration	
09:00 – 09:05	Opening Ceremonies (National Anthem / Opening Prayer)	
09:05 – 09:15	Welcome Remarks	**Mr. Soichiro Ide** Senior Representative JICA Philippines
09:15 – 09:30	Opening Remarks	**Engr. Vizminda Osorio** Assistant Director DENR-EMB
09:30 – 10:10	Report on TCP Summary and Accomplishments 1.) Video Presentation 2.) Project Completion Report	**Mr. Takahiro Kamishita** JICA Expert Team
10:10 – 10:20	Coffee break / AM Snacks	
10:20 – 10:30	TCP Involvement of Target LGUs: Accomplished activities, Lessons learned, and future SWM Plans	**Engr. Lakandiwa Orcullo** Davao City LGU
10:30 – 11:20	TCP Involvement of Target LGUs: Accomplished activities, Lessons learned, and future SWM Plans	**Mr. Arlie Gesta** **Atty. Aliko Garganera** Cebu City LGU
11:20 – 12:00	Open Forum	
12:00 – 13:00	Lunch	
13:00 – 13:45	**Output 1: Enhancement of National Government's capacity to support and coordinate LGU's WTE projects** Manual for Planning, Formulation, Evaluation and Contract Management (PFEC) of WTE projects in the Republic of the Philippines Joint Administrative Order (JAO) on the Guidance Document for the Operation of the WTE Facility on Appropriately Controlled Combustion (ACC) Case Study Analysis for the Guideline of Best Available Technique/ Best Environmental Practice (BAT/BEP)	**Mr. Makoto Kosaka** JICA Expert Team **Engr. Reynaldo Esguerra** DOST-ITDI **Mr. Takahiro Kamishita** JICA Expert Team
13:45 – 14:30	**Output 2: Enhancement of target LGU's capacity for Planning, Evaluation, Formulation, and Supervision of WTE project** Support to SWM PPP Projects to Clarify Responsibility of LGUs under PPP Scheme	**Ms. Ma. Cynthia Hernandez** Undersecretary Public-Private Partnership Center

14:30-15:00	Open Forum Coffee break / PM Snacks	
15:00 – 15:45	**TCP Products: Output 3** Enhancement of National Government's capacity for environmental monitoring Standard Operating Procedures and Other Activities on the Dioxins Analysis Component	**Mr. Roger Evangelista** ERLSD
15:30 – 16:15	**TCP Products: Output 4** Enhancement of National Government's and target LGU's capacity to identify issues and provide suggestion/recommendation for SWM technologies other than WTE	**Engr. Glory Rose Manatad** Cebu City LGU
16:15 – 16:50	Open Forum	
16:50 – 17:00	Closing Remarks	**Ms. Ruby De Guzman** DOE-REMB

The Project for Capacity Development
on Improving Solid Waste Management
through Advanced/Innovative Technologies
in the Republic of Philippines

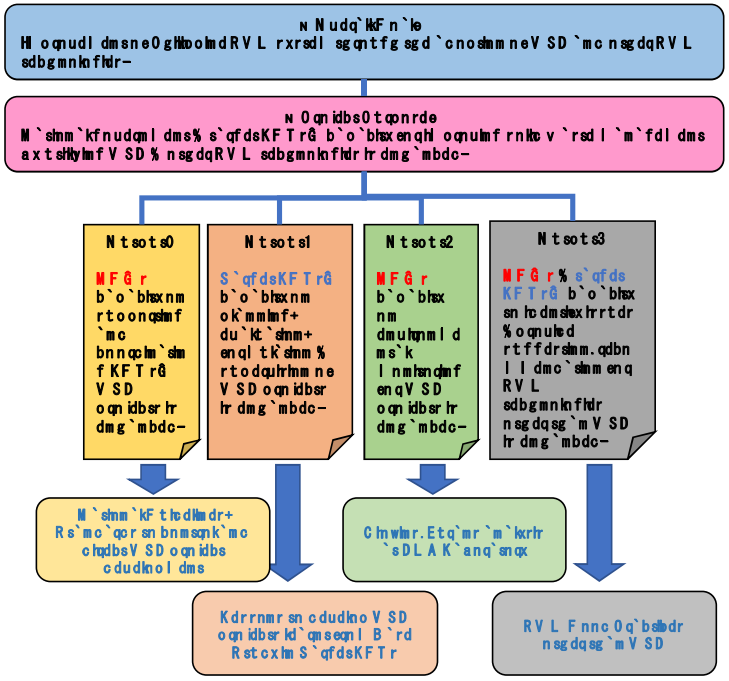
- Project Completion-

December 2022
JICA Expert Team

Project outline

- Project objective:
  The Project intends to manifest the outputs and the project purpose by implementing activities based on the R/D and the Project Design Matrix (PDM).
- Duration:
  from March 2019 to December 2022 (3years 9months)
- Counterparts:
  - Implementing agency: DENR-EMB
  - Target LGUs: Quezon City, Davao City & Cebu City
  - Inter-agency Technical Working Group (ITWG)
  - Cooperation agency: NSWMC
- Target area:
  - Whole Philippines with special attention to Quezon, Davao, and Cebu cities.

Project Design



Project Design Matrix (PDM)

- Overall Goal:
  Improvement of Philippine SWM system through the adoption of WTE and other SWM technologies.
- Project Purpose:
  National government & target LGUs' capacity for improving solid waste management by utilizing WTE & other SWM technologies is enhanced.

Appendix 12

Project Design Matrix (PDM) (cont.)

- Output 1:
  National government's capacity on supporting and coordinating LGUs' WTE projects is enhanced.
- Output 2:
  Target LGUs' capacity on planning, evaluation, formulation & supervision of WTE projects is enhanced.
- Output 3:
  National government's capacity on environmental monitoring for WTE projects is enhanced.
- Output 4:
  National Government's & target LGUs' capacity to identify issues &provide suggestion/recommendation for SWM technologies other than WTE is enhanced.

TCP Accomplishments

TCP Products:
Output 1 Enhancement of National Government's capacity to support and coordinate LGU's WTE projects

- [document] Case Study Analysis for Guideline of Best Available Technique/ Best Environmental Practice (BAT/BEP) →Reference for the LGUs

The BAT/BEP Case Study will be used to develop the official BAT/BEP Guideline of the country, which shall serve as a benchmarking document to determine the appropriate technologies to be implemented.

Japan International Cooperation Agency

Department of Environment and Natural Resources

Case Study Analysis for Guideline of Best Available Technique / Best Environmental Practice (Final Draft)

Under the Project for Capacity Development on Improving Solid Waste Management through Advanced/Innovative Technologies in the Republic of the Philippines

Appendix 12

TCP Products:
Output 1 Enhancement of National Government's capacity to support and coordinate LGU's WTE projects

[document] **Guidelines for the Technical Standards of WtE on Appropriately Controlled Combustion**

→Guidelines for WTEs

The Technical Standards that will be published as a Joint Administrative Order between DENR, DOE, and DOST, shall serve as a legal basis for the technical specifications that the monitoring agencies will require from the WTE operators.

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

EMB MEMORANDUM CIRCULAR
No. 2020 - ____

SUBJECT : GUIDELINES FOR THE TECHNICAL STANDARDS OF WASTE-TO-ENERGY FACILITY ON APPROPRIATELY CONTROLED COMBUSTION

TCP Products:
Output 1 Enhancement of National Government's capacity to support and coordinate LGU's WTE projects

- [document] **Manual for Planning, Formulation, Evaluation, and Contract Management (PFEC) of WTE project**

→Reference for the LGUs

The PFEC Manual shall serve as a reference document for LGUs to guide them through the process of putting up a WTE facility, from planning to implementation and closure.

DRAFT Manual for
Planning, Formulation, Evaluation and Contract Management of WTE project in the Republic of the Philippines

Ver. 6.1

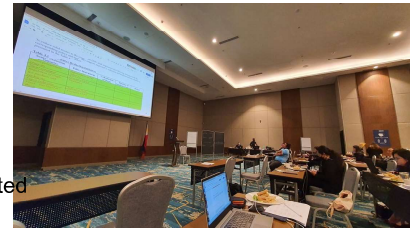
ITWG Subgroup 1

November 2022

TCP Products:
Output 1 Enhancement of National Government's capacity to support and coordinate LGU's WTE projects

- [inputs] **Comments on the NSWMC Annotated Outline for the preparation of the LGU 10-year SWM plans** [presented to NSWMC May 2022]

The feedback from JET led to the updating of the Annotated Outline to streamline the process of drafting and updating the 10-year SWM plans of the LGUs. The inputs from JET also promoted the inclusion in the SWM plans their intention to put up WTE facilities.



NSWMC writing workshop on Annotated Outline last September 22, 2022

TCP Products:
Output 2 Enhancement of target LGU's capacity for Planning, Evaluation, Formulation, and Supervision of WTE project

- [inputs] **Review and comments on Target LGU‘s 10-year SWM Plans** [ACCOMPLISHED in 2019]

Among the analyzed documents is the target LGU’s 10-year SWM plans that JET commented on to guide the LGUs in the updating for their next 10-year plans.

- [inputs] **Review and comments on Target LGU‘s Land Use Plan** [ACCOMPLISHED in 2020]

The City Land Use Plans were also reviewed, and JET provided insights on how to improve it and harmonize it with their 10-year SWM Plans.

TCP Products:
Output 2 Enhancement of target LGU's capacity for Planning, Evaluation, Formulation, and Supervision of WTE project

- [inputs] **Review and comments on Target LGU‘s WTE Project Proposals** [ACCOMPLISHED in 2019-2020]

The target LGUs have received WTE project proposals. JET requested for the documents for review, and provided recommendations and comments to the LGUs that can guide them in negotiating and/or clarifying with the proponents.

TCP Products:
Output 2 Enhancement of target LGU's capacity for Planning, Evaluation, Formulation, and Supervision of WTE project

- [inputs] **Review and comments on PPPC Conceptual Framework on SWM PPPs** →Reference for the LGUs

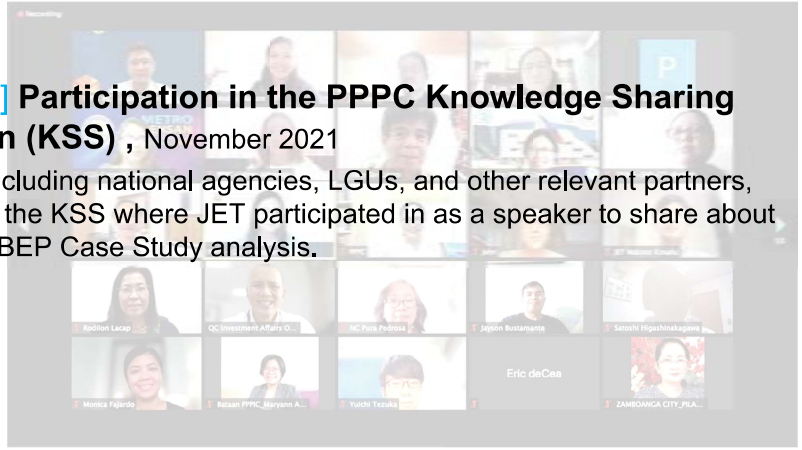
Another SWM-PPP products from PPPC is the Conceptual Framework, that shall serve as the umbrella document for all SWM-PPP guideline documents, that JET also reviewed and provided comments on.

Conceptual Framework for the Development of Solid Waste Management PPP Projects

1. Background

Municipal solid waste (MSW) management chain involves three major scopes: segregation, collection and/or pre-processing, and disposal and/or treatment. Incorporated in the three major scopes are the transportation and storage of the MSW. Segregation is the sorting of wastes generated by the source into different classifications mentioned in the Ecological Solid Waste Management (SWM) Act of 2000 (RA 9003). Collection and/or pre-processing involves gathering the wastes generated by the household as mandated in the Local Government Code of 1991 (RA 7160) and processing it prior to final disposal and/or treatment. Lastly, disposal and/or treatment ensure safe storage and destruction of wastes through environmentally sound and compliant technologies.

TCP Products:
Output 2 Enhancement of target LGU's capacity for Planning, Evaluation, Formulation, and Supervision of WTE project



- [event] Participation in the PPPC Knowledge Sharing Session (KSS) , November 2021

PPPC, including national agencies, LGUs, and other relevant partners, attended the KSS where JET participated in as a speaker to share about the BAT/BEP Case Study analysis.

TCP Products:
Output 3 Enhancement of National Government's capacity for environmental monitoring

- [inputs] Gap analysis of present EMB capacity and required capacity for environmental monitoring for formulation of TCP training plans

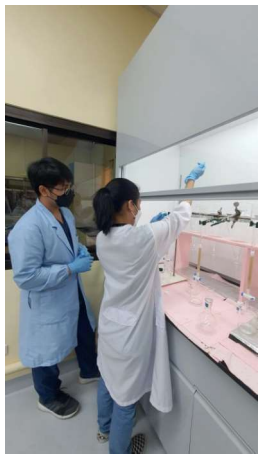
Pre-work of Output 3 included the analysis of the current operations, manpower, equipment availability, and overall capacity of the laboratory to conduct dioxins analysis in order to identify the gaps and formulate the appropriate training programs to bridge these gaps.

Preliminary Laboratory Inspection
April 2019

TCP Products:
Output 3 Enhancement of National Government's capacity for environmental monitoring

- [event] Conduct of trainings on sampling, analysis, and QA/QC of Dioxins and Furans

Through the gap analysis, the trainings were formulated and later on conducted by the team through immersive training procedures.

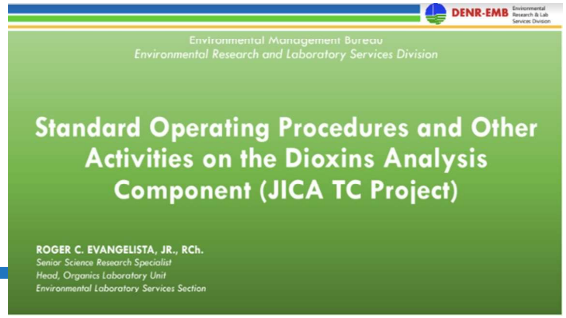


Laboratory trainings on sample preparation, analysis, QA/QC, and capacity building on routine repair activities on the GC/HRMS equipment

TCP Products:
Output 3 Enhancement of National Government's capacity for environmental monitoring

- [document] Standard Operation Procedures on Dioxins Analysis

Among the goals of the trainings facilitated is to allow ERLSD to develop their own procedures for dioxins analysis in the form of the SOPs. JET provided insights to ERLSD on the draft SOPs and supported the laboratory in refining the SOP to fit the laboratory considering the operational standards that have to be met.



TCP Products:
Output 4 Enhancement of National Government's and target LGU's capacity to identify issues and provide suggestion/recommendation for SWM technologies other than WTE

- [document] Booklet of Good Practices and Good Technologies other than WTE
[finalized 2022, for approval]

→Reference for the LGUs

The TCP underscores that WTE is not the primary nor only solution to address SWM problems. Through this Booklet, other SWM technologies and practices from other countries were gathered to give LGUs ideas on the best fit practices that they can implement to address their SWM issues. This holistic problem solving approach is promoted by the TCP, tapping the help of the TCP members in nominating the practices and technologies to be included in the Booklet.

DRAFT

Good practices and Good technologies other than WTE

The Project for Capacity Development on Improving Solid Waste Management through Advanced/Innovative Technologies In The Republic of Philippines

Measures: Actions taken during project implementation

Issues: Difficulties in implementation. Things that could not be devised.

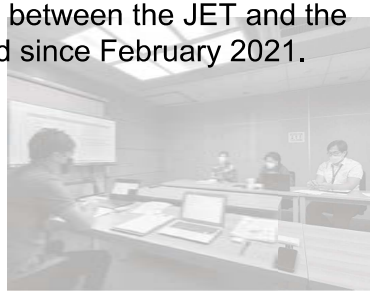
Lessons learnt: To be utilized for the future project implementation

Measures, Issues, and Lesson Learnt in the Project

For activities related with WTE

1)Measures: Cooperation with the institution(PPPC) that supports LGUs for the introduction of WTE projects through PPP

- DENR/EMB: regulating body, difficult to promote the WTE-ACC, which have not existed in the Philippines.
- PPPC: provides support to municipalities for PPP project formulation, regardless insufficient knowledge of the technical aspects of SWM
- To complement and create synergy between the JET and the PPPC in this TCP was strengthened since February 2021.



For activities related with WTE

2)Measures: Recommendations to the Sanitary Landfill Regulations to complete WTE project operations without environmental impact

- Generation of incineration fly ash and bottom ash from WTE as residues is inevitable.
- Final disposal facilities remain a challenge for management practices in LGUs
- Review of the existing relevant laws and regulations on final disposal was added in the TCP activities

NIPPON KOEI
EJEC

For activities related with WTE

6)Issue：Need for the National Government supports for LGUs (technical and financial aspects)

- Not efficient for LGUs to retain experts and expertise in facilities procurement because a lifetime of WTE facility: 20 years or more.
- NG to have sufficient knowledge of WTE development and operation for providing technical guidance to LGUs and private companies.
- An appropriate financial support mechanism for LGUs by the NG is needed too

NIPPON KOEI
EJEC

For activities related with WTE

7)Issue：Supervision and guidance for proper disposal and recycling by DENR

- Open dumping at disposal site is still operated in many LGUs
- An unreasonably low cost of direct disposal is recognized as the baseline, so improper understanding of the appropriate treatment costs WTE spreads in the country
- DENR to encourage LGUs to practice proper disposal by sanitary landfill as required by RA9003

NIPPON KOEI
EJEC

For activities related with WTE

7)Issue：Less involvement of technical personnel of LGUs in decision making

- PPP project formulation and discussion with the private proponent is initiated at the decision maker level of LGUs
- The technical personnel who knows better about SWM restraint and difficulties. Are less involved in such process. The personnel should be ore involved.
- The technical personnel are required to be capacitated as well.

NIPPON KOEI
EJEC

For activities related with WTE

8)Lesson learnt: Projects stagnation through unsolicited approach

- The change of mayors affected the evaluation progress of the unsolicited proposals for the two target LGUs
- Recommended for LGUs to develop their facility plan which meet LGU's needs for SWM

For activities related with WTE

9)Lesson learnt: Need for careful evaluation of business profitability and support system and mechanism for LGUs

- Private companies require a reasonable profit from PPP project implementation
- FS conducted for a WTE project of Davao in 2015, the price of biomass FIT was applied for the study and concluded as feasible.
- In another FS under the Grant Aid scheme that conducted in 2020, biomass fit could not assumed because it already expired.
- The project has been suspended after the FS in 2020.

For activities related with dioxin analysis

1)Measures: Identification of appropriate training needs based on gap analysis results (software operation capability enhancement)

- The equipment of dioxins and furans analysis (GC/HRMS manufactured by JEOL) owned by DENR/EMB: the only one as of the end of 2022.
- A gap analysis conducted in the early stages of the TCP identified a low proficiency level in the equipment's software operation.
- For this, an additional expert skilled in software operation was assigned to ensure adequate training.

For activities related with dioxin analysis

2)Measures: Training to compensate for the lack of capacity of the local service provider

- the poor response and lack of capacity of the local service provider were confirmed during training.
- JET's training expanded to include some content that ERLSD relied on the local service provider, so that analytical work could continue without waiting for outsourcing services.

THANK YOU SO MUCH!

JICA Technical Cooperation Project on Improving Solid Waste Management through Advanced/Innovative Technologies

Project Progress, Lessons Learned, and Future Plans of the City of Cebu

Mr. Arlie Gesta
Engr. Glory Rose Manatad
Atty. Aliko Jasmine Garganera

OUTLINE OF THE PRESENTATION

01 **THE PROBLEM**
A discussion on the current state of SWM in the City of Cebu

02 **THE PROPOSED SOLUTION**
WTE as a proposed solution to the SWM problem in the City of Cebu

03 **CONCERNS & ISSUES**
Concerns and issues arising from WTE as a proposed solution on SWM

04 **BREAKTHROUGHS IN TCP**
The outcomes of the TCP which will assist the LGUs to address concerns

05 **FUTURE PLANS**
Future plans of Cebu City as presented by CCENRO OIC Mr. Arlie Gesta

THE PROBLEM

A COMPARATIVE ANALYSIS OF THE COST AND BENEFIT

OF INCINERATION AND SANITARY LANDFILL

A Research Paper

Presented to the

Faculty of the Department of Accountancy

School of Business and Economics

University of San Carlos

Cebu City, Philippines

In Partial Fulfillment

of the Requirements for the course

Accounting Synthesis – AC527

400 **TONS PER DAY** in 2015

600 **TONS PER DAY** in 2015

~2,000+ **PHP PER TON** From 2015

EN BANC

[G.R. No. 231164. March 20, 2018]

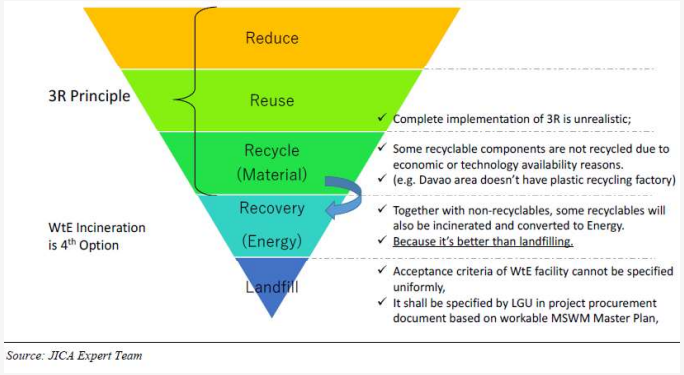
MAYOR TOMAS R. OSMEÑA, IN HIS CAPACITY AS CITY MAYOR OF CEBU, PETITIONER, V. JOEL CAPILI GARGANERA, FOR AND ON HIS BEHALF, AND IN REPRESENTATION OF THE PEOPLE OF THE CITIES OF CEBU AND TALISAY, AND THE FUTURE GENERATIONS, INCLUDING THE UNBORN, RESPONDENT.

D E C I S I O N

TIJAM, J.:

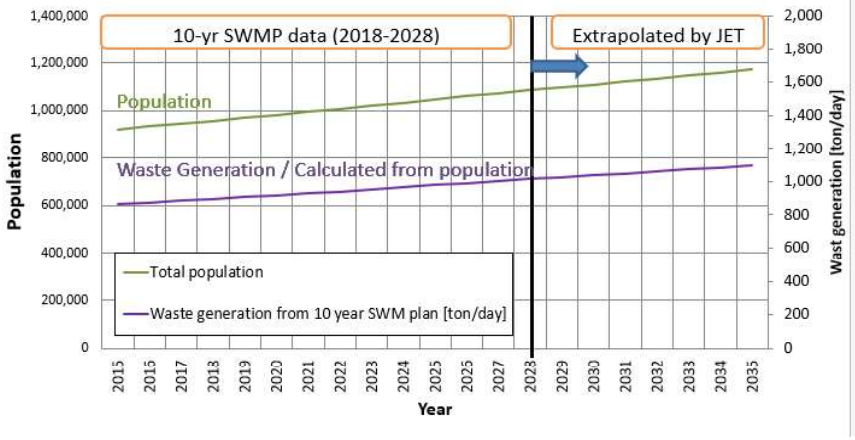
Before Us is Petition for Review on *Certiorari*[1] under Rule 45 of the Rules of Court, as provided under the Rules of Procedure for Environmental Cases (A.M. No. 09-6-8-SC) filed by petitioner Mayor Tomas R. Osmeña, in his capacity as City Mayor of Cebu (Mayor Osmeña), which seeks to reverse or set aside the Decision[2] dated December 15, 2016 and Resolution[3] dated March 14, 2017 of the Court of Appeals (CA) in CA G.R. SP No. 004WK, that granted the privilege of the writ of *kalikasan* and ordered Mayor Osmeña, and/or his representatives, to permanently cease and desist from dumping or disposing garbage or solid waste at the Inayawan landfill and to continue to rehabilitate the same.

Waste Management Hierarchy



Source: JICA Expert Team

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



Appendix 12

THE PROPOSED SOLUTION

Mayor Mike Rama signed the Joint-Venture Agreement (JVA) with New Sky for Waste-to-Energy (WTE) Facility

The Proposed WTE Project

After 43 years (1 year of permitting, 2 years of construction and 40 years of operation), the project site will be transferred to the City.

Maintenance will be conducted by New Sky throughout the Contract Period. After the contract period, the WTE project will be given to the City in good working condition, free of charge (BOT)

Will promote economic activity in the area and provide possible sources of income to local residents and opportunities to MSMEs

Will be constructed at no cost to the City.

Project benefits:

Eliminate the need for more and more land to be used as landfills; reduce the volume of MSW by 90% of its original volume; treat and dispose of MSW more efficiently; reduce pathogen, water, soil and air pollution that comes with processing MSW; produce emissions that are harmless and meets EU standards; reduction of CO_2 emissions for power generation, in comparison to Coal.

ISSUES & CONCERNS

SunStar / CEBU

Cebu

Group: Discipline, not WTE plant, solution to garbage problem

Cebu

Cebu City WTE deal a 'risk' to health, environment, say experts

Cebu

Waste-to-energy deal 'without feasibility study' questioned

"[Dr. Jorge] Emmanuel added that the Department of Environment and Natural Resources, particularly its Environmental Management Bureau, is incapable of conducting monitoring of dioxins, furans and other toxins that is essential to protecting public health and the environment.

"You cannot test for dioxins through ambient sampling. The only way to test dioxins is through stack sampling, and yet DOST (Department of Science and Technology) approved this one technology. I would definitely like to see the details of the **ETV (environmental technology verification)** for the New Sky," he added."

- Sunstar Cebu, 05 April 2022
HONEY I. COTEJO

Guidelines Governing WTE
DAO No. 2019-21

Republic of the Philippines
Department of Environment and Natural Resources
Visayas Avenue, Diliman, Quezon City
Tel. Nos. (632) 929-66-26 to 29 • (632) 929-62-52
Website: [redacted]r.gov.ph / E-mail: web@denrgov.ph

NOV 2 6 2019

DENR ADMINISTRATIVE ORDER NO. 2019 - 21

SUBJECT: GUIDELINES GOVERNING WASTE-TO-ENERGY (WtE) FACILITIES FOR THE INTEGRATED MANAGEMENT OF MUNICIPAL SOLID WASTES

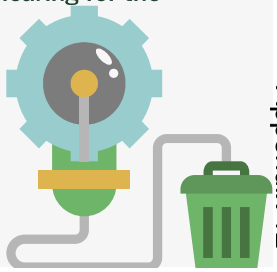
1. Emissions from WTE facilities must conform to standards specified in Section 19 of RA 8749 or approved by DENR-EMB.
2. For WTE facilities utilizing thermal process, such shall fall under the category of fuel burning equipment, thus the appropriate emission standards in Section 19 of RA 8749 196 shall apply for the maximum limits for particulates and sulfur oxides.
3. WTE facilities utilizing thermal process must conduct sampling and analysis for dioxin for at least once a year following the prescribed methodology; all average values of dioxin measured over the sample period of a minimum of six (6) hours and 200 a maximum of eight (8) hours must not exceed the limit value of 0.1 nanogram 201 toxicity equivalence per normal cubic meter (ng-TEQ/NCM).
4. Effluents from WTE facilities must conform to the requirements of effluent discharges as specified in Rules 6.3, 8.3, 12.1 and 19.6 of the IRR of the Clean Water Act (RA 9275)

"On a legal standpoint, the proposed WTE project is also not allowed under the country's laws.

Lawyer Nikka Oquias of the Philippine Earth Justice Center, a pro-environmental law advocate based in Cebu, said the construction of an incineration facility to be used for a WTE facility is prohibited under Republic Act 8749 or the Clean Air Act of 1999.

Oquias also questioned the accuracy and update of the data on the quantity and quality of waste composition in Cebu City and the lack of public hearing for the project."

- Sunstar Cebu, 05 April 2022
HONEY I. COTEJO



REPUBLIC OF THE PHILIPPINES
Supreme Court
Manila
THIRD DIVISION

G.R. No. 147465 **January 30, 2002**

METROPOLITAN MANILA DEVELOPMENT AUTHORITY, petitioner,
vs.
JANCOM ENVIRONMENTAL CORPORATION and JANCOM INTERNATIONAL DEVELOPMENT PROJECTS PTY. LIMITED OF AUSTRALIA, respondents.

DECISION

MELO, *J.*:

Before the Court is a petition for review on *certiorari* under Rule 45 of the Rules of Civil Procedure filed by petitioner Metropolitan Manila Development Authority (MMDA), seeking to reverse and set aside the November 13, 2000 decision of the Court of Appeals declaring valid and perfected the waste management contract entered into by the Republic of the Philippines, represented by the Secretary of National Resources and the Executive Committee to oversee the build-operate-transfer implementation of solid waste management projects, and JANCOM Environmental Corporation.

BREAKTHROUGHS IN THE TCP

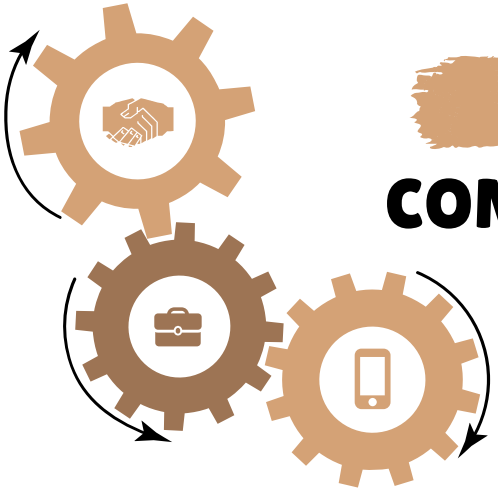
"Along with the importance of financial support to LGU by the national government, it must also be understood that the "development of WTE facilities in LGUs will not advance unless the national government promote and support it adequately.""

Project Outputs

Output No. 1: National government's capacity for supporting and coordinating of LGUs' WTE project is enhanced.	1. Draft BAT/BEP guideline 2. Technical standard for WTE installation and operation 3. Manual for planning, evaluation, formulation and supervision
Output No. 2: Target LGUs' capacity for Planning, Evaluation, Formulation and Supervision of WTE project is enhanced.	1. Updated 10 year SWM plan that reflects the waste volume reduction target. 2. Compilation of experiences of target LGUs' WTE project in PPP scheme reported to NSWMC.
Output No. 3: National government's capacity of environmental monitoring for WTE project is enhanced.	Standard Operation Procedure (SOP) for monitoring, analyzing and QA/QC of Dioxins and Furans in ambient air and source emission gas endorsed to DENR-EMB for adoption
Output No. 4: National Government's and target LGUs' capacity to identify issues and provide suggestions/ recommendations for other SWM technologies other than WTE is enhanced.	Identified issues and recommendations /suggestions

Appendix 12

TCP Highlights in the City of Cebu



PROJECT COMMENCEMENT

Deeper understanding of Cebu City's solid waste management

Project commencement: March 2019

Since the commencement of the Project on March 2019, the JICA experts team provided technical assistance to Cebu City that paved the way for a better understanding of the City's solid waste management.

10-YEAR SOLID WASTE MANAGEMENT PLAN

Finalization of the Cebu City Ten-Year Solid Waste Management Plan

The JICA experts team contributed to the finalization of the Cebu City Solid Waste Managemet Plan.

Presentation of the City's Solid Waste Management Plan with the NSWMC

The Cebu City Ten-Year Solid Waste Management Plan was presented with the National Solid Waste Management Commission on October 2019.

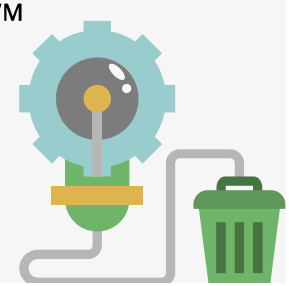
Salient points of the SWMP

The SWMP emphasizes the important of waste diversion, waste minimization, and strengthening of enforcement of solid waste management ordinances and environmental laws.

WASTE-TO-ENERGY CONCEPTUAL PLAN

Objective and Project Purpose

- Improvement of Philippine's Solid Waste Management System through the adoption of WTE and other SWM technologies
- National government and target LGUs' capacity for improving Solid Waste Management and other SWM technologies is enhanced.



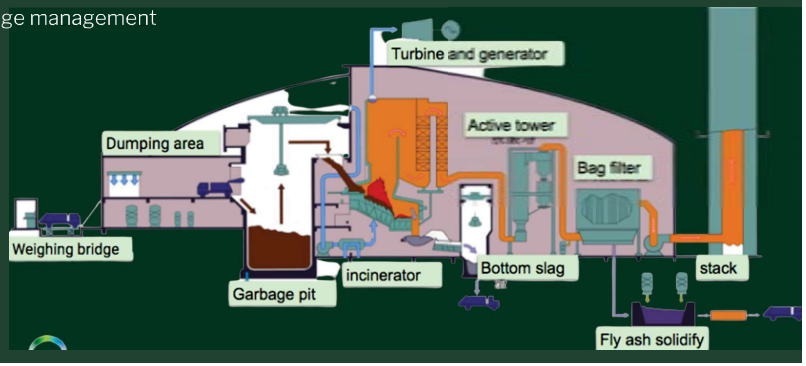
How to setup the Capacity of WTE

WTE Conceptual Plan

1. Confirmation of existing SWM in the City (population trend, present waste treatment system, and issues)
2. Facility Development Concept (define the target waste to be combusted, new waste treatment system)
3. Setup the quantity to be treated
4. Setup the capacity of WTE facility
5. Consideration of WTE facility site
6. Setup the processing methods
7. Utilization of excess heat
8. WTE project management plan

JICA Experts Team provided technical inputs which helped the JVSC in evaluating WTE proposal, placing emphasis on key considerations:

- Environmental concerns
- Leachate and sewage management
- Fly ash and dioxin
- Social acceptance



おせわになります。いつもありがとうございます。またよろしくおねがいします.

Osewaninarimasu. Itsumo arigatou gozaimasu. Mata yoroshiku onegaishimasu.

Thank you for helping my country. I appreciate your work and dedication. Until our next partnership.

FUTURE PLANS

IMPLEMENTATION OF SEGRAGATION

ORDINANCE NO. 2031

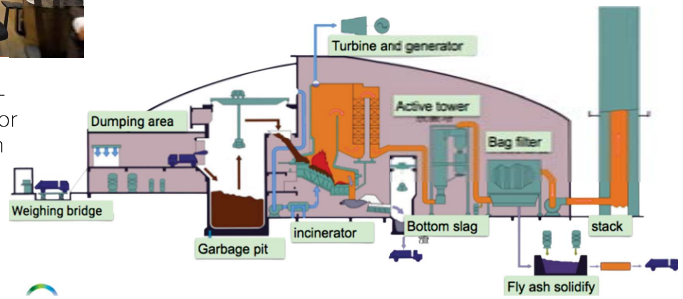
AN ORDINANCE FOR THE IMPLEMENTATION OF SOLID WASTE SEGREGATION AT SOURCE, PROVIDING PENALTIES FOR VIOLATIONS THEREOF, AND THE CREATION OF A SPECIAL FUND FOR INCENTIVES.

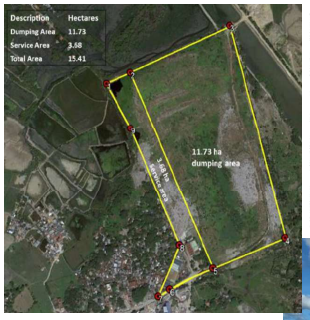
In compliance with RA No. 9003 and City Ordinance 2031, the City gradually implements the No Segregation, No Collection Policy.

The Cebu City Environment and Natural Resources Office (CCENRO) also began its intensive information and education campaign on solid waste management.

WASTE TO ENERGY AS AN ALTERNATIVE ENERGY SOURCE AND WASTE MANAGEMENT SOLUTION

Mayor Mike Rama signed the Joint-Venture Agreement with New Sky for Waste-to-Energy (WTE) Facility on September 22, 2022





WHEREFORE, in view of the foregoing premises, the privilege of the writ of kalikasan is hereby GRANTED. Accordingly, pursuant to Section 15, Rule 7 of the RPEC:

1) the respondent Mayor and/or his representatives are ordered to permanently cease and desist from dumping or disposing of garbage or solid waste at the Inayawan landfill;

2) the respondent Mayor and/or his representatives are ordered to continue the rehabilitation of the Inayawan landfill;

3) the DENR-EMB is directed to regularly monitor the City Government's strict compliance with the Court's judgment herein;

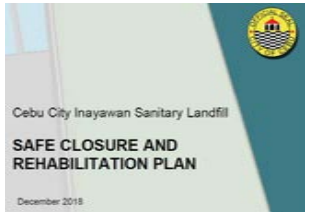
4) in case of non-compliance, the DENR-EMB is directed to file and/or recommend the filing of appropriate criminal, civil and administrative charges before the proper authorities against the responsible persons; and

5) the DENR-EMB is ordered to submit to the Court a monthly progress report on the City Government's compliance/non-compliance until such time that the rehabilitation of the Inayawan landfill is complete and sufficient according to the standards of the DENR-EMB.

In GR No. 2311164 (March 20, 2018), the Court granted the Writ of Kalikasan which ordered the closure and suspension of disposal of solid waste at the Inayawan Landfill.

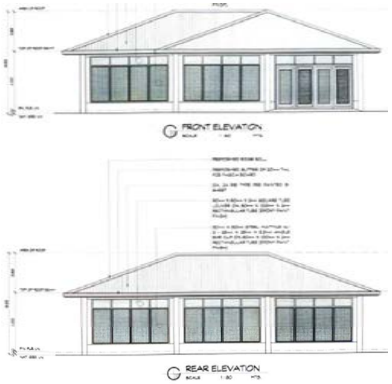
Subsequently, the Safe Closure and Rehabilitation Plan was developed following the mandate under the DAO 2006-09 or the "General Guidelines in the Closure and Rehabilitation of Open Dumpsites and Controlled Dumpsites" and in consonance with the provisions of RA 9003 or the "Ecological Solid Waste Management Act of 2000".

CLOSURE OF OLD LANDFILL



The Safe Closure and Rehabilitation Plan (SCRP) is prepared to provide the LGU Cebu City a clear guideline to execute the safe closure and rehabilitation for Inayawan Sanitary Landfill. The plan primarily details the procedure for the: 1) physical safe closure and rehabilitation, 2) post-closure management, 3) monitoring and 4) post-closure land-use plan.

MRF IN CLUSTERED BARANGAYS

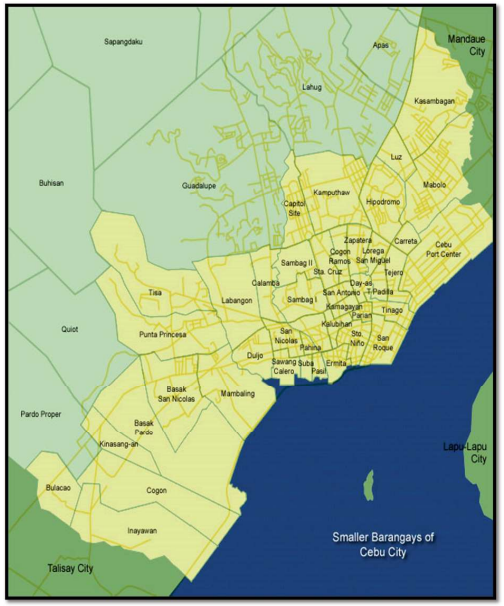


Section 32 of RA No. 9003 mandates the establishment of a Material Recovery Facility (MRF) in every barangay or cluster of barangays

Section 20 of RA No. 9003 mandates solid waste diversion through various processes such as composting.

*Each LGU plan shall include an implementation schedule which shows that within five (5) years after the effectivity of this Act, the LGU shall divert at least 25% of all solid waste from waste disposal facilities through re-use, recycling, and **composting activities** and other resource recovery activities.*

MASSIVE COMPOSTING AS SOURCE OF ORGANIC FERTILIZER FOR UPLAND FARMERS



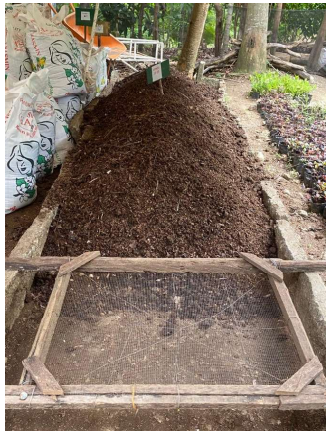
A. ESTABLISHMENT OF COMPOSTING IN HVC PRODUCING BARANGAYS

1. Sorting of biodegradable wastes

2. Shredding

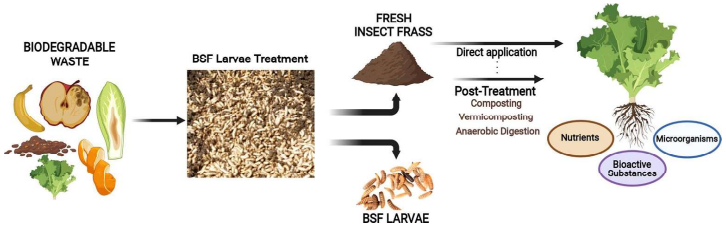
3. Turning and mixing of compost pile every 3-4 days

4. Compost ready to use after 3-4weeks



5. Packing and storing of compost for distribution to farmers in upland barangays

B. BLACK SOLDIER FLY AS NEW WASTE DIVERSION METHOD



Food waste is a good resource that we can create value from while at the same time helping to conserve the environment and address the problem of biodegradable waste using the black soldier fly.

B. BLACK SOLDIER FLY AS NEW WASTE DIVERSION METHOD

Salamat!

You may reach us at: