

WASTE MANAGEMENT IN THE PHILIPPINES



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THE SPEAKER



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Graduated in 2001, Mapua Institute of Technology (Intramuros, Manila) - Bachelor of Science in Civil Engineering, Gold Medalist - Cum Laude (Top 1 Graduating Class)

Registered Civil Engineer (Philippines)

20 + years of Professional Experience (Solid Waste Management, Quality Management, and Business Development)

AVP for Business Development, Phil. Ecology Systems Corp. (PhilEco)



PHIL. ECOLOGY SYSTEMS CORP. (PHILECO)



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CORE BUSINESS

Vitas Marine Loading Station (VMLS) located in Tondo, Manila.

Support the operation of NSLF is **the first and only marine garbage transfer station** in the Philippines accredited by the Metro Manila Development Authority (MMDA).

Caters to all collected municipal solid waste before being transported via barge to the NSLF.

Navotas Sanitary Landfill Facility (NSLF) located in Brgy. Tanza, Navotas City.

The 40-hectare area became the **first engineered and only bay area sanitary landfill** in the Philippines in 2006 accredited by the Metro Manila Development Authority (MMDA).

At present, NSLF accommodates up to 3,000 tons of Municipal Solid Waste from various areas in Metro Manila.



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Vitas Marine Loading Station (VMLS)



Navotas Sanitary Landfill Facility (NSLF)

OUR SERVICES



Design, Construction, and Operation of Sanitary Landfill

The primary service of PhilEco that involves project implementation, feasibility study, environmental assessment, detailed engineering design, construction, operation and monitoring of integrated waste management facilities.



Design, Construction, and Operation of Wastewater Treatment Facilities

Treatment of domestic and industrial sewage and septage.



Garbage Collection, Hauling and Disposal Services

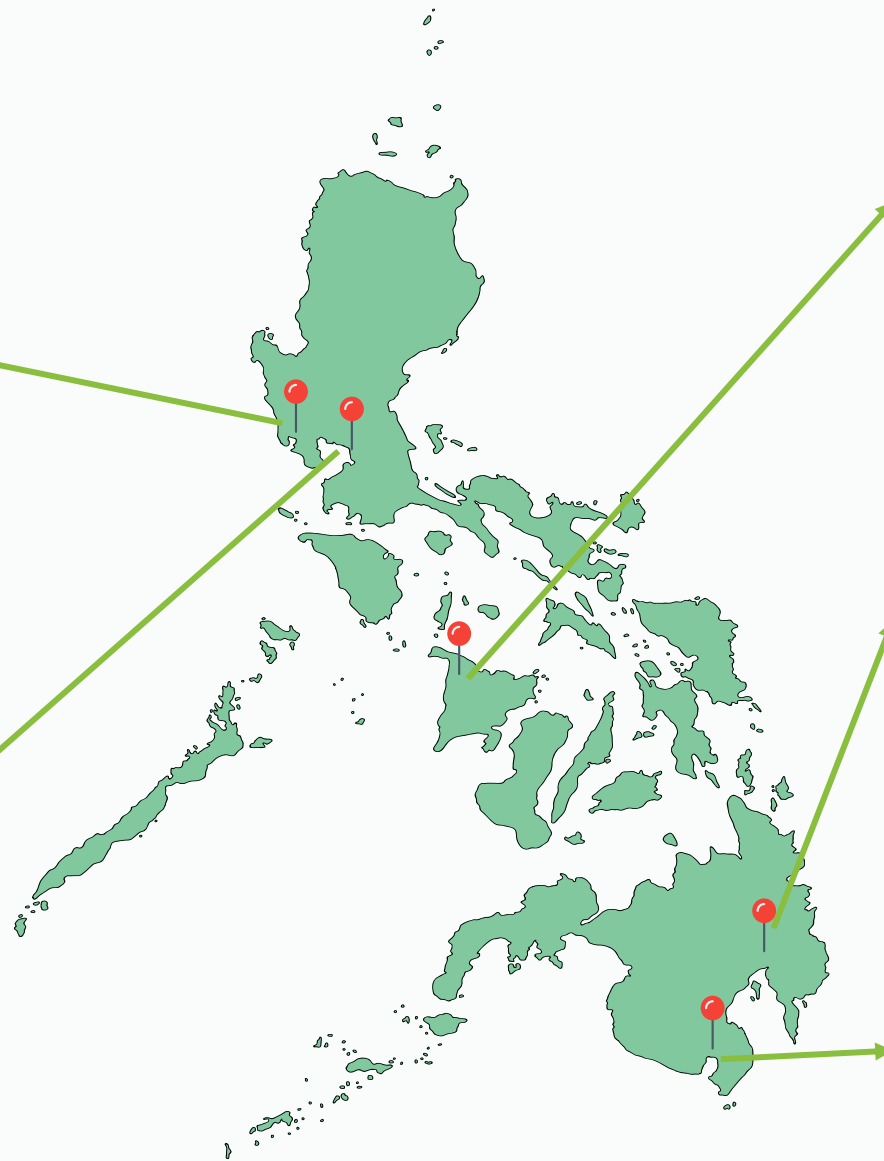
Hauling of debris filling materials, construction, Municipal Solid Waste (MSW) from source to disposal site.



Waste to Energy

Coverion of Municipal Solid Waste (MSW) into usable heat and electricity to minimize residual waste going to the Sanitary Landfill.

PROJECTS – DESIGN, CONSTRUCTION AND OPERATION OF SANITARY LANDFILL



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WASTE MANAGEMENT SITUATION IN THE PHILIPPINES



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WASTE MANAGEMENT SITUATION IN THE PHILIPPINES

- As of 2023, the Philippines is producing **61,000 metric tons** of garbage on a daily basis. Metro Manila, which comprises 16 cities and 1 municipality, produces more than 10,000 metric tons of garbage daily.
- The implementation of Republic Act 9003 or the Ecological Solid Waste Management Act of 2000 has still a lot of improvements to be made as the **absence of waste segregation at source and lack of proper disposal facilities** remain to be a problem after more than 20 years of implementation of the law.

WASTE MANAGEMENT SITUATION IN THE PHILIPPINES

- The **Republic Act 11898 or the Extended Producer Responsibility (EPR) Act of 2022** is an act institutionalizing the Extended Producer Responsibility on Plastic Packaging Waste. According to the Department of Environment and Natural Resources (DENR) Secretary Maria Antonia Yulo-Loyzaga, the Philippines is producing **163 million plastic sachet packets, 48 million shopping bags and 45 million thin-film bags daily.**

WASTE MANAGEMENT SITUATION IN THE PHILIPPINES

- According to Earth.Org, the Philippines had the **largest share of global plastic waste** discarded in the ocean in 2019. The country was responsible for **36.38% of global oceanic plastic waste**, far more than the second-largest plastic polluter, India, which in the same year accounted for about 12.92% of the total.

Highest Ocean Plastic Waste Polluters

(annual estimation in metric ton)



It is estimated that **1 million metric tons** of plastic waste enters the ocean every year, out of a total of **67.5 million metric tons**.

Graphic: Louis Lugas

Source: More than 1000 rivers account for 80% of global riverine plastic emissions into the ocean, Laurens J. J. Meijer et al (2021) via science.org

WASTE MANAGEMENT SITUATION IN THE PHILIPPINES

299

Operational Sanitary
Landfills

675

Servicing
LGUs
(43% of 1,584 LGUs)

20,564.61

Waste Disposal
Tons/day
(34% of Total MSW)

65,768,122.33

Total Capacity (cu.m)

WASTE MANAGEMENT SOLUTIONS



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HOW TO ADDRESS? WASTE MANAGEMENT SOLUTIONS

- **Improved Garbage Collection System** – collection at source
- **Materials Recovery Facility (MRF)** – waste recycling
- **Refuse Derived Fuel (RDF)** – plastic waste re-purposing
- **Composting – Anaerobic Digester (AD)** - biodegradable
- **Waste-to-Energy (WtE)** – all types of MSW

IMPROVED GARBAGE COLLECTION SYSTEM

- **Strict Implementation of Garbage Collection Schedule**
- **Identification of Proper Garbage Collection Pick Up Points**
- **Provision of Adequate Number and Quality of Garbage Collection Trucks**
- **Establishment of Proper Garbage Transfer Stations**

MATERIALS RECOVERY FACILITY (MRF)

- **Waste sorting using Mechanized MRF**
- **Recovery of Recyclable Materials (15-20% of MSW)**
- **Storage of Recovered Recyclables (Packaging/Bailing)**
- **Selling of Recyclables in Bulk (tons)**

MATERIALS RECOVERY FACILITY (MRF)



Source: resource-recycling.com



Source: zamboangacity.com.ph

REFUSE DERIVED FUEL (RDF)

- **Processing of flexible plastics (20% of MSW)**
- **Primary and Secondary Shredding of RDF Materials**
- **Storage of RDF Products (Packaging/Bailing)**
- **Selling of RDF Products to Cement Plants**
- **Supports EPR Law (Plastic Credits)**

REFUSE DERIVED FUEL (RDF)



Source: Chimirec Avrasya



Source: TPI Polene Power Public Company Limited

ANAEROBIC DIGESTER (AD)

- **Processing of biodegradable wastes (food waste, market waste)**
- **Generation of Biogas (Fuel) and Electricity**
- **Production of Soil Conditioners / Enhancers (Compost)**
- **Diversion of 30-40% of MSW to be landfilled**

ANAEROBIC DIGESTER (AD)



Phil. Ecology Systems Corp. March 2024



Source: Hebei Zhaoyang Environmental Technology Co., Ltd.

WASTE-TO-ENERGY (WTE)

- **Ultimate Re-Purposing Plant in Support of the EPR Law**
- **Processing of Mixed Municipal Solid Waste (MSW)**
- **Reduces the area requirement for Sanitary Landfills (only for ash disposal, about 10% volume)**
- **Provides Long-Term and Sustainable Solution to MSW**
- **Generation of Heat and Electricity for Communal Use**

WASTE-TO-ENERGY (WTE)



Source: Hitachi Zosen (Japan)

SOURCES:

- www.philstar.com/headlines/2023/08/06/2286595/philippines-produces-61000-million-metric-tons-waste-daily
- www.earth.org/Philippines-plastic/#:~:text=The%20Philippines%20had%20the%20largest,about%2012.92%25%20of%20the%20total.
- <https://app.powerbi.com/view?r=eyJrljoiZjdhNDE3YzMtZGIxNi00MjZhLTlhNmItNTQ4YWUyYTlzMDYzliwidCI6ImY2ZjRhNjkyLTQzYjMtNDMzYi05MmlyLTY1YzRINmNjZDkyMCIslmMiOjEwfQ%3D%3D> (National Solid Waste Management Commission website)
- <https://app.powerbi.com/view?r=eyJrljoiZjdhNDE3YzMtZGIxNi00MjZhLTlhNmItNTQ4YWUyYTlzMDYzliwidCI6ImY2ZjRhNjkyLTQzYjMtNDMzYi05MmlyLTY1YzRINmNjZDkyMCIslmMiOjEwfQ%3D%3D> (National Solid Waste Management Commission website)

THANK YOU!!!!



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