



**International Conference in  
Urban and Regional Planning**

# **Solid Waste Management and Sustainable Development: The Case of Philippine Cities**

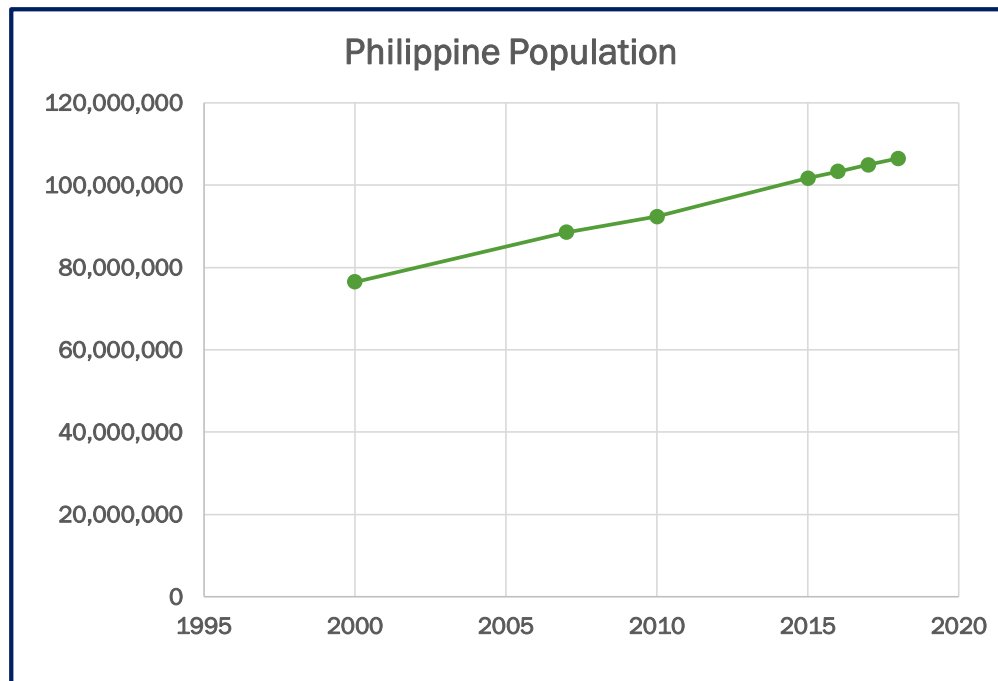
Grace P. Sapuay

President

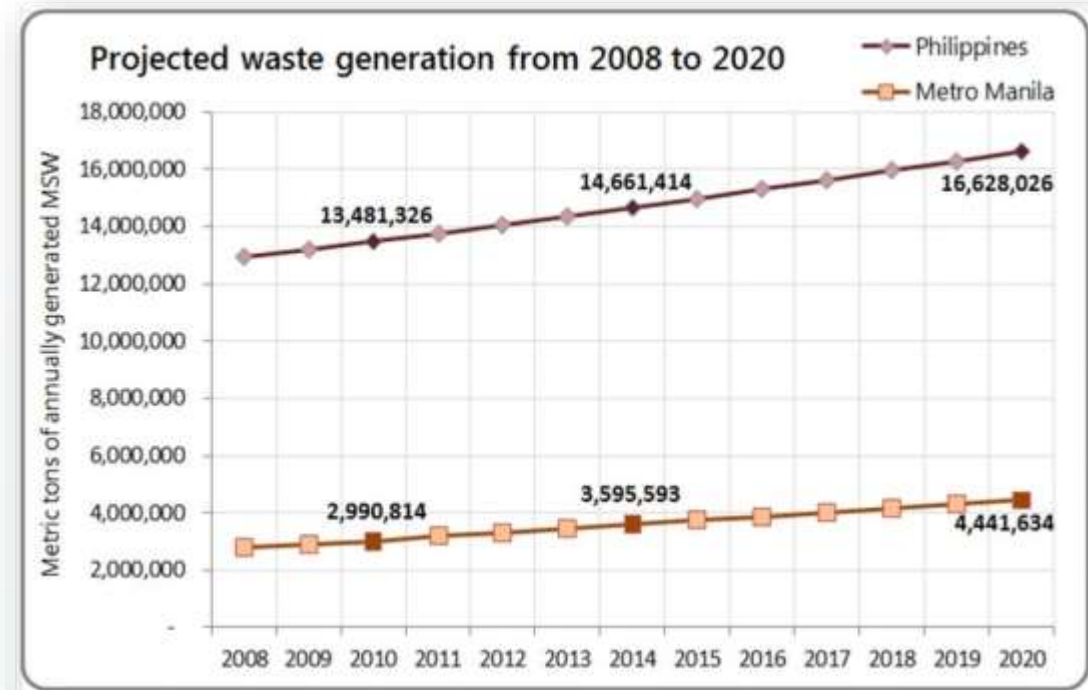
Solid Waste Management Association of the Philippines

# INTRODUCTION

## Trends in population growth and solid waste generation



Source: PSA



Source: NSWMC

# Urbanization and solid waste generation

Metro Manila contributed 22.2% of PH Solid waste generation in 2010.

Metro Manila is projected to contribute 26.7% by 2020.

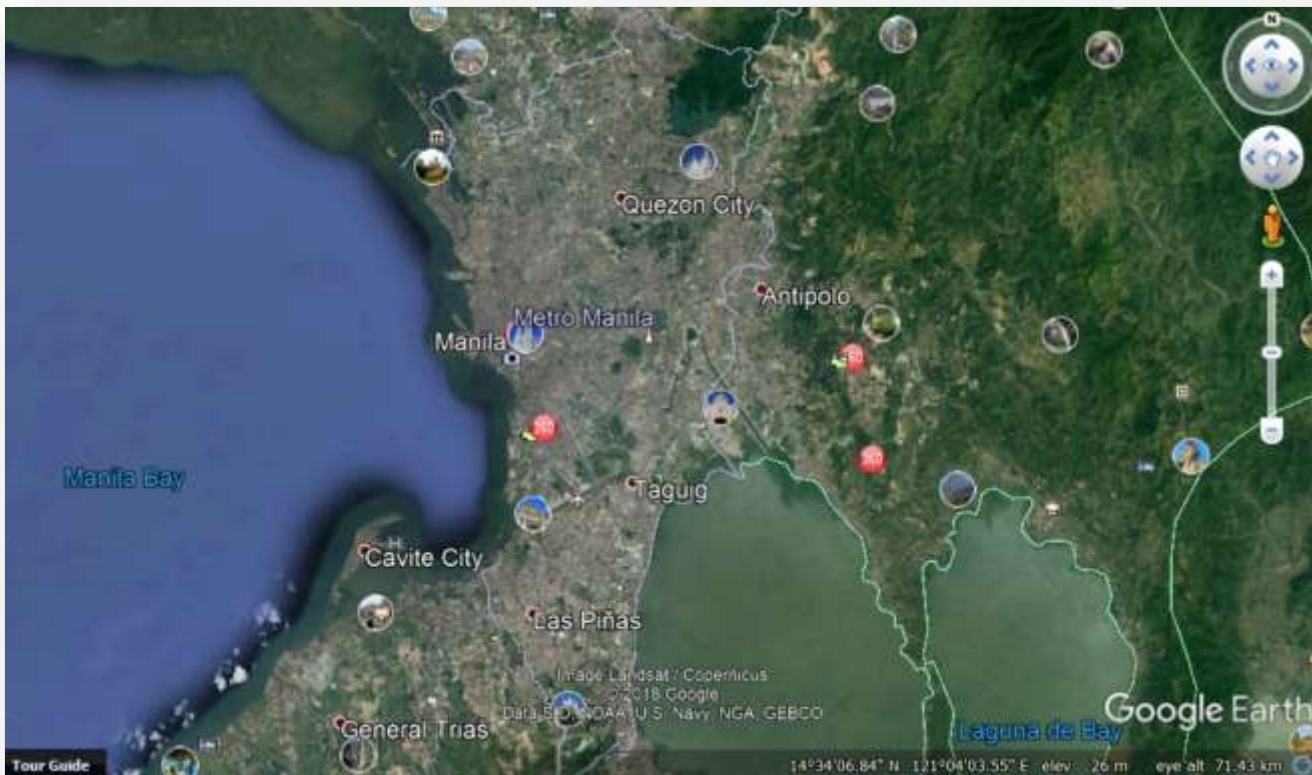


Photo credits: Google Earth

- Metro Manila dumps 8,000 tons per day or about 2,920,000 annually (data represents only collected waste)





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# **SUSTAINABILITY OF CITIES VS.**

# **SUSTAINABLE SOLID WASTE MANAGEMENT**

**THE UN SUSTAINABLE DEVELOPMENT GOALS**

## Sustainable Development Goals



# UN SUSTAINABLE DEVELOPMENT GOALS

Source: <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

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# **SUSTAINABLE SOLID WASTE MANAGEMENT**

# **SDG # 12 RESPONSIBLE CONSUMPTION AND PRODUCTION -**

*Aims at “doing more and better with less,” increasing net welfare gains from economic activities by reducing resource use, reducing degradation and pollution along the whole life cycle, while increasing quality of life. It involves different stakeholders, including business, consumers, policy makers, researchers, scientists, retailers, media, and development cooperation agencies, etc.*

Source: <http://www.un.org/sustainabledevelopment/sustainable-consumption-production/>

# OVERVIEW

# SOLID WASTE MANAGEMENT IN THE PHILIPPINES

Solid waste management remains the most pressing urban environmental challenge in the country.



# PHILIPPINE SOLID WASTE SITUATION

PH POPULATION AS OF  
2015 = 100.98 million  
Filipinos

Philippine population by  
2025:

116,151,399 Filipinos

SW Production:

- 40,000 Tons daily
  - 12,000 tons daily (uncollected)
- 14.6 million tons annually
  - 4,380,000 tons (uncollected)

Based on the 30% estimate of uncollected waste

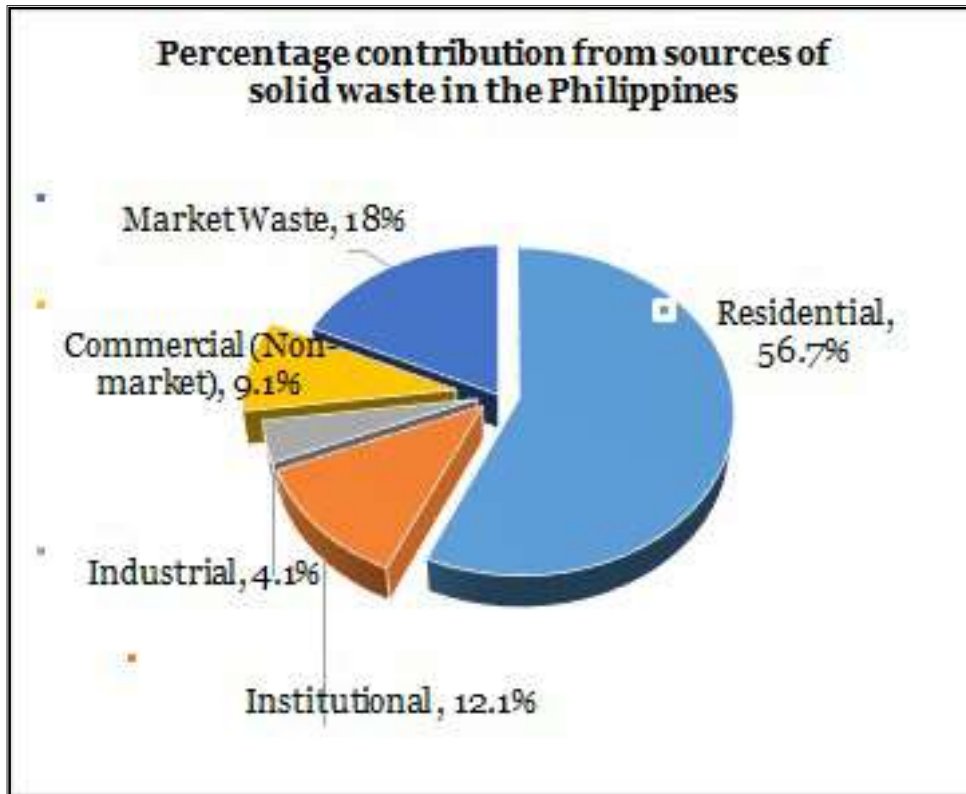
WB study: SW generation will increase by 0.5 kg/day to 0.9 kg/day in 2025

❖ Daily generation by 2025 = 104,536 tons

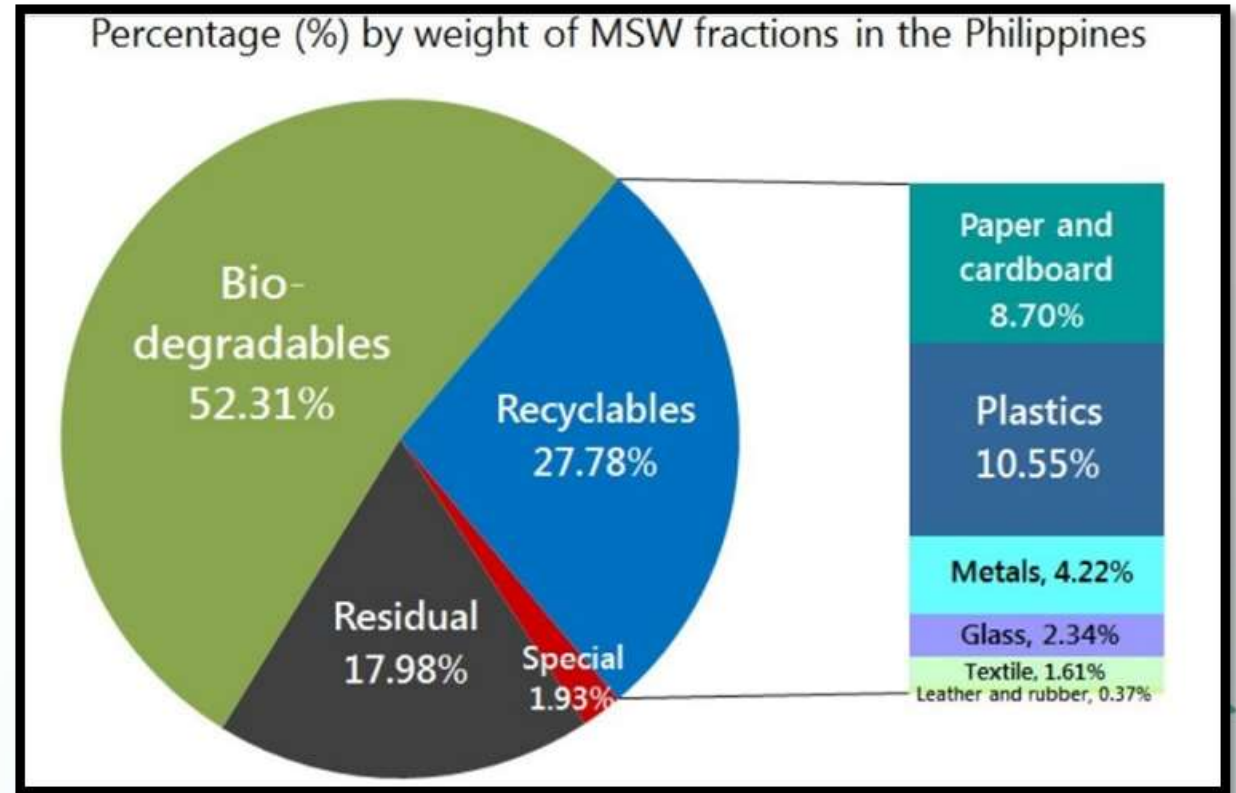
❖ Or about 38,155,640 tons annually



## Percentage composition from sources of solid waste in the Philippines



## Percentage by weight of MSW fractions in the Philippines



# **ECOLOGICAL SOLID WASTE MANAGEMENT ACT 2000 (RA 9003)**

**Mandates all local government units (LGUs) to:**

- Form their Local Solid Waste Management Boards,**
- Formulate their Ten-Year Solid Waste Management Plans,**
- Establish their respective Materials Recovery Facilities (MRFs), and**
- Establish their final disposal facilities or engineered sanitary landfills (ESLFs)**

# RA 9003

Policy is based on the management of waste in the following hierarchy:

- a) Source reduction (avoidance) and minimization of waste generated at source
- b) Reuse, recycling and resource recovery of wastes at the barangay level
- c) Efficient collection, proper transfer, and transport of wastes by city/municipality
- d) Efficient management of residuals and of final disposal sites and/or any other related technologies for the destruction/reuse of residuals

# Rate of compliance (NSWMC data)

| Number   | Year   |        |        |        |        |        |        | 3rd Qtr. 2017 |
|--|--------|--------|--------|--------|--------|--------|--------|---------------|
|  | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   |               |
| Number of MRFs in the Philippines                    | 6,958  | 7,329  | 7,713  | 8,486  | 8,656  | 9,335  | 9,883  | 10,052        |
| Estimated Percentage (%) of Barangays with MRFs      | 16.6 % | 17.4 % | 18.4 % | 20.2 % | 20.6%  | 22%    | 23.5%  | 23.9%         |
| Number of Barangays/LGUs served by MRFs              | 7,938  | 8,323  | 8,843  | 9,634  | 10,327 | 12,607 | 13,155 | 13,324        |
| Estimated Percentage (%) of Barangays served by MRFs | 18.9 % | 19.8 % | 21.0 % | 22.9 % | 24.5%  | 30%    | 31.3%  | 31.7%         |

| Paramater  | Year       |            |            |             |             |             | 3 <sup>rd</sup> Qtr. 2017 |
|--|------------|------------|------------|-------------|-------------|-------------|---------------------------|
|  | 2008       | 2010       | 2013       | 2014        | 2015        | 2016        |                           |
| Population of the Philippines                    | 88,543,800 | 92,337,852 | 98,449,090 | 100,420,642 | 101,883,764 | 102,250,133 | 103,964,038               |
| Number of operating SLFs                         | 21         | 29         | 72         | 86          | 101         | 118         | 131                       |
| Number of LGUs with access to SLFs <sup>a</sup>  | 63         | 78         | 130        | 154         | 228         | 248         | 289                       |
| Percent of LGUs <sup>b</sup> with access to SLFs | 3.86%      | 4.77%      | 7.96%      | 9.42%       | 13.95%      | 15.18%      | 17.69%                    |

# The Proliferation of Informal Waste Sector

- Due to informal recycling system
- SWM is dominated by the Informal waste sector



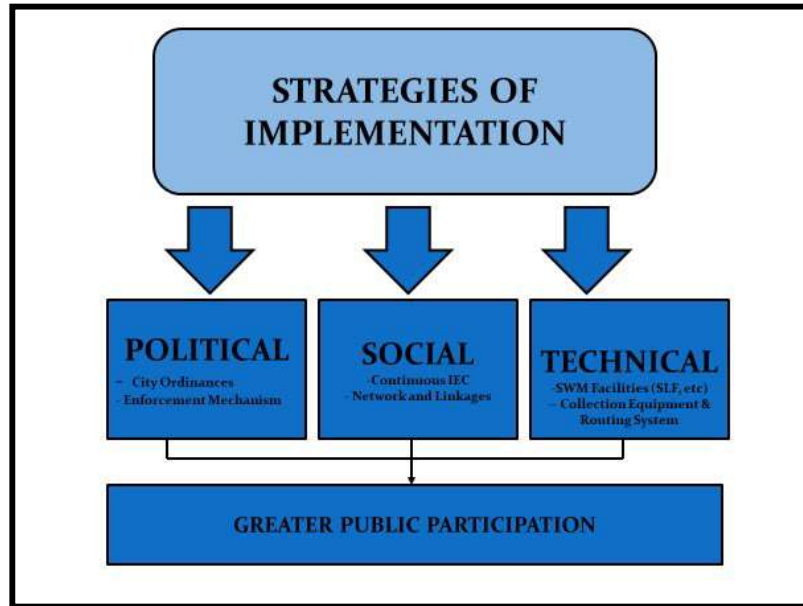
## Recycling

| Country     | Recycling rate (%) |
|-------------|--------------------|
| Austria     | 63                 |
| Australia   | 30                 |
| Belgium     | 58                 |
| Canada      | 27                 |
| France      | 35                 |
| Germany     | 62                 |
| Italy       | 36                 |
| Japan       | 21                 |
| Singapore   | 59                 |
| South Korea | 49                 |

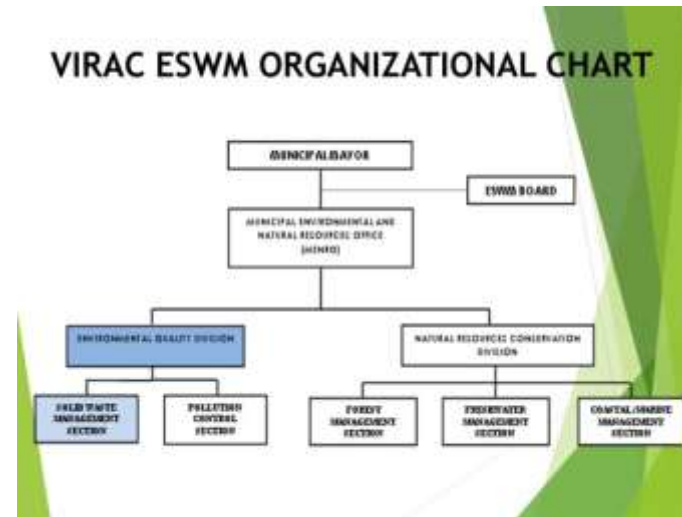


# Compliance and best practices among Philippine Cities

## Legazpi City, Albay



## Virac, Catanduanes



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# Cebu City

- PASSED ORDINANCE NO. 2450
- February 27, 2016
- **PURPOSE:** An ordinance Providing for the Management of Special Waste



# Maragusan

## Solid Waste Management System



# What is sustainable Development?

- Brundtland report (1987) - *development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*

## What is sustainable solid waste management?

It is the proper managing of solid waste in order to minimize environmental degradation, reduce consumption of energy , reduce the use of virgin materials through recycling as well as prevent pollution and contamination of land, air and water, on which sustainability of cities rest.



# Conclusion

Sustainability rests on judicious use of natural resources.

In solid waste management, judicious use of natural resources means:

A) Implementing the 3 R's concept (REDUCE, REUSE, RECYCLE) to

B) Prevent wasting of resources that can still be used to manufacture other important products, or repurpose.

# Recommendations

- Cities and municipalities in the Philippines must seriously implement the national law on solid waste management (RA 9003).
- They must implement segregation of waste at source to recover materials that can still be used and help in the recycling activities.
- They must encourage composting in the community to divert organic waste from the landfills and prevent methane generation, a greenhouse gas that contributes to global warming and the consequent climate change.
- People must not only follow the law but by their own volition must help to conserve precious resources by not being wasteful with the resources that they possess.

*“Without good solid waste management, you can’t build a sustainable and livable city. It’s not just about technical solutions. There are climate, health, and safety impacts, as well as, important social considerations.”* - Ede Ijasz-Vasquez (Senior Director Social, Urban, Rural and Resilience Global Practice, World Bank Group)