

AN ANALYSIS OF REGULATORY POLICIES ON SOLID WASTE MANAGEMENT IN THE PHILIPPINES: WAYS FORWARD

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OUTLINE OF PRESENTATION

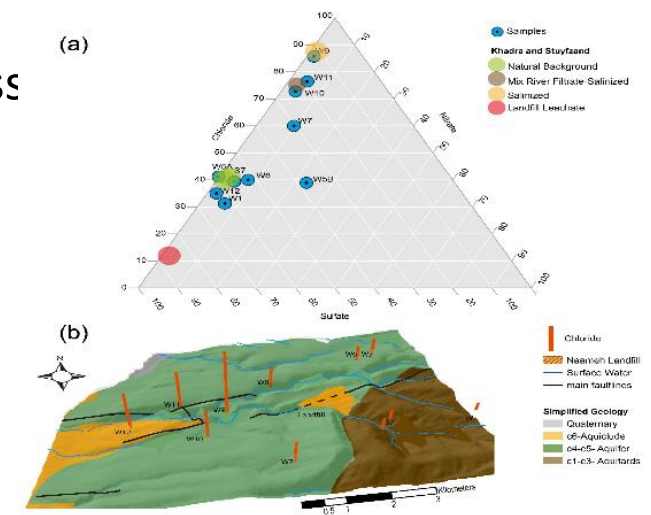
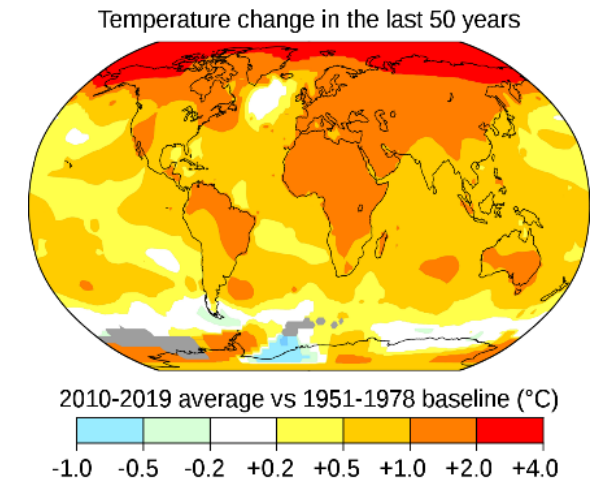
1. Introduction and Background
2. Methodology
3. Results
 - 3.1. Global and PH landscape
 - 3.2. Policy Evolution and Institutions
 - 3.3. Waste Generation and Facilities
 - 3.4. Case studies on SWM System
 - 3.5. Waste Management in Time of COVID-19
 - 3.6. Penalties and Incentives
 - 3.7. Strategic Options for SWM
4. Key Insights



Shredded plastic wastes in Teresa, Rizal

1. INTRODUCTION AND BACKGROUND

- Increase in waste generation is linked by literature to **rapid urbanization, lifestyle changes, and consumption patterns** (Gamaralalage, Gilby, & Lee 2015; Kaza et al. 2018).
- Daily waste generation in the Philippines is around **40K MT, expected to double by 2025**. Compounding problems on **leachate intrusion/water pollution, climate change, and disaster risks** (EMB 2015 and World Bank 2012).
- **RA 9003/Ecological Solid Waste Management Act** passed in 2001 to address waste management concerns, with most mandates devolved to local government units consistent with the Local Government Code (RA 7160).



1. INTRODUCTION AND BACKGROUND

Objectives and Policy Questions

OBJECTIVES:

1. Review the provisions and grounding of the Ecological Solid Waste Management Act of 2000 and related policies;
2. Conduct case studies on local government implementation of solid waste management policy; and,
3. Recommend ways forward.

POLICY QUESTIONS:

1. What issues predominate in local government grounding of the solid waste management act and related policies?
2. What policy augmentations are required to address critical issues in solid waste management?

2. METHODOLOGY

- Process Evaluation of RA9003
- Case Study of 4 Representative Sites

STUDY SITE	RATIONALE	AGENCY	DATA SOURCE
Quezon City	Payatas dumpsite as template for facility transition and rehabilitation	DENR-EMB	Waste Analysis and Characterization Study (WACS)
Rizal province and Teresa (municipality)	Cluster SLFs servicing Metro Manila, great incentive system, waste facility and livelihood generation	PSA	Annual Survey of Philippine Business and Industry (ASPBI) Census of Philippine Business and Industry (CPBI)
Bulacan Province and Paombong (municipality)	Enforcement case related to open dumpsite and compliance	GAIA	Waste Analysis and Brand Audit (WABA)
Pampanga Province and San Fernando City	Promoted zero waste, close engagement with NGOs	LGUs	WACS, Investment and Funding, Facilities

3.1. GLOBAL LANDSCAPE



242M tonnes of plastic waste were recorded in 2016



12 percent of which were municipal waste



40 percent were disposed in landfills



19 percent were recycled or composted



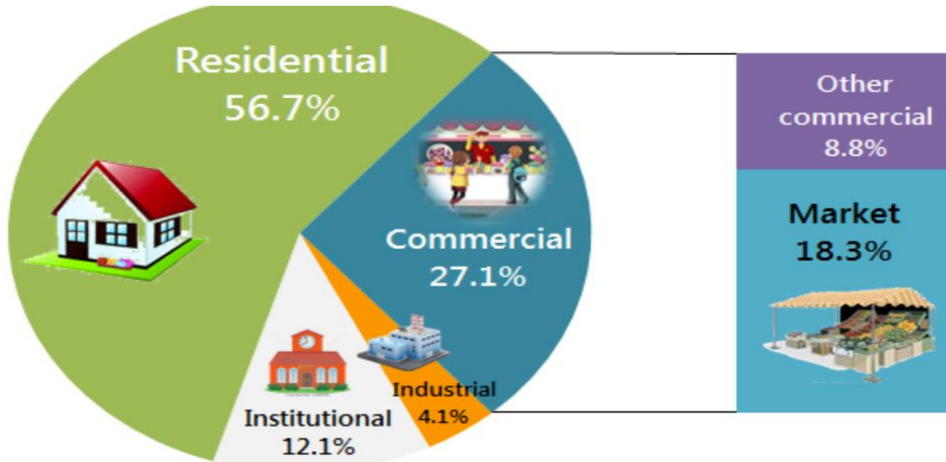
11 percent were incinerated

- **The higher the GDP and per capita** income of a country, **the more plastics and paper they generate**, whereas the lower the GDP, the higher the biodegradable wastes generated.
- **Incineration** is used in developed countries (US, Europe), while **developing nations depend much on dumpsites and landfills** which are cheaper in capital.
- **Organic matter make up most of the wastes** in Asia, making the region unfit and economically non-viable to pursue incineration technology (Roberts-Davis & Guerrero 2018).

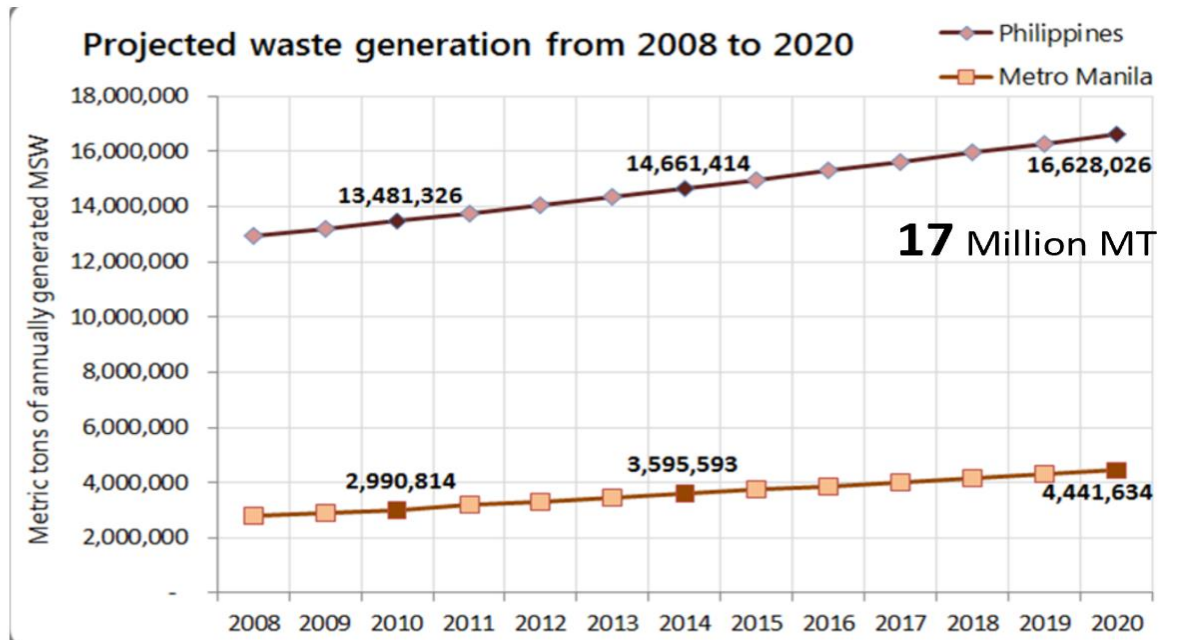
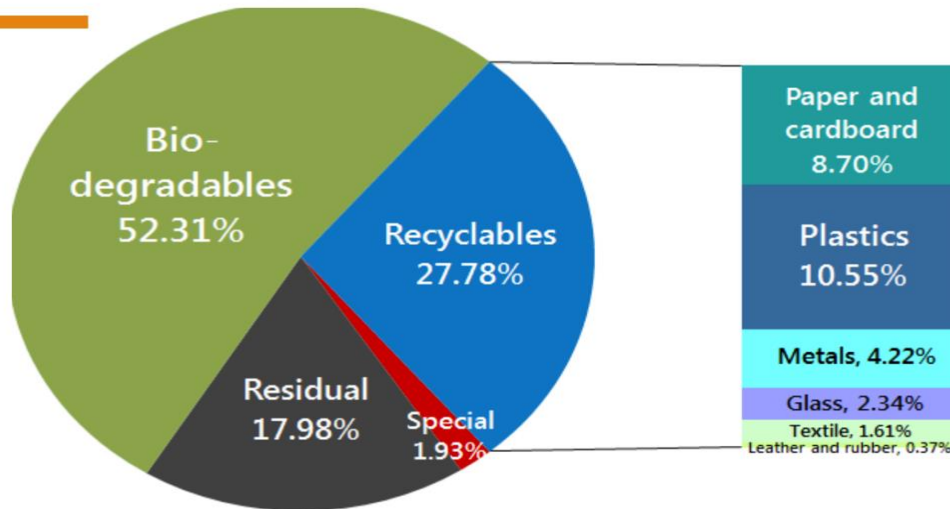
Philippine LANDSCAPE

Sources and composition of municipal solid wastes in the Philippines

Source

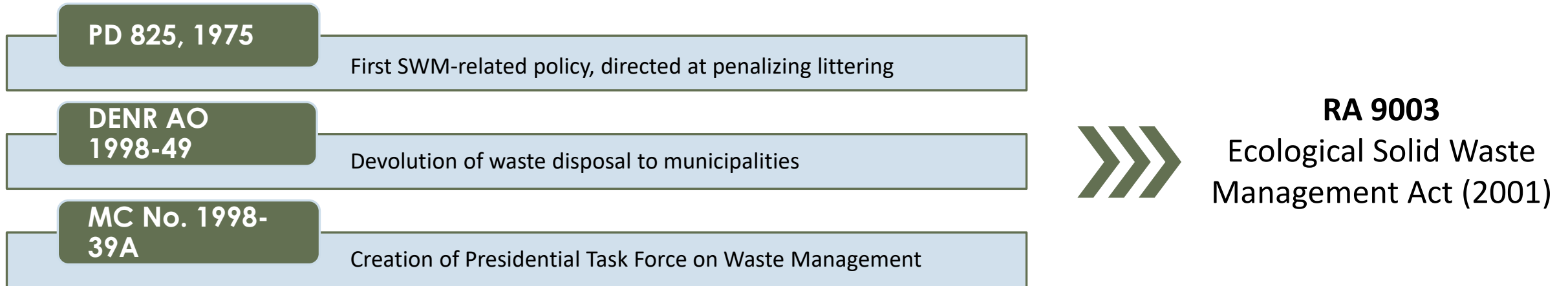


Waste



(National Solid Waste Management Commission 2015)

3.2. POLICY EVOLUTION & INSTITUTIONS



SALIENT FEATURES

1. Devolution of segregation and collection of residential solid waste to the barangay level while special and hazardous wastes were to the municipal/city LGUs
2. Forced closure of existing open dumpsites and transition to sanitary landfills within five years of passage
3. Required a solid waste management board at each local level to oversee SWM plans

3.2. POLICY EVOLUTION & INSTITUTIONS

BASELINE POLICIES

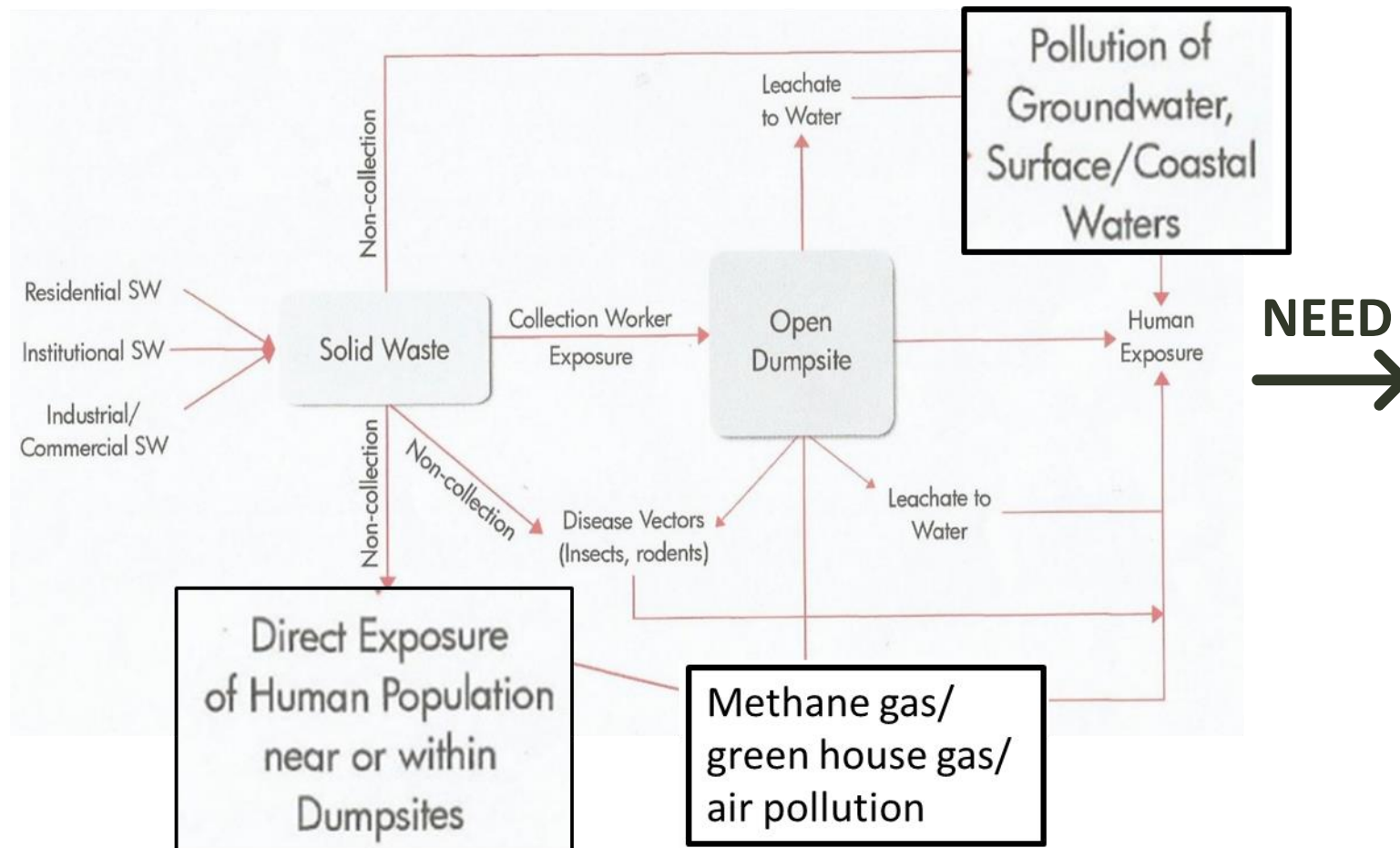
RA 6969	Toxic Substances and Hazardous and Nuclear Waste Act of 1990
RA 7160	LGC sections devolving cleanliness and sanitation roles to LGUs
RA 8749	Clean Air Act of 1999
RA 9275	Philippine Clean Water Act of 2004
RA 9512	Environmental Awareness and Education Act of 2008
RA 9513	Renewable Energy Act of 2008
RA 9729	Climate Change Act of 2009
PD 856	Code of Sanitation of the Philippines
PD 1586	Environmental Impact Assessment Law
PD 1160	Punong barangays to enforce pollution and environmental control laws
EO 774	Creation of 13 task groups on solid waste management
RA 9003	Ecological Solid Waste Management Act of 2000
PD 825	Penalty for improper disposal of garbage

FUNCTIONAL POLICIES

DENR DAO 1998-49	Technical guidelines for municipal solid waste disposal
DENR DAO 2001-34	IRR of RA 9003
DENR AO 1993-90	Project management office on solid waste management
DENR DAO 1998-50	Adoption of landfill site identification
DENR MC 1988-39A	Reconstituting Presidential Task Force on Waste Management
EO 2004-301	Establishing Green Procurement Program and National Eco-Labeling Program

3.2. POLICY EVOLUTION & INSTITUTIONS

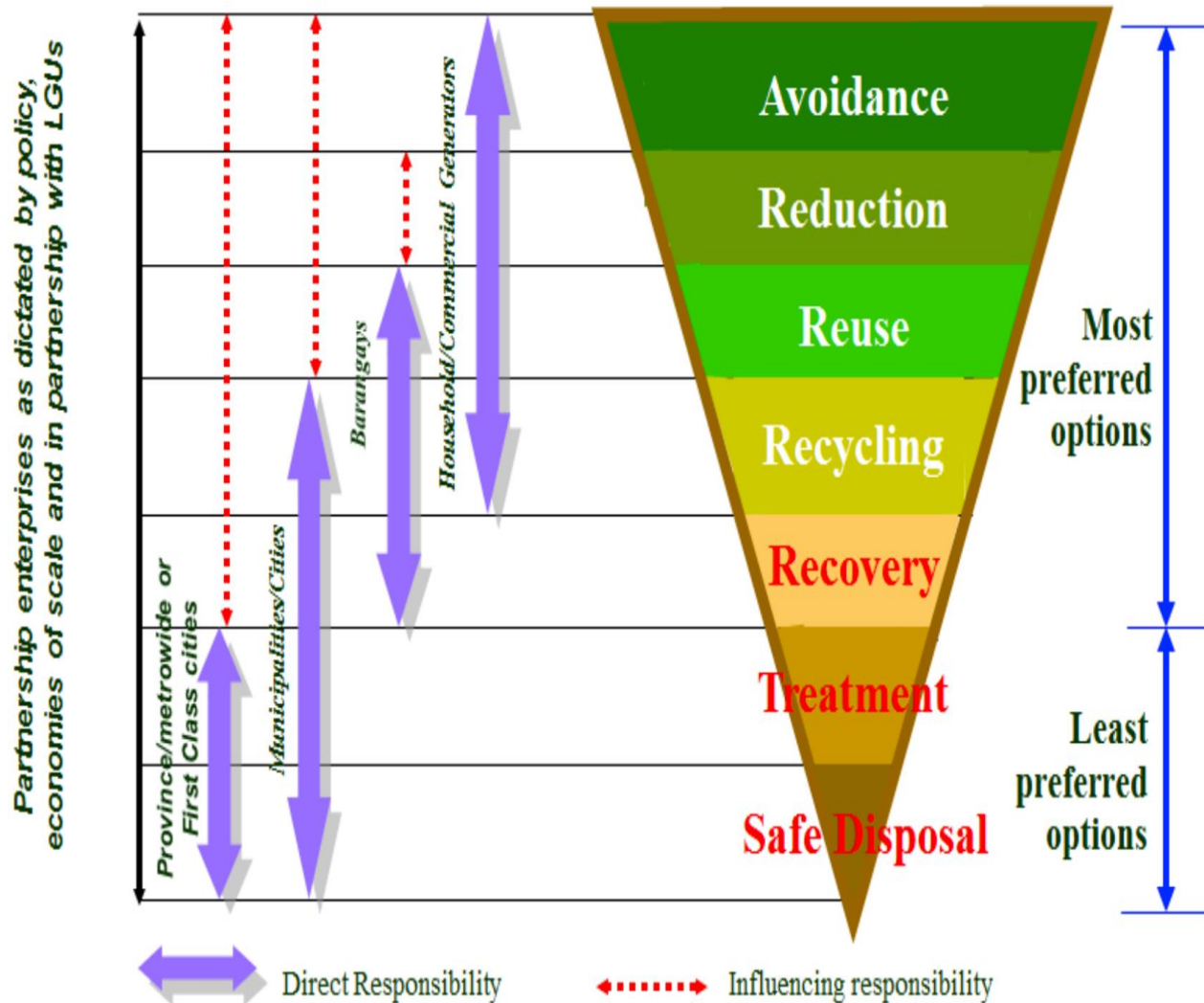
SOLID WASTE EXPOSURE PATHWAY (NSWMC)



RA 9003

1. Capacity augmentation
2. Institutional mechanism
3. SWM planning
4. Materials recovery facility
5. Controlled dumpsite
6. Sanitary land fill
7. Post SLF operation
8. Research and development
9. Environment cooperatives/associations

3.2. POLICY EVOLUTION & INSTITUTIONS



Overall policy of RA 9003 based on SWM hierarchy

- Waste avoidance, reduction, reuse, and recycling are preferred over eventual treatment and disposal.
- Most preferred options are to be managed at the level of waste generators -> households and commercial establishments.
- Source: NSWMC 2015

3.2. POLICY EVOLUTION & INSTITUTIONS

Key Institutions

- | | |
|---|---|
| 1. National Solid Waste Management Commission | Approving body of national and local SWM plans, coordinate linkages, augment resources, create-capacity-building programs, link markets, EMB as its secretariat |
| 2. Local Government Units | Given the discretion to create specific divisions and designate focal persons; no dedicated SWM department/office |
| Provincial/City/Municipal/Brgy SWM Boards | In charge of stakeholder representation, planning, local ordinances, rationalization of budgets |
| 4. Private Sector | Engagement ranges from financing, collection, and disposal activities; PPP encouraged as modality to bridge logistical and financial lapses |
| 5. NGOs | Serve as consultants for waste management plans |

3.2. POLICY EVOLUTION & INSTITUTIONS

Funding sources, priorities, and SWM fund trend across study sites

LGU	20% IRA	20% LDF	Gen. Fund	Penalties	Permit fees	Accreditation, documentary	ISWMF products	External bodies	Priorities	Trend
QC	✓	×	×	✓	×	×	×	×	MOOE	Increasing
Rizal	✓	✓	✓	×	✓	×	✓	✓	ISWMF	Ambiguous
Bulacan	✓	×	×	×	×	✓	×	×	Not mentioned	Decreasing
CSFP	✓	✓	✓	✓	×	✓	×	✓	Tipping fees and MRF	Increasing

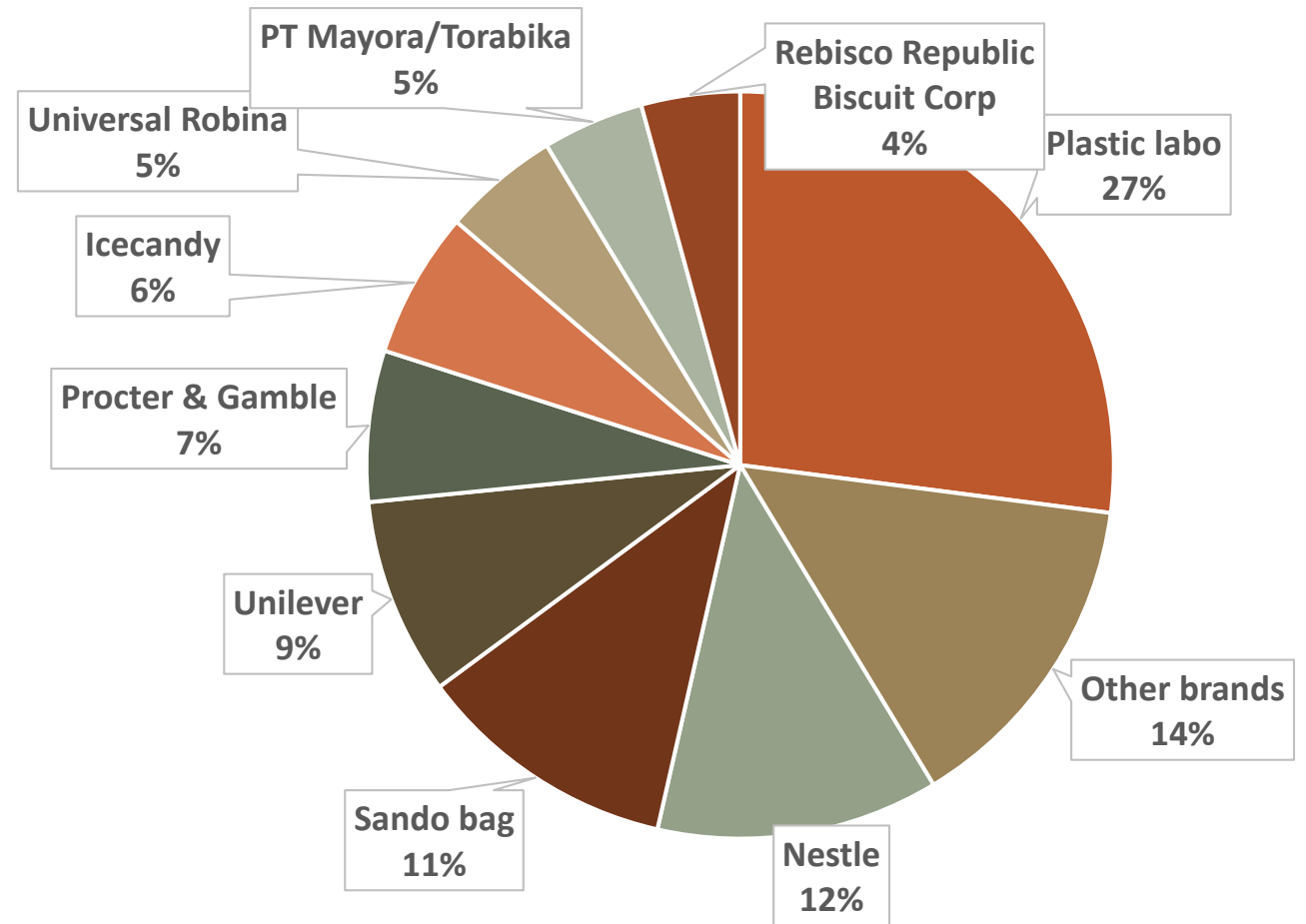
Source: Authors' analysis

3.3. WASTE GENERATION AND FACILITIES

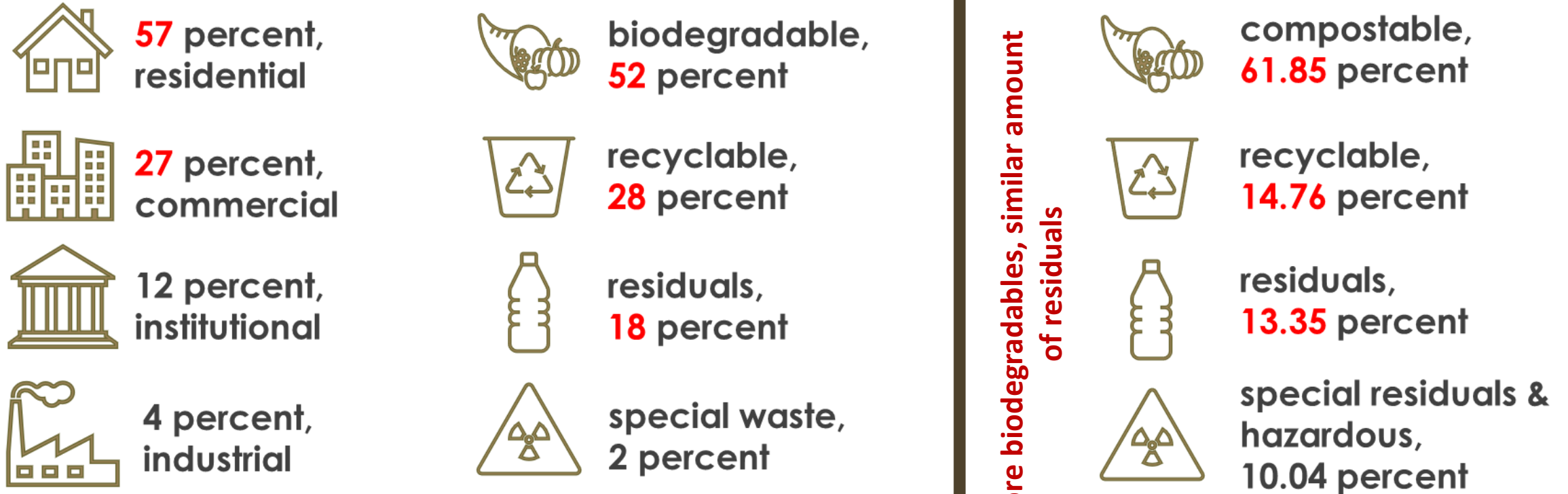
- Interestingly, 3,286 MT of waste profile summary of WABA communities were from branded wastes (Roberts-Davis & Guerrero 2018).
- **branded plastic waste comprise at least 54% of total residual waste vs unbranded waste**

Filipinos use more than 163 million plastic sachet packets, 48 million shopping bags and 45 million thin film bags daily (GAIA 2019)

Source: Top 10 waste contributors, 2018 Waste Assessment and Brand Audit, MEF-GAIA



3.3. WASTE GENERATION AND FACILITIES



Source: 2013 Waste Analysis and Characterization Study (WACS, NSWMC)

Source: 2018 Waste Assessment and Brand Audit, MEF-GAIA

3.3. WASTE GENERATION AND FACILITIES

QUEZON CITY



biodegradable,
48%, 630.67 tons/day



paper,
17%, 219.82 tons/day



residuals,
13%, 168.10 tons/day



plastic,
16%, 206.89 tons/day



glass or bottle, and metal,
3% each, 38.79 tons/day

• The daily waste generation per capita was approximately **0.69 kilograms per person** per day in 2003.

RIZAL

The municipality of Teresa churned out 8.74 cubic meters or 2,919 kgs of wastes in 2007. Residuals **mostly came from non-households.**



residuals,
85 percent, provincial data



biodegradable,
460 kgs, Teresa data



recyclables,
979 kgs, Teresa data



residuals,
1,480 kgs, provincial data

BULACAN



biodegradable,
65.3 percent



residuals,
42.4 percent



recyclables,
35.4 percent



special wastes,
9.3 percent



outright disposal,
8.2 percent

While Bulacan's wastes mainly came from residential areas, **Pampanga's major generator was commercial establishments** given its food production industries.

3.3. WASTE GENERATION AND FACILITIES

Collection

Average ASPBI and CPBI figures for selected solid waste management variables (**Business and Industry Surveys 2000-2015**)

Variable	ASPBI							CPBI				
	collection of hazardous	collection of nonhazard	material recovery	Remediation	treatment of hazardous	treatment of nonhazardous	all	collection	material recovery	remediation	treatment and disposal of hazard	treatment and disposal of nonhazard
no. of establishment	7.00	21.00	59.00	9.75	11.25	5.00	46.50	28.50	46.50	3.50	12.00	1.50
total employment	237.00	948.40	1,063.50	104.00	204.50	190.33	2,124.50	1,566.00	696.50	94.50	295.50	101.50
total revenue	462,310.75	2,797,203.80	2,185,709.50	191,581.75	327,472.25	358,468.33	853,376.50	2,867,747.00	999,482.00	56,155.50	492,455.50	389,511.00
total compensation	46,830.75	263,061.80	167,545.00	37,253.00	50,002.75	50,377.33	195,158.00	291,673.50	78,647.50	18,468.50	63,092.00	23,647.50
total cost	355,965.25	2,099,308.00	1,618,064.75	172,065.75	271,852.25	220,755.00	520,279.50	2,111,582.00	846,562.50	40,370.50	388,370.00	347,646.50
subsidies	-	-	-	5,424.50	8,555.25	-	-	-	-	-	390.00	-

- **Highest revenues and costs are observed in collection activities and material recovery.**

Notes: values in thousands

Source: Annual Survey of Philippine Business and Industry (ASPBI) (2009-2015), Census (CPBI) (2000-2012)

3.3. WASTE GENERATION AND FACILITIES

Waste Diversion

Diversion rate per year of City of San Fernando, Pampanga

Year	Waste generated (per year in kg)	Waste diverted (per year in kg)	Difference from previous year	Percentage
2012	61,571,149	7,388,538	NA	12%
2013	61,571,149	33,864,132	26,475,594	55%
2014	61,571,149	44,946,939	11,082,807	73%
2015	66,039,016	48,208,481	3,261,542	73%
2016	66,039,016	45,566,921	(-2,641,560)	69%
2017	66,039,016	50,189,652	4,622,731	76%

CSFP claim 93 percent compliance with RA 9003.

Source: CSFP CENRO 2018

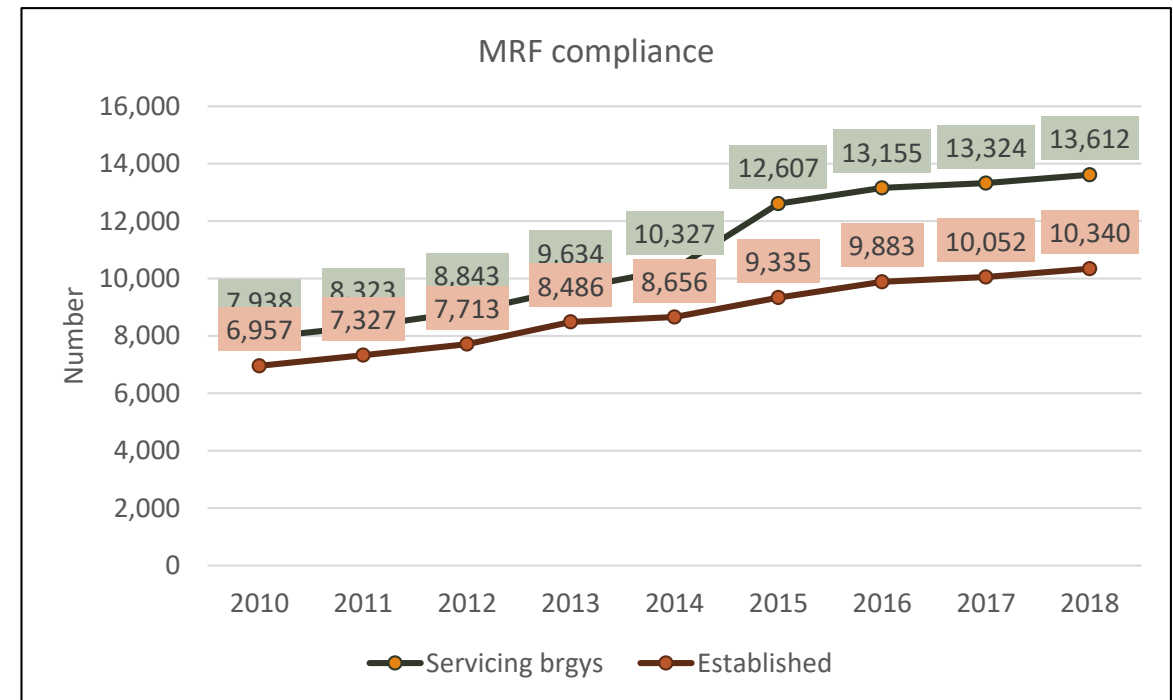
3.3. WASTE GENERATION AND FACILITIES

Material Recovery

Material	Collector	Metro Manila	Metro Cebu	Southern Mindanao	Average
Paper	Street collectors	3.18	3.69	2.45	3.11
Paper	Collection workers	21.83	1.81	0.62	8.09
Paper	Disposal site scavengers	22.01	8.21	12.86	14.36
Aluminum	Street collectors	0.76	0.35	0.40	0.50
Aluminum	Collection workers	0.78	0.13	0.02	0.31
Aluminum	Disposal site scavengers	2.50	0.05	1.79	1.45
Other metals	Street collectors	1.39	5.04	14.76	7.06
Other metals	Collection workers	12.35	0.94	0.64	4.64
Other metals	Disposal site scavengers	16.75	6.34	13.75	12.28
Plastic	Street collectors	1.63	3.94	3.50	3.02
Plastic	Collection workers	9.79	0.50	0.63	3.64
Plastic	Disposal site scavengers	20.32	4.48	25.00	16.60
Glass	Street collectors	0.85	0.58	6.65	2.69
Glass	Collection workers	6.58	0.26	0.94	2.59
Glass	Disposal site scavengers	9.96	0.32	49.64	19.97

Source: JICA 2008

Number of MRFs established and barangays served from 2008-2018



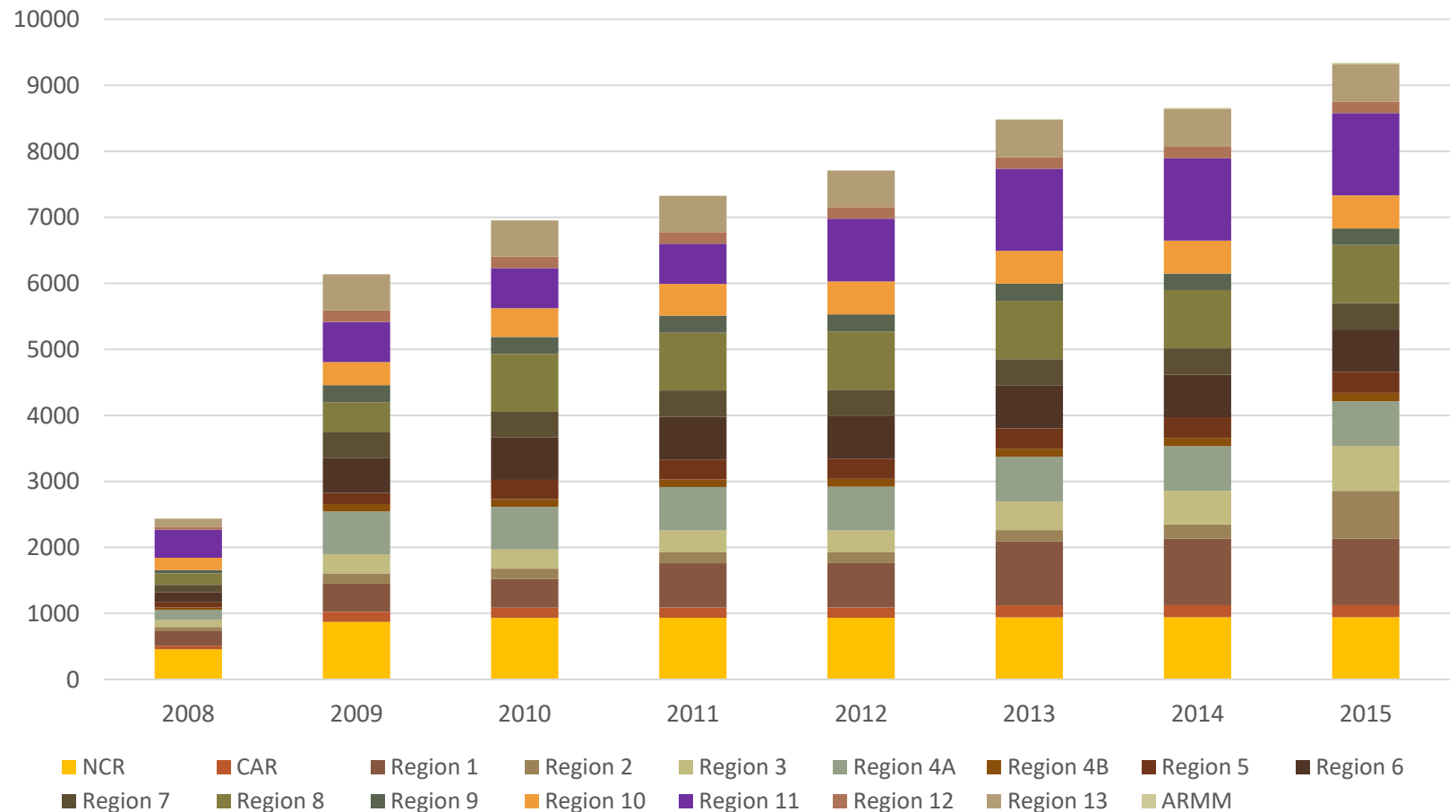
Source: NSWMC 2018

3.3. WASTE GENERATION AND FACILITIES

Material Recovery

- QC has a low compliance rate, 36 out of 142 barangays.
- Rizal has 148 fully operational MRFs out of 189 barangays as of Nov 2019.
- Bulacan met 50 percent compliance aside from 44 composting facilities. Whereas in City of San Fernando Pampanga, there were 162 operational MRFs. PLGU assists in establishment in case barangays do not have the funds.

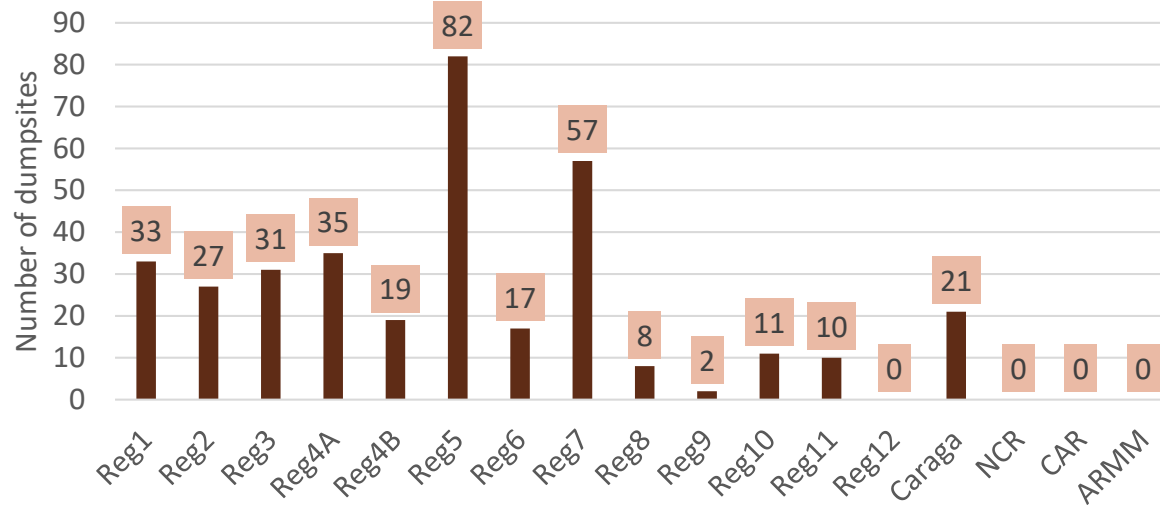
Trend of materials recovery facility across regions from 2008-2015



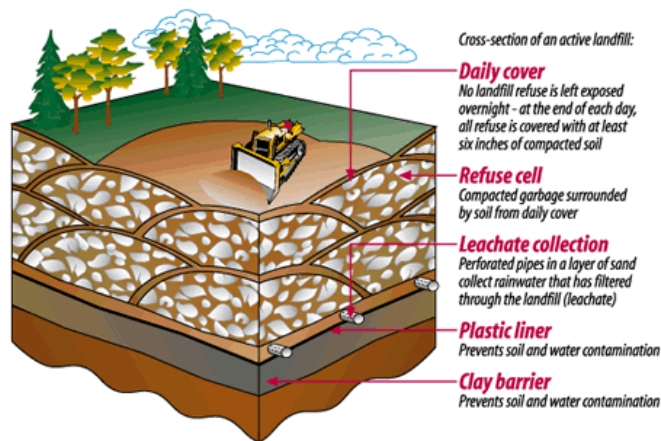
3.3. WASTE GENERATION AND FACILITIES

Illegal Dumpsites

Illegal dumpsites as of 2018



- Closure and rehabilitation of all dumpsites and their replacement with sanitary landfills by 2006
- Legally mandated transition was not fully realized as many open and controlled dumps are still currently in operation
- In the past eight years between 2008 and 2018, it has been notable that the numbers decreased by more than half from 806 to 353.

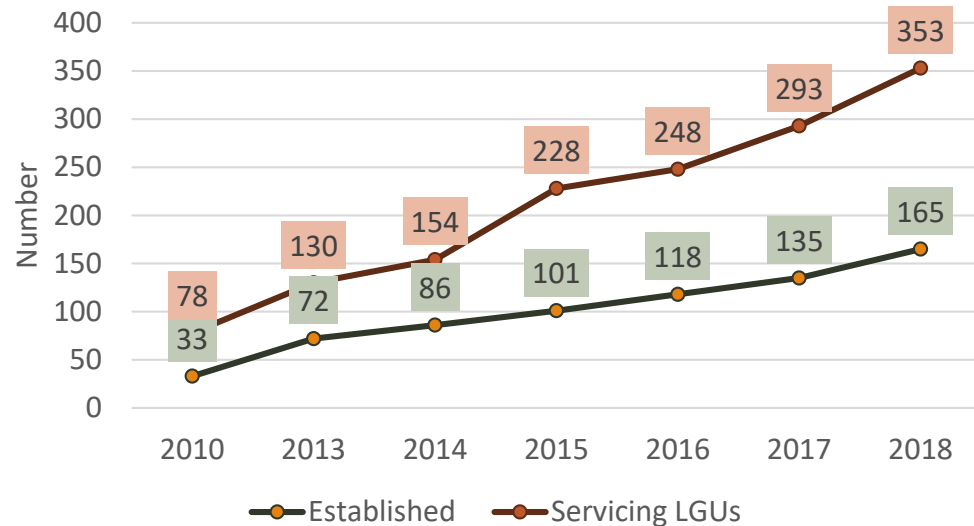


SLFs are disposal facilities with impermeable liners to prevent liquid discharges from polluting ground and surface waters; gas management system to reduce risks of burning or explosion; soil cover to minimize odor; and other environmental protection features

3.3. WASTE GENERATION AND FACILITIES

Sanitary Landfills

SLF coverage



- Only 353 LGUs have access to 165 SLFs as of December 2018, equivalent to 21.6% of total LGUs
- Clustering can be an option with several arrangements:
 1. Small LGUs can pool their resources into setting up a common solid waste disposal facility
 2. Enables economies of scale and reduce cost per unit of disposal
 3. Difficult to find a host LGU given social acceptability of the proposed facility
 4. LGUs can host and charge neighboring municipalities fees

Parameter	2008	2010	2013	2014	2015	2016	2017	2018
Population	88,543,800	92,337,852	98,449,090	100,420,642	101,883,764	103,320,222	104,918,090	106,512,074
Operating SLFs	21	29	72	86	101	118	135	165
LGUs with access to SLFs	63	78	130	154	228	248	293	353
% of LGUs with access	3.9%	4.8%	8.0%	9.4%	14.0%	15.17%	17.93%	21.78%

Source: NSWMC 2018

3.4. RESULTS: CASE STUDIES ON SWM SYSTEM

QUEZON CITY



Largest LGU in NCR with an area of 16,112.58 ha

Has the biggest population figure at 2.94 million, with 41.57% residential development in land use

Home to Payatas Open Dumpsite active from 80s to 90s

Closed in 2000 due to trash landslide and eventual combustion, burying at least 300 waste pickers

RIZAL



Mixture of urbanization, protected areas and forested lands, and extractive industries

Teresa LGU was recommended for its model MRF and the marrying of local waste management and extractive industries

PAMPANGA AND BULACAN



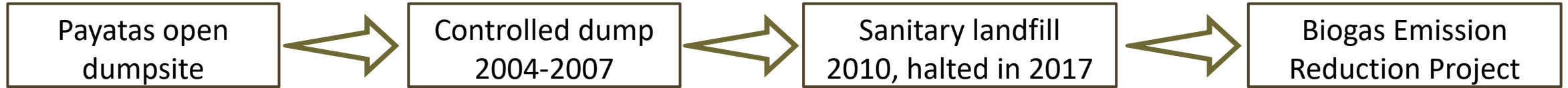
Bulacan mainly dependent on agriculture, fisheries, and forestry; seconded by manufacturing, mining and quarrying, gas and development, and construction

Pampanga, on the other hand, is driven by gastronomy and artisan production

Consistent observation of growing problem of migration which may drive up waste figures. The added presence of informal economy facilitated creation of unique strategies and waste mechanisms.

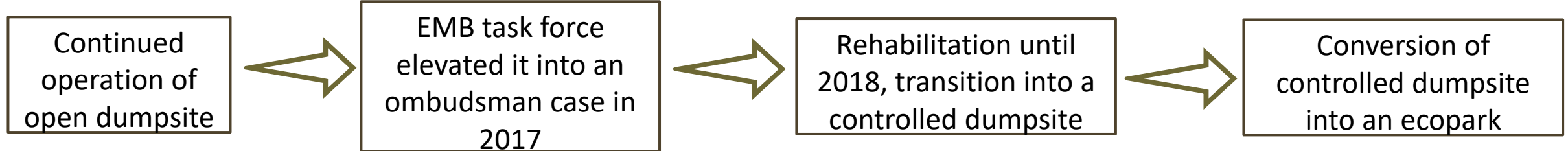
3.4. RESULTS: CASE STUDIES ON SWM SYSTEM

QUEZON CITY



*The biogas project was an attempt to tap into the carbon credit market as one of the Clean Development Mechanisms. This did not come to fruition due to **constrained market prices** offered by Kyoto Protocol.*

PAOMBONG, BULACAN



RIZAL

! Clustered landfills for adjacent regions. Has three SLFs in Montalban, San Mateo, Morong which serviced Metro Manila and Central Luzon. Pampanga and Bulacan also asked service from Metro Clark Waste Management Corporation.

SAN FERNANDO PAMPANGA

Promoted zero waste, close engagement with NGOs

3.4. RESULTS: CASE STUDIES ON SWM SYSTEM

STUDY AREA	POLICIES	INSTITUTIONS
Quezon City	Institutionalized junkshops through Ordinance No. SP. 1711 s. 2006	QC-Environmental Protection and Waste Management Department under the city LGU. For enforcement, QC enlisted environmental police and barangay public safety officers.
Rizal	Greening programs issued through EO 2018-11 . Teresa pushed an environmental inspection policy for potential commercial polluters.	Ynares-Ecosystem-Program (YES Team) , devolved to municipalities as well. Provincial and municipal ENRO as focal persons.
Bulacan and Pampanga	SWM plans of PLGUs not yet approved. External aid was observed more in their municipal LGUs. CSO partnership, and zero waste initiative Provincial Ordinance No. C-005 of Bulacan allowed incineration.	ENRO and General Services division of Bulacan and Pampanga. CSOs The provincial police of Pampanga assists with enforcement, also members of SWM board.

3.4. RESULTS: CASE STUDIES ON SWM SYSTEM

Material Collection, Segregation and Processing

- Waste collection was observed to have better turnouts in urban areas compared to rural ones, the gap attributed by literature to **non-cooperation, unfit collection vehicles, and ineffective routes for collection service**.
- Barangays handled most of the segregation and collection part, mostly implementing a no-segregation, no-collection policy**. In inaccessible areas, mini-dump trucks and pushcarts were utilized. In big localities, private contractors also carry out the collection and segregation.
- CSFP **delegated its collection responsibilities** – private contractors for residential, city general services for SMEs, and private handlers for large businesses.
- Quezon City implemented a **macro and micro cell-based collection system for residential areas** whereas commercial establishments were responsible for their respective wastes.

3.4. RESULTS: CASE STUDIES ON SWM SYSTEM

Material Collection, Segregation and Processing

The informal economy bridged the gaps e.g. junkshops serving as pseudo-MRFs and scavengers picking out recyclables for market exchange. QC, acknowledging this, institutionalized them in their SWM system.

LGU	Interface with junkshops	Processing mechanisms
Quezon City	Institutionalized junkshops as part of SWM system of the city (Ideal)	MRF function/material segregation
Rizal	Junkshops as markets for recyclable wastes	Teresa's integrated SWM facility produced construction materials, paper charcoals, pillows and cushion fillings, and coco nets. Coco nets sold to quarry and mining operators for rehab purposes.
Bulacan	None mentioned	None mentioned
Pampanga	Engaged junkshops with private sector in Waste Market Fair	Composting arrangements with grazers, connected with cement manufacturers (5 cement bags for every one ton of shredded plastic), use of local networks for IEC

3.4. RESULTS: CASE STUDIES ON SWM SYSTEM

Processing

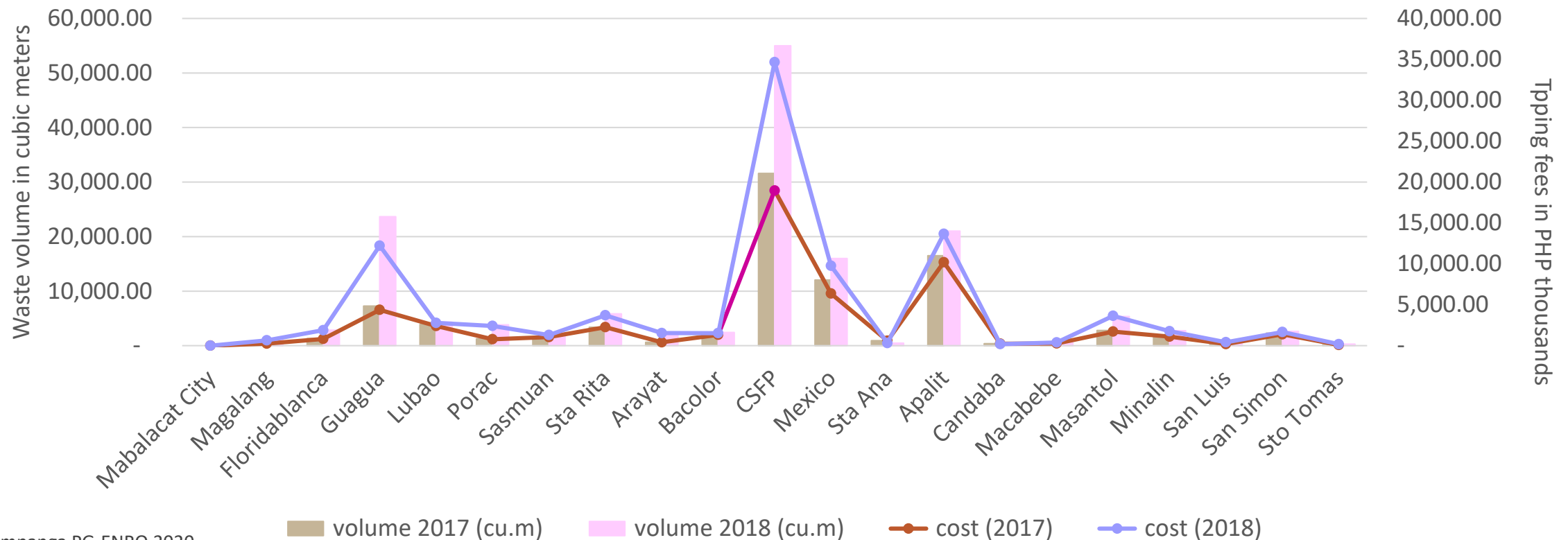


Integrated Solid Waste Management Facility in Teresa, Rizal

3.4. RESULTS: CASE STUDIES ON SWM SYSTEM

One aspect not usually highlighted in SLF clustering is the cost. In the case of Pampanga LGUs, their hauling costs and tipping fees to MCMWC averaged around Php 660 per metric ton.

Waste volume disposed to MSWMC and tipping expenses of Pampanga LGUs for 2017 and 2018



Source: Pampanga PG-ENRO 2020

3.5. WASTE MANAGEMENT IN TIME OF COVID-19

- The surge of COVID-19 cases meant a **spike in hazardous wastes PRODUCTION**. For instance, the San Lazaro Hospital in Manila city released between March and June 2020 approximately 29,473 kilograms of healthcare waste including but not limited to “personal protective equipment, dressings, swabs, blood bags, urine bags, sputum cups, syringes, syringes, test tubes, and histopathological waste.”
- Earlier in April 2020, **ABD projected Metro Manila would generate 280 MT of healthcare wastes**, a jump from baseline figure of 47 MT (Cabico 2020).
- Guidelines in RA 9003 do not cover **BIOMEDICAL- wastes in households**. These are supposedly generated in hospitals, thus covered by RA 6969 or Toxic Substances, Hazardous, and Nuclear Wastes Control Act
- While overall generation decreased due to establishment closure and limited foot traffic, the share of special wastes increased.

3.6. PENALTIES AND INCENTIVES

- Rizal has the strongest incentive mechanisms. This involved :



quick facilitation of requests



provision of equipment (e.g. e-bikes, green vehicles, dump truck)



cash incentives c/o YES Team



Barangay Resilience Award from provincial DRRMO

- Pampanga's programs were specific to SWM.



Cash dole out to assist in constructing MRFs

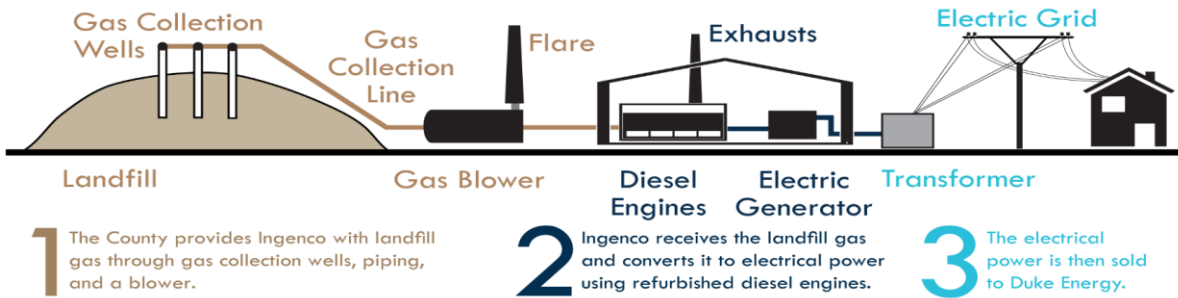


Equipment donations were given to best barangay, highest diversion rate, best MRF, best IEC, and clean and litter free barangay

- Disincentive mechanisms – requests and permits on hold by provincial capitol. Most of the time however, **the filing of cases in view of violations were left to EMB.**

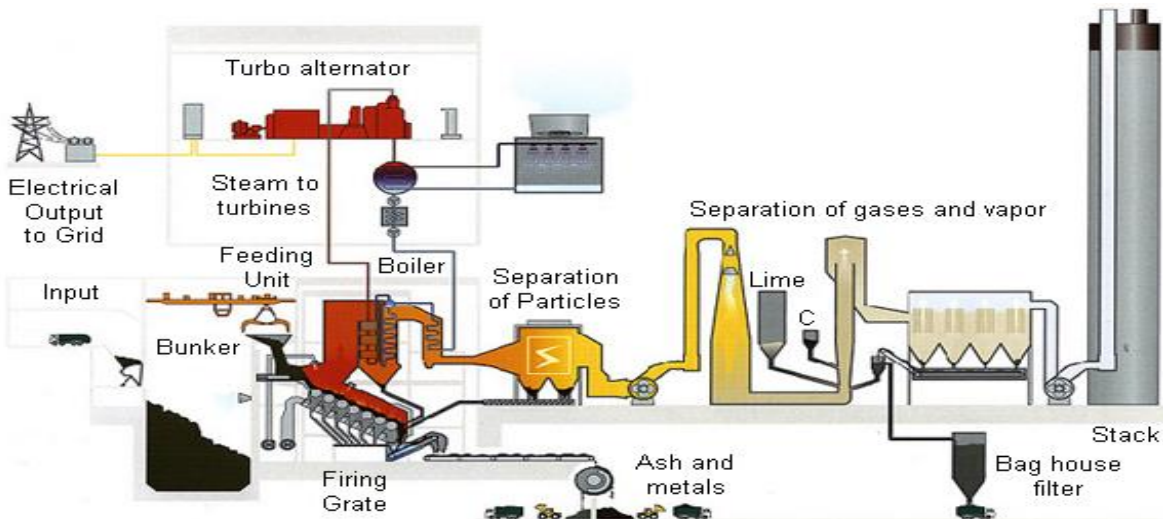
3.7. STRATEGIC OPTIONS FOR SWM

Gas-to-Energy Process



Landfill Mining/ GAS TO ENERGY

- Accumulated landfill wastes eventually become gases. They can be extracted as fuel or energy for landfill operations and LGU revenue.
- Recently considered by QC for Payatas landfill
- Flaring systems deemed beyond capacity of LGUs, better to establish as PPP or multistakeholder collaboration



STATE OF THE ART SWM FACILITY

- Fully integrated infra for waste management, complicit with clean air and SWM act provisions
- Established by-product processing
- Formalization of informal workers as partners

3.7. STRATEGIC OPTIONS FOR SWM

VERTICAL MARKET LINKAGE



- Rizal partnered with cement companies wherein collected residual wastes are provided to factories
- Teresa LGU was required to produce 2T (minimum weight) of segregated residual waste every two weeks at Php 1.20 per kilo or Php 1,200 per ton.
- Market of recycled and reused materials

3.7. STRATEGIC OPTIONS FOR SWM

SUBNATIONAL POLICY, STRUCTURAL AND RESOURCE AUGMENTATION

BUREAUCRATIC AUGMENTATION



Leadership and participation:
Both top-down and bottom-up approaches are needed.

Vertical and horizontal integration in SWM operations

Rizal exhibited strong vertical linkages with a bottom-up approach while Pampanga has a very extensive top-down, horizontal linkages, connecting with NGOs and private sector.



Structural augmentation necessary with absence of dedicated ENROs

COMMUNITY ENGAGEMENT



IEC as core component in LGUs' SWM program



Changing passive public, not relegated as participants with no decision-making role



Strengthening Barangay-level counterparts

CHALLENGES



No capacity-building programs on source reduction.



No concrete program linking recyclables to market.



Ex-officio/adhoc nature of NSWMC resulted to institutional gaps



The absence of blueprint of implementation, misalignment to development plans



Absence of teeth and clout, lack of transparency



limited resources among LGU

Unsustained LGU SWM initiatives

3.7. STRATEGIC OPTIONS FOR SWM

SHIFTING VIEWS ON INCINERATION

- Increasing interest on incineration due to land shortage concerns;
- Landfills have been found to fill faster than expected; and
- source reduction strategies have been ineffective

- Global cases:

1. **Malaysia**

No blanket ban on all forms of incineration

Small plant established in 2011 in Tioman Island, discontinued due to high MOOE

Planned to construct centralized plants but faced resistance and financial limitations

2. **Laos**

Considered incineration for healthcare wastes, met financial constraints

3. **Indonesia**

Provided benchmark emission values for existing biomass-fueled plants

4. **Vietnam**

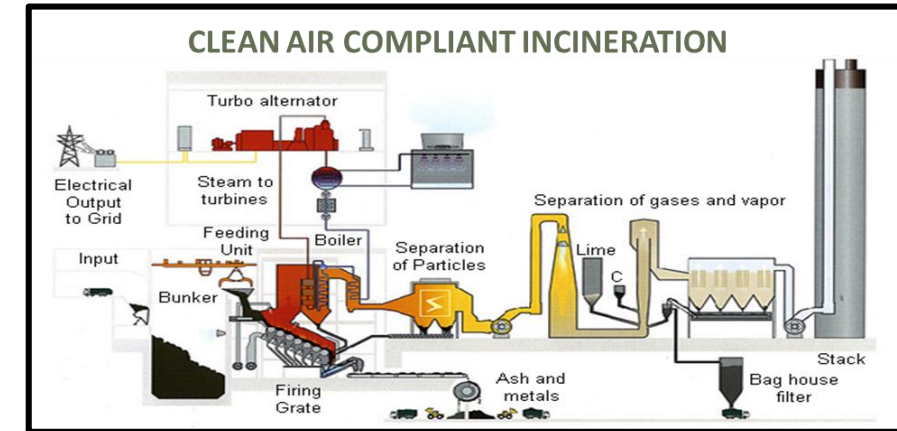
Opted for treatment infrastructure sponsored by World Bank and Germany

5. **Singapore**

Managed coexistence of landfills and incineration towards Zero Waste realization

Established five incineration plants, 90 percent waste reduction

Applicable due to less organics



4. KEY INSIGHTS

- **RA 9003 failed to fully cascade:** SLF transition, institutional complementation, enforcement and compliance
 - **Weak regulatory governance and limited sub-national resource and infrastructure** contribute to sub-optimal waste management systems
 - Institutionalization of **municipal/city ENROs**
 - DENR and NSWMC must be resolute and clear on policy; whole-of-government responsibility
- **Empowerment at sub-municipal level:** Communities are passive; Barangays are heavily dependent on cities and municipal governments.
 - **Community Active Engagement: reorientation, behavioral change**
 - **Capacity and resource augmentation at the Barangay and Community levels**
- Institutionalization of the **informal economy; and strengthening of horizontal and vertical linkages**, from collection hubs to markets
 - **Formalization of informal workers and settlers**
 - **Industry linkage**

4. KEY INSIGHTS

- **Policy and Institutional direction** need to be harmonized
 - Clean Air and SWM Acts are clear but institutional resistance need to be managed (i.e. incineration, WTE)
 - Technology options/interventions need to be packaged and institutionalized
- **Revisit LGU reliance on policy grounding; LGU full autonomy not working**
 - **National** and **subnational cooperation** and **complementation** need to be enhanced:
 - clustering, subregion, subprovince, submunicipal, barangay
- **Infrastructure Investment** (public and private)
 - State of the Art SWM Facility design with vertical linkage to markets for sustainability
 - SLF Post-closure maintenance and operation/mining/waste to energy; facility transition and transfer planning
 - Public investment on SLF in the template of build build build (40B @500M/Province)
- **Covid 19 realities necessitate change**
 - Greater worker protection (training and equipment)
 - Strict waste handling and safety protocols; particularly for Bio-medical wastes
 - Clean-air compliant Incineration??? Other Technology options

4. KEY INSIGHTS

**Institutional
Augmentations &
Interventions**

- Expenditure programming
- Technology options
- Livelihood & welfare
- IEC/ Awareness



LGUs
NGAs
Private sector
CSOs
Community organization

- Policy compliance
- Clustering & Institutional Complementation
- Municipal/City ENROs
- Barangay and community empowerment
- Enforcement/ Penalties and Incentives

Policy

- Legal challenge: incineration and WTE discussion
- SLF Post-closure management and gas/material mining
- Devolution and oversight functions
- Public and Private Investments



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