

Challenges in Governance and Implementation of the Solid Waste Management Programs: Focus on Plastics

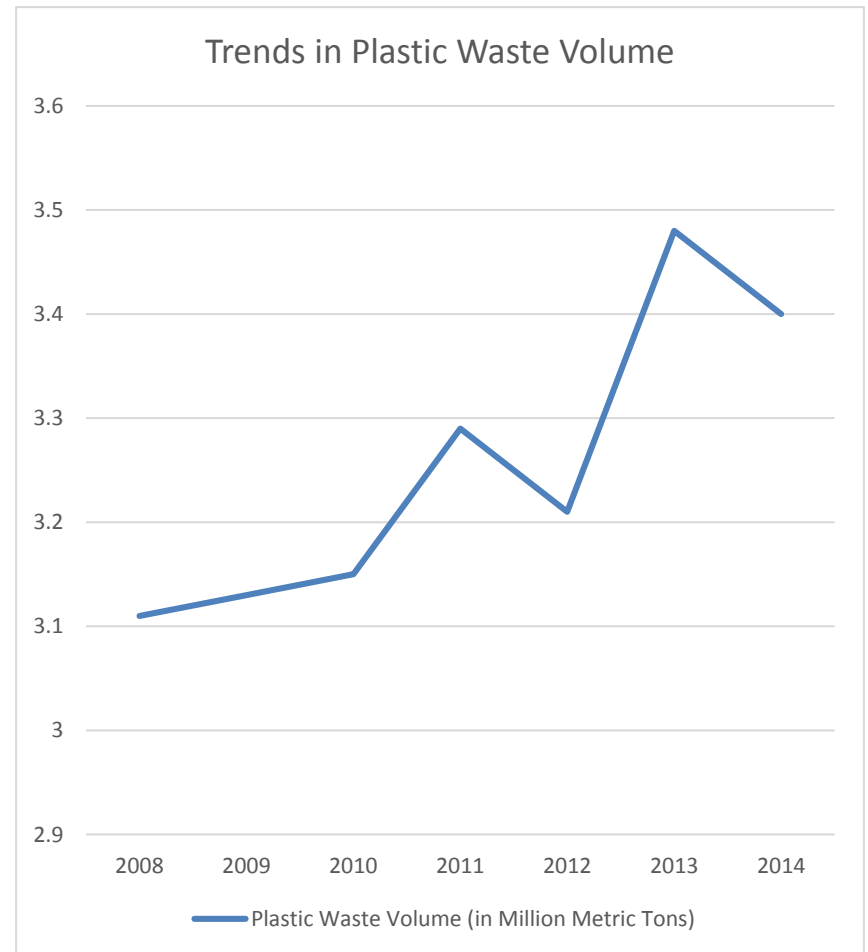
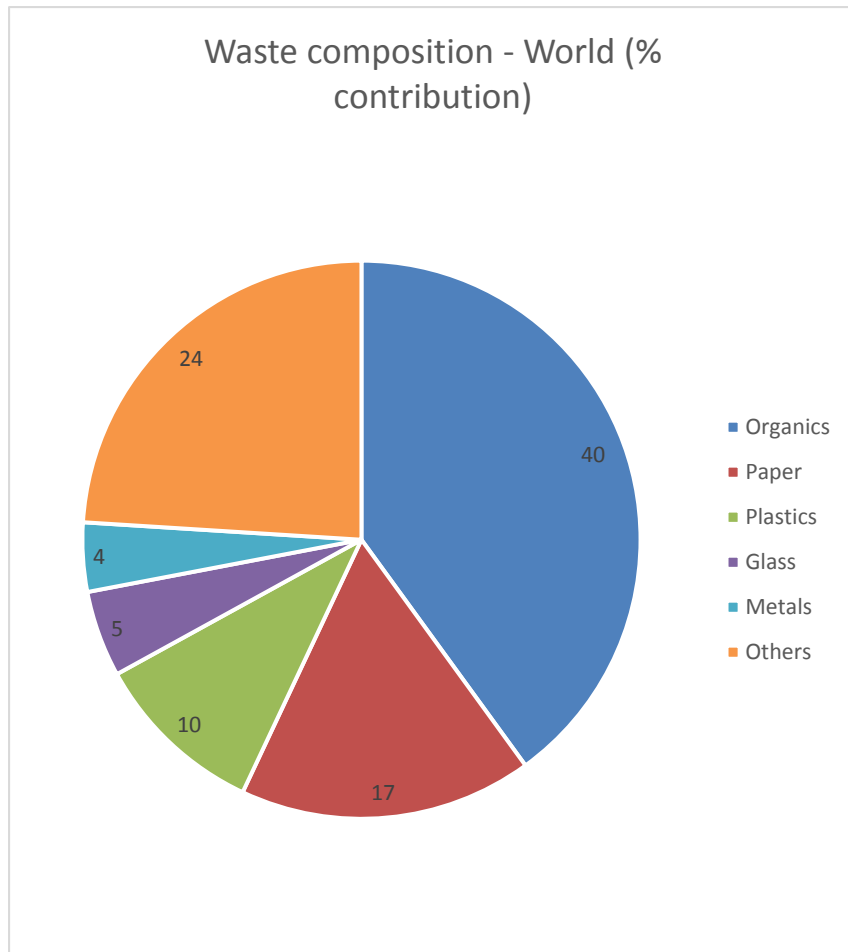
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Outline

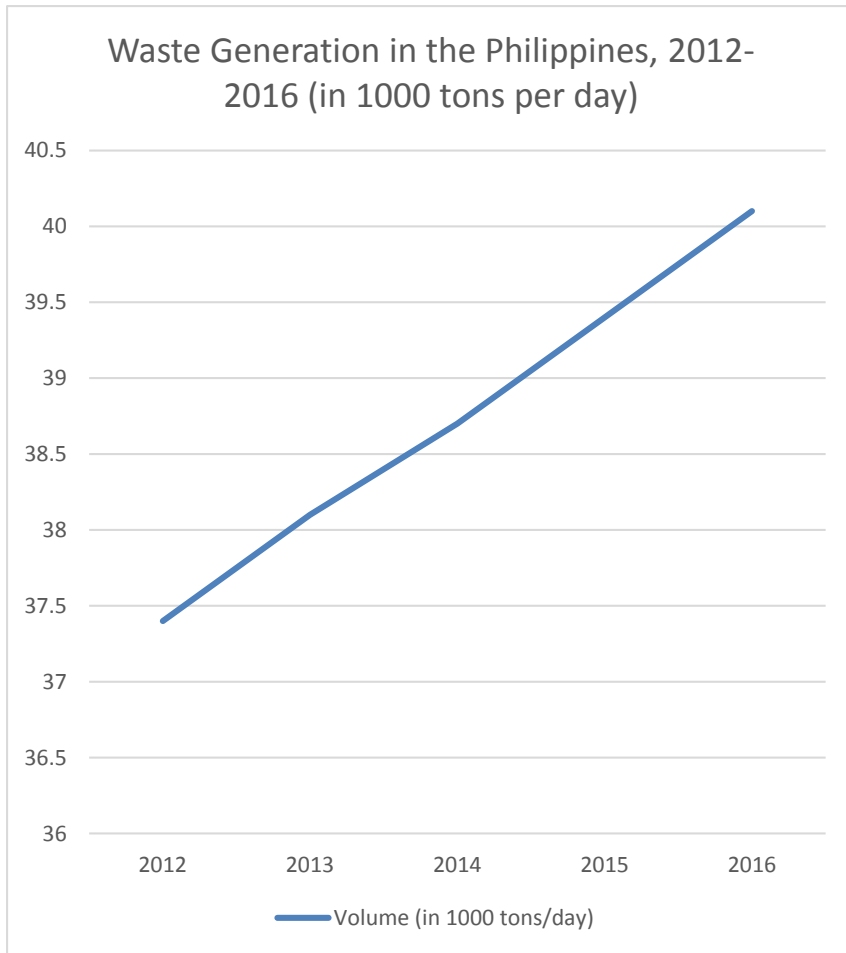
- Trends in Plastic Pollution, Nature and Causes
- Laws on Plastic Pollution
 - Other countries
 - Philippines- Ecological Solid Waste Management Act-The RA 9003
- Challenges in RA 9003 implementation
- Institutional Innovations in Sustainable SWM

TRENDS IN PLASTIC POLLUTION, NATURE AND CAUSES

Trends in Plastics Volume and World Waste Composition (Source: Plastic Institute of Thailand)



Waste Generation in the Philippines (Source: AAG Philippines)



Waste Volume, Philippines 2016 (in 1000 Metric Tons/day)

Highest		Least	
NCR	9.2	CAR	0.6
Region 4A	4.4	Region 13	0.94
Region 3	3.8	ARRM	0.97
		Region 4B	0.97

Recyclable Wastes: Plastic Packaging Materials comprise around 38% (Source: AAG)

Location	Waste Generation Rate (Weighted Average 2010, in kg/capita/day)
Metro Manila	0.69
Metro Manila and some Highly Urbanized Cities (HUC)	0.69
Other cities and provincial capitals (excluding NCR/HUCs)	0.50
All LGUs excluding Metro Manila	0.34
Municipalities (cities and some capital towns excluded)	0.31
Philippines	0.40

Figure 1. Sources of municipal solid waste in the Philippines, 2008-2013 (Source: EMB)

Percentage (%) contribution of the various sources of MSW

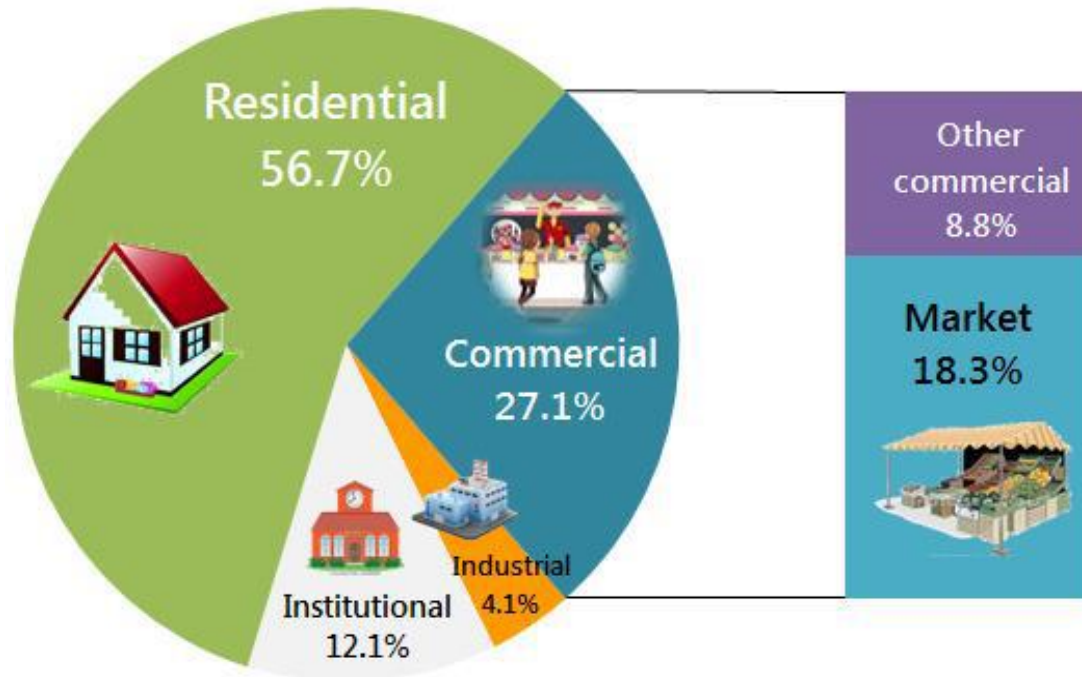
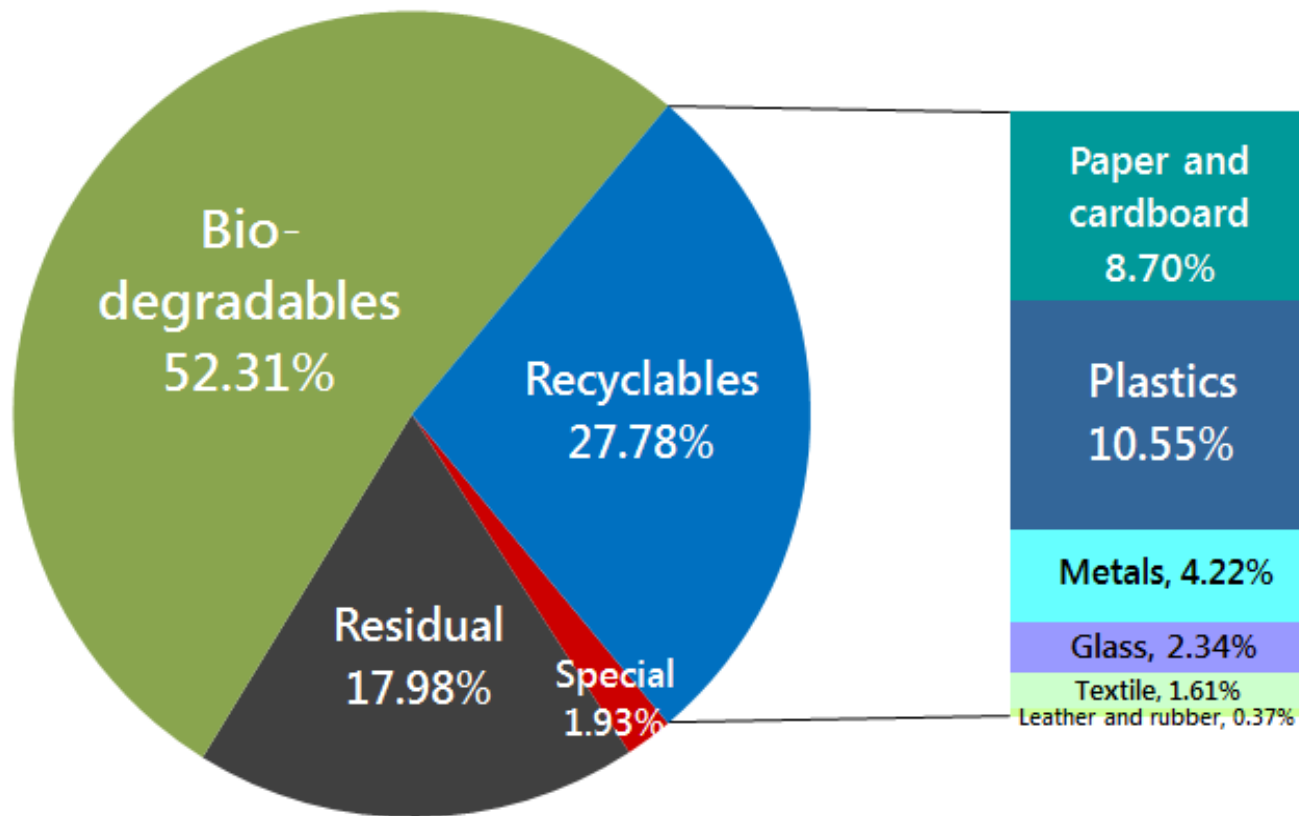
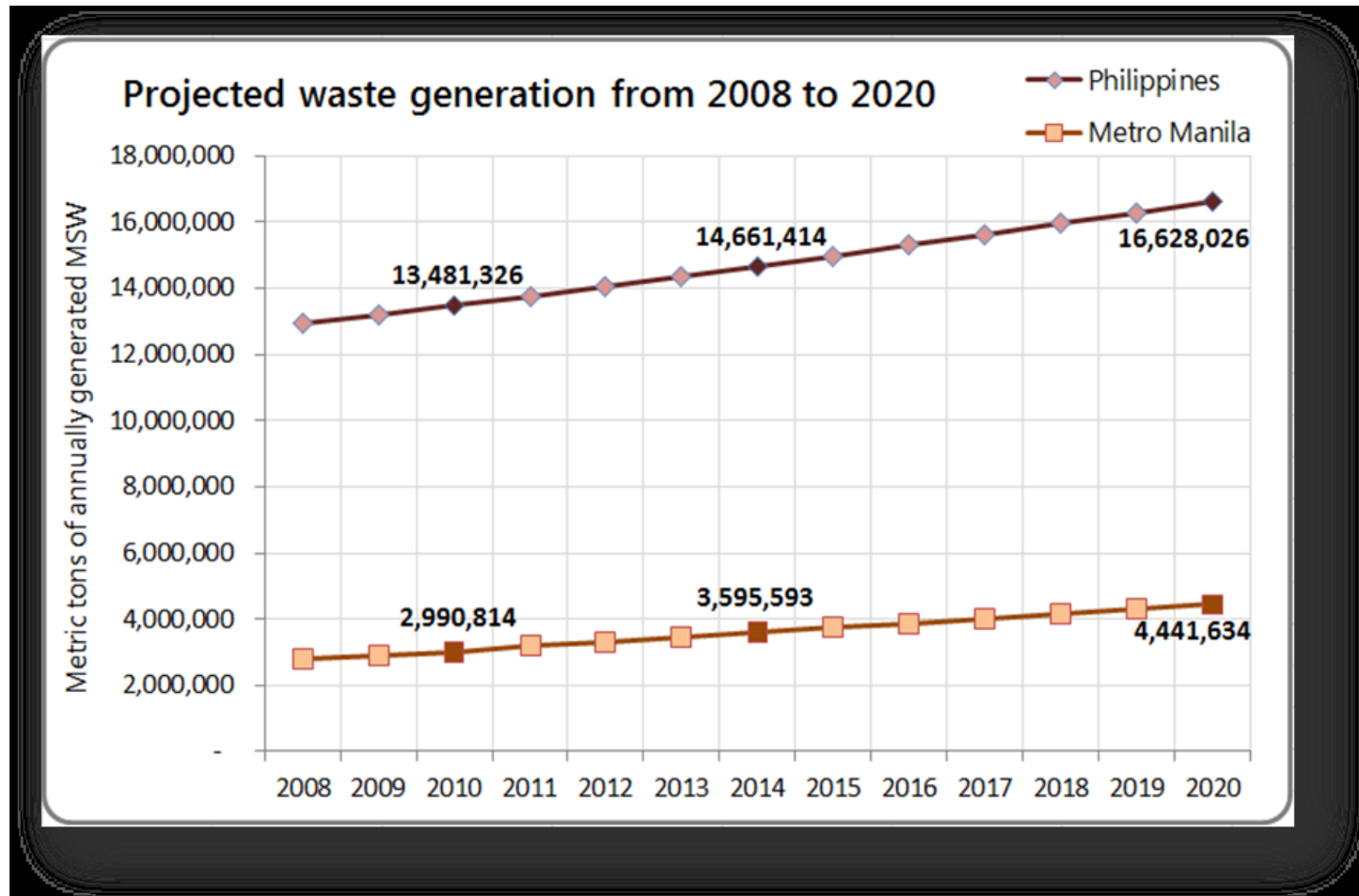


Figure 2 Composition of municipal solid waste in the Philippines, 2008-2013 (Source: EMB)

Percentage (%) by weight of MSW fractions in the Philippines



**Figure 3. Projected waste generation 2008-2020
(metric tons per year, Source: EMB)**



Factors affecting increasing volume of Solid Waste

- Population Growth
- Urbanization
- “Sachet” Culture

World Bank (2012) estimates that solid waste in the Phil cities will increase by 165% to 77.78 tons/day from 29.3 tons per day by 2025, due to projected increase in population.

The Sachet Culture

- Filipinos throw away 164 Million pieces of sachet packets daily or 59.8 billion sachets sold and discarded in the Philippines.
- Per capita use-591 pieces of sachet products a year, 174 plastic shopping bags.
- 57 million plastic bags are used daily (20.6 billion annually)

(Source: Global Alliance for Incinerator Alternatives, GAIA cited in CTalk, Philippine Star, March 13, 2019, p. 12)

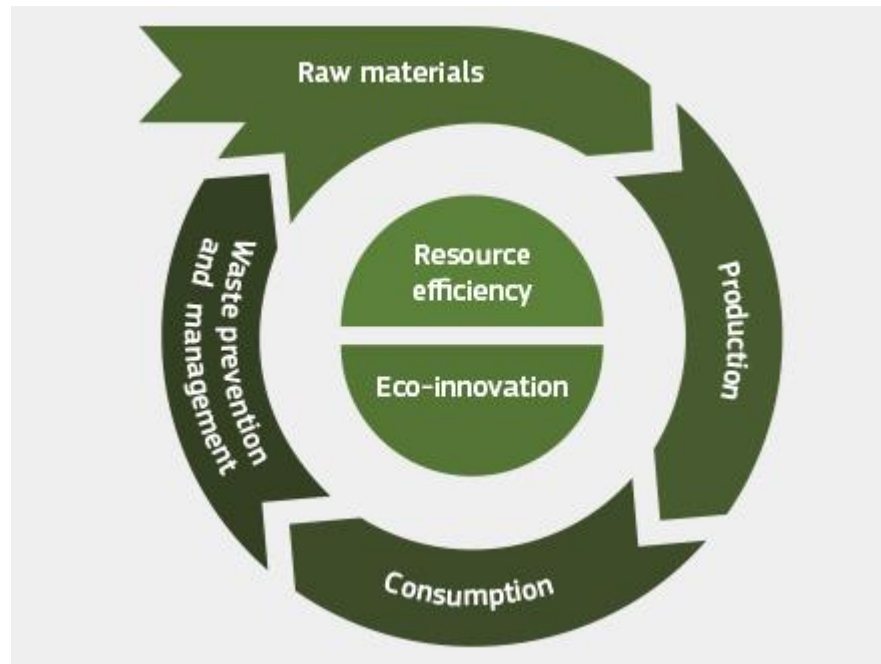
LAWS ON PLASTIC POLLUTION

Laws on Plastics in other countries

- India banned all forms of disposable plastics
- US EPA-Reduce, Reuse, Recycle
- EU agrees to slash single-use plastics

Green growth and circular economy-EU (Source: EU)

For EU, they can make things better!!



Philippines RA 9003

- The passage of RA 9003 (or the Ecological Solid Waste Management Act) in 2001 is a landmark policy because of its integrated approach to solid waste management.

Philippines RA 9003

- Solid waste management *refers “to the systematic administration of activities which provide for segregation at source, segregated transportation, storage, transfer, processing, treatment, and disposal of solid waste and all other waste management activities which do not harm the environment.” (RA 9003, Art 2.Sec.3, 1).*

Salient provisions of RA 9003

- Provides for the **mandatory segregation of waste at the household level** with collection vehicles having the appropriate compartments for the sorted wastes;
- Mandates the establishment of **recycling centers (MRFs) at every barangay** nationwide
- Requires the preparation of **10-year solid waste management plans** by all local government units
- allows for the creation of a **municipal and a provincial solid waste management board** with corresponding functions.

Institutional Mechanisms

Governing Board	Members	Responsibility
National Solid Waste Management Commission (Office of the President)	14 members from government; 3 from private sector; DENR is chair	<ol style="list-style-type: none"> 1) Prepare the national solid waste management framework, 2) Approve local solid waste management plans, 3) Review and monitor the implementation of local solid waste management plans, 4) Manage the Solid Waste Management Fund, among 20 other responsibilities
National Ecology Center	Headed by EMB Director and composed of a pool of multi-disciplinary, multi sectoral experts.	<ol style="list-style-type: none"> 1) Facilitate training and education in integrated ecological solid waste management; 2) Establish and manage a solid waste management information data base, in coordination with the DTI and other concerned agencies; 3) Promote the development of a recycling market through the establishment of a national recycling network that will enhance the opportunity to recycle

Institutional Mechanisms

Governing Board	Members	Responsibility
Provincial Solid Waste Management Board	All the mayors of its component cities and municipalities; reps of government and non government agencies (Iloilo case-> 50 members)	<ol style="list-style-type: none"> 1) Develop a provincial solid waste management plan from the submitted solid waste management plans of the respective city and municipal solid waste management boards 2) Provide the necessary logistical and operational support to its component cities and municipalities 3) Oversee the implementation of the Provincial Solid Waste Management Plant, among 12 responsibilities

Institutional Mechanisms

Governing Board	Members	Responsibility
City and Municipal Solid Waste Management Board	Composed of the city or municipal mayor as head and 7 representatives from public and private sector	1) Develop the City or Municipal Solid Waste Management Plan 2) Monitor the implementation of the City or Municipal Solid Waste Management Plan 3) Adopt specific revenue-generating measures to promote the viability of its Solid Waste Management Plan, among 12 other responsibilities
Barangay SWM committee (Senate Economic Planning Office (SEPO 2017))		Tasked to formulate SWM programs consistent with the City/municipal SWM plans to segregate and collect biodegradable, compostable, re -usable wastes, and to establish an MRF.

Score card in the local level Implementation of RA 9003

(Data Source: SEPO 2017)

Provision of RA 9003	Accomplishment
Collection	85% in Metro Manila; about 40% outside MM
Waste Disposal	Open dumping is still popular; controlled dumpsites and sanitary landfills are limited. LGUs with access to SLFs is below 15%
Diversion and Recovery	31% of all barangays in the country have Materials Recovery Facilities (MRFs).
Local SWM boards	As of 2017, 68% have provincial boards, 38% have city/municipal boards; and 13% have barangay committees.
Local SWM plans	As of Sept 2017, 1460 SWM plans were submitted to the EMB as the NSWMC Secretariat, but only 318 SWM plans have been approved.

CHALLENGES IN RA 9003 IMPLEMENTATION

Challenges in RA 9003 Implementation

(SEPO 2017, Lizada and Ibabao, no date)

1. Capacity building- in understanding the provisions of the law, formulating SWM plans
2. Fund generation- technical assistance needed to access credit facilities and to connect to the private sector.
3. Too many members of the PSWMB- difficult to have a quorum, difficulty to agree on important policy decisions due to diverse group with different worldviews.
4. Unclear delineation of the various members in the provincial board
5. Lack of enforcement of ordinances

The case of Solid wastes in the Sta. Cruz River, Laguna

INSTITUTIONAL INNOVATIONS IN SUSTAINABLE SWM

A Protocol for Adaptive Collaborative Solid Waste Management

Building partnerships and assessment of initial conditions

- Identification of SW decision-making groups
- Creation of a technical working group (TWG)
- Review of local policies and existing management instruments

Planning strategic actions

- Establishment of shared vision, mission, objectives and ground rules of the TWG
- Identification of appropriate management approach
- Application of participatory approach

Developing SW management plan

- Put together the individual municipalities' prepared plans.
- Validation of data in the draft SW plan by the TWG members.
- Preparation of an investment plan based on prioritized common problem among municipalities.

Implementing an investment plan

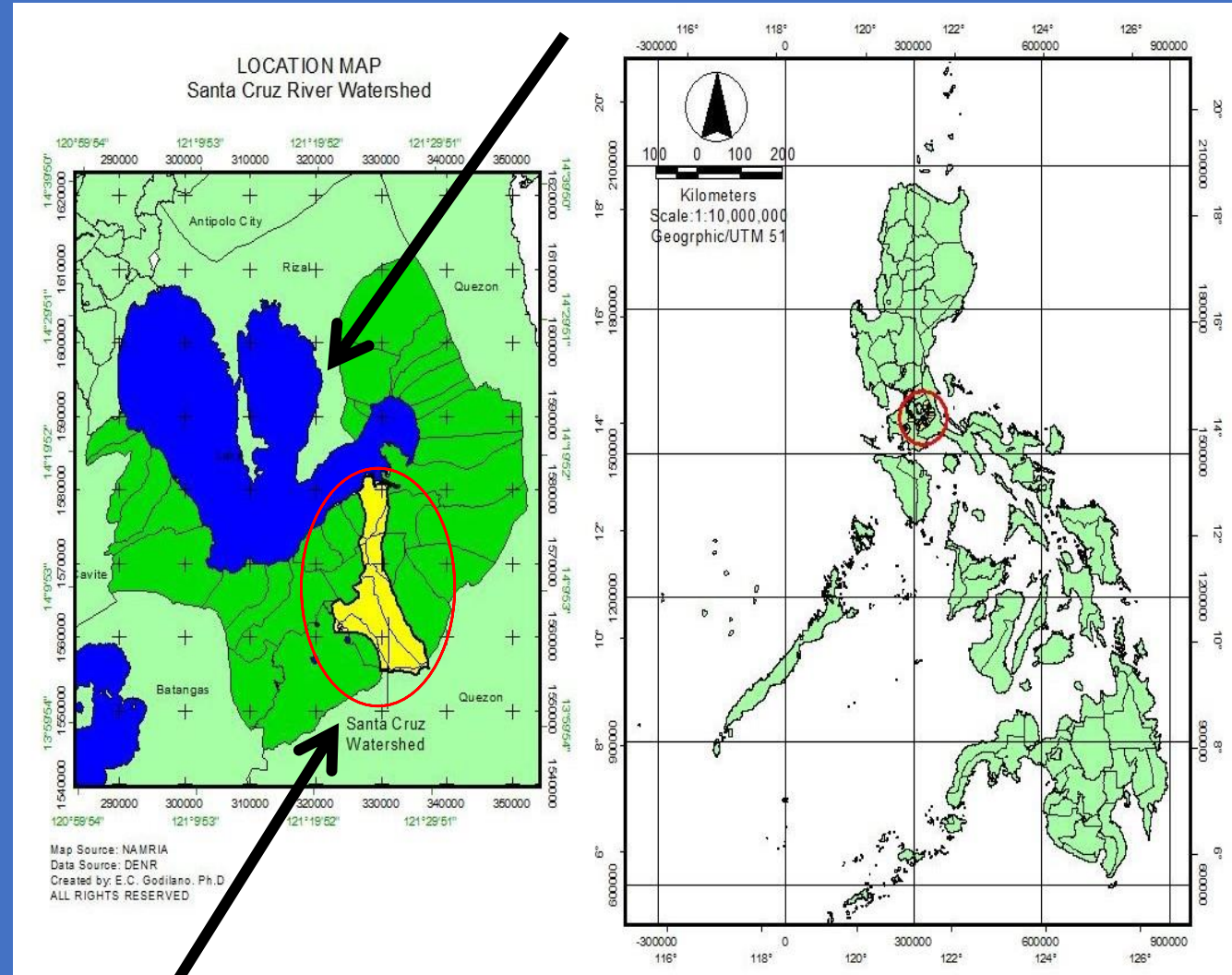
- Implementation of the SW management plan through a developed investment plan
- Enactment of local laws to support the SW management plan

Study Site Sta Cruz Watershed

Laguna de Bay

Involved the Major Stakeholders Actors

- **River council:** Sta Cruz Integrated Management Association, Inc. (mostly from LGUs)
- **6 municipalities:** Sta Cruz, Magdalena, Majayjay, Liliw, Rizal, Nagcarlan
- **Laguna Lake Development Authority**
- **Provincial & Community: Environment & Natural Resources Offices**
- **Academe:** UP Los Banos (facilitator)



Sta Cruz watershed – one of the 24 watersheds of Laguna de Bay; 18% of fresh water comes from hence there is a need to protect the watershed from pollutants

Methodological Framework



Adaptive Collaborative Water Governance (ACWG) Protocol

David et al 2016

Developed ACWG in the absence of any formal mechanisms to guide the stakeholders in managing natural resources at the local level

- Conceptualized out of collaboration models
- Field tested in Sta Cruz Watershed, Laguna, Philippines
- Action research program 2012-2016

Served as guide on what activities to undertake

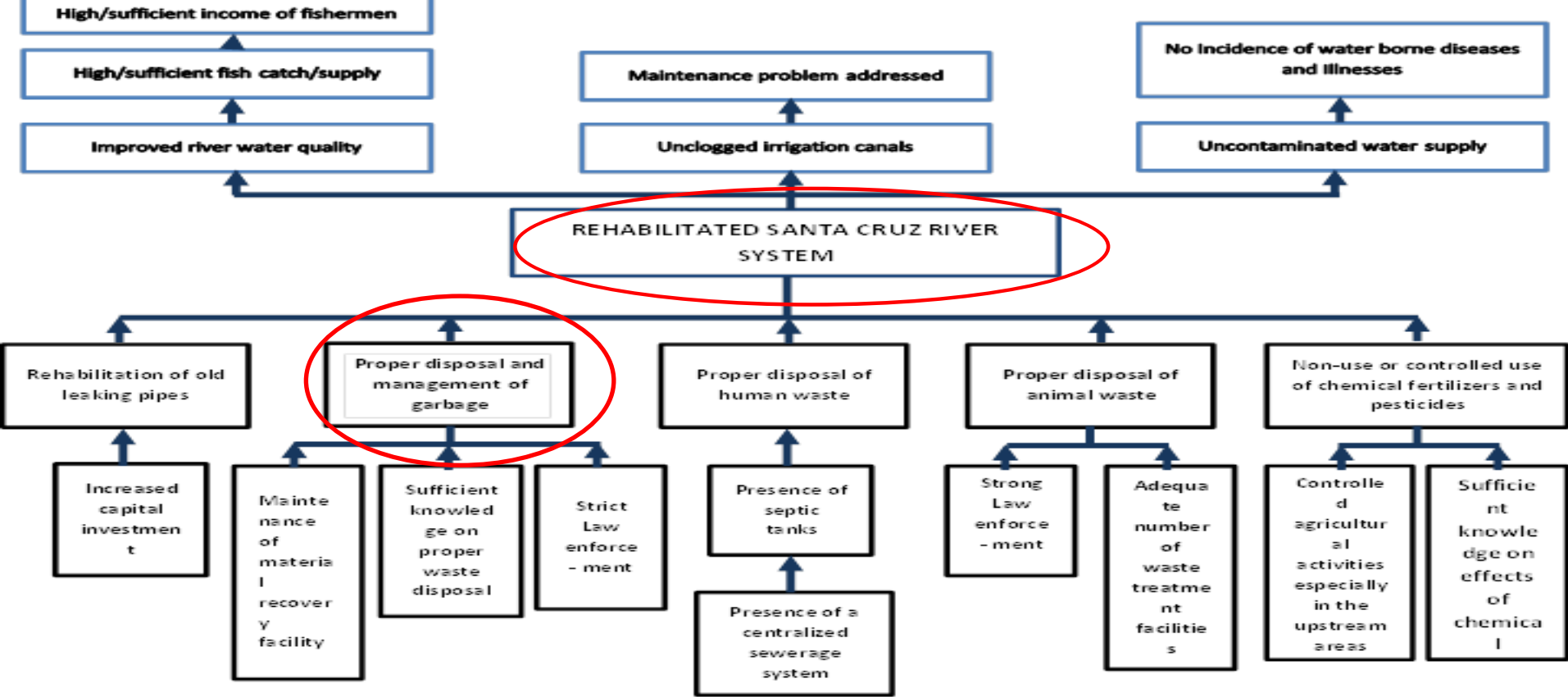
- Forums
- monthly meetings
- Training-workshop
- Seminars

Institution Building

Conduct of Sta Cruz watershed stakeholders' forum in 2014

- Favorable starting condition
- Presented biophysical condition of watershed
- Varied issues discussed (administration, resource management, water access)
- Agreed to institutionalize a mechanism to address issues
- River council committed to serve as platform
- Presence of river council was attributed to the LLDA's previous program





Objective Tree - result of a training-workshop attended by 6 municipalities

Solid waste management problems prioritized in 2014

Collaboration continued to date to address problems

Results from FGDs

- only 13 or 6.9% of total number of barangays of the Sta Cruz watershed have functional MRFs
- about 5 or 2.6% of the total number of barangays have non-functional MRFs.
- Liliw and Magdalena have not implemented the establishment of MRFs at the barangay level due to some reasons.
- Magdalena had not put up even a municipal MRF
- results validate the absence to little efforts done in implementing the law on SWM esp at barangays

Activities



- River council monthly meetings continued with other stakeholders including UPLB
- Participation in meetings had been transparent & inclusive – a rule
- River council continuously gaining knowledge about the watershed & its challenges – invite speakers

Rules of Engagement

- Other rules
 - participation is voluntary but tried to keep municipalities' participation regularly
 - promote good practices of municipalities
e.g. Rizal initiated working with cement company to lessen volume solid waste



Developed Water Resource Management Plan, 2017 (Priority on Solid Waste Management)

Objectives	Measurable indicators	Means of verification	Important assumptions
Goal: To rehabilitate the SCRW	Clean and safe water quality of the SCRW	Results of water sampling at strategic locations like in more populated areas near the river; ocular inspection i.e. no garbage found on rivers	External institutions (e.g. LLDA) will continuously monitor water quality at Sta Cruz (end of river)
Purpose: Properly disposed and managed solid wastes	All the barangays of the six municipalities have practiced proper disposal and management of garbage by 2025	All barangays have ordinances on solid waste management that are reflective of actual community situation. Material recovery facilities are functional.	Communities cooperate; barangays' management
Output 1: Strictly enforced laws and ordinances on solid waste management	Reduced volume of garbage at the barangay level by 20% Municipalities collected residual wastes only and volume reduced	Baseline data on garbage collected; data show volumes of solid wastes at decreasing rate	Monthly volume of solid wastes at decreasing rate
Output 2: Establishment of functional systems of MRF (segregation, reuse, recycle, composting, etc)	Reduced volume of solid wastes at 20% through effective MRF systems	Revised SWM ordinance which discusses an MRF system; report of volume of solid wastes showing reducing rates by month	DILG informed of results of collection of MRF systems
Output 3: Educated communities on proper solid wastes disposal (changed behaviour)	No complaint received committed by sectors (e.g. plastics used in manufacturing "pesalubong" or meat products, etc.)	Physical cleanliness in vicinities (e.g. market, schools, rivers etc) is observed.	Complaints are verified



- Developed plan as mechanism for effective polycentric governance – overlapping authority & responsibilities
- Implementation takes time - relative time of political process e.g. endorsement of 1-water resource management plan for 1 watershed
- Incentives refers to outcomes of collaborative processes
- Output 3 activity - Educated newly-appointed barangay officials on solid waste management in September 2018

Determinants of successful solid waste management

(using collaborative governance framework of Ansell and Gash 2007)

- favorable starting condition of cooperation
- committed river council
- river council's knowledge of the watershed
- stakeholders' attitudes regarding incentives
- clear ground rules
- process transparency
- face-to-face dialogues
- recognition of polycentric governance mechanisms
- inclusiveness

Los Banos, Laguna: A special case of successful solid waste management

- Commitment by the local executive to clean the open pit
- Ordinance banning plastics in wet markets, supermarkets, malls to **reduce** plastics
- Implementing waste segregation at the household level
- Change of behaviour of household members in willingness to segregate
- Efficient collection of wastes by scheduling pick up of bio and non biodegradables
- Organic fertilizer production from bio-degradables
- **Recycle** whenever possible, non biodegradables
- **Re use** plastics whenever possible.
- Still, the sachet culture needs solution beyond the municipality.

Conclusions

- Increasing volume of solid wastes, including plastics
- There are laws but must be implemented by building capacities at the local level and by providing necessary funds
- Sustainability of SWM plans' implementation depends on the commitment of the local institutions and households to change behaviour.

Recommendations

- ❑ Institutional strengthening through the adaptive collaborative governance (ACG) is needed to sustain the solid waste management activities
- ❑ Solid waste management plan should be crafted in a participatory manner
- ❑ Focused on achieving incentives should keep spirit of collaboration always active
- ❑ Leadership an important factor for a committed river council
- ❑ Academe is an effective facilitator in an ACG approach

References

- David, M.E., A.C. Rola and J.M. Pulhin. 2016. Development of a Protocol on Adaptive Collaborative Water Governance for Improved Santa Cruz Watershed Management in the Philippines. *Ecosystems & Development Journal* 6(2): 35-51. October 2016 ISSN 2012-3612.
- EMB. Solid waste . <https://emb.gov.ph/wp-content/uploads/2018/09/3-Solid-Waste-1.8.pdf>
- European Union (EU). Plastic Pollution: We can make things better. plastic waste fact sheet info graphics, pdf.
- Hannequart Jean-Pierre. 2004. Waste plastics recycling a good practices guide by and for local & regional authorities, **Association of Cities and Regions for Recycling (ACRR)**, Brussels, Belgium.
- Lizada Joy C., Rhodella A. Ibabao. 2013. Building Resilience through Solid Waste Management: The Case of the Iloilo Province, Central Philippines, Paper presented during the 28th International Conference on Solid Waste Management Technology and Management, Philadelphia, USA, March 10 - 13, 2013.

References

- Plastics Institute of Thailand. Thailand Plastic waste management and environmental challenges. *thai**plastics**.org/content_attachment/attach/**plastics_waste***. Accessed February 2019
- Republic Act 9003. Ecological Solid Waste Management Act of 2001. Republic of the Philippines.
- Senate Economic Planning Office (SEPO). Philippine Solid Wastes at a Glance, AG 17-01, Senate of the Philippines, November, 2017.
- US EPA. Facts and Figures about Materials, Waste and Recycling, in <https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/plastics-material-specific-data>, Accessed February 2019.
- World Bank. No date. What a waste: A global review of solid waste management , Urban Development Knowledge papers. *siteresources.worldbank.org/.../Resources/...1334852610766/Chap5.pdf* .