



POLICY BRIEF

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Barriers for Implementation of the Philippine National Solid Waste Management Framework in Cities

Key Messages

- 📶 Municipal Solid Waste Management (MSWM) is one of the most serious environmental and public health issues in the Philippines. One to two thirds of MSW generated is not properly collected and is often dumped indiscriminately contributing to flooding and increases in pests and disease.
- 📶 The National Solid Waste Management Framework is underpinned by the Ecological Solid Waste Management Act of 2000 (known as the Republic Act No. 9003 or RA 9003). This legal framework is in line with the internationally recognised and accepted Integrated Solid Waste Management (ISWM) concept.
- 📶 Despite this, implementation of the Republic Act at the local government level is still very limited more than decade having passed since enactment.
- 📶 Examining three case study cities (Cebu City, Cebu; Santiago, Isabela; San Carlos, Negros Occidental) it is seen that it can be possible for Philippine local government units (LGUs) to establish solid waste reduction and diversion plans and actions at the start of the waste hierarchy in compliance with RA 9003 individually with their own limited resources.
- 📶 However, they have faced difficulties in the final stage of compliance in improving the final disposal by establishing a sanitary landfill due to three key reasons: (i) lack of budget for initial construction (ii) difficulties in finding suitable land, especially in the fast growing cities (iii) lack of technical expertise and know-how in design, construction, operation and monitoring. Of the three cities, only San Carlos has demonstrated the ability to establish and effectively operate a sanitary landfill, partly

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because of external technical assistance from the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) a German private development company with strong ties to the German Federal Government.

- ☞ The National Solid Waste Management Commission (NSWMC) of the Department of Natural Resources and the Environment (DENR) is the responsible national agency for overseeing compliance of the implementation of the Republic Act with DENR's Environmental Management Bureau (EMB) currently providing technical assistance and capacity building to LGUs in establishing and implementing a SWM plan as mandated by the Act through its national and local offices. Though such support is welcome, the national government should also focus more on assisting with final disposal systems which is the main barrier for the cities in establishing an effective solid waste management system.
- ☞ It is therefore recommended that the national government should re-assess and expand its technical and financial assistance on the final disposal issue through (i) allocating additional funds to LGUs for the improvement of landfill sites, (ii) training and capacity building for the design, planning and establishment of landfills as well as operation and monitoring (iii) undertaking a survey to determine where landfills might be established or where cities might be able to share landfill sites, (iv) support for experiment and research on alternative treatment methods such as Refused Derived Fuel (RDF) and incineration (v) source additional funds by encouraging private sector partnerships and international cooperation.

I Introduction to the Ecological Solid Waste Management Act of 2000 (known as the Republic Act No. 9003 or RA 9003)

In recent years Municipal Solid Waste Management (MSWM) has become one of the most serious environmental and public health issues confronting local governments in developing countries. The Philippines is no exception with rapid urbanisation, economic growth and development, changes in lifestyles and consumption patterns having resulted in a remarkable increase in both the volume and diversity of waste during past decades (Oliveira et al., 2013; Premakumara et al., 2014). Daily waste generation was estimated at 39,422 tonnes in 2015 (EMB, 2015) and is expected to double by 2025 from a 2010 baseline (World Bank, 2012). However, one to two thirds of MSW generated in the cities is not adequately collected and is often dumped indiscriminately on the streets and into the drains contributing to flooding as well as an increase in pests. The urban poor, living in slums or low-income settlements, suffer most from life-threatening conditions deriving from the deficient management of solid waste. Where waste is collected, the most common disposal method is open dumping in a more or less uncontrolled manner (Philippines-Canada Local Government Support Programme, 2003; UNEP/IETC, 2009; Premakumara et al, 2011).

Recognising the importance of taking immediate actions to overcome this fast growing urban environmental issue at the national level, the

Ecological Solid Waste Management Act of 2000 (widely known as the Republic Act No. 9003 or RA 9003) was passed by the Philippine Congress (Acosta et al, 2012). RA 9003 provides a policy direction for all LGUs in the country to establish an Ecological Solid Waste Management (ESWM) system based on the waste hierarchy to promote the 3Rs (Reduce, Reuse and Recycle) to reduce the amount of MSW generated at source, rather than later at the end-of-cycle in order to achieve at least 25% waste diversion target by 2010 (Philippines-Canada Local Government Support Programme, 2003; Premakumara et al., 2011).

As a guiding framework, RA 9003 mandates all LGUs to (i) create a Solid Waste Management Board (SWMB) at city and barangay levels (Section 12), (ii) prepare and submit a 10 year Solid Waste Management Plan (SWMP) (Section 17), (iii) establish mandatory solid waste diversion (Section 20) (iv) establish Material Recovery Facilities (MRF) in each barangay to increase resource recovery and composting (Section 32), and (v) close the open dumpsites and establish sanitary landfills by 2006 (SLFs) (Section 37), (Philippine Congress, 2000). In adopting this framework, the Philippines followed the global trend at that the time within global waste management towards an integrated policy which combines both technical fixes with the waste hierarchy

and the 3Rs thereby initiating a shift towards resource management more broadly rather than simply waste management. This trend has subsequently consolidated around the concept of Integrated Solid Waste Management (ISWM) which was first initiated by Schubeler et al (1996) and further finalised by WASTE (2006) (Wilson, 2007; Wilson et al. 2012).

Although there have been increases in the number of LGUs in implementing the requirements of national policy at LGUs in the last few years, the monitoring database of the NSWMC Secretariat reveals that

progress is still very limited and challenging even though more than a decade has passed after the RA9003 was enacted. Against this background, this policy brief aims to identify the key challenges for effective implementation of the national policy in LGUs based on the experience of three case study cities and suggests some policy recommendations for the national government of Philippines on how to establish the supportive measures to expedite the policy implementation process in the future.

2 Current Status of Compliance with RA 9003 by the LGUs

The discussion below compares the requirements of RA9003 with actual achievements.

Create a Solid Waste Management Board (SWMB) at provincial, city and barangay levels.

Section 12b of RA 9003 requires the establishment

of provincial, city and barangay SWMB which are responsible for creation and implementation of city wide and barangay level solid waste management plans. Figure 1 shows the percentage of compliance of LGUs nationwide.

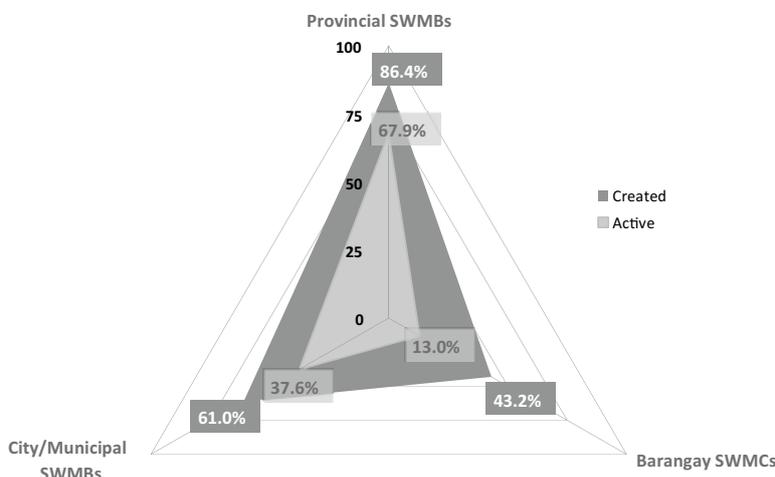


Figure 1 Created and Active Provincial, City/Municipal and Barangays SWMBs in 2010
Source: NSWMC, 2015

Prepare and submit a 10-year Solid Waste Management Plan (SWMP)

RA 9003 requires the preparation of 10-year SWM plans by all LGUs consistent with the national SWM Framework. These plans should include all

the components identified in the Act. It is subject to annual review and updating by the City SWMBs. All plans must be approved by the NSWMC. The Figure 2 shows the percentage of LGUs with submitted plans as of 2014.

Establish Material Recovery Facilities (MRF) in each barangay to increase resource recovery and composting

Section 32 of the RA 9003 mandates the establishment of a Materials Recovery Facility (MRF) in every barangay or cluster of barangays in barangay-owned, leased land

or any suitable open space designated by the barangay. The MRF shall be designed to receive, sort, process and store compostable and recyclable material efficiently and in an environmentally sound manner. Figure 4 shows the number of established MRF and number of barangays served nationwide.

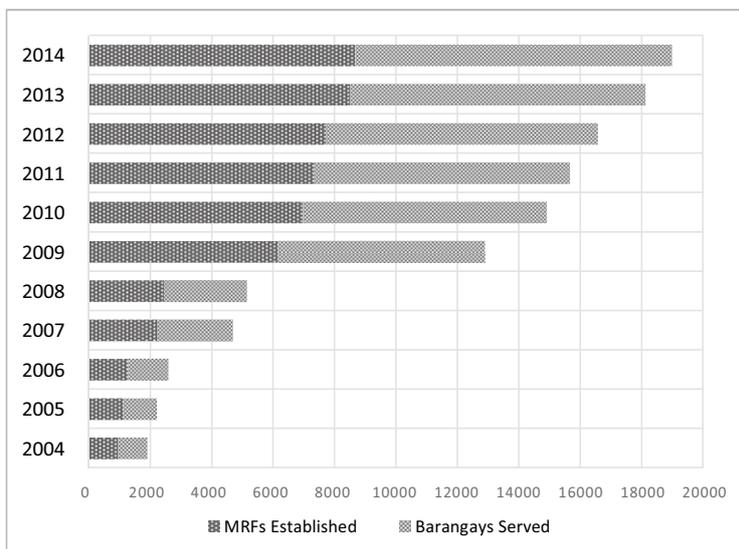


Figure 4 Number of MRFs Established and Barangays Served
Source: NSWMC, 2015

Close the open dumpsites and establish sanitary landfills

The RA 9003 mandates the closure and rehabilitation of all dumpsites and their replacement with sanitary landfills (SLFs). SLFs are disposal facilities with impermeable liners to prevent liquid

discharges from polluting ground and surface waters. It should also have a gas management system to reduce risks of burning or explosion, regular soil covers to minimize odour, and other environmental protection features. Figure 5 shows 137 sanitary landfills (SLF) are operating nationwide.

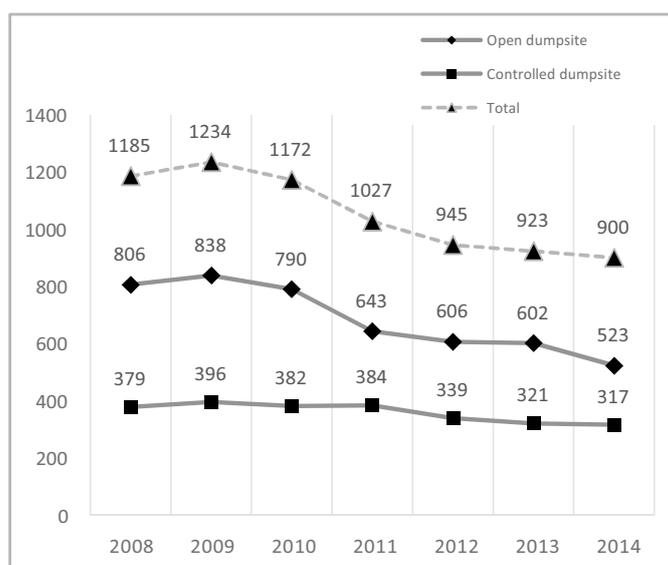


Figure 5 Number of Final Disposal Sites Nationwide
Source: NSWMC, 2015

3 Case Study: Implementation of RA 9003 in Cebu, San Carlos and Santiago

Overview

In order to understand the implementation challenges, three case study cities (Cebu City, Cebu; Santiago, Isabela; San Carlos, Negros Occidental) were selected to sample different geographical locations, urbanisation patterns, geographic size, and population size. All had successful experiences in establishing ISWM in their respective cities. Finally, accessibility and availability of relevant information through personal contacts and involvement in on-going action research activities in the selected

cities was considered. The relevant data was gathered from field observations, semi-structured interviews and focus group discussions with key stakeholders, including policy makers, city officials, and civil society organisations. Even though, the recommendations are mainly focused on the Philippines, they can also be considered for other developing countries in the initial stages of the modernisation of their solid waste management policies. The location of the cities can be seen in Figure 6 below, and their current level of implementation can be seen in Table 1, also below.



Figure 6 Location of the Case Study Cities in the Philippines

Source: Authors

Establishment of Committees, Plans, Solid Waste Diversion, Material Recovery Facilities at the start of the waste hierarchy

As can be seen above, all of the case study cities have successfully established solid waste management boards or committees at both the local government level and at the barangay level, with meetings taking place on a regular basis, all in compliance with RA 9003. The cities have also had a 10 year SWM plan either approved or conditionally approved. About 58 barangays out of total 80

barangays in Cebu City now have their own MRFs and composting programmes. In addition, two central waste treatment facilities were established by private ventures near the landfill site to treat plastic and organic wastes from urban barangays with insufficient space to establish MRF and composting facilities. Santiago City has not managed to reach the required waste diversion rate of 25% so far. The city considers this to be due to its inability to accurately measure the waste currently being diverted into the informal recycling sector. However, the three cities have all

made substantial efforts toward the implementation of waste diversion through waste separation at

source but with a wide variety in the methods of implementation.

Table 1 Summary of the RA9003 Implementation Progress of the Case Study Cities

	CEBU CITY	SAN CARLOS	SANTIAGO
Establishment of SWM Board	2004	2002	2004
Conduct regular meetings by SWM Board	Yes	Yes	Yes
Percentage of barangays which have established SWMCs	100%	100%	100%
Approved 10 year SWM Plan	2013 (conditionally approved)	2015 (approved)	2013 (conditionally approved)
Waste diversion rate achieved so far (25% National Target)	30%	70%	12%
No. of barangays with MRFs/ Total barangays	58/80	18/18	37/37
Open dumpsite closed	Jan 2015	2007	2007
Availability of SLF	Not yet	2007	Construction on-going

Source: Authors

In Cebu, educational institutions have implemented in-house solid waste management programmes including Information, Education and Communication (IEC) programmes among their students. For example, St. Theresa College has implemented a school-wide SWM programme, particularly in integrating environmental concerns in its curriculum and instruction. It has established a model composting facility to demonstrate the practical process in making compost. Further, the Lihok Filipina, which is a network of Filipino women, has also carried out an education campaign programme in the Cebu City related to SWM at household level. The NGO has encouraged housewives to participate in a “Cash from Trash” programme that produces homemade crafts that could be sold in the market. Efforts have been further made to promote environmental awareness through a competition among local barangays which is conducted annually to award and recognise the best environmental barangay in the city. In addition to incentives, the city also creates deterrents through the implementation of the ‘No Segregation, No Collection policy’ which educates citizens to separate waste at the source into different categories: biodegradable, recyclable and residual. To ensure the enforcement of the ordinance on waste segregation, the Cebu Environmental and Sanitation Team (CESET) was established to issue citation tickets to its violators.

San Carlos has also made substantial efforts to utilise social capital for effective SWM. The city undertook a 5-year door-to-door campaign in collaboration with the local NGO Genesys Foundation with staff from the NGO subsequently being brought in as city hall staff. San Carlos has also opened its Eco-Center (the name of its SLF) to visitors as a tourist attraction and has received 7,040 visitors as of December 2014. Further, San Carlos incentivises compliance with solid waste management through competitions and prize giving. Examples of competitions include the Search for the Most Environmentally Friendly Market Vendor, with the first prize being a 22-inch flat screen LED TV. San Carlos has also targeted the youth in its work, with the establishment of the Eco-Model School Programme in 2006. The programme started with 14 schools, but has now expanded to 44 due to interest and demand. Some schools have also been gifted solar panels and other equipment as a part of the eco-zone companies’ CSR activities. San Carlos was a finalist at the Eco-School Awards in 2012 in Kuala Lumpur, Malaysia.

Santiago has federated local NGO and CSOs, enabling the city to be able to effectively communicate with all NGO and CSOs as the need arises and also ensures that the city is able to ensure representation of a variety of stakeholders in decision making processes. Promotion of activities is undertaken

by directly involving and utilising non-government partners as well as barangay captains. To this end, the city has concentrated on creating partnerships between city stakeholders, typically by organising related groups. The three main groups established by the city were the transport group, junkshop group and a federation of the local branches of the nationally mandated Youth for the Environment in Schools Organization (YES-O). Santiago has been successful in creating incentives amongst city residents. One of these is through its implementation of the Search for Sustainable and Eco-Friendly Schools / Barangays

competitions, which cash prizes are given to the winning schools/barangays. Barangays also frequently hold their own competitions, awarding the best managed purok (a non-administrative sub-division) for a variety of categories. Enforcement within Santiago is done through the proper implementation of a “no segregation no collection” policy. The city has also integrated environmental concerns into the distribution of business licences, with a requirement for the attendance on an SWM course a condition of receiving the licence.



Figure 7 Waste Diversion Activities in Case Study Cities Source: Authors

Establishment of a Sanitary Landfill at the end of waste hierarchy

Whereas all of the cities are able to demonstrate commitment to the establishment of the institutional framework and waste diversion, if not its fully successful achievement, the establishment of properly functioning sanitary landfills has been much more difficult as can be seen in Table 2 below. In Cebu City, the city landfill was originally constructed in 1998 with the assistance of JICA, but it was designed with the use of an incinerator which was subsequently banned under RA 9003. The

city has had difficulties in using the landfill properly due to limited budget and technical know-how. As a result, it cannot be used in the manner for which it was designed and became a controlled dumpsite prior to its closure due to a fire in 2012. Currently, the city brings its solid waste to the nearby city of Consolacion. Due to difficulties in finding suitable land, sufficient budget and building a common consensus among different stakeholders (politicians, officials and citizen groups), Cebu City is still facing difficulties in establishing a sustainable sanitary landfill independently.

Table 2 Summary Table of Challenges in Implementing a Sanitary Landfill

	CEBU CITY	SAN CARLOS	SANTIAGO
Finding suitable lands within the city limit	No	Yes	No
Sufficient funds for land purchase	No	Yes	Yes
Sufficient funds for landfill construction	No	Yes	Yes
Sufficient budget for landfill operations	No	Yes	Yes
Common consensus amongst stakeholders	No	Yes	Yes
Technical ability within the city to construct landfill	No	No	No
Ability to attract outside assistance for construction	Yes	Yes	Yes

Source: Authors

To provide the needed waste processing facilities, San Carlos City launched a new Eco-Center in the year 2007 with technical assistance of the GIZ (former GTZ). The Eco-Center integrates a sorting plant, a composting site and a clay-lined landfill with leachate treatment facility. All components were developed utilizing appropriate, low-cost technologies. The sorting facility was designed as an in-house unit where incoming waste is segregated along several slides by using the force of gravity. All incoming non-organic waste at the Eco-Center is further segregated (having been segregated at source), processed and recorded on a daily basis. In constructing its landfill, San Carlos received technical assistance from GIZ which identified that local soil could be used as a liner, leading to substantial savings as the landfill could be constructed for PHP7.5m rather than the PHP20m initially predicted. Moreover, San Carlos has benefitted from being a large agricultural area with few landowners. This meant that appropriate land could be identified easily and negotiations were greatly simplified due to being with only one landowner. San Carlos was also fortunate that the landowner agreed to lease the land rather than sell it in exchange for access to discounted compost, reducing both initial and on-going costs. However, this should not detract from San Carlos's achievement in maximising this opportunity through ensuring the system was properly managed and sustainable following the end of funding. As San Carlos is able to smoothly manage its solid waste it has recently signed agreements

with surrounding cities to accept their waste, thereby assisting other cities which may not have the means to establish their own sanitary landfill.

In Santiago City, a properly functioning collection system has been established with a daily collection for 23 barangays and the new public market and a scheduled collection at the 14 other barangays. Biodegradable waste is transferred to the bio-organic fertilizer plant and non-biodegradable waste is sent to the central MRF where it is further sorted with re-sellable recyclables being separated out. All residual waste is then sent to final disposal which is a controlled dumpsite. Following the closure of the previous final disposal, construction of a sanitary landfill is on-going with the residual container area being used as a temporary facility. Nevertheless, a lack of funding means that the city needs to take a phased approach to the construction of the landfill. Land availability has also been an issue, with a delay in the construction of the sanitary landfill being caused by a dispute over the ownership of the land.



Figure 8 Disposal Site of Cebu City Source: Authors

4 National Support for the Implementation of RA 9003 by the LGUs

The National Solid Waste Management Commission (NSWMC) of the DENR is the leading agency appointed to implement Republic Act 9003, comprising 14 members from the government sector and 3 private sector representatives (one from NGOs which promote recycling, water and air quality; one from the recycling industry; one from the manufacturing or packaging industry). The role of the NSWMC is broad and varied, but the main role is to prepare the national solid waste management framework, approve and monitor implementation of local SWM plans as well as assisting sub-national level entities with their responsibilities under the Act. The Environmental Management Bureau (EMB) assists the NSWMC as the Secretariat. The Regional Environmental Management Bureau (Regional EMBs) have been established in each of the 18 regions. The role of the EMBs is to support LGUs in all aspects of their environmental management, and they are able to give technical assistance to cities concerning the establishment of legally compliant solid waste management. Nevertheless, regional EMBs do not have substantial resources at their disposal, and it is frequently difficult for the EMBs to be able to give assistance quickly once need is identified. Capacity within many LGUs is low; consequently, demand for technical assistance is high.

A National Ecology Centre was also established in order to provide information and capacity

building for the implementation of the Act. The eSWM4LGUs course (Solid Waste Management for Local Government Units online course) has been established of improving capacity within LGUs based on the SWM4LGUs project which was run by GIZ from 2005 – 2012 aiming to assist 5 cities in the Philippines in establishing integrated solid waste management systems proficiently, economically and in line with the legal requirements. Following the end of the project DENR, in collaboration with the Open University of the Philippines, used the materials generated by the project to establish an online course. The course is focused on assisting the LGUs in creating a SWM Plan mandated by RA 9003 and takes the participants through the process in a step by step process. The final SWM plan is assessed by staff from the NSWMC. Although a pass from the course does not guarantee final approval by the NSWMC, it ensures that the participating LGUs have a draft plan which can be amended, rather than nothing. However, the budget for the course is limited and currently there is only sufficient budget of 2 groups of 8 LGUs each per year. With 433 LGUs yet to submit a SWM plan, let alone receive approval, it is clear there is a substantial needs gap. Moreover, it is only this year that Congress has allotted P500m for solid waste management capacity building. This is apparently due to solid waste management not being technically under DENR's remit (CNN 2016).

5 Conclusion and Recommendations

This policy brief has demonstrated that Philippine cities are able to establish effective front of pipe solutions through their own efforts in building partnerships with its local stakeholders (citizens and NGOs) but are facing challenges in implementing end of pipe solutions which require greater external support from the national government. All case study cities have shown successful progress in establishing community level activities at the start of the waste hierarchy leading to notable improvements in terms of reduction of waste at source, waste segregation,

community awareness, establishment of MRFs and composting activities. However, cities frequently lack the technical and financial ability to construct, operate and monitor landfills. Further, it is a significant challenge for many cities to find suitable lands within the city limits. The only city of the three examined that can be said to be unequivocally successful in establishing ISWM is San Carlos, because the city was able to overcome the land issues as well as the technical and financial challenges of establishing a sanitary landfill. The city received significant technical

assistance from GIZ which enabled the city to design and construct their landfill at a third of the usual cost. The city also found suitable land for rent at a low cost and also benefited from having only a small number of landowners to negotiate with. Therefore, this study

concluded that the national government needs to play a more active role in supporting cities in implementing measures aimed at the end of the waste hierarchy as shown in Figure 9.

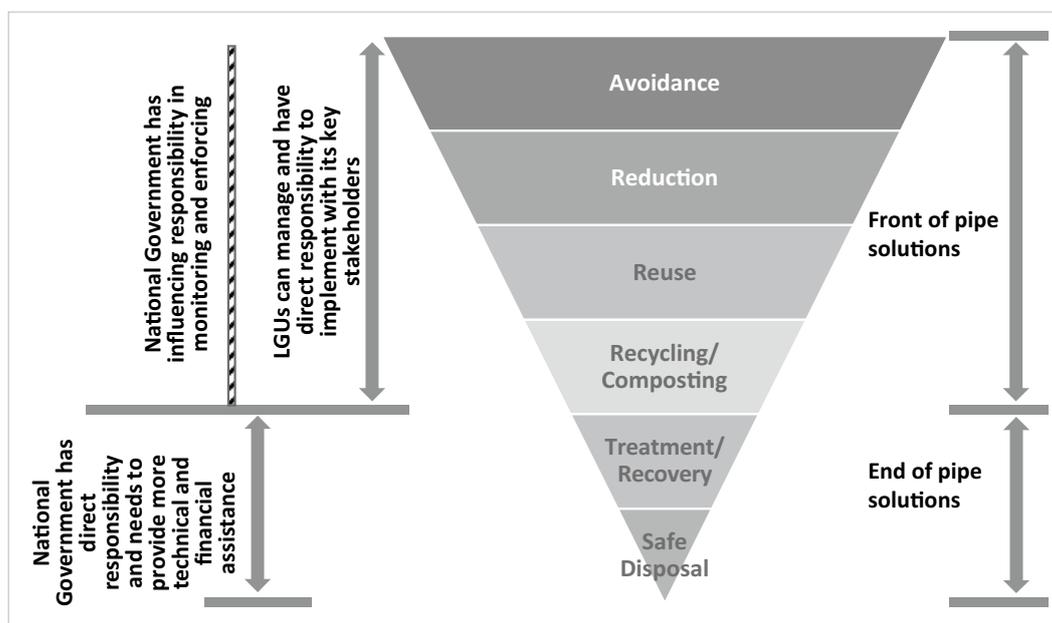


Figure 9 Role of National Government in implementing the RA 9003 based on Waste Management Hierarchy
 Source: Authors

For this, the following actions are recommended:

- Firstly, Philippine cities should implement RA 9003 as far as resources permit. Although it is found that establishing a sanitary landfill may exceed the financial and human resource capacity of Philippine cities, it is clear that with sufficient political will and commitment, cities are capable of achieving the requirements of RA 9003 at the front of the waste pipe through the establishment of committees, development plans, waste separation at source and MRFs in partnership with its key stakeholders (citizens academic and NGOs). Philippine cities which are not even attempting to be compliant with the front of pipe aspects of RA 9003 are failing in basic governance. They should be compliant to the full extent of the law in order to demonstrate national commitment to upholding the law and to motivate others to begin compliance. Recent moves in this direction by the national government are welcome, and these efforts should be intensified.
- Secondly, given that even capable and well governed cities are struggling with final disposal

- issues, the national government is recommended to provide increased support with a specific focus on solving the sanitary landfill issue with the aim of facilitating shared use of landfills through surveying the current situation in cities and identifying where landfills might be constructed and shared upon the payment of tipping fees. Once landfill sites are identified, then additional resources will be required to facilitate their construction, and capacity building will be needed to ensuring proper management upon opening. The national government should also look to support for experiment and research on alternative treatment methods such as Refused Derived Fuel (RDF) and incineration specially in more densely cities which are facing difficulties in finding lands for disposal.
- Finally, none of the above are usually possible without substantial additional financial resources being made available at both the local and national level. Additional funds can be ensured by encouraging private sector partnerships (both formal and informal) and international cooperation.

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