UN environment programme

Addressing Marine Litter in the Philippines:

A National Source Inventory (NSI) Approach

Working Paper

Acknowledgement:

This report was developed as part of '**SEA circular – Reducing marine litter by addressing the management of the plastic value chain in South-East Asia'** a project jointly implemented by the United Nations Environment Programme (UNEP) and the Coordinating Body on the Seas of East Asia (COBSEA), with funding from the Government of Sweden.

This National Source Inventory report identifies sources of available data and knowledge related to marine litter in the Philippines, to inform evidence-based planning to address plastic pollution and marine litter at national level, in line with regional and global frameworks. This document includes information up to end of 2022.

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SEA circular
solving plastic pollution at source

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COORDINATING BODY ON THE SEAS OF EAST ASIA

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The **SEA circular** project – Reducing marine litter by addressing the management of the plastic value chain in South-East Asia is implemented by the UNEP Regional Office for Asia and the Pacific and the Coordinating Body on the Seas of East Asia (COBSEA), with funding support from the Government of Sweden. SEA circular aims to reduce and prevent plastic pollution and its impacts by working with governments, businesses, civil society, academia, and international partners. The initiative promotes market-based solutions and enabling policies to transform plastic value-chain management, strengthens the science base for informed decision making, creates outreach and awareness. The project leverages COBSEA's regional mechanism to tackle the transboundary challenge of marine litter in a harmonized manner.
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List of abbreviations

BoC	Bureau of Customs
CE	Circular Economy
COBSEA	Coordinating Body on the Seas of East Asia
CSIRO	Commonwealth Scientific and Industrial Research Organization
CSO	Civil Society Organization
DENR	Department of Environment and Natural Resources
DENR-EMB	DENR- Environment Management Bureau
DSSC	Davao del Sur State College
EPR	Extended Producer Responsibility
GAIA	Global Alliance for Incinerator Alternatives
IUCN	International Union for the Conservation of Nature
LGU	Local Government Unit
MMDA	Metropolitan Manila Development Authority
NEAP	Non-Environmentally Acceptable Products
NEDA	National Economic and Development Authority
NPOA-ML	National Plan of Action for the Prevention, Reduction, and Management of Marine Litter
NSA	National Statistics Authority
NSI	National Source Inventory
NSWMC	National Solid Waste Management Commission
NUS	National University of Singapore
NWRB	National Water Resources Board
PAP4SCP	Philippine Action Plan for Sustainable Consumption and Production
PSA	Philippine Statistics Authority
SCP	Sustainable Consumption and Production
SSTSWN	Sustainable Science and Technology Solid Waste Management
WACS	Waste Analysis and Characterization Study
UNDP	United Nations Development Programme
UNEA	United Nations Environment Assembly
UNEP	United Nations Environment Programme

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EXECUTIVE SUMMARY

This report was developed as part of '**SEA circular – Reducing marine litter by addressing the management of the plastic value chain in South-East Asia'** a project jointly implemented by the United Nations Environment Programme (UNEP) and the Coordinating Body on the Seas of East Asia (COBSEA), with funding from the Government of Sweden.

This National Source Inventory (NSI) report identifies sources of available data and knowledge related to marine litter in the Philippines, to inform evidence-based planning to address plastic pollution and marine litter at the national level, in line with regional and global frameworks. This document includes information up to the end of 2022.

National Source Inventories and Marine Litter

Marine litter, particularly from plastic wastes, is one of the main environmental challenges facing this generation. The United Nations Environment Assembly (UNEA) identified pollution as the third great environmental crisis of our times, along with climate change and biodiversity loss. One of the responses developed to address marine litter is to craft and implement marine litter action plans. The first step identified in developing such a plan is to conduct a scientific assessment and data collection. This is critical because according to UNEP, "Actions to address marine litter may be delayed due to inadequate science-based monitoring and assessment programmes." One of the tools identified to address this gap are national source inventories (NSI).

NSIs are decision and policy-making tools that promote the use of data and evidence. The NSI approach provides an integrated assessment of sources of marine plastic litter from plastic production through to waste management, calculating leakage to the environment, including via wastewater and waterways, identification of accumulation zones in coastal regions, modelling of litter dispersion at sea, and in-situ monitoring to complement and validate the models and estimates. The NSI has four main data sources or pillars of information: i) statistics in production, imports, use and lifecycle of plastics; ii) waste statistics; iii) monitoring of freshwater and wastewater; and iv) monitoring of coastal and marine waters.

Philippine Legal and Policy Landscape on Marine Litter: Recent Development

Waste management has been a constant challenge for the Philippines for several decades now due to a host of factors ranging from increased consumption and economic activity to an increasing population and urbanization rate. One of the main drivers of pollution is plastic use and consumption. In recent years, plastic pollution, both from land and sea-based sources, has risen to the top of the global environmental agenda.

In the Philippines, Government authorities have also acknowledged the waste crisis and the impacts of plastics on this issue. The previous administration made solid waste management one of its environmental priorities. Some of these recent efforts include:

- The adoption of the National Plan of Action for the Prevention,

Reduction, and Management of Marine Litter
- Passage of the Extended Producers Responsibility Act of 2022
- Support for an international instrument on plastic pollution and marine litter (also referred to as a Global Treaty on Plastics).

Gaps and Barriers Related to NSI in the Philippines

A recent study by UNEP and COBSEA looked at the legal and policy landscape on marine litter in the Philippines. Some of the issues identified which may be relevant for the Philippine NSI include:

- Addressing misaligned and non-science-based national targets on waste recovery and recycling.
- Mobilizing support for research and development and new technology; and,
- Supporting research to establish clear baselines.

The study also noted the following specific data concerns:

- Several proposals have called for mandatory data reporting on production, consumption, and disposal patterns.
- Capacity, resource, and funding barriers point out the "limited Government capacities for data collection, monitoring and transparency" due to limited manpower and other resources.
- No national baseline data on marine litter were available by 2022, though efforts are ongoing through COBSEA in partnership with Commonwealth Scientific and Industrial Research Organisation (CSIRO) to conduct baseline monitoring surveys in 2022 and 2023.

The current report conducted a survey of relevant stakeholders. One of the key gaps identified by the survey respondents was in the accuracy and completeness of the data. It was also noted by the respondents that the relevant data or information was not easily accessible, both for Government and external sources.

A National Source Inventory for the Philippines

The Report developed the following Approach and Data Presentation to present the NSI findings. The first step was to identify the different types and sources of data and information for each NSI pillar. Once the sources were identified, the information in Table 1 below were also considered and outlined. This method allows for an analysis of the current state of the data sources/types and, more importantly, the identification of any gaps, barriers, and issues related to the use, generation, reporting, and accessibility of the data.

An NSI Database was created to identify the different data sources and information collected. Table 1 below presents a summary of the NSI Database.

Table 1: Summary of NSI Database

Data source/type	Who generates the data?	How are the data reported and gathered?
• Production, use, import, and lifecycle of plastics • Waste statistics • Monitoring of freshwater and wastewater • Monitoring of coastal and marine waters	• Government enforcement and implementation agencies • Local Government units (limited extent?) • NGOs, INGOs, development organizations • Academic institutions	• Reports and mandatory submissions of various entities to comply with laws and regulations • Possible independent sources – academic institutions, projects by development partners • Publications of compilation of data
Where are the data found/ available?	**How can the data be accessed/ used?**	**Who are the current users of the data?**

• Government databases and websites:
  • DENR-EMB
  • PSA
  • BOC
  • NWRV
• Philippines Statistics Authority Environment Accounts
• Independent sources and databases:
  • Plasticount Pilipinas
	• Website access
	• Official written request from concerned Government agency
	• Publications:
	  • Annual reports
	  • Special reports
	• Government plans and programme reports
		• Government policy makers
		• Legislators
		• Enforcement agencies
		• Academic/ research institutions
		• NGOs/CSOs
		• General public

The analysis of the findings will focus on i) sources of data; ii) quality of the data; and iii) usability of the data.

For the Philippines, the primary sources of data and information for all pillars comprising the NSI remain to the Government agencies and instrumentalities. Aside from the Government, a significant amount of data comes from academic and CSO sources, including the World Bank Group, Greenpeace, Manila Journal of Science, Journal of Environmental Science and Management, and various universities. However, data from these institutions are often just a compilation and analysis of existing data from the aforementioned Government sources. The findings above will show that relevant data comprising the NSI are available, but they are from different sources and on different platforms. There is no single database or platform where this information can be easily accessed.

Data and information are generally accurate and at times often updated. However, these are minimal and difficult to understand and use. There is also a need to disaggregate and provide additional details – such as on plastics – when data is presented. Data on wastes need to be regularly updated.

Aside from policy making and implementation, the presentation of these data (while updated and accurate) need to be more palatable to the general public to help build political consensus on marine litter policies.

Conclusions and Recommendations

The conclusions and observations will be discussed for each pillar of the NSI. This will be followed by specific recommendations relevant to the following: i) data availability; ii) data quality; and iii) data accessibility.

The most crucial gap that must be addressed is **the need for local plastic generation data**. Aside from this, there is also a need to **regularly update data**, especially those coming from DENR and other Government sources. The DENR-EMB should be able to update its National Solid Waste Management Status Report every year. Additionally, DENR-EMB should also be able to conduct WACS annually and improve its methodology. Data can also ideally be disaggregated to include information on specific type of wastes and pollutants.

For fresh and coastal/marine water, the most crucial gaps are the **proper compilation of monitoring data and the need for more analysis and detailed recommendations**. As to the compilation of data, this can be remedied by creating a single source/website to compile all the Government reports on water monitoring based on the Government body, year, region, body of water, among others.

There is a need to **improve the accessibility, transparency, and quality of Government-sourced data**. In terms of data requested from Government offices, it is also ideal to have a universal and simplified process to encourage institutions and even the public to review and use Government-generated data. Lastly, regarding data quality, the Government should focus on improving data gathering by empowering and training LGUs on gathering, analysing, and managing solid waste data.

The recommendations of this report will be divided into three clusters. These have been identified based on the specific gaps, barriers and issues noted, as well as the findings and observations on the data sources. The clusters are as follows:

- **Availability –** Identifying additional sources of data and information; developing national baselines as the basis for further research; information sharing; and capacity to disseminate and make the information available.

- **Quality** – Accuracy and timeliness of data; ability to be validated and confirmed; transparent and open processes and access.

- **Accessibility** – Public access and use; ability to understand and use the data and information; regularity in reporting and updating.

Error! Reference source not found. b elow presents the specific recommendations for each cluster.

Table 2: Specific List of Recommendations

Cluster of Issues, Barriers, and Observations	SPECIFIC RECOMMENDATIONS

Availability	• Mandatory reporting of data on importation, production, and consumption across sectors and stakeholders
	  ○ Begin with obliged entitles under the EPR Act of 2022
	  ○ Gradually include MSMEs, LGUs, and other sectors and establishments
	• Developing a national baselines data on marine litter
	  ○ Immediate step to take to guide further studies and research
	  ○ Can begin with a consolidation of data sources identified in this report comprising the NSI
	• Establishing a technical working group on data, research, and development under the NEC or the NSWMC
	  ○ Focal for establishing a national database on marine litter information
	• Creating a network of knowledge hubs/centres of excellence on marine litter monitoring
	  ○ Identifying academic institutions and NGOs in marine litter hotspots
	  ○ Can initially focus on coastal and marine monitoring
	• Improving government technical capacity to collect. Monitor, and evaluate data
	  ○ Developing skills and identifying focal points in regional offices
	  ○ Coordinate with academic institutions for training and capacity building programs

Quality	• Increased support for research and development and funding for studies and initiatives
	  ○ Encourage and support knowledge building and developing localized expertise on marine litter monitoring, data gathering, and research
	• Improve data collection and gathering at the LGU level
	  ○ Support updating of the local solid waste management plans
	  ○ Assist and support the conduct of local WACS
	• Mandate reporting of market information
	  ○ To allow for verification of existing data and of studies and research
	• Collect and present disaggregated data or information on specifical type of pollutants and waste (especially plastics)
	• Address and plug data gaps identified
	  ○ These include:
	  ➢ Water quality in coastal and marine areas
	  ➢ Specific kinds of waste per waste categorization
	• Improve capacity of government technical staff to evaluate data and information
	  ○ Allow for better data reporting and dissemination
	• Promote transparency and open access to information
	  ○ Allow for a peer review process to verify and validate findings
	  ○ Encourage multistakeholder research and study teams
	• Develop and establish linkage between institutions, development partners, and NGOs for information sharing and collaboration
	  ○ To address issues of overlaps and lack of synergy and coordination among reports and initiatives

Accessibility	• Creating an overall and comprehensive marine litter/waste management database
	  ○ Can serve as a one-stop-shop for information on marine litter
	  ○ Act as clearinghouse to verify research and studies conducted
	• Improve user interface and interaction with online databases and sources
	  ○ Improved and easy-to-use research functions
	  ○ Readily available online or technical support
	• Ensure data and information is easy to understand and digest by the general public
	  ○ Information, education, and communication campaigns
	  ○ Potential translation of critical information into local dialects
	  ○ Coordination and collaboration with NGOs and community organizations on dissemination efforts
	  ○ Work with academic institutions to improve databases and spread information
	• Regular publication and dissemination of reports, publications, and updates to information and databases

INTRODUCTION AND BACKGROUND

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National Source Inventories and Marine Litter

Marine litter, particularly from plastic wastes, is one of the main environmental challenges facing this generation. The United Nations Environment Assembly (UNEA) identified pollution as the third great environmental crisis of our times, along with climate change and biodiversity loss.[i] Litter is found in all the world's oceans and seas, even in remote areas far from human contact and obvious sources of the problem.[ii] According to the International Union for the Conservation of Nature (IUCN), *"At least 14 million tons of plastic end up in the ocean every year. Plastic debris is currently the most abundant type of litter in the ocean, making up 80% of all marine debris found from surface waters to deep-sea sediments. Plastic is found on the shorelines of every continent, with more plastic waste found near popular tourist destinations and densely populated areas."*[iii]

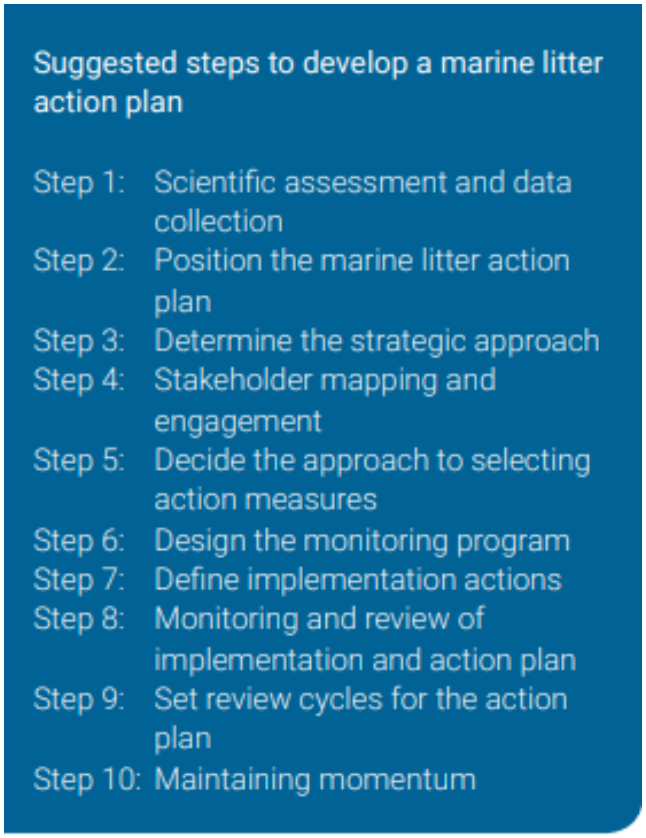
Marine litter presents a huge problem in our oceans, with some scientists warning that, by 2050, the quantity of plastics in the oceans will outweigh fish.[iv] It is an economic, environmental, human health and aesthetic problem posing a complex and multi-dimensional challenge.[v] Marine plastic litter poses significant harm to marine life and threatens fragile habitats.[vi] It can also cause serious economic losses:

> *"Coastal communities are facing increased expenditure on beach cleaning, public health and waste disposal. The tourism sector has to deal with loss of income and bad publicity. The shipping industry is impacted by higher costs associated with fouled propellers, damaged engines, removing litter and managing waste in harbours. The fishing industry faces reduced and lost catch, damaged nets and other fishing gear, fouled propellers and contamination, which also affects fish farming and coastal aquaculture."*

One of the responses developed to address marine litter is to craft and implement marine litter action plans. Marine litter action plans play an important role in 1) creating a platform for member countries to agree on the priority issues and activities in their region; and 2) guiding interventions at the regional level as well as the national level.[vii] There are ten suggested steps in the development of a marine litter action plan (see Figure 1 below).

Figure 1: Steps to Develop a National Action Plan

Source: UNEP. **Marine Litter: Guidelines for designing action plans**



The first step identified in developing a marine litter action plan is to conduct a scientific assessment and data collection. This is critical because according to UNEP, "Actions to address marine litter may be delayed due to inadequate science-based monitoring and assessment programmes."[viii] One of the tools identified to address this gap are NSIs.

NSIs are decision and policy-making tools that promote the use of data/evidenced. The NSI approach provides an integrated assessment of sources of marine plastic litter from plastic production through to waste management, calculating leakage to the environment including via wastewater and waterways, identification of accumulation zones in coastal regions, modelling of litter dispersion at sea, and in-situ monitoring to complement and validate the models and estimates.[ix] The purpose of NSIs will be to inform national and regional action plans for tackling marine litter, allowing policymakers to better design evidence-based, targeted, and effective interventions to reduce and eliminate the flow of litter and microplastics into the marine environment, including through legislative tools and incentives.[x]

By bringing different data sources together, the NSI approach can provide the basis for identification and prioritization of actions, strategic development of national marine litter action plans in line with regional frameworks, and better tracking of results achieved - in other words, NSIs are a key building block for evidence-based and effective national marine litter planning.[xi] One recent study notes that a plastics emissions inventory – creating a baseline of sources that generate plastic pollution in a given jurisdiction – will be critical if the proposed Global Treaty on Plastics is to succeed.[xii]

Figure 2: National Source Inventory approach

Source: UNEP

The NSI is part of an overall approach described in Figure 2 below. Following the development of a regional or national action plan, a NSI shall be conducted to provide the essential data and evidence needed – or what gaps and barriers there are – in implementing the said plans. Alongside the NSIs, legislation and advocacy, and a policy review and assessment can be conducted to identify laws and policies needed to support the development and implementation of the action plan.

The NSI has four main data sources or pillars of information: i) statistics in production, imports, use and lifecycle of plastics; ii) waste statistics; iii) monitoring of freshwater and wastewater; and iv) monitoring of coastal and marine waters. These will be discussed more in the Philippine context, in the succeeding sections below.

Legal and Policy Landscape on Marine Litter: Recent Developments

Waste management has been a constant challenge for the Philippines for several decades now due to a host of factors ranging from increased consumption and economic activity to an increasing population and urbanization rate. Coupled with poor infrastructure and weak enforcement and implementation of existing policies, this has created an unprecedented waste crisis which is increasing by the day.[xiii]

One of the main drivers of pollution is plastic use and consumption. In recent years, plastic pollution, both from land and sea-based sources, have risen to the top of the global environmental agenda. It's detrimental and harmful impacts on the health of both people and planet are being shown in numerous studies, and this has spurred international attention and global action.

In the Philippines, Government authorities have also acknowledged the waste crisis and the impacts of plastics on this issue. The previous administration made solid waste management one of its environmental priorities,[xiv] particularly the implementation of several key provisions of Republic Act (RA) No. 9003, or the Ecological Solid Waste Management Act of 2000, the country's main waste management legislation. Recently, the Department of Environment and Natural Resources (DENR) closed all illegally operating dumpsites, declared plastic straws and stirrers as non-environmentally acceptable products (NEAPs), and implemented efforts to address waste issues during the Covid-19 pandemic.[xv]

National Plan of Action on Marine Litter

One of the efforts undertaken by the Philippine Government is the crafting of the National Plan of Action for the Prevention, Reduction, and Management of Marine Litter (NPOA-ML). With a goal of "zero waste in Philippine waters by 2040", the NPOA-ML promotes shared responsibility, accountability and participatory governance in addressing marine litter which is any persistent, manufactured or processed solid material discarded, disposed or abandoned in the marine and coastal environment.[xvi] According to DENR, "[t]he document has been developed through a multi-stakeholder consultative process led by the Government of Philippines' DENR through its Environmental Management Bureau (EMB), in close cooperation with Biodiversity Management Bureau (BMB) and other Government agencies, partners from the business sector, non-government organizations and other stakeholders, and carried out with support from the United Nations Development Programme (UNDP)."[xvii]

Marine litter prevention, reduction and management measures are divided between Programmatic and Cross-Cutting actions, with lead and coordinating agencies mandated for implementation:

- *Programmatic Cluster of Actions*
  1. Establish science- and evidence-based baseline information on marine litter
  2. Mainstream circular economy (CE) and sustainable consumption and production (SCP) initiatives
  3. Enhance recovery and recycling coverage and markets
  4. Prevent leakage from collected or disposed waste
  5. Reduce maritime sources of marine litter
  6. Manage litter that is already existing in the riverine and marine environments

- *Enabling/Cross-cutting Cluster of Actions*
  7. Enhance policy support and enforcement for marine litter prevention and management
  8. Develop and implement strategic and targeted social marketing and communications campaigns using various media
  9. Enable sufficient and cost-effective financing and other institutional resource requirements for the implementation of the NPOA-ML

Data and evidenced-based approaches have been identified as key ingredients for the success of the NPOA-ML. According to the DENR, "[t]o ensure success of NPOA-ML implementation, strategies and actions should be doable, applicable, and appropriate; science and knowledge-based; progressive or phased implementation; operationally supported; and continuously funded. Additional considerations likewise observe integration, prevention, precautionary, SCP, polluters-pay, and public participation and stakeholder involvement principles; as well as an ecosystem- and science-based approaches (sic)" *(emphasis supplied)*.

The Extended Producers Responsibility Act of 2022

A significant development in waste management policies in the Philippines is RA No. 11898, or the EPR Act of 2022.[xviii] It lapsed into law on 22 July 2022 and amends RA 9003, by institutionalizing an EPR system for the country, with specific measures prescribed for plastic packaging waste. According to the DENR-EMB, the passage of the law was "…timely as it addresses the urgency and necessity for collaboration between the public and private sector to combat environmental damages caused by plastic pollution and climate change."[xix]

Some of the significant provisions of the law include:[xx]

- "Obliged enterprises," or through their Producer Responsibility Organizations (if established), will have to recover or offset their generated plastic product footprint by 20 percent in 2023 to 80 percent by 2028.
- Among the plastic packaging covered by the EPR Law are single or multi-layered plastics such as sachets, rigid plastic packaging products like food and drink containers, single-use plastic bags, and polystyrene.
- Penalties for non-compliance of EPR duties range from P5 million to P20 million, or "twice the cost of recovery and diversion of the footprint or its shortfall, whichever is higher."
- Reconstituted the composition of the National Solid Waste Management Commission (NSWMC) and enhanced the functions and duties of the National Ecology Center (NEC).
- Provides for the expansion and simplification of fiscal incentive schemes to encourage stakeholder involvement both for solid waste management and EPR activities.
- The NEC is mandated to establish and maintain a Waste Management Database and an EPR Programs Registry.

Global Treaty on Plastics

The Philippines has also actively supported efforts related to and called for a global treaty on plastics.[xxi] In March 2022 heads of State, ministers of environment and other representatives from United Nations Member States endorsed a historic resolution at the UNEA-5 to end plastic pollution and forge an international legally binding agreement by 2024.[xxii] The resolution addresses the full lifecycle of plastic, including its production, design and disposal, and seeks to comprehensively address plastic pollution, including in the marine environment.[xxiii]

Other Recent and Related Efforts on Marine Litter

Other Government agencies have also contributed to marine litter efforts through their various plans and programs. Some of these are as follows:

- The ***Sustainable Science and Technology Solid Waste Management (SSTSWM) Road Map***, implemented by the Department of Science and Technology, envisions a circular economy with a solid waste pollution-free environment.[xxiv] To this end, the document outlines guide posts toward science and technology support for strengthening research and development of cost-effective prevention, control, and management of solid waste, the enforcement of guidelines and standards, and capacity for good environmental governance.

- The National Economic Development Authority (NEDA), for its part, has begun work on a **Philippine Action Plan for Sustainable Consumption and Production (PAP4SCP)**.[xxv] This document seeks to incite behaviour change, with outcomes focused on shifting the preferences of producers and consumers toward more sustainable goods and services.

Gaps and Barriers Related to a NSI in the Philippines

This section will briefly look at gaps and barriers related to a NSI in the Philippines. It will recall relevant findings of the UNEP and COBSEA publication entitled *Legal and Policy Guidance on Addressing Marine Litter in the Philippines: Gap Analysis and Needs Assessment*. Gaps and barriers noted from the survey responses and some key informant interviews will also be presented.

Gap Analysis and Needs Assessment Observations Relevant to the NSI

A recent study by UNEP and COBSEA looked at the legal and policy landscape on marine litter in the Philippines.[xxvi] Table 3 below summarizes legal and policy gaps and barriers which need to be addressed in order to effectively tackle marine litter. Some of the issues identified which may be relevant for the Philippine NSI include:

- Addressing misaligned and non-science based national targets on waste recovery and recycling.
- Mobilizing support for research and development, and new technology.
- Supporting research to establish clear baselines.

The report also noted the following specific data concerns:

- Several proposals have called for **mandatory reporting of data on production, consumption and disposal patterns**. The report notes that “Credible and up to date information will help support Government planning,

programming, and decision-making. Data is critical to allow different stakeholders identify where interventions are needed, and how limited resources can be deployed."

- A capacity, resource and funding barrier identified points out the "**limited Government capacities for data collection, monitoring and transparency**" due to limited manpower and other resources.
- **No national baseline data on marine litter is available**: "While there is much research on the country's coastal and marine ecosystems, the Philippines is still without complete nationwide baseline data on the sources, extent and impacts of marine litter". Studies tend to be area or project-location specific.

The previous report also provides specific recommendations related to data, which is relevant to the development of the Philippine NSI. Table 4 summarizes and consolidates these recommendations.

Table 3: Legal and policy gaps and barriers

Barrier/Gap	Mitigate waste leakage into the environment	Increase waste recovery and recycling	Create a sustainable plastic production and consumer society
Legal and Policy	• Updating national plan and strategy on waste management • Fast-tracking approval and implementation of NPOA on marine litter • Addressing gaps in current legal framework	• Addressing misaligned and non-science based national targets on waste recovery and recycling • Ensuring the availability of incentives and support for investments in waste recovery and recycling facilities	• Fast-tracking approval and roll-out of SCP Plan • Crafting clear and viable upstream policies
Institutional	• Clarifying mandates and responsibilities among Government agencies • Enhancing coordination between and among local Government units		
Capacity, Funding, and Resource	• Building capacity of national Government agencies • Building capacity of local Governments	• Mobilizing support for research and development, and new technology	
Implementation and Enforcement	• Improving policy implementation and enforcement	• Increasing accessible and functional recycling facilities	• Fast-tracking implementation of current initiatives • Supporting research to establish clear baselines

Political, Societal, and Cultural	• Addressing the negative impact of local politics in the implementation of waste management laws • Giving formal recognition to informal waste sector workers	• Addressing the prevalence of throw-away/wasteful culture • Strengthening programs to shift consumer behaviour

Table 4: Summary of recommendations

Gap/Barrier/Issue	Recommendation/Action Point
Addressing gaps in current legal framework	Mandatory reporting of data on production, consumption, and disposal patterns
Addressing misaligned and non-science based national targets on waste recovery and recycling	• Improve data collection on waste generation and disposal at the *barangay* and local level as the basis for waste diversion targets at the national and local level ○ Ensure alignment of local Government waste diversion targets with national targets • Publish scientific and technical basis of waste diversion targets • Mandatory reporting of market information (i.e., production, distribution, sale, and recovery) by top plastic manufacturers and FMCG companies.
Clarifying mandates and responsibilities among Government agencies	• Consider creating and designating smaller technical working groups on specific areas of implementation, such as: ○ Data gathering, research and development
Building capacity of national Government agencies	• Improve system of data collection, monitoring, and information dissemination ○ Train other Government officials, academia, and research and policymakers on how to use the information
Improving policy implementation and enforcement	• Enforce and implement various provisions of RA 9003 such as: ○ Functions of the National Ecology Center particularly on the solid waste management database and development of a national recycling network

Supporting research to establish clear baselines
 	
Ensuring availability of disaggregated data and sector-specific research on marine litter impacts
	• Expand and improve current solid waste management database
	  ○ Make disaggregated data easily accessible
	  ○ Promote the use of the database among waste management stakeholders
	• Conduct extensive policy and institutional assessment and stakeholder mapping to streamline functions and improve coordination
	• Coordinate with the academic community and local and international experts on conducting baseline studies on the waste situation in the country
	• Publish and disseminate these baseline studies, along with bases for policies and programs to be rolled-out
	• Ensure availability of disaggregated data on the waste sector which includes women, children, artisanal fisherfolk, and the informal waste sector.

Gap/Barrier/Issue	Recommendation/Action Point
Addressing the negative impact of local politics in the implementation of waste management laws	• Improve capacity of local environment and natural resource officers and staff to ensure continuity despite leadership change • Encourage local Governments to develop a database of institutional knowledge on SWM plans, programs, and implementation

Survey Responses

The Report conducted a survey of relevant stakeholders. One of the key gaps identified by the survey respondents was the **accuracy and completeness of the data**. Although generally accessible, the respondents pointed out that some information lacks context to be better used and understood. In most cases, the localized context of the data is not available (unless the study or research is on a specific local area). The information is also not updated, and a direct request with the agency or organization holding the information is needed, which is often time-consuming and may become a tedious exercise. One of the respondent NGOs noted that some publicly available information does not provide enough detail on the study or research conducted.

The respondents also noted that **the relevant data or information was not easily accessible,** both for Government and external sources. Even though most sources are available on the internet, there was difficulty in locating the information online. Broken links were also noted as an issue, along with needing to physically go to the Government or organization's office to access the files or database (whether in hard copies of digital format). It was also noted that cumbersome Government processes make getting detailed and up-to-date information difficult to obtain.

A NATIONAL SOURCE INVENTORY FOR THE PHILIPPINES

This section of the Report will present the research conducted to develop the NSI for the Philippines. It will begin with a discussion of the survey developed and other methodologies to gather data. The results and findings of the survey will then be presented, followed by a discussion of specific gaps and barriers. Additional commentary on the types of data sources that comprise the specific NSI pillar will be provided. A table summarizing the data collected will also be presented.

Methodology

This report primarily employed desk research and looked at secondary data and sources to determine the different data sources which comprise the NSI Pillars. Some of these research and studies have been listed and identified in the References Section of this report. A list of stakeholders consulted via interviews, prior engagements and discussions, and surveys, can also be accessed here.

To gather additional information and inputs from stakeholders, a survey form was developed. In general, the survey asked the following questions:

- Types of data being gathered, collected, or stored
- Sources of the data

- Methods of access and/or location of the data or information
- Identification of any gaps, barriers, and issues in relation to the data on marine litter
- Rating on the availability, quality, and accessibility of the concerned data

The survey results will be discussed in the Analysis and Commentary section below.[xxvii]

NSI Approach and Data Presentation

The Report developed the following Approach and Data Presentation to present the NSI findings. The first step was to identify the different types and sources of data and information for each NSI pillar. Once the sources were identified, the information in Table 5 below was also considered and identified. This method allows for an analysis of the current state of the data sources/types, and, more importantly, the identification of any gaps, barriers, and issues related to the use, generation, reporting, and accessibility of the data.

Table 5: Relevant data/information in analysis

Information	Description/Relevance
Data source/type	• The data sources identified in the NSI Approach
Who generates the data?	• Data generators can either be those required to report or submit information; or those required to receive, collect, or consolidate • These can also be information and data generated from research work or related studies
How are the data reported and gathered?	• Identifies methodologies on how data are received, gathered, and reported, primarily by Government agencies • May also include non-government and academic sources which report or publish the data
Where are the data found/available?	• How the data or information are presented or reported, in what medium, format, or location • Online via a website or web link/web database; or through printed reports and publications • Can also include files and data physically available at the concerned agency or organization's office
How can the data be accessed/used?	• Accessible either through the internet/online, printed report or publication, or by physically going to the office or location of the concerned agency or organization • Looks at how the public in general can see and use the data
Who are the current users of the data?	• Why the data or information are being used, accessed or retrieved by stakeholders

Findings and Observations

This section will discuss the findings and observations from the research conducted following the approach described above.

Table 6: Summary of NSI Database

Data source/type	Who generates the data?	How are the data reported and gathered?
• Production, use, import, and lifecycle of plastics • Waste statistics • Monitoring of freshwater and wastewater • Monitoring of coastal and marine waters	• Government enforcement and implementation agencies • Local Government units (limited extent?) • NGOs, INGOs, development organizations • Academic institutions	• Reports and mandatory submissions of various entities to comply with laws and regulations • Possible independent sources – academic institutions, projects by development partners • Publications of compilation of data
Where are the data found/ available?	**How can the data be accessed/ used?**	**Who are the current users of the data?**

• Government databases and websites:
  • DENR-EMB
  • PSA
  • BOC
  • NWRV
• Philippines Statistics Authority Environment Accounts
• Independent sources and databases:
  • Plasticount Pilipinas
	• Website access
	• Official written request from concerned Government agency
	• Publications:
	  • Annual reports
	  • Special reports
	• Government plans and programme reports
		• Government policy makers
		• Legislators
		• Enforcement agencies
		• Academic/ research institutions
		• NGOs/CSOs
		• General public

An NSI Database was also put together to identify the different data sources and information collected by this report. Table 6 below presents a summary of findings.

Production, use, import, and lifecycle of plastics

a. Sources of Data

Information on the production, use and import of plastics are regularly reported by Government agencies such as the Philippines Statistics Authority (PSA) and the Bureau of Customs (BOC). Data on plastic use have also been reported by other Government agencies such as the DENR-EMB and the Metropolitan Manila Development Authority (MMDA), in relation to their waste monitoring functions. All these databases and information are accessible online.

Studies by non-government and international development organizations have also reported on and provided data on plastics. These include the World Bank, Ocean Conservancy, the Global Alliance Against Incinerator Alternatives, and the World Wide Fund for Nature-Philippines. Their respective reports are all accessible online via their respective websites.

*Figure 3: Screenshots of PSA database**

Home » Business » Foreign Trade » Imports

Highlights of the Philippine Export and Import Statistics October 2022 (Preliminary)

Reference Number: 2022-000
Release Date: Tuesday, December 13, 2022

Highlights of the Philippine Export and Import Statistics October 2022 (Preliminary)

Table A. Summary of External Trade Performance in the Philippines
October 2021r, September 2022r, and October 2022p

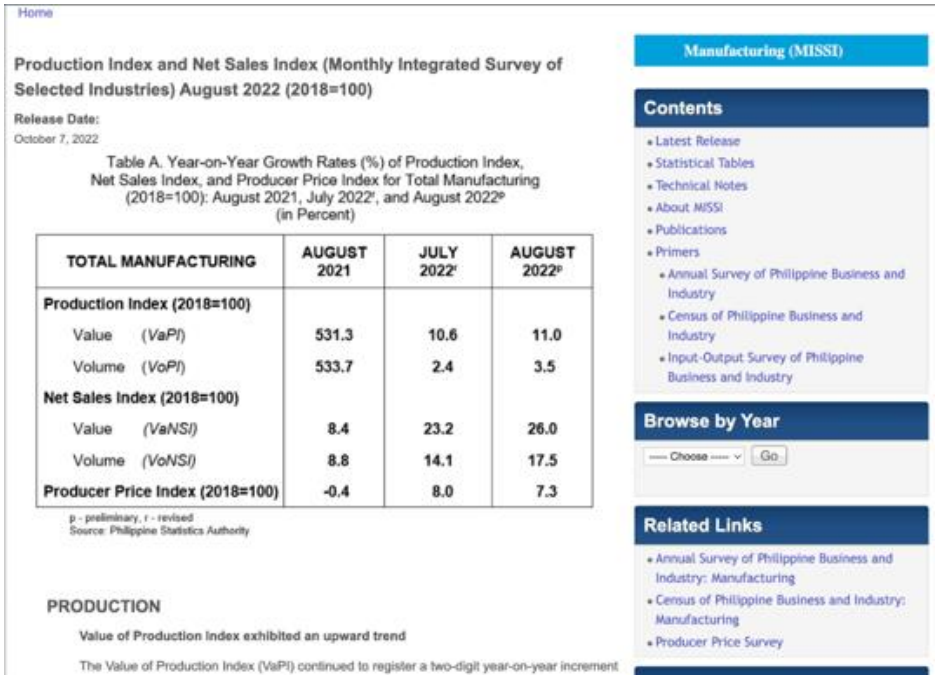
Indicator	October 2021r		September 2022r		October 2022p	
	FOB Value (in million USD)	Year-on-Year Growth (%)	FOB Value (in million USD)	Year-on-Year Growth (%)	FOB Value (in million USD)	Year-on-Year Growth (%)
Total Trade	16,646.73	13.8	19,169.99	11.5	18,697.57	12.3
Balance of Trade	-3,822.56	86.6	-4,843.33	27.1	-3,306.76	-13.5
Exports	6,412.08	2.0	7,163.33	7.1	7,695.40	20.0
Imports	10,234.65	22.8	12,006.66	14.4	11,002.17	7.5

p – preliminary, r – revised
Source: Philippine Statistics Authority

A. TOTAL EXTERNAL TRADE AND BALANCE OF TRADE

1. Total external trade increased

In October 2022, the country's total external trade in goods amounted to USD 18.70 billion which indicates an annual growth rate of 12.3 percent from its level



Home

Production Index and Net Sales Index (Monthly Integrated Survey of Selected Industries) August 2022 (2018=100)

Release Date:
October 7, 2022

Table A. Year-on-Year Growth Rates (%) of Production Index, Net Sales Index, and Producer Price Index for Total Manufacturing (2018=100): August 2021, July 2022r, and August 2022p (in Percent)

TOTAL MANUFACTURING	AUGUST 2021	JULY 2022r	AUGUST 2022p
Production Index (2018=100)			
Value (*VaPI*)	531.3	10.6	11.0
Volume (*VoPI*)	533.7	2.4	3.5
Net Sales Index (2018=100)			
Value (*VaNSI*)	8.4	23.2	26.0
Volume (*VoNSI*)	8.8	14.1	17.5
Producer Price Index (2018=100)	-0.4	8.0	7.3

p - preliminary, r - revised
Source: Philippine Statistics Authority

PRODUCTION

Value of Production Index exhibited an upward trend

The Value of Production Index (VaPI) continued to register a two-digit year-on-year increment

Manufacturing (MISSI)

Contents

- Latest Release
- Statistical Tables
- Technical Notes
- About MISSI
- Publications
- Primers
  - Annual Survey of Philippine Business and Industry
  - Census of Philippine Business and Industry
  - Input-Output Survey of Philippine Business and Industry

Browse by Year

— Choose — Go

Related Links

- Annual Survey of Philippine Business and Industry: Manufacturing
- Census of Philippine Business and Industry: Manufacturing
- Producer Price Survey

**A sample of the PSA Import-Export Statistics Online Database accessible here. A sample of the PSA Production Index and Net-Sales Index Online Database accessible here.*

b. Observations and Findings

Numerous institutions, especially CSOs and academia, **collect and use marine litter data for projects and research**.

Among the different types of marine litter data, the most used are on the life cycle of plastics and other products, waste statistics (e.g., collection, disposal, use), production or manufacture of plastics (any type), and the monitoring of coastal and marine waters.

According to various research, **plastic makes up 80% of the total marine litter, including microplastics, nanoplastics, and other single-use plastic products** (e.g., PET bottles, sachets, thin films, etc.). However, aside from the single-use plastic found in the ocean, data users also look for data on the number of plastic alternatives for comparison.

For data on the production, importation, and use of plastics coming from Government sources, most are generated and reported by the PSA, the BOC, DENR, Metro Manila Development Authority MMDA, and the PSA. Almost **all of their data are easily accessible online without the need for access permission**.

Waste Statistics

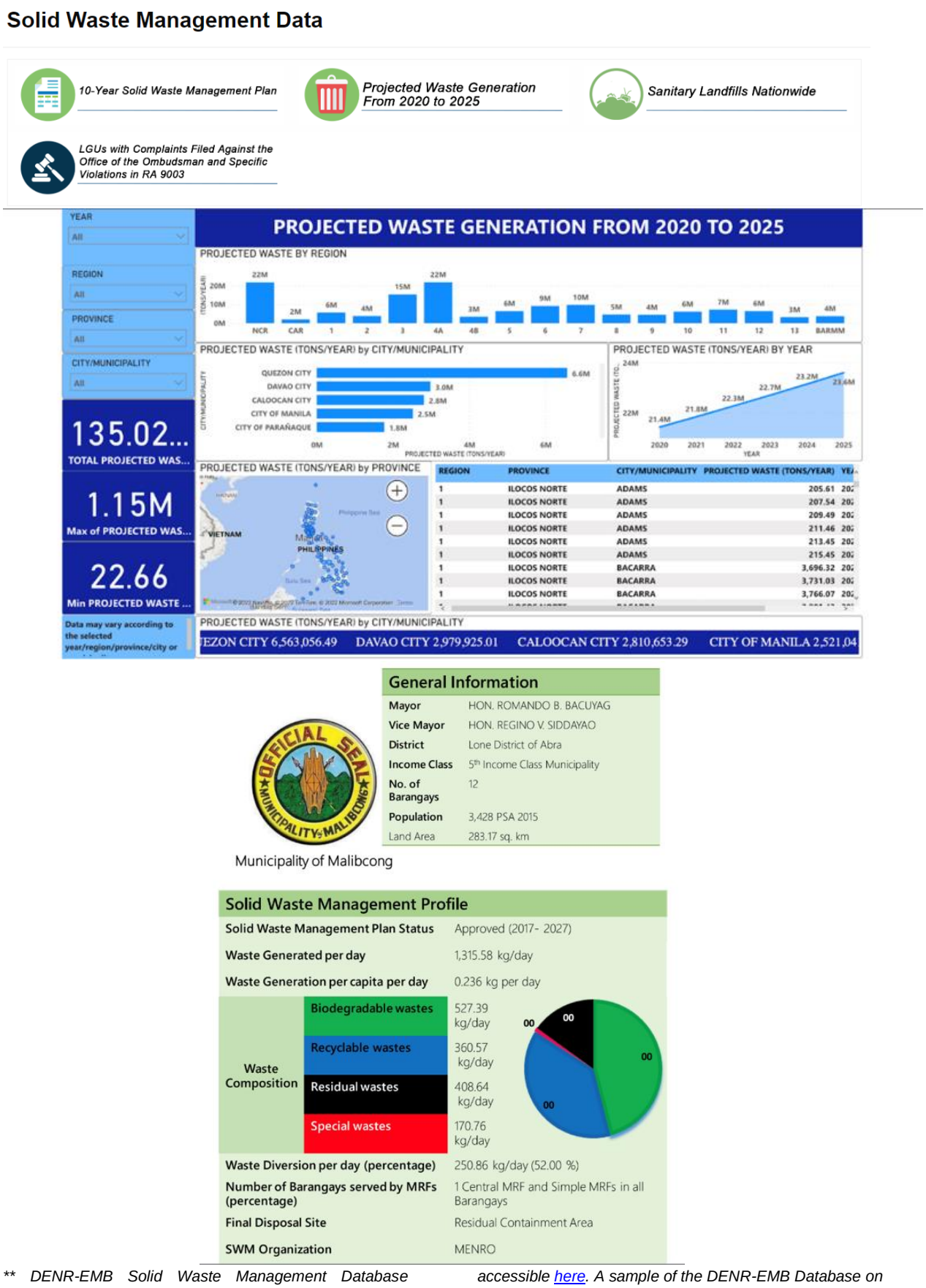
a. Sources of Data

The DENR-EMB Solid Waste Management Division is the primary source of data related to waste. In its website, information on the following is available, among others: solid waste generation; local Government unit (LGU) solid waste profile; waste analysis and characterization studies manual; and LGU best practices. There are also published National Solid Waste Management Status Reports, the latest one released as of 2018.[xxviii]

Other NGOs, development organizations, and academia have also come up with studies and reports which provide for data and information on waste. Although most use the Government databases for baseline information, others conduct their own research and analysis to report on waste and plastic pollution. The Regional Marine Litter Research Database[xxix] developed by COBSEA and the National University of Singapore (NUS) identified 53 published research articles, of which 33 were published by institutions in the Philippines, with an emerging track record of research studies that involve sampling in the environment. For example, Plasticount Pilipinas has a Philippine Plastic Monitoring Map, which relies on data submitted by volunteers and researchers.[xxx]

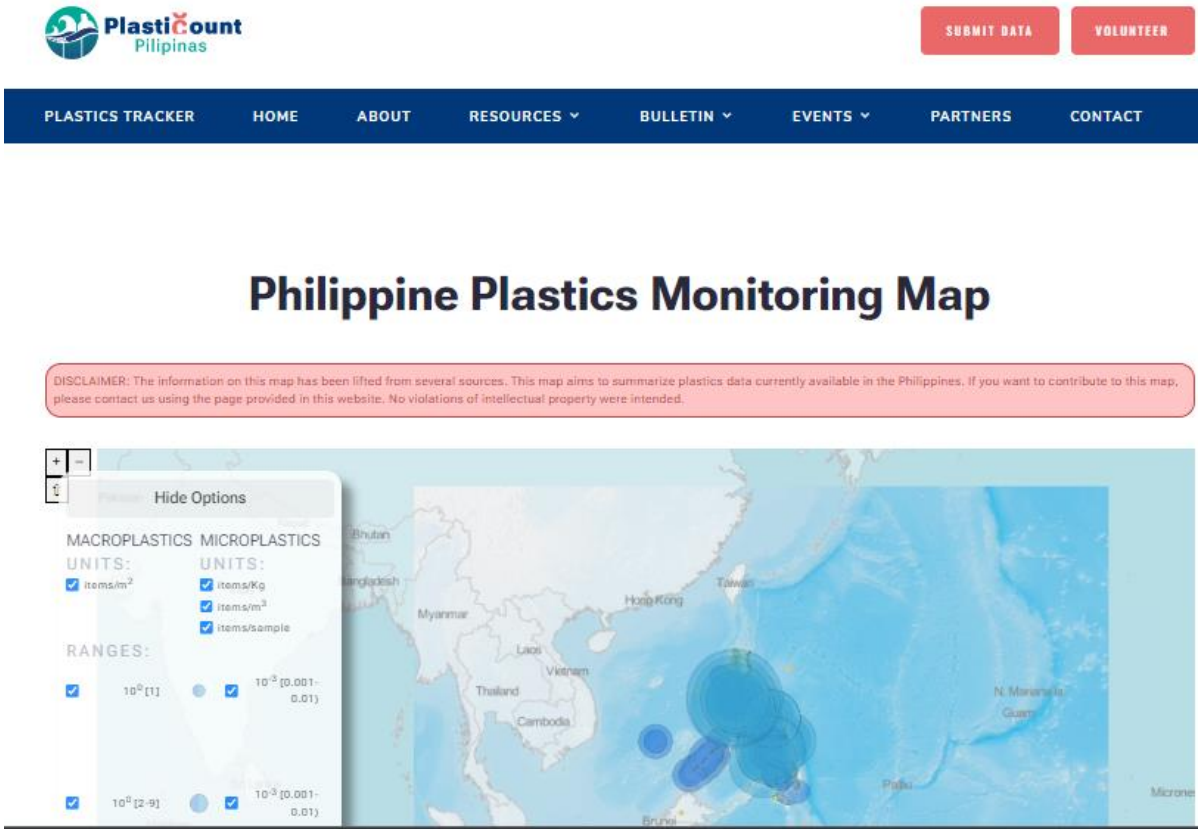
There are also ongoing efforts to develop a national marine litter monitoring programme that collects data of sufficient quality to support high-level decision making. National monitoring efforts to assess the leakage of litter into the environment were launched in the Philippines in 2022 with support from COBSEA and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). In partnership with the DENR and Davao del Sur State College (DSSC), capacity is being built for the assessment of a national baseline on marine litter, including inland, river, and coastal habitats.

*Figure 4: Screenshot of DENR-ENB Databases***



** *DENR-EMB Solid Waste Management Database available here. A sample of the DENR-EMB Database accessible here. A sample of the DENR-EMB Database on LGU Solid Waste Profile accessible here*

Figure 5: Screenshot of Plasticount Pilipinas' Plastics Monitoring Map Homepage



b. Observations and Findings

Data on waste statistics are primarily from the DENR-EMB Solid Waste Management Division in partnership with the LGUs. The DENR has made **modest efforts to update and ensure the accuracy of the information**. Although there may be some difficulty in navigating these websites, with proper guidance, the information can be accessed and used for research and even for policy making. Most of the data are disaggregated per region, which can be useful in location-specific marine litter studies. All the data are available online.

For local Government-specific data, **most LGUs will have sufficient and updated information**, although a random browsing of various LGUs will show some with little or outdated information. This can be attributed to the lack of information reported by the concerned LGU, among other reasons and factors.

The **information on waste composition is, however, not as detailed and can be further disaggregated**. For example, current databases do not show what percentage of recyclables or residuals are plastics. This kind of information would be useful in determining specific policies which target certain types of waste such as plastics.

It can also be observed that **there are numerous parallel efforts by NGOs and academic institutions at gathering data and information on waste, particularly on plastics**. Although most are supported by DENR, this information is found in different websites and online resources – which

can be the institutions website, or an online database of research studies and publications. There is also **limited coordination or linkages between the different studies and institutions**, resulting in duplicate and overlapping efforts in some instances.

Monitoring of Freshwater and Wastewater

a. Sources of Data

Most of the data come from Government sources, such as the DENR-EMB, the National Water Resources Board (NWRB), and the PSA. The DENR-EMB has a Water Quality Database, and ambient monitoring of water bodies. The PSA also regularly publishes water quality reports in select water bodies, particularly dissolved oxygen levels and biochemical oxygen demand concentration. The NWRB regularly reports on the status of freshwater resources in its Annual Reports.

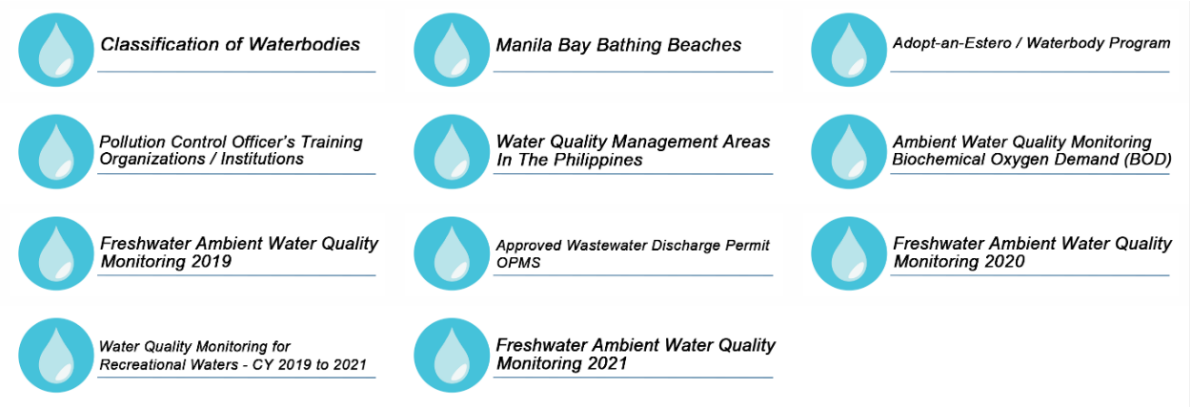
Other NGOs and development organizations have also published reports related to water quality. The World Bank's Philippine Environment Monitor includes statistics and information on water quality and the state of water bodies. Greenpeace has also published a report on the state of water resources in the country.

A Water Quality Monitoring Manual was also developed by DENR.[xxxi]

*Figure 6: Screenshot of NWRB website of reports****

****NWRB Annual Reports available here.*

*Figure 7: DENR-EMB Water Quality Management Databases*****

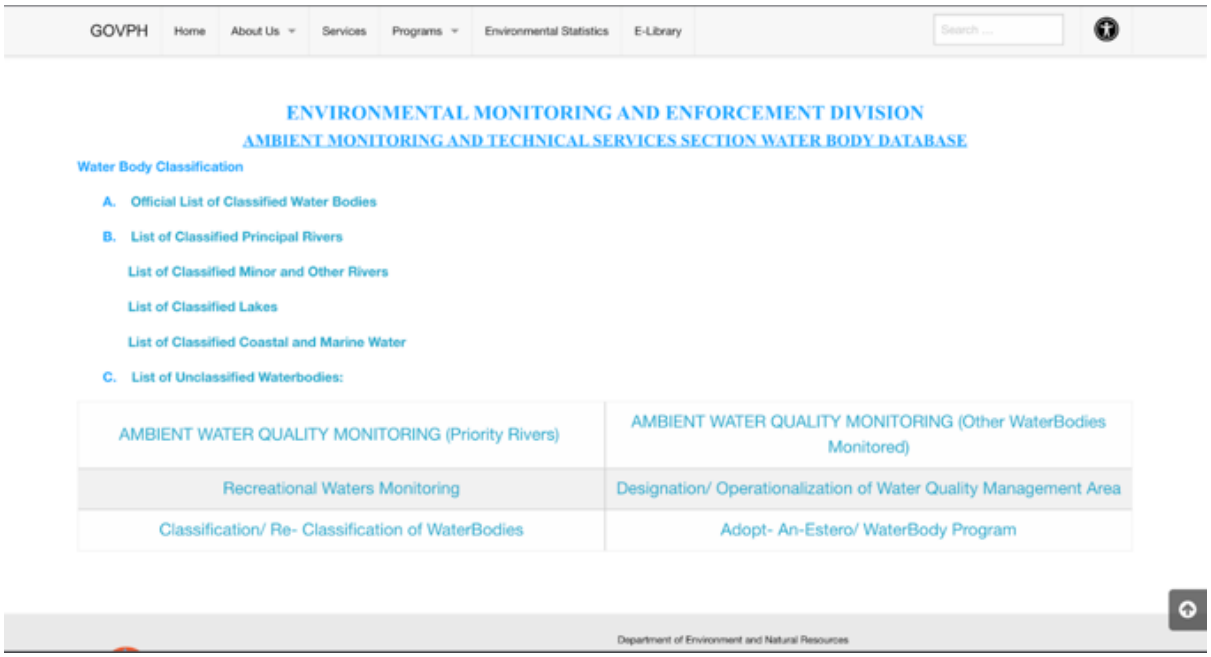


****DENR-EMB Water Quality Management Databases available here.

*Figure 8: Screenshot of Water Resources Management Information Database******

*****Water Resources Management Information Database available here.

*Figure 9: Screenshot of DENR-EMB Ambient Monitoring and Technical Services Section Water Body Database******



******DENR-EMB Ambient Monitoring and Technical Services Section Water Body Database available here. Information on coastal waters can also be accessed here.*

b. Observations and Findings

Primary data on water quality and wastewater **comes from the identified Government sources and databases**. A review of the various sources shows the Government's **efforts to keep the information updated**. The databases also allow disaggregation by specific regions, provinces, types of water bodies, and in specific locations. The interface may initially be challenging to navigate, but with assistance, it can be manageable and could prove helpful.

Like waste statistics, **disaggregated data or information on the specific type of pollutants – such as plastics and other solid waste, is not readily available**. Pollutants that are included are, among others: faecal coliform, nitrates, and phosphates. Information on municipal and other solid wastes in these water bodies are not available.

Monitoring of Coastal and Marine Waters

a. Sources of Data

Similar to freshwater and wastewater, data on coastal and marine waters come from Government sources, in particular the DENR-EMB and the PSA. The DENR-EMB provides for the classification of waterbodies, while the PSA reports on the average dissolved oxygen concentration of select marine waterbodies. However, there is no readily available database from the DENR on monitoring of water quality in marine/coastal areas.

Other sources of data that analyse water quality include studies, research papers, and other academic works published in journals and those by NGOs and other development organizations.

b. Observations and Findings

Aside from the classification of waterbodies, it appears there is **no readily available database or information on the water quality of coastal and marine areas**. Aside from the report/publication by the PSA, no other agency reports on coastal and marine water quality. Sources that have been found are different journal articles and studies, but these are usually on specific locations and areas only.

There are **reports of water quality monitoring in coastal areas from Government sources and presentations**,[xxxii] particularly in Water Quality Management Areas with coastal/marine areas pursuant to the Clean Water Act of 2004. However, these are not made readily available online. The extent of the water quality monitoring in all coastal and marine areas is also not clear.

Analysis of Findings

This section will provide an analysis of the findings on the four pillars of the NSI. The analysis will focus on i) sources of data; ii) quality of the data; and iii) usability of the data.

SOURCES OF DATA

- *Government is the primary source of data*

For the Philippines, the primary sources of data and information for all pillars comprising the NSI remain the Government agencies and instrumentalities. The actual source of information is usually the Government's own monitoring and enforcement efforts, with the occasional inclusion of data from external sources. There are several efforts by the Government to improve data gathering and monitoring, particularly by improving online databases and allowing the electronic filing of reports from various sources for easier consolidation and posting in the public space.

Data sources are also generally easily accessible, be it from the Government or other external sources. Much like waste and plastics, data on waters from the Government are also easily accessible and downloadable online without the need for access permission. However, it is not explicitly indicated whether physical copies are also available at their offices.

The information is also regularly updated based on the best available information. Since most of these data are easily accessed online, it was seen that the websites of DENR EMB NSWMC (https://nswmc.emb.gov.ph/), PSA (https://psa.gov.ph/), and the Philippine Information Agency (https://pia.gov.ph/) are the most updated.

- *Significant amount of reported data also come from other sources*

Aside from the Government, a significant amount of data comes from academic and CSO sources, including the World Bank Group, Greenpeace, Manila Journal of Science, Journal of Environmental Science and Management, and various universities. However, data from these institutions are often just a compilation and analysis of existing data from the aforementioned Government sources. As to the academic and CSO sources, the authors, affiliations, journal numbers, series numbers, and other pertinent information about its publication are readily available.

However, some academic sources may be difficult to access since there is a paid journal subscription.

- *No single source of comprehensive data on each pillar*

The findings above will show that relevant data comprising the NSI is available from different sources and on different platforms with no single database or platform where this information can be accessed. This makes accessing and using the data a challenge, especially for the public. One would need to delve deeper into Government websites or be directed by specific persons to the right source to be able to see the information. As some stakeholders have noted, this makes the research and data-gathering process time-consuming and tedious.

Online data are hard to locate, meaning there is no central page to find them. These data also need to provide more information, which limits access, especially for entities outside the National Capital Region (NCR) or major cities where most NGAs and institutions are. For data requested directly from Government offices, a response from them may takes several weeks to months in some reported instances.

Although there are efforts to create a consolidated database on waste management, these are still in the pipeline, and no clear timeframes have been given by the Government.

QUALITY OF DATA

- *Data are accurate but not easy to understand and use*

Data and information are generally accurate and, at times, often updated. However, these are difficult to understand and use. For example, data on plastic importation and industry profile is updated and compiled by the PSA every month. Specifically, these data are generated from its Monthly Integrated Survey of Selected Industries and the monthly report from the BoC. While these data are very accurate, they are not easily understandable since they are data heavy.

In another example, the DENR-EMB gathers water quality management data, the NWRB gathers national water resources monitoring data, and the PSA gathers data on chemical concentration in national waters. The data is comprehensive since it covers all bodies of water in all the regions of the Philippines. Additionally, water quality analysis is based on scientific and empirical standards such as the "Water Quality Guidelines" and "EMB Approved Methods of Analysis for Water and Wastewater," among others. While these data are generally comprehensive and accurate, they are not easily understandable since they are technical, data-heavy, and do not offer much analysis. Without guidance or assistance, they are difficult to use and analyse.

- *Need for disaggregation and additional details*

As noted in the findings, the DENR-EMB also conducted a Waste Analysis and Characterizations Study (WACS) that includes plastic use. Data from this study is often cited and used by academic institutions and CSOs in their solid waste management study. However, the plastic data in the WACS could be more comprehensive since plastic is not the focus of the research. Plastic use was only mentioned a few times and mostly fell into the "recyclable" data. Better disaggregation could lead to deeper and more

comprehensive analysis of the information presented.

Similarly, in databases on water quality monitoring, information on solid waste and other municipal wastes as pollutants was not readily available. As a result, one cannot discern the level of pollution from solid wastes – such as plastics – in different water bodies.

- *Specific information related to marine litter needs to be updated or filled in*

Among the Government-sourced data, Philippine plastic raw material and resin consumption figures must be updated the most. The latest data on the former is from 2011, while the latter is from 2013. Both these data can only be found on the industry.gov.ph website, and they need to be more comprehensive.

On the other hand, data sourced from non-government institutions are more reader-friendly and easier to access online. The most updated plastic use data is from the Global Alliance for Incinerator Alternatives (GAIA) since they conduct a Waste and Brand Audit (WABA) that focuses on single-use plastics annually. A report by WWF-Philippines also conducted a Materials Flow Analysis of plastic waste in the country.

In terms of waste statistics, data reported by the LGUs are comprehensive but relatively outdated. These data are based on the Municipal 10-Year Solid Waste Management Plan and utilized by the national office to come up with the projected waste generation, currently from 2020 to 2025. Additionally, as mentioned in the plastics statistics, the DENR-EMB also has a National Solid Waste Management Report (2008-2018), which includes sources and composition of municipal solid wastes, waste generation rates, and waste projection.

It is also worth noting that the National Solid Waste Management Strategy has not been updated, with the last one lapsing on 2016. The DENR has mentioned on several occasions that a new draft strategy has been prepared, but as of this writing none has been released for public consumption.

Furthermore, regular monitoring of litter in freshwater and the marine environment is limited, but efforts are underway to develop a national monitoring programme with support from COBSEA and UNEP in partnership with CSIRO in line with Regional Guidance Regional Guidance on Harmonized National Marine Litter Monitoring Programmes.[xxxiii] As noted above, baseline survey assessments of litter are underway in partnership with DENR and DSSC, including across inland, river and coastal habitats.

Some Government efforts focus on cleaning rivers and waterways, and coastal areas without collection of detailed litter data. A regional monitoring inventory compiled by COBSEA and CSIRO identified one-off efforts and application of Project AWARE's dive against debris programme for seafloor surveys and Ocean Conservancy's International Coastal Cleanup. The COBSEA Regional Marine Litter Research Database of the East Asian Seas Regional Node of the Global Partnership on Marine Litter (GPML) developed in partnership with the National University of Singapore (NUS) identified 33 research publications by institutions in the Philippines (at the time of publication), including publications based on field sampling

research primarily undertaken by local and international universities.

Data on academic sources, on the other hand, are sporadically updated because they are generally found in scientific and environmental journals. As mentioned, data in these academic sources are often a compilation and analysis of existing data from the Government agencies mentioned above. Surveys are also conducted to highlight the problems polluting bodies of water and water resources. Although these data are not updated as often as Government sources, they are easier to understand because they provide analysis so that the statistics may be seen as evidence of more significant environmental problems.

When looking at the Government-sourced data, it was also seen that there needs to be more field data and validation. In many instances, published data are mainly based on projections based on models with limited ground validation. These data are also mostly on land-based waste and very few on sea-based sources of marine litter since there has yet to be an existing mechanism to gather this type of marine litter data.

Since Government data may be scarce and outdated, CSOs and academic institutions, according to the survey conducted, rely on other online sites, resources, and databases. Non-government data sources found most helpful in research are the Asian Development Bank (ADB), World Bank, Plastic Research Network members, Break Free From Plastic, GAIA, Center for International Environmental Law, and other academic institutions. However, the issue is that most of these data are regional and global in scope and are not country specific.

USABILITY OF DATA

- *A useful snapshot exists but details on plastics are needed*

Data compiled by the PSA is beneficial in looking at the size and growth of the plastic industry, as well as how much plastic materials get imported to us. Additionally, data on plastic imports from BoC are accurate and updated, so we can see how much plastic waste is from foreign sources.

Unfortunately, the most crucial plastic data is missing– accurate local plastic production. With this data gap, designing effective solutions and strategies will be hard. It will also be hard to implement marine litter policies, such as the recently passed EPR Act if there is no data stating who to hold accountable. The most significant barrier to getting data on local plastic production is the lack of policy requiring plastic industries to regularly and accurately report, and to make this publicly available.

Furthermore, even if BoC regularly reports plastic importation, there is no public data on illegal waste (plastic or otherwise) already dumped in the Philippines. BoC only reports if they forestalled illegal waste dumps, but nothing on the quantity and classification of wastes.

- *Public presentation and information dissemination need to be improved*

Aside from policy making and implementation, the presentation of these data, while updated and accurate, need to be more palatable to the public to help build political consensus on marine litter policies.

Of positive note is the availability and accessibility of these data mostly

online. These include recent efforts to create better and more comprehensive databases, in addition to new mandates under the EPR Act 2022 for waste management database managed by the NEC.

However, existing and planned databases and website need to be designed better to be more user-friendly and easier to understand. Dissemination and information campaigns on these sources should also be improved to provide better public information on waste statistics.

- *Addressing gaps and weaknesses for better usability*

Data on waste in the Philippines is often minimal and, in some cases, outdated. While there are region-specific and national data that many CSOs and academic institutions use, updating these data yearly to fully serve its purpose is necessary. As for the presentation of data, it is often digestible and straightforward. The DENR-EMB was able to analyse and present raw data in a more meaningful and helpful way in many instances.

On data on monitoring waters, data found have several strengths and weaknesses. First, the data on the monitoring of waters from Government sources is comprehensive because the data covers almost all bodies of water in the Philippines and are also based on scientific and empirical standards. This gives a complete picture of the country's water quality. Second, the data is updated yearly, as seen from the reports of the DENR-EMB, NWRB, and PSA. This allows one to plot the progress/development of the country's water quality at consistent intervals.

The weaknesses of data from Government sources, on the other hand, are (1) the lack of proper compilation of reports, (2) the lack of analysis and recommendations, and (3) the lack of digestibility to the public viewer.

First, since many Government bodies are managing the classification and monitoring of waters, it is difficult to find one source which compiles all the reports. For example, the DENR-EMB, NWRB, and PSA all have different websites and links for their reports. Also, many hyperlinks to access such reports, or for further information, are broken links or direct to unavailable sources. Second, while the data on water monitoring is comprehensive, they lack proper analysis and recommendations on the data. The average viewer would not understand how to interpret the data because there is little to no analysis of the numbers on the websites of Government sources. Lastly, there is a lack of digestibility to the public viewer because the sources are data heavy. Compared to academic sources, data from Government sources are not organized as they do not have defined topic headers and explanations of the standards used to monitor the waters.

On the other hand, data from academic institutions and CSOs provide compilations of the data and provide data analysis and recommendations, which Government-sourced data often lack. Data on the monitoring of waters from academic sources provides compilations of the data from different Government sources. This is beneficial because only some sources compile all the Government reports. The academic sources also provide numerical analysis so that the audience can understand the significance of the numbers presented. Also, the authors and organizations provide overall recommendations to help improve the

monitoring system or water quality of Philippine waters.

As for the weaknesses of data from CSOs and academic institutions, they lack proper updates and are more inaccessible than Government-sourced data. Many of the studies published in journals are not updated since there is no incentive for authors or organizations to make consistent annual releases. While there is a lot of data analysis, the data being analysed is often outdated, mainly from 2005 to 2012. Many journals are also not accessible because they require a paid subscription.

CONCLUSION AND RECOMMENDATIONS

This section will present the conclusions and recommendations of this Report on developing an NSI for the Philippines. The conclusions and observations will be discussed for each pillar of the NSI. This will be followed by specific recommendations relevant to the following: i) data availability; ii) data quality; and iii) data accessibility.

Conclusions and Observations

a. Plastic importation, production, and use

The most crucial gap that must be addressed is the need for local plastic generation data. This can be solved by implementing policies requiring industries, manufacturers and importers of raw material to report monthly production and consumption. This can perhaps be expected as part of the requirements under the EPR Act of 2022.

Aside from this, there is also a need to regularly update data, especially those coming from DENR and other Government sources. The only updated data on plastic use and generation come from NGO sources. Since plastic pollution is a pressing issue in the country, a Government led WABA on plastic needs to be specifically conducted annually.

In the DENR WABA, plastic also falls under recyclable; however, only a small number of plastic types in the Philippines are recyclable. It would be good to have more comprehensive definitions when conducting and writing studies, and to present disaggregated information on all plastic types, including residuals, among others.

Regarding the presentation of data, PSA's report is very raw and hard to read and understand. The agency has excellent data management and collection but does not account for the public as one of its target audiences. Making data user-friendly and understandable would help spread information about plastic and marine litter impacts.

Data sourced from the Government are updated and accurate but still need to be updated—other Government agencies related to marine litter, including the Department of Trade and Industry, the Department of Finance, the Department of the Interior and Local Government, the Department of Health, and the Department of Science and Technology, among others, should be more participative and strengthen research and development to assist policy making and implementation, especially in data gathering, provision, and dissemination.

b. Waste Statistics

The DENR-EMB should be able to update its National Solid Waste Management Status Report every year to provide proper guidance in developing marine litter policies. Since this is a significant basis for the Government in drafting policies and for other institutions in doing research, then outdated data may lead to inaccurate and less effective laws and studies.

Additionally, DENR-EMB should also be able to conduct WACS annually and improve its methodology. This may include upskilling LGUs to perform their own waste analysis and expand their analysis coverage, especially specifying the number of single-use plastics and marine litter. Better LGU data can lead to a more comprehensive national picture.

Data can also ideally be disaggregated to include information on a specific type of waste and pollutants. Specific information can be given on certain types of waste, such as plastics, biodegradables, and other recyclables, such as glass, metals, and even electronic waste. This also holds true for monitoring of waters and coastal/marine areas.

c. Monitoring of Waters (Fresh and Coastal/Marine)

The most crucial gaps are the proper compilation of monitoring data and the need for more analysis and recommendations. A national monitoring programme is needed to guide regular monitoring efforts across different habitats building on the best available science in line with established methods. To strengthen and harmonize monitoring in the Philippines and ensure data comparability across the region, countries are encouraged to build on the COBSEA Regional Guidance on Harmonized National Marine Litter Monitoring Programmes and develop robust national baselines to track the progress of policies and plans. COBSEA is providing support to DENR-EMB to build capacity on monitoring methodologies, develop a national monitoring programme, and establish a national baseline on marine litter in the environment, in partnership with CSIRO.

As to the compilation of data, this can be remedied by creating a single source/website to compile all the Government reports on water monitoring based on the Government body, year, region, body of water, etc. This is so that it will be easier for viewers to find all the data they need for water monitoring and to compare the data for different bodies of water. They only need to look within the single source/website for the information needed.

The lack of analysis and recommendations can be remedied by establishing and financing a multi-disciplinary and multi-sectoral group that will focus on analysing the data-heavy sources to come up with recommendations about how to improve water monitoring or the water quality as a whole. This is so that it will be easier for viewers to understand the water monitoring process and propose methods to improve the system or solutions to remedy issues of bodies of water in the Philippines.

Finally, another way to improve the quality and consistency of the data would be to have the DENR release periodic reports based on the real-time, online environment monitoring system launched last May 2022. This would

serve as a single source/website that compiles all the data on the monitoring of waters. However, there still needs to be more information about the environmental data centre, and its timeframe for launch and public dissemination.

d. Data quality, management, and accessibility

There is a need to improve the accessibility and transparency of Government-sourced data. Data collection must be real-time and posted to online platforms immediately with minimal human interventions. Furthermore, the website or pages where these data are posted should have a better interface and data presentation for data to be easily found. The PIA, the official public information arm of the Philippines, should have a page on marine litter with data segregated into more usable information and subtopics.

In terms of data requested from Government offices, it is also ideal to have a universal and simplified process to encourage institutions and even the public to review and use Government-generated data.

Lastly, regarding data quality, the Government should focus on improving data gathering by empowering and training LGUs on gathering, analysing, and managing solid waste data. Moreover, the Government should allocate financial and technical support for research and development by independent institutions around reuse and upstream-focused intervention to balance out tendencies to focus on downstream approaches.

Marine litter data need to be improved both in quantity and quality. While there is abundant data on plastic importation, it was seen in the survey conducted by the team that data users only sometimes need this type of data. On the other hand, data on local production is very scarce, but it was found to be the most needed by data users. Data found also needs more context on how the data was collected and generated, and that data found online needs to be updated.

RECOMMENDATIONS

The recommendations of this report will be divided into three clusters. These have been identified based on the specific gaps, barriers, and issues noted, as well as the findings and observations on the data sources. The clusters of recommendations are as follows (see **Error! Reference source not found.** for details):

- **Availability** – Identifying additional sources of data and information; developing national baselines as basis for further research; information sharing; and capacity to disseminate and make the information available.

- **Quality** – Accuracy and timeliness of data; ability to be validated and confirmed; transparent and open processes and access.

- **Accessibility** – Public access and use; ability to understand and use the data and information; regularity in reporting and updating.

Table 7: Summary of Recommendations per cluster

Cluster of Issues, Barriers, and Observations	SPECIFIC RECOMMENDATIONS

Availability	• Mandatory reporting of data on importation, production, and consumption across sectors and stakeholders
	  ○ Begin with obliged entitles under the EPR Act of 2022
	  ○ Gradually include MSMEs, LGUs, and other sectors and establishments
	• Developing a national baselines data on marine litter
	  ○ Immediate step to take to guide further studies and research
	  ○ Can begin with a consolidation of data sources identified in this report comprising the NSI
	• Establishing a technical working group on data, research, and development under the NEC or the NSWMC
	  ○ Focal for establishing a national database on marine litter information
	• Creating a network of knowledge hubs/centres of excellence on marine litter monitoring
	  ○ Identifying academic institutions and NGOs in marine litter hotspots
	  ○ Can initially focus on coastal and marine monitoring
	• Improving government technical capacity to collect. Monitor, and evaluate data
	  ○ Developing skills and identifying focal points in regional offices
	  ○ Coordinate with academic institutions for training and capacity building programs

Quality	• Increased support for research and development and funding for studies and initiatives
	  ○ Encourage and support knowledge building and developing localized expertise on marine litter monitoring, data gathering, and research
	• Improve data collection and gathering at the LGU level
	  ○ Support updating of the local solid waste management plans
	  ○ Assist and support the conduct of local WACS
	• Mandate reporting of market information
	  ○ To allow for verification of existing data and of studies and research
	• Collect and present disaggregated data or information on specifical type of pollutants and waste (especially plastics)
	• Address and plug data gaps identified
	  ○ These include:
	  ➢ Water quality in coastal and marine areas
	  ➢ Specific kinds of waste per waste categorization
	• Improve capacity of government technical staff to evaluate data and information
	  ○ Allow for better data reporting and dissemination
	• Promote transparency and open access to information
	  ○ Allow for a peer review process to verify and validate findings
	  ○ Encourage multistakeholder research and study teams
	• Develop and establish linkage between institutions, development partners, and NGOs for information sharing and collaboration
	  ○ To address issues of overlaps and lack of synergy and coordination among reports and initiatives

Accessibility	• Creating an overall and comprehensive marine litter/waste management database
	  ○ Can serve as a one-stop-shop for information on marine litter
	  ○ Act as clearinghouse to verify research and studies conducted
	• Improve user interface and interaction with online databases and sources
	  ○ Improved and easy-to-use research functions
	  ○ Readily available online or technical support
	• Ensure data and information is easy to understand and digest by the general public
	  ○ Information, education, and communication campaigns
	  ○ Potential translation of critical information into local dialects
	  ○ Coordination and collaboration with NGOs and community organizations on dissemination efforts
	  ○ Work with academic institutions to improve databases and spread information
	• Regular publication and dissemination of reports, publications, and updates to information and databases

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