



# **GULF OF GUINEA MARITIME INSTITUTE**

**GoGMI - International Maritime Security  
Working Group Virtual Series Report**

## **MARINE PLASTIC LITTER, A DANGER TO OCEAN HEALTH AND THE BLUE ECONOMY**

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# GULF OF GUINEA MARITIME INSTITUTE.

## INTERNATIONAL MARITIME SECURITY WORKING GROUP SECOND MEETING REPORT 2019.

This report is a product of the collaborative efforts among representatives of the Environmental Protection Agency, Regional Environmental Office of the UK Embassy and institutional experts, as well as stakeholders in the maritime industry which was led by the Gulf of Guinea Maritime Institute focusing on the topic **“Marine Plastic Litter, A Danger to Ocean Health and the Blue Economy”**.

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# Executive Summary

An estimated amount of 70 percent of litter in the ocean consist largely of plastics.

Environmental pollution with plastics is now recognized as a global concern; as plastic is largely contaminating the ocean. Plastics are synthetic organic polymers made from petroleum with properties ideally suited for a wide variety of applications including, packaging, building and construction, household and sports equipment, vehicles, electronics and agriculture. With the highly heterogeneous mixture of litter types differing in origin, size, shape and polymer type, plastic pollution is causing insidious threat to marine habitat. Large amount of this litter comes from land, finding their way into the sea by rivers serving as pathways. Plastic pollution can cause huge harm to human well-being, wildlife and the economy considering its inherent characteristics; resistant to chemical, photo and bio-degradation, and highly resistant to moisture and water. The impact is also felt by mariners with the reduction in amenity value of coastlines.

Global production of plastics grew from 1.5million metric tons (Mt) per annum in 1950 to 400 million (Mt) in 2017. Even though there isn't any available data about the absolute quantity of plastics in the ocean currently, clearly, the absence of measures to beat the situation will mean that globally, we will experience an increase in quantity and its associated impacts.

Plastic touches all of our lives, bringing many societal benefits from packaging of food and items we come across both at home and workplaces. However, it is evident that most of these benefits can be realized without the need for the use of plastics and consequentially, its release to the natural surroundings. Studies have proven the menace of plastic pollution has a negative impact on the food chain and the environment. Inherently, one will realize that pollution of the sea with plastics is an indication of a more systematic matter originating on land and related to the cycle of plastic production right from design, use and disposal of plastic items, especially single-use packaging.

The issue of plastic pollution is pertinent to Ghana as a country in that, persistent contaminants as plastics are, much of it has ended up in the ocean. Consequently, we might be seeing more pounds of plastics than fishes some years to come. To beat plastic pollution will mean identifying key drivers of intervention and the overall strategy on ocean management to sustainably use the ocean and help reduce the quantity of plastic waste generated by society and the associated sources of litter to the ocean.

# I. What are the Key Sources of Plastic Pollution?

## I.1 Land-based Source

Anything man-made, including litter and fishing gear, can become marine debris once lost or thrown into the marine environment. Plastics are used in many aspects of our daily lives and therefore are a big part of our waste stream. Marine litter enters the ocean from many point source which can be both land-based and sea-based. Litters which have remained for long in the environment becomes difficult to trace its source possibly because of disintegration of larger parts. Generally, it is identified that majority of marine litter comes from land-based activities and uses.

Commercial activities such as beach tourism where plastic drink bottles can be left on beaches by tourist or plastics shopping bags not disposed properly by individuals causes direct littering. Industrial activities that produce plastic waste also add up to the pollution by way of improper disposal via rivers, drains and gutters acting as pathways.



**Figure 1. A typical land-based source of plastic pollution with plastic litters finding their way into the water body. Source; EPA.**

## **I.3 Fishing Activities**

The deliberate dumping and abandonment of fishing gears into the ocean also constitute a significant amount of marine litter into the ocean. Lost fishing gears also find their way into the sea and disturb marine habitat. Marine animals get entangled in these nets and sometimes end up dying.



**Figure 4. Fishing net that has been washed ashore. Source; EPA.**

## **I.2 Shipping Source Pollution**

The dumping of garbage by seafarers also contributes a significant amount of marine litter, largely plastics into the ocean. The adoption of the MARPOL Convention therefore seeks to prevent and

minimize the occurrence of such act by ships. Nevertheless, the dumping of plastic litter into the ocean still occurs even though it is minimal. Shipbuilding and ship recycling activities also contributes to the inputs of plastic litter.



**Figure 2. Plastic litters that have been washed ashore. Source: [Marinedebris.noaa.gov](http://Marinedebris.noaa.gov)**

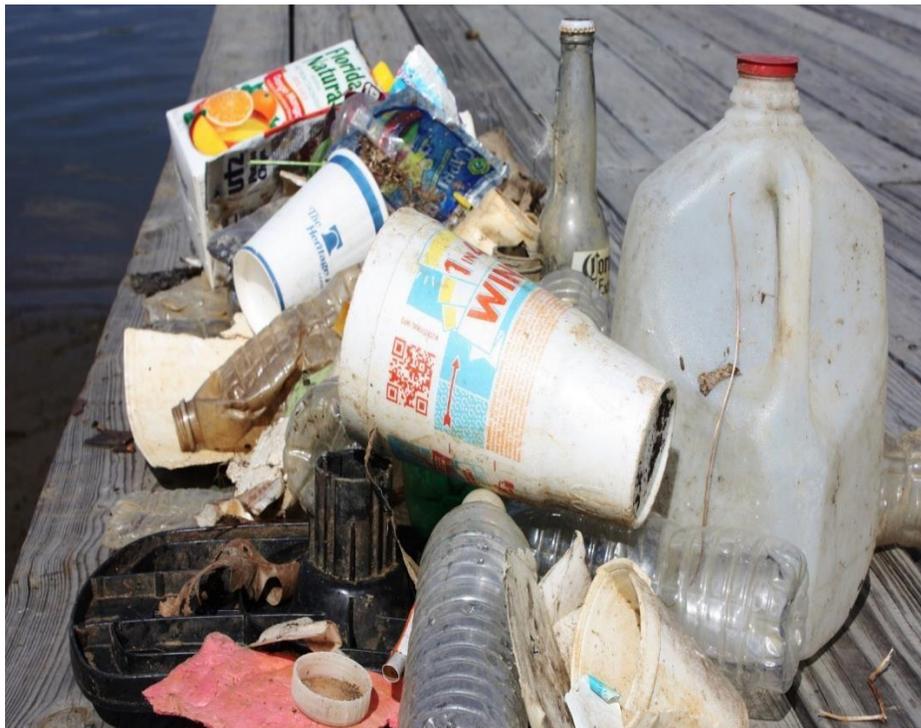


Figure 3. Plastic items found in the ocean as a result of dumping. Source; Marinedebris.noaa.gov

## 2. Impacts of Plastics on Ocean Health

Globally, the impact of marine plastic pollution is being felt. Reduction in marine livestock and value of coastal amenities is happening. Concerns are being raised through programs and initiatives to combat the current situation in our oceans.

Major cases of the situation include;

- a. Destruction of spawning grounds of fish and its effects on fish stock in that the habitat of marine mammals are being destroyed hence the reduction in stock and consequent reduction in protein food for human consumption.
- b. Creation of micro-plastics and its effect on the food web.
- c. High global death record of marine mammals due to ingestion of plastic films.
- d. Death of fishes, turtles, and other marine wildlife due to entanglement.
- e. Littering of ocean floor and water columns.



Figure 5. A turtle entangled by plastic Source; Marinedebris.noaa.gov



**Figure 6. Plastic debris located on the ocean floor which will later be consumed by fishes and other marine mammals, killing them. Source; [Marinedebris.noaa.gov](http://Marinedebris.noaa.gov)**

### **3. Impacts on Economic Benefit from the Ocean**

The sustainable management of the ocean space will generate economic benefits to the country. Unfortunately, that is not happening as the current state of the nation's ocean space is in a deplorable state, making it difficult to realize the potential benefits from the use of the ocean. Some negative impacts on the economic benefit of the ocean currently are;

- a. Reduction in fish stock

- b. Reduction in national income from marine fisheries.
- c. Reduced beach tourism causing a significant loss to the industry and state.
- d. Increasing poverty rate among fishermen due to low catch.

## 4. Examples of Beach Pollution from Plastics at Korle Estuary in Accra



Figure 7. Plastic bottles disposed along the beach. Source; EPA.



**Figure 8. Plastic bottles abandon at the beach. Source; EPA.**



**Figure 9. Marine litters floating in the sea. Source; EPA.**

# An Outlook of U.S. Approach to Addressing Marine Debris; a Case Study for Ghana.



From the U.S. approach, there is the requisite need for coordination between stakeholders, governments and ministries, ensuring good governance and improved management of solid waste. However, there is the establishment of about 24 domestic authorities that act as overall drivers for U.S. agencies to address marine debris. Although some of these drivers are more relevant than others, together, they demonstrate a complex legal framework for addressing marine debris within the United States, coupling coordination across U.S. agencies. These drivers are;

- Anadromous Fish Conservation Act
- Act on Prevention of Pollution from Ships
- Coral Reef Conservation Act
- Clean Water Act

- Coastal Zone Management Act
- Driftnet Act Amendments
- Energy Policy Act
- Endangered Species Act
- Flood Control Act
- **Marine Debris Research, Prevention, and Reduction Act**
- Marine Mammal Protection Act
- Marine Plastic Pollution Research and Control Act
- Marine Protection, Research, and Sanctuaries Act
- Magnuson-Stevens Fishery Conservation and Management Reauthorization Act
- National Marine Sanctuaries Act
- National Wildlife Refuge System Act
- National Wildlife Refuge System Improvement Act
- Outer Continental Shelf Lands Act and Amendments
- Oil Pollution Act
- Pollution Prevention Act
- Resource Conservation and Recovery Act
- Rivers and Harbors Act
- Shore Protection Act
- U.S. Coast Guard Act

A more focus on the U.S. Marine Debris Research, Prevention and Reduction Act sets out some legislative mandates as;

- Identify, determine sources of, assess, prevent, reduce, and remove marine debris

- Provide national and regional coordination
- Reduce adverse impacts of lost and discarded fishing gear
- Conduct outreach and education
- Address severe marine debris events (2012)
- International engagement (2018)

## 5.1 U.S Domestic Agency Roles

The agency roles are set out in two distinct groups which are land and oceanbased debris and ocean-based debris.

Land and ocean-based debris agencies are;

- Nat'l Oceanic & Atmospheric Administration
- Environmental Protection Agency
- Department of State
- Fisheries and wildlife
- National Park Service (Dept. of Interior)
- Dept. of Justice

**NOAA:** Address marine debris through mapping, identification, impact assessment, removal and prevention, focusing on living marine resources and navigation. Reduce and prevent loss of fishing gear. Public outreach and education.

**EPA:** Address land and ocean-based sources through solid waste, storm water, non-point source, and ocean regulations, voluntary programs, and outreach.

**State Dept.:** MARPOL Annex V and other relevant international agreements. Assistance to other countries on controlling land-based sources of pollution and derelict fishing gear.

**Fish & Wildlife:** Cleanup of shoreline/near shore habitats. Impacts on fish/wildlife resources and habitats. Management of National Wildlife Refuge and National Monuments.

**NPS:** Management of national parks-inland and coastal

**DOJ:** Judicial enforcement of environmental violation. The

Ocean-based debris agencies are;

- U.S. Army Corps of Engineers
- U.S. Navy
- U.S. Coast Guard
- Bureau of Safety and Environmental Enforcement
- Marine Mammal Commission

The responsibilities of these agencies are;

**USACE:** Obstructions in navigable waterways.

**US Navy:** Compliance with APPS for solid waste management and disposal of plastics from vessels. Preparation of vessels used as artificial reefs in accordance with Nat'l BMPs.

**BSEE:** Address marine debris from regulated facilities and operations through regulations, compliance, enforcement, voluntary programs, and partnerships with the offshore industry.

**Marine Mammal Commission:** Research and recommendations on impacts to marine mammals.

### **Interagency Marine Debris Coordinating Committee**

The committee is a multi-agency body responsible for streamlining the federal government's effort to address marine debris. Representatives meet to coordinate a comprehensive program of marine debris activities and make recommendations for research priorities, monitoring techniques, educational programs and regulatory action. Its marine debris action planning operates under;

- Multi-stakeholder approach
- Sub-national level
- Long-term solutions
- Both lateral and vertical collaboration

The IMDCC, working with the Nat'l Oceanic Atmospheric Administration Agency have developed a program, **"The NOAA Marine Debris Program"**, which works around the United States to reduce these impacts through the 5 main pillars; Removal, Prevention, Research, Emergency Response, and Regional Coordination.

**Prevention;** under **the prevention program**, the marine debris program seeks to create long lasting changes in behavior that reduce marine debris. Such behaviors as using a reusable bag instead of plastic or paper one, refusing a plastic straw in your drink or switching from disposable food ware to reusable alternatives. To achieve this, the marine debris program with its partners work directly with students and their teachers to change behaviors in the classroom as well as fishermen and businesses.

**Removal;** the NOAA marine debris program also funds a number of community-based **marine debris removal project**. These projects benefit and reduce the impacts of coastal habitat, waterways and wildlife. Over the period, more than 100 projects have been funded and more than 17,000 metric tons of debris have been removed over the life of the program.



**Figure 10. Community funded project on debris removal.**

**Source; [Marinedebris.noaa.gov](http://Marinedebris.noaa.gov)**



**Figure 11. NOAA MDP funds community project for debris removal.**

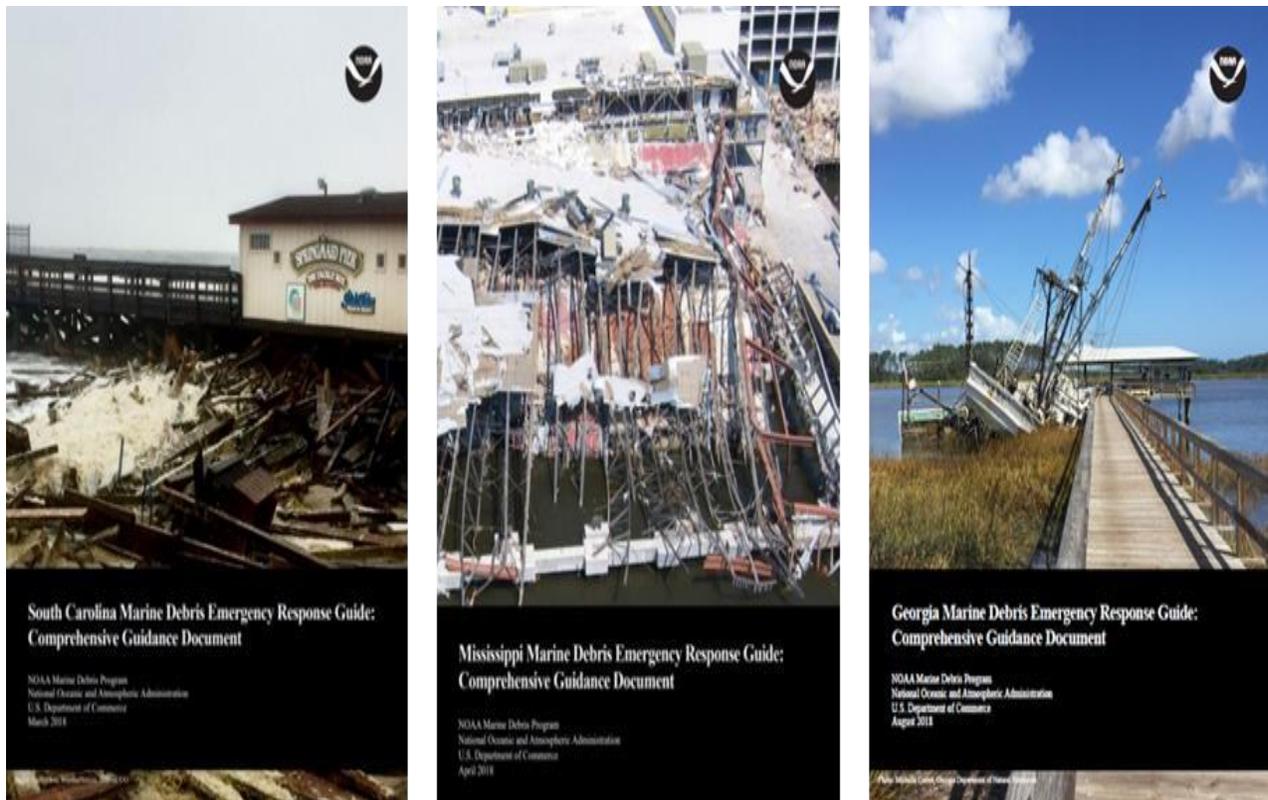
Source; [Marinedebris.noaa.gov](http://Marinedebris.noaa.gov)

**Research;** the Marine Debris Program also focuses on **research** with academia, state and federal agencies, and non-governmental organizations in finding new ways to deal with marine debris. Current research priorities are;

- Ecological risk assessment
- Exposure/ Response analysis
- Fate and transport and
- Economic impacts

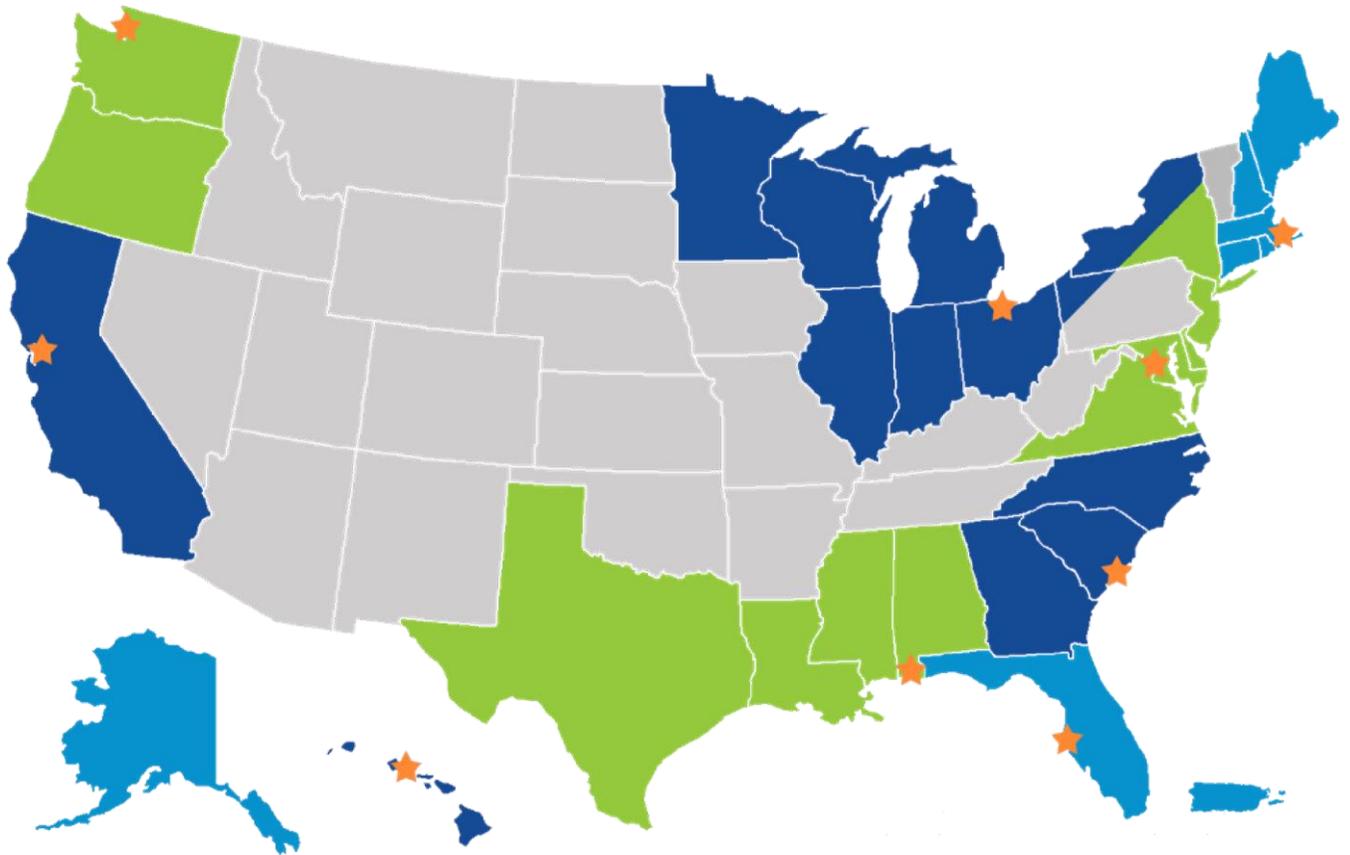
The marine debris **Monitoring and Assessment Project** was launched in 2012 to engage NOAA marine debris partners to volunteer in using standardized monitoring protocols to survey and record marine debris. This survey helped the NOAA marine debris program and its partners to better understand the amount and types of marine debris on shorelines.

**Emergency Response;** The NOAA marine debris program also responds to extreme weather events and provides expertise on marine debris. They also prepare weather events by facilitating the **creation of emergency response guides**. These guides outline the existing response structure at the local, state and federal levels to facilitate a coordinated, well managed and immediate response to waterway debris.



**Figure 12. Debris can threaten navigation, natural resources, and human safety Source; [Marinedebris.noaa.gov](http://Marinedebris.noaa.gov)**

**Regional Coordination;** Marine debris issues differ around the United States, hence the need for **regional coordination**. The program has staff located in 10 regions around the U.S., helping to provide regional expertise and coordinate with local partners on local marine debris issues. These coordinators also lead and facilitate the creation of regional marine debris action plans.



**Figure 13. Marine debris differ from one region to another.**

Source; [Marinedebris.noaa.gov](http://Marinedebris.noaa.gov)

## 6. International Collaborations.

The NOAA MDP collaborates with a number of international organizations on marine debris actions through the Global Partnership on Marine Litter, a group that promotes information sharing and cooperation across the global marine debris community. The MDP serves on the steering committee of the Global Partnership for Marine Litter (GPML.) The issue of marine debris is growing in profile and has been included in discussions at ministerial and leader summits for the G7 and the G20.

USG sees increasing capacity for waste management systems and innovation in waste management technologies as the key to best addressing this issue.

NOAA's Marine Debris Program is mostly focused domestically, but with passage of Save Our Seas Act in 2018, now have a role in engaging internationally to work with governments of nations that are the highest source countries for mismanaged plastic waste (China and SE Dept. is engaging through APEC, ASEAN and other regional forums to raise the visibility of this issue with government officials and decision makers.

USAID has a municipal solid waste program that has given out about \$3million in South and SE Asia for municipal solid waste systems, including the informal sector. This program is expanding in future years.

## **7. Summary Record of Issues Captured During Discussion Session.**

1. Currently, Ghana is facing a plastic menace without any elaborate plan in operation. However, the 10 percent environmental tax imposed on plastic producing entities have accrued close to 1 billion Ghana Cedi without a cedi being used for its intended purpose- waste management.
2. The National Plastic Management Policy developed last year by the Ministry of Environment, Science, Technology and Innovation with the collaborative efforts of sector agencies, is still in cabinet, pending approval.
3. Greater portion of the challenge is with managing used PET bottles. Strives have been made in the managing of flexible plastics.
4. Ghana is currently consuming close to 5,700 tons of PET bottles every month.
5. Proposals have been made to government on the recycling of PET bottles. The 10 percent tax now in the consolidated fund is meant exclusively for Plastic Recycling.

6. The law that establishes the 10 percent Environmental Tax requires the proceeds be used to support relevant plastic waste management initiatives but the authority to see to that has still not been formed.
7. There are state institutions mandated by law to manage the oceans, EPA only collaborates with these institutions. An example is the Natural Resources Unit of the EPA which works with players like the Natural Resources Commission, Forestry Commission and the Oceanographic department of Legon among others.
8. The main sources of plastic waste in Ghana is from land activities which eventually find their way into the sea by drainage systems and rivers, acting as pathways.
9. District assemblies are responsible for some aspect of environmental sanitation as EPA is mandated to develop some bye-laws to regulate such activities. Unfortunately, local management for environmental sanitation seem not be doing their work probably because of lack of funding and poor leadership.
10. In Ghana's constitution, article 41 case 6; it is everybody's duty to save and protect the environment. EPA develops pre-guidelines on how to manage waste; organizing workshops and training seminars.
11. VOLTIC and TOTAL Ghana have set up a project of establishing collection units at various points across the country to collect used bottles as a way of reducing the plastic waste mismanagement.
12. EPA only acts as a regulator as there are state institutions and agencies mandated to take charge of environmental challenges faced in the country. EPA only collaborates with these agencies.

## 8. Key Messages for Future Actions Made by Participants.

1. District and municipal assemblies should also be involved in collaborative efforts towards the design structure of identifying the sources of plastic waste and dealing with the menace.
2. EPA needs legal authority to engage other state institutions in making effective impacts.
3. Research should be made into looking into alternative uses of waste generation such as a source of energy.
4. The creation of media campaign on TV and Radio about the effects of plastic waste on the country is essentially important in educating and sensitizing citizens on the proper management of plastic waste and other waste generated.
5. Techniques to discourage the patronage of plastic bags should be established like the free give way of paper bags to customers and making them bear the cost for plastic bags.
6. The Media as the fourth estate of the nation should be part of the committee on National Plastic Management Policy development.
7. Community involvement such as beach clean-ups days should be encouraged among citizens to help boost efforts of government in fighting the plastic menace around our marine environment, more as a preventive pillar on plastic pollution mechanism.