



# SEA VIEWS

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## **Water, water, everywhere, and oceans of debris, too**

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*The proliferation of marine waste in the oceans was starkly brought to the world's attention during the search for MH370. This article highlights the issues and experiences from the United Nations Environment Programme's Global Initiative on Marine Litter and other initiatives before offering recommendations on tackling marine debris and litter more effectively.*

### **Introduction**

Over six weeks since the search for Malaysian Airlines Flight MH370 started and there are still no signs of the plane or its passengers. What the search has inadvertently exposed is the vast swathes of debris and trash floating in the search area: the oil slicks spotted in the South China Sea to the flotsams in the Indian Ocean are a disheartening reminder that the oceans have become a convenient dumping area for discarded fishing gears and other trash items.

Social media and several online pieces frequently highlight marine pollution as a gradual catastrophe affecting the environment and marine life. The analyses of the oil slicks in the South China Sea point to the discharge being most likely from ships, but not directly obvious is the deplorable state of the coastal and marine environment. For instance, it is not generally known that even very small spills would be adequate to create large sheens of oily layers across the ocean surface. Moreover, runoffs from terrestrial areas add to the problem when they get washed into the waterways with the rain.

The United Nations Environment Programme (UNEP) describes marine pollution as *persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment*. This generally consists of items that have either been made or used and deliberately discarded into the sea or rivers or even on beaches, and causes a wide spectrum of environmental, economic, safety, health and cultural impacts. Major land-based sources of debris and marine litter include wastes from dumpsites located on the coasts or river banks, rivers and floodwaters, industrial outfalls, storm water drains, untreated municipal sewerage, littering on beaches and coastal areas, tourism activities, fishing industry, to name a few. While major sea-based sources of marine litter include shipping and fishing activities, offshore mining and extraction, dumping at sea, discarded fishing gear, as well as natural disasters. The slow rate of degradation of most items such as plastics and the continuously growing quantity of litter and debris lead to a gradual increase in such sea and shore pollution.

Marine litter is often considered to be part of the broader problem of waste management and of increasing concern to public health and the environment around the globe. The International Coastal Cleanup (ICC) activity by Ocean Conservancy for instance provides a valuable information base to help catalogue and analyse the main sources and activities responsible for marine debris and litter pollution. Data released by the ICC in 2013 recorded about ten million pounds of trash consisting of all kinds of items collected in the 2012 cleanup programme by some 500,000 volunteers in more than 100 countries around the world. The same figures for 2011 stood at about nine million pounds. Items collected included plastic bags, bottles, beverage cans, food wrappers and containers, rope, fishing line and nets, cigarette butts, and many others; originating from both land and sea-based sources.

Although it can be argued that cleanups alone are not the solution to the litter problem, the ICC data nevertheless provides a snapshot of items trashing the seas and oceans so that necessary steps could be taken towards carrying out prevention efforts. Despite numerous international and national efforts however, indications are that in many areas the quantity of marine litter and debris is increasing with its attendant environmental and socio-economic impacts. Among the most common factors quoted for the increase in marine debris and litter include deficiencies in implementation and enforcement of regulations, relevant guidelines and standards, as well as the lack of awareness leading to the persistence and severity of such pollution.

### **Distribution of marine debris and litter**

Incidents of sea turtles mistaking plastic bags for jellyfish, seabirds choking on bottle caps, and marine life covered with oily slicks are highlighted often enough in the media. Data on the actual amount of litter and debris discharge into the coastal and marine environment are mainly estimates but in 1997, the United States Academy of Sciences placed it at about 6.4 million tonnes per year and about eight million items entering the oceans and seas every day. A 2009 report highlighted that the 7.4 million pounds of marine debris collected in 108 countries weighed over 4,000 tonnes and covered about 21,000 km of coastline and waterways. Almost 60 percent of the debris collected was attributed to shoreline and recreational activities. To illustrate further, clean up efforts in the Swedish west coasts produced over 73,000 m<sup>3</sup> of marine litter and debris on 300 kilometres of rocky beach from 1992-2002, with the average annual amount at between 6,000 to 8,000 m<sup>3</sup>. Figures for the North Sea area show that about 70 percent of the marine debris and litter that enters the sea ends up on the seabed, with half of the remaining amount being deposited on beaches and the rest floating on the water surface.

## **The case in Malaysia**

Marine litter and other debris not only impact the aesthetics of a beach and coastal area, it imposes economic repercussions. A report by the National Strategic Plan for Solid Waste Management placed the cost of waste management services at more than RM300 million in 2012. There are however no definite figures at the national level on the quantities of marine litter and debris on the coastal and marine areas. Following its study on assessing the management of coastal litter in Malaysia in 2010 MIMA recommended that the Clean Coast Index (CCI) be used to evaluate the cleanliness of the coastal areas in the country. The second phase of the study in 2011 focused on gathering data and information on the actual application of the CCI for cleanliness assessment of selected coastal areas.

Surveys were conducted on 10 beaches in 8 states namely Pantai Morib and Kelanang (Selangor), Pantai Desaru (Johor), Pantai Cenang (Langkawi), Pantai Balok (Pahang), Pantai Puteri (Malacca), Tanjung Tuan and Pantai Cermin (Port Dickson), Pantai Puteri (Sarawak), and Tanjung Tuan (Sabah). This study provided a baseline on the quantity and distribution of litter at these areas, besides establishing a baseline CCI value on the cleanliness of these beaches. The results show that Pantai Cenang in Langkawi was the cleanest with the lowest index at 1.18 while Pantai Desaru recorded the highest index at 7.08. The study elaborated that the cleanliness index for these areas were largely influenced by the cleaning efforts by the local concessionaires responsible in undertaking waste management in the particular areas.

## **Major challenges**

Marine debris and litter blight all seas and oceans of the world and are prevalent not only in densely populated regions but also in remote areas posing complex and multi-dimensional challenges with significant implications for the coastal and marine environment all over the world. The issue is rooted primarily in poor practices of solid waste management, rising populations and human activities, inadequate understanding by the public of the potential consequences of their actions, and the lack of effective implementation of legal and enforcement systems. The weakness in coordination of global and regional strategies, and deficiencies in implementation and enforcement of existing programmes, regulations, guidelines and standards at international, regional and national levels call for more comprehensive mitigating efforts.

The UNEP Global Initiative on Marine Litter for instance provides a platform for the management of the problem through the establishment of partnerships, cooperative arrangements as well as coordination of joint activities. It has been largely involved in organizing, implementing and promoting regional activities on marine litter through 13 Regional Seas programme established under the auspices of UNEP, which includes some 143 countries worldwide. The main partners in this initiative include the individual Regional Seas Conventions and Action Plans, government representatives, United Nations bodies, donor agencies and organisations, private sectors, and NGOs and involve instituting innovative economic incentives for discouraging litter and in the promotion of cleanup activities, establishment of reception facilities, as well as prevention and management of abandoned, lost or otherwise discarded fishing gears.

Data gathering and studies under the UNEP programme highlighted several issues and challenges associated with marine debris and litter management. These include limited information of the extent of the problem provided by participating members, lack of a common denominator for marine litter impacts among the different regions, and ineffective integration of management strategies to address

marine debris and litter into existing solid waste management efforts. While some countries in the Wider Caribbean and Northwest Pacific have specific national legislations addressing marine debris and litter, others treat it as part of their overall solid waste management strategies that are often inadequate in terms of implementation and enforcement. The need for continuous monitoring to collect information on regular basis for programme development and assessment of reduction strategies and management solutions was another point emphasised in the UNEP programme. One other issue often discussed is the gap in information available on the economic impacts of marine litter, hence the need for research to better address the issue in terms of policies, legislation and mitigation.

### **Way forward**

Marine debris and litter affect not only the coastal communities but also tourism, fisheries, aquaculture, and other related activities. The issue is largely multi-sectoral. Generally, specific activities related to marine debris and litter management are not included in broader solid waste management efforts that require a comprehensive and integrated approach encompassing cultural and socio-economic aspects of the problem. Based on past experiences, the issue can be effectively addressed through a global framework, further coordinated at the regional level and implemented at the national level through development and implementation of national action plans and local strategies which entail basic principles of preventive and mitigation efforts. National efforts should largely focus on incorporating development, implementation and enforcement of legislation for marine debris and litter management within the overall solid waste management strategies, enhancement of national institutional mechanisms, public and private partnerships, as well as awareness building, and greater stakeholders' engagements and coordination of efforts. There is also a need for effective monitoring programmes. More specifically, the study by MIMA points to the value of using the CCI on a continuous basis and on a more comprehensive scale, conducting national public awareness programmes, and the adoption of a socio-enviro-economic policy for turning waste into resources as the way forward.