

Title: Regulation and management of marine litter

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#### Abstract

Marine litter (or called marine debris) has long been on the political and public agenda. It is a significant pollution problem plaguing all the oceans and coastal areas of the world, concomitant with the increasing use of synthetic materials, industrialization and urbanization of coastal areas, deficient collection systems and inadequate disposal practices both at sea and on land. To tackle this problem, a variety of regulations and management measures at international, regional and national levels are already in place and they are representatively profiled in this paper.

Marine litter has been defined as any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment (UNEP, 2005). It is documented to have a wide spectrum of detrimental environmental, economic, safety, health, and aesthetic impacts. To minimize such impacts, there have been tremendous efforts made to manage marine litter at international, regional and national levels. A plethora of instruments pertaining to marine litter already exist and based on them a wide range of actions have been taken. The measures to address marine debris are either legal requirements or voluntary/incentive schemes, and constitute the current regulatory and management framework of marine litter. Based on the measures' functions, they can be divided into four general categories: (i) preventive (avoiding the generation of debris, or preventing debris from entering the marine environment), (ii) mitigating (reducing the impact of marine litter on the environment), (iii) curative (removing marine litter from the marine environment), and (iv) behavior-changing (initiating a behavioral change).

The study further identifies potential gaps in this framework, including: deficiencies in the legislation and lack of implementation and enforcement of regulations and management measures, insufficient participation of states in the UNEP initiatives, failure to control garbage discharge from small ships, and insufficient marine debris monitoring activities. To fill these gaps, recommendations are proposed for future improvement, which include establishment of a

comprehensive national marine debris program, enhancing participation and cooperation of states in international/regional initiatives, strengthening management measures on fishing vessels.

Like other environmental problems, marine litter can be prevented and controlled through an effective collaboration of education and outreach programs, strong regulations and policies, effective enforcement, and adequate support infrastructure. Based on this perspective, it is hoped that that the current regulatory and management framework, potential gaps identified and the recommendations proposed could shed light on the better management of marine debris in the future. It is hoped that through the efforts to tackle marine debris, a shared vision of a “free-litter marine environment” would be achieved among all parties involved in the future.