

**A review of the current status of marine litter and microplastics knowledge in the Western Indian Ocean region: amounts, sources, fate and resultant ecological and human health impacts on the coastal and marine environment**

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**Abstract**

The Western Indian Ocean (WIO) is a region where high biodiversity is increasingly being impacted by marine anthropogenic debris. Identification of litter types and local concentration around urban source areas indicate that most litter is from local, land-based sources, reaching the ocean via rain run-off or being directly deposited by beachgoers. Cleaning beaches close to urban source areas provides a temporary way to reduce leakage of plastic into the sea while more fundamental solutions are sought to reduce the generation of mis-managed plastic waste in the region. Land-based sources are dominant for areas close to urban centres, especially in continental areas, while offshore inputs dominate away from these sources. One major need relating to the mitigation of marine litter in the WIO region is the establishment of a regional monitoring programme, given the relevance of litter monitoring to help identify the major sources of litter, as well as new sources not previously identified, and provide information to assess the efficacy of mitigation measures. The following recommended actions were provided to curb the release of litter in the WIO region:

- Extend regional monitoring programme to all WIO countries with a coordinated and harmonised protocols and reporting units within WIO and among other regional programmes.
- Include understudied habitats (e.g., water column, seafloor) and strengthen research of understudied topics (e.g., ecological impacts and on human health)
- Reduce production and consumption of single-use plastics and promote the reusable/returnable alternatives
- Establish Extended Producer Responsibility (EPR)
- Impose tax on imported plastic products (especially in island states)
- Develop educative campaigns to manufacturers to support litter curbing measures and anti-littering campaigns
- Improve waste management and pickup services at the municipal level
- Implement and enforce stricter international regulations (to e.g., reduce litter released from land-based activities, and ensure adhesion of ships to MARPOL)
- Require waste audits on board ships upon departure and docking
- Adopt regional approach of coordinated rates at litter reception facilities on harbours

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