

Marine Bioprospecting for Sustainable Blue-bioeconomy

Remediation of marine pollutants for biorefinery innovations

Khoaele, KK; Mphahlele, IJ; Gbadeyan, OJ; Sithole, B; Chunilall, Viren

Abstract

The exponential growth of plastic production and consumption worldwide has been a growing concern for environmentalists. Mismanaged waste plastic significantly contributes to marine pollution, which can have severe environmental implications. To fully understand the environmental impact of plastics throughout their lifecycle, it is essential to identify their sources, pathways, and removal during remediation. Plastic waste harms marine species, threatening their survival and affecting the food chain. The ingestion of plastic waste is the primary way marine animals are affected. However, the consumption of waste plastic by “invader” species and the absorption of chemical additives from ingested plastics are lesser-known threats. This can help determine the adverse effects of waste plastic on overall ecotoxicity. Recycling waste plastic to develop composites with naturally sourced fiber as reinforcement is another measure for reducing resources and remediating the environment. This practice has increased the demand for waste plastic biocomposite for various applications in various industries, helping reduce waste and lessen environmental outcomes. This chapter focuses on integrating marine waste plastic into value-added products using biorefinery innovation.