

Policy Brief

Rethinking Coastal Resource Management: Tackling land-based Plastic Waste during the planning stage

Introduction

Plastic waste, known as “white pollution”, has a transboundary issue affecting coastal and marine ecosystems. According to statistics, approximately 275 million metric tonnes of plastic waste are produced annually by 192 coastal countries, from which, an estimated 4.8 to 12.7 million metric tonnes being dumped into the ocean worldwide through inland waterways. This has resulted in numerous threats in ecological aspect including habitat damage and entrapment for marine wildlife (Jambeck et al., 2015). “An estimated 45% of marine mammals and 21% of seabirds either ingest or are entrapped by plastic debris” (Cook et al., 2020). Plastic debris affects not only the individuals’ health found ingesting plastics but also on their predators in the food webs through biomagnification. By this mechanism, humans, as consumers in trophic pyramid, is no doubt impacted by contaminated particles involving the respiratory system, lymphatic system, and circulatory system (Wright et al., 2017; Salhofer et al., 2021). Another effect of plastics is on the socio-economic aspects such as fishing, aquaculture, and tourism, with an estimation of \$279 million per year costs for repairing fishing vessels and engine shutdown, cleaning propeller or ports (Aretoulaki et al., 2021).

Vietnam, with its extensive coastline, discharges about 1.8 million tonnes of plastic waste into the national sea annually (Thanh Hai et al., 2019), making it responsible for 6% of the global amount entering the ocean annually, and ranking it 4th in the world in term of marine litter contributors. The Coastal Clean Index (CCI) reveals

that over 70% of Vietnam's shoreline is polluted, signifying severe contamination by plastic waste (Chu et al., 2020). Coastal resources are considered as natural resources and historical assets dependent on the coasts, providing several ecosystem services such as economic, aesthetic, scientific and educational aspects to human populations (Sorensen et al., 1990). However, due to inadequate management and synchronization in techniques, human resource capacity, and waste treatment systems, the coast is subject to a wide range of stresses, resulting in the loss of biodiversity, ecological functioning, and services along the shoreline (Turner et al., 1999).

There are only few studies and insufficient data regarding the source of plastic in Vietnam; however, several research suggested that most marine litter comes from land-based sources as a result of unrobust policies of plastic waste management and unsustainable consumer practices (Chau et al., 2020). Additionally, considerations for plastic waste are not specified in marine environment protection and pollution control strategies. Therefore, it is imperative to supplement and focus on the plastic waste element in national plans, particularly in the planning of natural coastal resources, which directly impacts the effectiveness of coastal area utilization and management.

Vietnam is in the process of developing and appraising the master plan for the sustainable use of natural coastal resources for the period 2021–2030, with a vision extending to 2045. The Vietnam Agency of Seas and Islands (VASI) plays a leading role in this initiative. This presents a golden opportunity to emphasize land-based plastic waste management in this master plan to ensure its sustainable and effective utilization.



Our approach and contributions

GIZ has been continuously supporting marine and coastal environments, collaborating closely with the government in plastic waste management. One such initiative is the German-ASEAN regional project “Reduce, Reuse, Recycle to protect the marine environment and coral reefs (3RproMar)”. This project, part of the multilateral cooperation between Germany and ASEAN, is partnering with the Ministry of Natural Resources and Environment (MONRE) of Vietnam in developing national measures as well as translating those into local strategic implementation. Its objectives include:

- 1) Enhancing regional cooperation and knowledge sharing among ASEAN member countries in addressing marine plastic pollution, through the aligning of the Regional Action Plan for Combating Marine Debris with the national action plans, and supporting regional policies, platforms in the negotiations of the Global Treaty towards tackling a critical environmental challenge against plastic waste.
- 2) Developing national measures to reduce waste leakage in Viet Nam and translating them into local strategic implementation.
- 3) Improving implementation conditions for private sector engagement across the value chain to reduce waste leakage into the sea.
- 4) Piloting practical solutions along the plastics value chain from sustainable consumption to enhanced waste collection and recycling in the Mekong Delta region. These local-level projects aim to establish best practices in the fields of policy development and implementation.

The 3RproMar project has made a comprehensive contribution to various aspects, particularly:

Support for Regional Knowledge Hub: The Vietnam Agency of Seas and Islands (VASI) submitted several key documents, such as the National Action Plan for Management of Marine Plastic Litter within the framework of the 3RproMar Knowledge Partnership and the forthcoming ASEAN Environment Knowledge Hub (<https://environment.asean.org/>). This contributes to improving knowledge exchange and coordination throughout ASEAN.

Support for baseline study and technical reports: Throughout the project implementation, GIZ has collaborated with technical experts and local communities to carry out baseline studies and technical reports. These documents serve as national data for decision-making and contribute to the preparation of the upcoming Global Treaty on Marine Pollution. A review report of plastic waste consideration in current legal/policy documents of Vietnam was published, indicating key gaps along with proposing recommendations for institutional and policy synchronization with the implementation of marine plastic waste concerns. Furthermore, a baseline study conducted by GIZ’s consultants associated with marine debris pollution, provided technical inputs to support Vietnam Government in preparation for Global Treaty development as well as the completion of the master plan on coastal resource-use.

Support for networking of regional and national stakeholders: In the efforts to dismantle the barriers between plastic waste-related stakeholders, National Stakeholder Fora are held yearly to

promote public and private cooperation and exchange best practices on plastic recycling and treatment technologies.

Support for coastal and marine spatial planning: In the focus of policy advice for coastal and marine spatial planning, 3RproMar has contributed perspectives, accordingly, the plan should consider:

- Incorporating international and regional treaties and agreements concerning the sea that are ratified by Vietnam. Some examples are the provisions of the United Nations Convention on the Law of the Sea 1982, the Commitment to implement the Paris Agreement on reducing greenhouse gas emissions, and the 1992 Convention on Biological Diversity, etc. with which regulations on Vietnam's maritime activities need to be consistent with.
- Specify sources of waste leakage and name concrete solutions regarding activities along the coast and along river basins in accordance with national goals and international commitments of the country (e.g. Net-Zero, Circular Economy).
- Emphasize plastic waste due to its characteristics of high durability, difficulty to decompose and long-term effects.
- Focus on the ideas of reducing the production and consumption of plastic products and replacing necessary plastic products with recycled or reusable alternatives. Also, the framework conditions for the recycling markets in Vietnam need to become more favorable incentivizing waste segregation at source, recycling businesses and the use of recycled products.
- Provide solutions to the issue of conflicts of socio-economic development activities and national policies. For example, the petrochemical industry encourages the production and use of plastic products while the environmental policies advocate for the reduction of production and consumption of non-essential products. In order to harmonize this confliction, retrieving back plastic wastes for conversion to value added petrochemical-based products is a direction should be strengthened.

Recommendations: Priorities of action to promote coastal resource management

Improve political framework and regulations:

- Design a roadmap and framework that comprehensively considers all components including social, cultural, economic, and environmental aspects as integrated coastal management initiatives. Achieving sustainability for coastal communities requires improving interaction between scientists, stakeholders, and policymakers (Burbridge, 1997). Engagement of local actors, including private and informal sectors in the planning development and planning consultation process makes the planning more inclusive and comprehensive, and feasible during the implementation. Best practice from the Philippines have shown that the country has gained insights from a planning approach *focusing on both national and local work simultaneously* and *utilizing multiple education and communication strategies* to empower the local

government and its partners (Catherine et al., 2000). This strategy is known as Community-Based Coastal Resource Management (CB-CRM), which is oriented to empower and share responsibilities to communities with different cultural and condition characteristics, believing to be a potential initiative for management effectiveness (Ferrer et al., 1997).

- Strengthen Extended Producer Responsibility (EPR) in plastic industries in coastal and riverine areas, in parallel to developing mechanism and policies to encourage recycling and green industries.

Improve interdisciplinary collaboration and plastic waste-related database:

- Establish a network of experts and database sharing, including monitoring data of plastic waste carried by the waterways, especially from the coastal resource-used industries and agricultures. Studies with a multidisciplinary approach should be prioritized and facilitated for more comprehensive insights and solutions (e.g. ethnobiology, environmental economics). Furthermore, the interaction of researchers and community plays an important role, considered as participatory research. This is a process that empowers the community to re-research its socio-cultural and identify its demands. By this methodology, new local knowledge could be generated and utilized to formulate strategy and solutions (Ferrer et al., 1997). Then, international and regional cooperation should be promoted in experience exchange and technology transfer.

Improve systematic plastic waste management:

- Improve and develop plastic recycling and communication activities in Vietnam to raise public awareness and encourage changes in consumption habits and proper disposal of plastic waste.

Require segregation at source to enable sustainable waste management and the recycling of resources, including plastic waste. The mainstreaming of plastic waste in coastal resource-use planning, as shown in figure 1. Based on the circular structure of the sustainable economy diagram from a study of Kosseva, 2011 that is compatible with 3Rs orientation, the cycle was modified and focused on 3Rs in coastal resource management in which encouragement of waste prevention by using eco-friendly materials and implementing circular economy must be strengthened. Moreover, it is necessary to consider plastic waste from tourism. The typical case study for unplanned tourism development is Pattaya, Thailand as the tourists and vendors generate huge amounts of waste. Therefore, environmental impact assessment (EIA) was developed as a guideline for tourism development (e.g. a resort with less than 40 rooms) and wastewater treatment plants were settled to reduce water pollution (Wong, 1998).

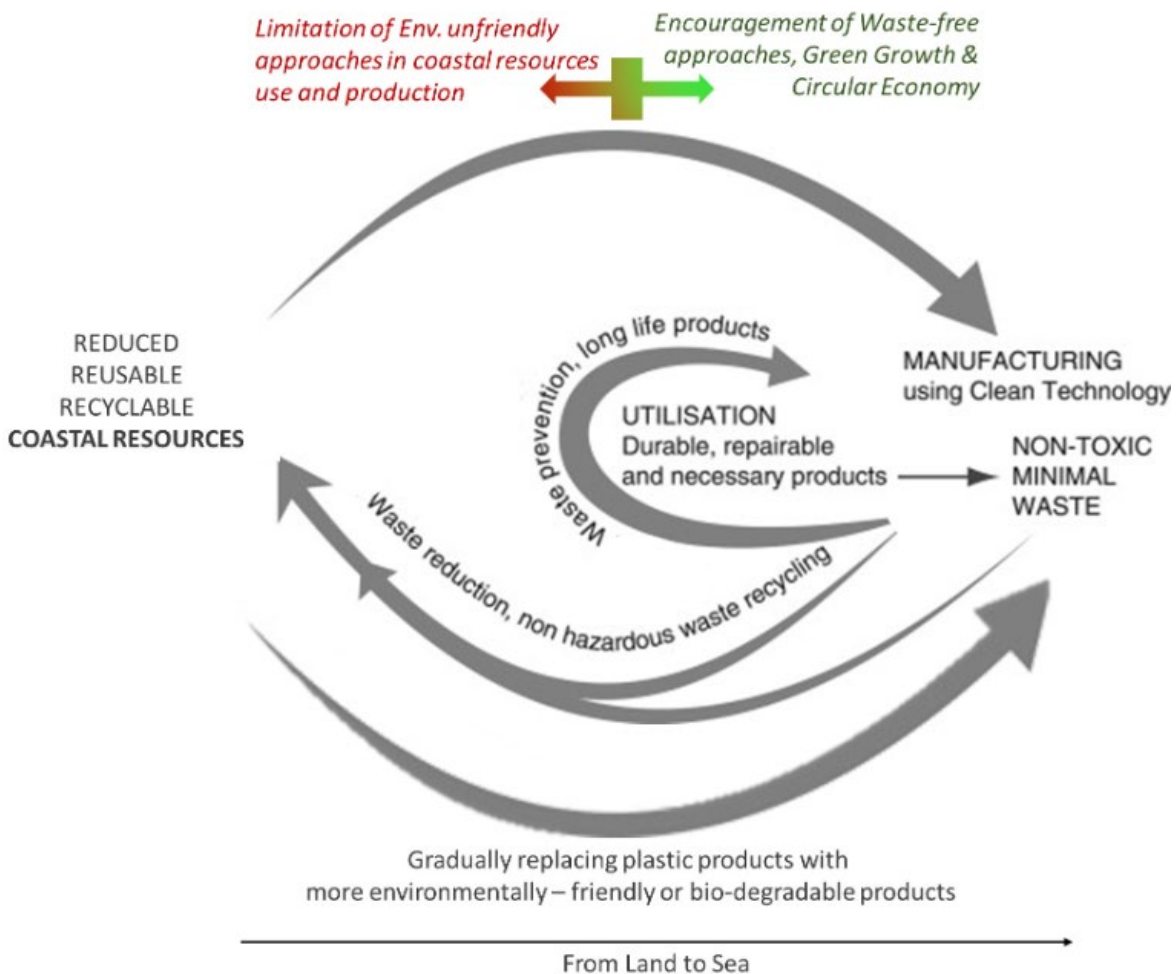


Figure 1. Mainstreaming Reduction – Reuse – Recycle of plastic waste into coastal resource use planning

Conclusion

Drawing lessons from other countries, particularly ASEAN regions with similar geographical, cultural, and socio-economic conditions, in considering land-based plastic sources into planning and strategy, aids Vietnam's policymakers in leapfrogging and effectively apply strategies in Vietnam context. Engaging local sectors, stakeholders and experts in the early planning stage ensures a comprehensive and objective perspective. Planning for the use of coastal resources, developed using a participatory approach with a green footprint, is believed to mirror the needs, and implementing capacity of local actors, contributing to green growth and sustainable development aligned with the national goal of net zero.

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