

Source-to-Sea Framework for Marine Litter Prevention

The Framework highlights the central role of the river basin in preventing marine litter. Building a common understanding of both the sources and impacts of plastic pollution incentivizes cooperation between upstream and downstream actors, as well as coordination across sectors. Engaging a broader set of stakeholders and prioritizing investments that drive changes in behaviour from individual to global levels will help break the cycle of inadequate resources at the local level and prevent plastics from reaching the oceans.

Due to its practicality, plastic has rapidly become one of the most used materials for the manufacturing and packaging of goods. Inadequate waste management, lack of awareness, indifferent behaviour in the absence of adequate disposal systems – resulting in plastic being dumped or abandoned wherever it is convenient – contribute to the release of plastics into the environment. Where plastic waste is not properly managed on land, much of it enters waterways and is carried to the oceans, where it persists over long periods of time. The impacts of plastic litter are wide ranging, affecting both freshwater and marine environments and can be felt not only locally but regionally and even on a global scale.

Current approaches to reducing marine litter address an individual symptom of the problem, such as coastline cleanups, making them poorly suited for addressing root causes. Plastic waste tends to be managed by local authorities and communities in isolation, which can result in outcomes that may not be optimal nor take into consideration the entire source-to-sea system. Policies, procedures, regulations, investments and management practices are segmented and lack coherence.

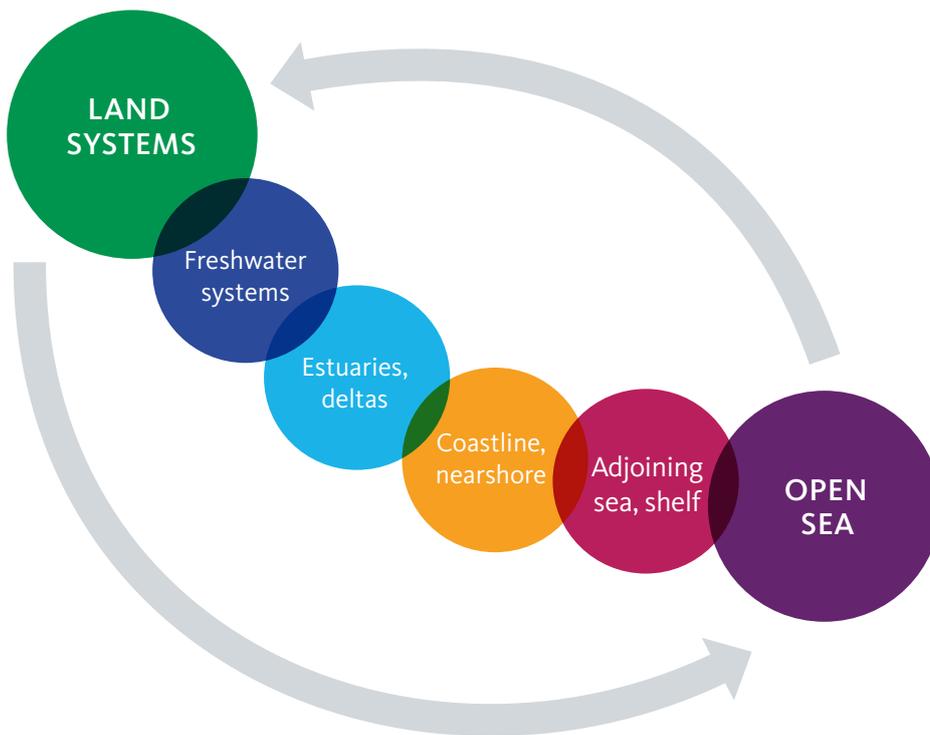
The Source-to-Sea Framework for Marine Litter Prevention combats this tendency by bringing together all actors within the source-to-sea system and building a common understanding of the issue of marine litter. Widening the perspective to include upstream and downstream linkages across the source-

to-sea system and promoting coordination between public authorities responsible for management of different sectors, e.g., land, water, marine management, etc., supports taking action at the right scale and location within the source-to-sea system.

Identifying pollution sources and pathways throughout the source-to-sea system and linking the sources of the problem with the areas and people being impacted expands the actions to be taken and the responsible parties beyond local waste managers. The Source-to-Sea Framework for Marine Litter Prevention is useful in determining measures addressing governance, management, practices and behaviour that speed progress toward reducing the quantities of land-based plastic entering the oceans.

By understanding the sources and types of plastic pollution, engaging stakeholders, building commitment and driving towards a circular economy, the Source-to-Sea Framework for Marine Litter Prevention can be used to design interventions and set priorities that reach beyond traditional boundaries. Considering social, economic and environmental impacts from source to sea builds a clear case for making deeper systemic changes. This triggers the use of financial incentives, in addition to regulations, to facilitate the behaviour changes needed to reduce plastic pollution. The Framework can guide both public and private sector investments that will elicit the changes needed to prevent marine litter.

The source-to-sea system



Implementing the Source-to-Sea Framework for Marine Litter Prevention

Understand the sources, types, behaviour and impacts of plastic pollution in riverine and marine environments

Packaging, products after their use, additives and microplastics are released into the environment by consumers, commercial activities, industry and agriculture. Plastic leakage from land-based sources occurs along four main paths: inadequate waste management, direct littering or dumping of waste, illegally discharged waste and through sewage or wastewater treatment systems. Different sources will require different measures and involve different actors and governance structures. Understanding the sources and pathways early on is essential for a successful application of the Framework.

Engage stakeholders who are impacted by, contribute to and provide solutions for plastic leakage

The growing attention on plastics in oceans is directing focus to the inadequacies of waste management in many countries. Taking a source-to-sea approach to preventing marine litter, which fundamentally recognizes the upstream and downstream linkages across the source-to-sea continuum, can reveal the role of actors beyond local waste and wastewater managers. Engaging stakeholders from local to global levels in addressing the problem of plastic leakage into rivers and oceans defines a 'solution space' that includes a broader set of actors who can contribute solutions, build political will and supply finance.

Analyze failures in governance, finance, management and operations

The problem of plastics in the oceans is evidence that current governance systems fall short in enabling sound management of plastic production, consumption/use, collection and resource recovery. The failure of governance to provide the

conditions under which plastic waste is properly managed arises from both the lack of an appropriate legal and regulatory framework and inadequate enforcement. Source-to-sea management increases collaboration and coherence across the source-to-sea system by establishing governance, operations, behaviours and finance in full recognition of the physical, social and economic connections from source to sea. A governance system that supports actions to prevent marine litter at the individual, local, national and global levels will lead to river basins and marine environments with no plastic leakage.

Build commitment towards preventing plastic pollution

By elaborating the links between the governance, finance, infrastructure, capacity, and other enabling conditions and the behaviours and practices that need to change in order to prevent plastic leakage, stakeholders come to a shared view of the needs and priorities within a river basin or across several river basins. Drivers at national, regional and global levels that build political will and support local change must be identified. Constructive communication strengthens coordination between sectors, regions and nations opening up new opportunities to address financial limitations. For example, regional coordination may produce economies of scale that improve the cost-benefit ratio for proper waste and wastewater management.

Take action at individual to global levels

The assessment of social, economic and ecological damages and their causes guide the selection of the most effective solutions. While the topic of plastic polluting the oceans has created a significant driving force towards improving waste management services, the underlying barriers are still difficult to overcome. Source-to-sea management bridges the local need

for better management systems and changes in behaviour and the global drivers and support to combat plastic pollution. Depending on priorities and the selected interventions, different actors have to be involved and engaged with to work collaboratively on the required solutions.

Monitor progress, learn by doing and adapt

The aim of a source-to-sea monitoring system is to assess progress in terms of the improvement in waste and wastewater management, provide feedback on the effectiveness of the interventions and measure advances toward the prevention of plastic leakage into river basins and the oceans. It is important to build a strong and preferably participatory baseline description that is reasonably acceptable to all stakeholders. Process, stress reduction, environmental status and impact indicators can be monitored to assess progress as well as to provide feedback on the original assumptions of the linkages between enabling conditions and long-term impacts. Continuous monitoring forms the basis for joint learning and continuous improvement toward reducing plastic pollution and its impacts.

Support transformation to a circular economy

The Source-to-Sea Framework for Marine Litter Prevention focusses on the transformation needed to gain control of plastic already in the river basin once it becomes waste. This

approach interlinks directly with measures that keep plastics from becoming waste in the first place, i.e., developing a circular economy. Transforming consumption and production patterns towards a circular economy will reduce the amount of plastic waste that could enter riverine and marine environments.

Understanding the economic, social and environmental impacts of plastic pollution across the river basin and in the ocean, amplifies the benefits of implementing circular economy approaches. Linking these together – source-to-sea management and circular economy – presents the greatest opportunity to prevent marine litter.

Apply the source-to-sea framework to key challenges

Plastic in the oceans has catalyzed global attention to the problem of poor solid waste management and the uncontrolled consumption of plastic goods. It is important to keep in mind that this is just one of many issues that are degrading riverine and marine environments and diminishing those social and economic opportunities which depend upon healthy ecosystems. It would be prudent to expand the concern to include other issues. The Framework we offer here can be adapted to other alterations to the source-to-sea system and investment in building the capacity for source-to-sea management will spill over benefits to these issues. Using this holistic approach to prevent plastic pollution will begin building a foundation for improved social, environmental and economic outcomes from source to sea.



Recommendations

- Stopping plastic waste before it enters waterways and the ocean is the most cost effective. The immediate need is to direct resources to radically improving the capability of local waste and wastewater managers to gain control of, reduce and capture waste plastics.
- Global concern about plastics in the oceans should be focused where funding, capacity and infrastructure are insufficient to tackle the task of marine litter prevention. Taking a source-to-sea view of the problem of land-based sources of plastic pollution will funnel resources where they are most needed.
- Invest in developing methods to characterize the types, sources and behaviours of plastics in riverine and marine environments in order to drive focus toward behavioural change.
- A better understanding of the impacts of plastic pollution as it travels through river basins and out to sea is urgently needed in order to identify who (people and ecosystems) is being affected in what ways.
- As the impacts of plastic pollution and their ramifications are better understood, the impetus for stakeholders from source to sea to engage and invest in changes will evolve. Assessing the impacts of plastic pollution from source to sea will strengthen the business case for the transition to a circular economy for plastic.
- The Source-to-Sea Framework for Marine Litter Prevention is a holistic management approach that can be integrated with existing approaches such as Integrated Water Resources Management (IWRM), Coastal Zone Management (CZM) and Marine Spatial Planning (MSP) and can link these management approaches together.
- All investment in building the capacity for source-to-sea management will have spill over benefits to other source-to-sea issues. Using this holistic approach to preventing plastic pollution will begin building a foundation for improved social, environmental and economic outcomes from source to sea.
- The solution for preventing plastic pollution lies in both source-to-sea management and circular economy working together. Efforts on both fronts need to be supported.

About this brief

This policy brief has been authored by Ruth Mathews, Senior Manager, SIWI and draws extensively upon *Mathews, R. E. & J. Stretz (2019). Source-to-sea Framework for Marine Litter Prevention: Preventing Plastic Leakage from River Basins*. Funding has been provided by Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (BMZ) and United Nations Development Programme (UNDP) through the UNDP-SIWI Water Governance Facility.

The Framework builds on the methodology established in *Implementing the source-to-sea approach: A guide for practitioners* published by the Action Platform for Source-to-Sea Management (S2S Platform). Since 2014, the S2S Platform has been hosted by SIWI. For more information about source-to-sea publications and the S2S Platform please visit www.siwi.org/source-to-sea.



Empowered lives.
Resilient nations.

BMZ



Federal Ministry
for Economic Cooperation
and Development

