PROMISE
PREVENTION OF MARINE LITTER IN THE LAKSHADWEEP SEA

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Regional Policy Brief on

(Input Paper)

Marine Litter Prevention in Lakshadweep Sea


India


Maldives


Sri Lanka

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1. Background

The Lakshadweep Sea is a part of the Indian Ocean between India, the Maldives and Sri Lanka. The area comprises about 786,000 km² and is named after the Lakshadweep islands which are a group of 36 small islands (belonging to India), 220-440 km away from the coast of the Indian state of Kerala. The three countries all share maritime borders with each other. While Sri Lankas state territory is dominated by one main island with a coastline of about 1620 km, the Maldives consist of 1200 islands, of which only 189 are inhabited.[1] On the Indian mainland, the southern states of Kerala and Tamil Nadu share a coastline with the Lakshadweep Sea.

All three of these countries show significant economic activity in the coastal areas, moreover the tourism sector is of great importance for the regions. In Sri Lanka for example, 65% of the industries are located along the coastline and 80% of the island's tourism depends on the accommodation by the sea[2]. At the same time, however, all the countries share similar problems when it comes to the consumption and the disposal of plastics, as well as its leakage into the environment. Tourism, which has increased along the coastlines over the decades, is a major contributor to the pollution, but will also suffer from its consequences. The whole region and its ecosystems are under increasing pressure from marine plastic pollution.[3]

India is known as a focal point for marine litter and is among the leading contributors globally. Out of the ten rivers responsible for transporting 90% of the total plastic waste into the ocean, three rivers (Indus, Ganga, Brahmaputra) flow through India, with the Indus River carrying the second largest quantity worldwide.[4] The situation in Sri Lanka is similar, insufficient waste management causes packaging materials to end up as marine litter. Alongside consumer products and followed by waste from fishing activities, packaging materials are a main source for marine litter. In the Maldives, waste production has risen by 155% over the past decade, while the population of the atolls has increased by 57.6%. Open burning and the disposal of wet waste into the ocean are the most prevalent methods of waste disposal.[5] The island of Thilafushi has evolved into a dedicated landfill island for the country.

[1] National Bureau of Statistics, "Statistical Pocketbook of Maldives" (Male, 2020).

[2] Johanna Doerpinghaus et al., "Policy Brief (Input Paper): Prevention of Marine Litter in Sri Lanka" (2021).

[3] Johanna Doerpinghaus et al., "Policy Brief (Input Paper): Prevention of Marine Litter in India" (2021).

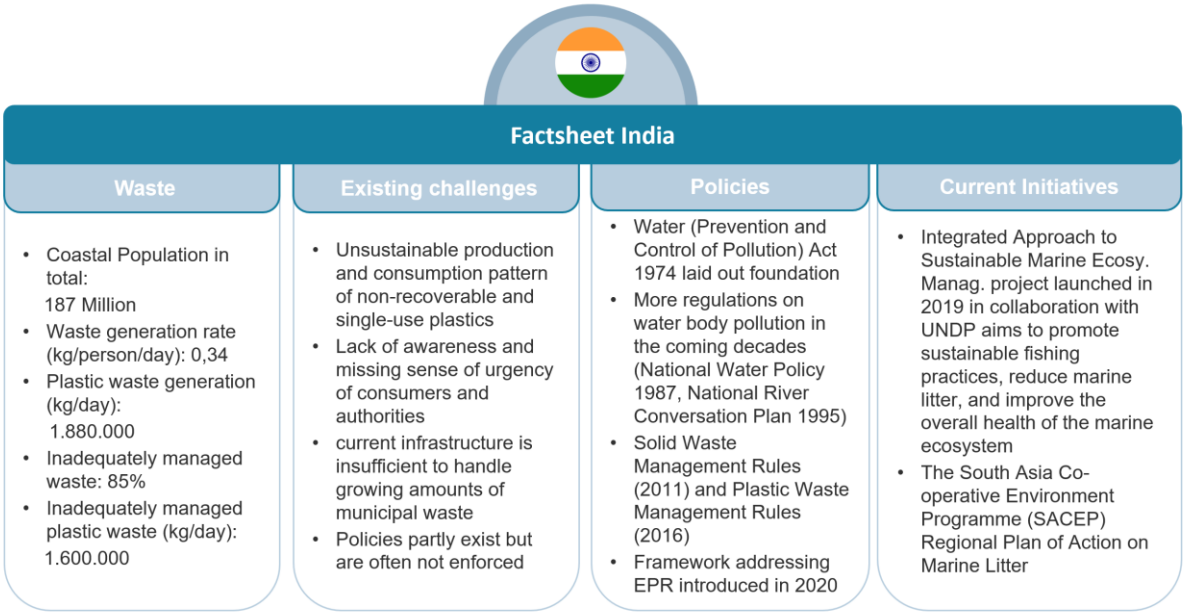
[4] Laurent C. M. Lebreton et al., «River plastic emissions to the world's oceans», *Nature communications* 8 (2017), doi:10.1038/ncomms15611.

[5] Doerpinghaus et al., "Policy Brief (Input Paper): Prevention of Marine Litter in India"

Marine Litter and the resulting microplastic pollution put the ecosystems of the Lakshadweep Sea and its users at a great risk. First of all, large-scale plastic production and incineration or even landfilling has a high carbon footprint. Marine plastic has negative effects on biodiversity through entanglement and ingestion by animals. Humans can get exposed to containing chemicals through the food chain. Furthermore, plastic waste will reduce the overall fish supply for the industry and pollutes beaches, atolls and reefs making them far more unattractive for tourists, causing economic losses in all three countries.

In Sri Lanka, an integrated waste management strategy is absent, and despite existing legislation, there is no clear mechanism to manage marine debris along seashores. An Extended Producer Responsibility (EPR) Scheme is still under development. In the Maldives, the Ministry of Environment, Climate Change and Technology has formulated a singles-use plastic phase-out plan between 2020-2023, with the aim to tackle marine plastic pollution, also a new waste regulation bill with principles to introduce EPR for effective waste management was drafted. In India, there is also a number of policies already in place that try to address the problem. Twenty-six states have already banned single use plastics. In 2022, the government implemented mandatory Extended Producer Responsibility (EPR) on plastic packaging.[6]

The three factsheets below contain the most relevant information for each of the three countries condensed into a short overview, summarizing key facts regarding waste generation, existing challenges, environmental policies and current ongoing initiatives.



[6] «Indian EPR - What do we know so far?». Jianhong Hu, https://www.loraxcompliance.com/blog/env/2022/04/14/Indian_EPR_-_What_do_we_know_so_far.html.

Factsheet Sri Lanka

Waste	Existing challenges	Policies	Current Initiatives
• Coastal Population in total: 187 Million • Waste generation rate (kg/person/day): 0,34 • Plastic waste generation (kg/day): 1.880.000 • Inadequately managed waste: 85% • Inadequately managed plastic waste (kg/day): 1.600.000	• Increasing population, urbanisation and industrial activities lead to more waste • Current recycling infrastructure is insufficient to handle growing amounts of municipal (plastic) waste • Lack of awareness and measures also in tourism and fishery industry	• Marine Pollution Prevention Act amended 2008 • National Waste Management Policy in 2019 • National Policy on Sustainable Consumption and Production 2019	• since 2018: Ceylon Chamber of Commerce and the Ministry of Mahaweli Development and Environment worked with the Municipal Waste Recycling Program working on Extended Producer Responsibility • Plastic Free Rivers and Seas for South Asia funded by World Bank and implemented by SACEP

Factsheet Maldives

Waste	Existing challenges	Policies	Current Initiatives
• Coastal Population in total: 500.000 • Waste generation rate (kg/person/day): 2,5 • Plastic waste generation (kg/day): 125.000 • Inadequately managed waste: 66% • Inadequately managed plastic waste (kg/day): 83,7	• Tourism and fishery represent 45% of GDP, both are polluting industries • Waste production has skyrocketed in recent decades • Reefs and lagoons increasingly polluted, endangering tourism • Open burning most common method of waste disposal	• Environment Protection and Preservation Act (1993) • Regulation on the Protection and Conservation of the Environment in the Tourism Industry (2006) • National Solid Waste Management Plan 2015 • Plan for EPR is drafted • National Single-use Plastic phaseout plan 2020-2023	• USAID 5 Year Plastics Reduction Project in Sri Lanka and Maldives 2022 • Commonwealth Clean Ocean Alliance • International donors like World Bank, Asia Development Bank and UNDP are active • Partnerships between government, Blue Prosperity Coalition and Parley for the Oceans

2. Regional Initiatives

This section provides an overview of regional policies and initiatives for marine litter prevention in the Lakshadweep Sea, identifies the key stakeholders and assesses the current policy gaps. In the context of marine litter prevention in the Lakshadweep Sea regional initiatives between India, Maldives, and Sri Lanka, play a critical role in addressing the shared challenge and promoting sustainable development in

the region. Through collaborative efforts, effective strategies to prevent marine litter and protect the marine ecosystem, can be developed and subsequently implemented. These initiatives typically involve sharing knowledge, resources, and expertise to develop and implement strategies that benefit the region as a whole. Regional initiatives can focus on a wide range of issues, including economic development, environmental protection, social welfare, and political stability.

2.1 Regional Policies

This sub-chapter provides a brief look at any regional policies, including any governmental tri-party, bi-party agreements or international regulations concerning ocean waste management in the context of marine litter in the Lakshadweep Sea. The analysis of relevant policies and regulations will provide further insights into the existing framework for waste management and contributes to a comprehensive understanding of the policies influencing marine litter management in the Lakshadweep region. Furthermore, any sustainability related policies are also looked at, if they are relevant.

Signed in 2018 and currently being implemented, the Indian Ocean Memorandum of Understanding (IOMOU) on Port State Measures to Combat Illegal, Unreported and Unregulated Fishing is a regional agreement between the Indian Ocean rim countries. The agreement aims to prevent, deter and eliminate illegal, unreported and unregulated fishing, including the discarding of waste, in the Indian Ocean. The agreement covers the Lakshadweep Sea as well.

There is also the Trilateral Agreement on Maritime Cooperation between India, Maldives, and Sri Lanka, which was signed in 2013. The trilateral agreement includes provisions related to the prevention of pollution from ships, including marine litter. The agreement covers the Lakshadweep Sea and aims to strengthen cooperation among the three countries to address environmental issues in the region. Under the agreement, the three countries have committed to implementing the International Maritime Organization's (IMO) MARPOL convention, which includes regulations to prevent marine pollution from ships, including marine litter. The agreement also calls for the exchange of information and best practices among the countries and the development of joint programs and initiatives to address environmental challenges in the region.

In addition, all three countries are signatories to the Convention on Biological Diversity (CBD), which includes provisions related to the conservation and sustainable use of marine biodiversity, including measures to prevent and reduce marine litter. The CBD was adopted in 1992 and has been ratified by 196 countries, including India, Maldives, and Sri Lanka.

On the international level, there are several agreements and conventions addressing marine litter and waste management. For example, the United Nations Environment Programme (UNEP) and the International Maritime Organization (IMO) have launched initiatives to combat marine pollution and plastic waste, including the Global Partnership on Marine Litter and the London Convention and Protocol on Marine Pollution. These agreements encourage cooperation among nations to prevent and reduce marine litter and promote sustainable waste management practices.

Overall the analysis reveals a distinct lack of focussed regional policies, that specifically address the issue of marine litter in the Lakshadweep Sea. There are no legal instruments in place dedicated to the management of marine litter between the different countries. Therefore, it is a very urgent requirement

to prepare a regional level plan, to implement international conventions, agreements, laws, regulations and treaties.[7]

2.2 Other regional initiatives (projects, programmes, platforms, etc)

This sub-chapter provides a brief look at any regional tri-party, bilateral or international initiatives in related to marine litter or waste management, which are currently being implemented or have been conducted in the past.

The South Asia Co-operative Environment Programme (SACEP) is an inter-governmental organization, established in 1982 by the governments of South Asia to promote and support protection, management and enhancement of the environment in the region. SACEP member countries are Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. Amongst other activities the SACEP developed the Regional Plan of Action on Marine Litter which covers the South Asian Seas region, including the Lakshadweep Sea, and includes measures to address marine litter. India, Maldives, and Sri Lanka are all members of SACEP and have committed to implementing the plan. Furthermore, the World Bank, Parley for the Oceans, and the SACEP have formed a unique partnership to help the region curb its marine plastic pollution and ramp up eco-innovation to reinvent plastic use and production. They are also implementing the Plastic Free Rivers and Seas for South Asia project, which will coordinate action and facilitate South Asia's transition to a circular plastic economy by encouraging investments and greater collaboration between the public and private sectors and across countries.[8]

India, Maldives, and Sri Lanka share similar initiatives by implementing national policies such as India's Ban on Single Use Plastic: Step towards Clean India - Green India[9], the Maldives' Single-Use Plastic Phase-Out Plan[10], and Sri Lanka's National Action Plan on Plastic Waste Management[11]. Each country emphasizes the importance of Extended Producer Responsibility (EPR), ensuring that manufacturers are responsible for the entire lifecycle of their products, encouraging recycling, and proper waste disposal. Key components of all three strategies are public awareness campaigns and educational initiatives, which seek to alter consumer behaviour and promote involvement in waste management initiatives.

The SACEP also formulated the Regional Marine and Coastal Biodiversity Strategy (MCBS) for the South Asian Seas Region. The aim of the MCBS is to address the issues threatening marine biodiversity through strengthening implementation of and coherence of actions under National Biodiversity Strategies and Action Plans (NBSAP) for 2011-2030 period. Furthermore, SACEP also hosts inter-governmental Meeting of Ministers.

The Bay of Bengal Large Marine Ecosystem (BOBLME) project was a regional initiative aimed at promoting the sustainable management of the Bay of Bengal's marine ecosystem. The Lakshadweep Sea fell within the BOBLME's purview, and the project includes activities aimed at reducing marine litter in the region. Maldives, India, Sri Lanka, Bangladesh, Myanmar, Thailand, Indonesia and Malaysia, had declared their willingness to work together through the BOBLME Project and laid the foundations for a coordinated programme of action designed to improve the lives of the coastal populations through improved regional management of the Bay of Bengal environment and its fisheries. The BOBLME Project

[7] http://www.sacep.org/pdf/Reports-Technical/2019.11.06-Regional-Marine-Litter-Action-Plan-for-South-Asian-Seas-Region.pdf

[8] http://www.sacep.org/pdf/Reports-Technical/2019.11.06-Regional-Marine-Litter-Action-Plan-for-South-Asian-Seas-Region.pdf

[9] Ministry of Environment, Forest and Climate Change, "Ban on Single Use Plastic in India: Step towards Clean India, Green India" (Ministry of Environment, Forest and Climate Change, 2022), https://static.pib.gov.in/WriteReadData/specificdocs/documents/2022/jul/doc20227169001.pdf.

[10] Ministry of Environment, "Single Use Plastic Phase Out Plan"

[11] Srilanka Ministry of Environment, "National Action Plan on Plastic Waste Management 2021–2030," https://apps1.unep.org/resolutions/uploads/national_action_plan_on_plastic_waste_management.pdf.

was implemented through the national fisheries and environmental agencies of the participating countries and was closed in 2017.

All three countries are also part of the Clean Seas Campaign, a global initiative led by the United Nations Environment Programme (UNEP) to address the issue of marine litter, including plastic waste, in the world's oceans. All three countries have signed up to the campaign and have committed to acting to reduce plastic pollution.

Furthermore, the three countries are members of the Indian Ocean Rim Association (IORA), which adopted an action plan on marine litter in 2018. The action plan includes measures to address marine litter in the Indian Ocean region, including the Lakshadweep Sea, and calls for the development of national and regional policies and initiatives to combat marine litter.

Last but not least, the U.S Agency for International Development (USAID) awarded the Ocean Plastics Reduction Activity, a five-year project led the research institute RTI International that aims to reduce environmental plastics by decreasing plastic inputs and improving integrated SWM practices in both Sri Lanka and Maldives.

2.3 Regional Stakeholders

Public stakeholders are responsible for developing and formulating policies and guidelines related to marine litter prevention. They assess the existing challenges, scientific data, and best practices to design effective strategies and frameworks for managing marine litter. They are also are tasked with implementing policies and programs on marine litter prevention. This involves coordinating with various government departments, agencies, and non-governmental organizations (NGOs) to ensure the effective execution of initiatives, including waste management practices, recycling programs, and pollution reduction measures.

In India, various institutions such as the National Institute of Ocean Technology of the Department of Ocean Development, the Indian National Centre for Ocean Information Services (INCOIS), National Centre for Earth Science Studies, the Central Marine Fisheries Research Institute (CMFRI) and the National Institute of Oceanography are contributing to the prevention of marine litter with their research and provision of information. These institutions also engage with international organisations such as the MARPOL International Convention for the Prevention of Pollution from Ships and the Marine Satellite Remote Sensing Service (MARSIS). A brief description of some of the key stakeholder is provided in the table below:

Table 1: Key Public Stakeholders in India for regional policy development

India	
Stakeholder	Role
Ministry of Environment, Forest and Climate Change (MoEFCC)	The MoEFCC is the primary government agency responsible for environmental protection and conservation in India. The ministry has a key role in developing policies and regulations related to marine litter management, including the National Plan of Action for Marine Litter.

Central Marine Fisheries Research Institute (CMFRI)	The CMFRI is a research institute under the Indian Council of Agricultural Research (ICAR) that conducts research on marine fisheries and related topics. The institute has conducted several studies on marine litter in the Lakshadweep Sea and has been actively involved in developing strategies and initiatives for its management.
Lakshadweep Administration	The Lakshadweep Administration is the governing body responsible for the administration and development of the Lakshadweep Islands. The administration has a key role in implementing policies and regulations related to marine litter management in the Lakshadweep Sea, including the enforcement of regulations related to waste management and pollution control.

In Sri Lanka waste management falls under the responsibility of several central and local government agencies[12]. Due to the dangers associated with rising levels of marine litter, the topic has become one of the focus areas of the Sri Lankan government in recent years. 23 municipal councils and 41 urban councils are responsible for municipal solid waste management and collection in Sri Lanka. A brief description of some of the key stakeholder is provided in the table below:

Table 2: Key Public Stakeholders in Sri Lanka for regional policy development

Sri Lanka	
Stakeholder	Role
Ministry of Environment	The Ministry of Environment is responsible for the formulation and implementation of policies related to environmental conservation and sustainable development in Sri Lanka. The ministry plays a vital role in developing policies and programs related to marine litter management, including the monitoring and management of marine litter in the surrounding seas.
Ministry of Fisheries and Aquatic Resources	The Ministry of Fisheries and Aquatic Resources is responsible for the development and management of the country's fisheries resources. The ministry plays an important role in managing marine litter from fishing activities, including developing policies and programs to reduce the amount of marine litter generated by fishing vessels and promoting sustainable fishing practices that minimize the impact on the marine ecosystem.

https://www.researchgate.net/publication/342546211_Status_of_Particulate_Marine_Plastics_in_Sri_Lanka/link/5f605fefa6fdcc1164132c87/download

State Ministry of Provincial Councils and Local Government Affairs	The State Ministry of Provincial Councils and Local Government Affairs is responsible for the implementation of plans and policies and coordinates the responsibilities between the central government and the provincial councils. As waste management falls under the jurisdiction of

In the Maldives the **Environmental Protection and Preservation Act of the Maldives** (Act No: 4/93) declares the **Ministry of Environment and Climate Change** (MEE)[13] as the key government entity for waste management. The MEE holds the responsibility for formulating all policies for the environmental protection, preservation, as well as the enforcement of these regulations. The **Waste Management and Pollution Control Department** of the MEE is mandated to ensure safe waste disposal and implement pollution control projects on all inhabited islands[14]. The **Environmental Protection Agency** (EPA) as a regulator ensures that waste management and pollution control measures are being implemented according to the national waste management policies and regulations[15].

Table 3: Key Public Stakeholders in Maldives for regional policy development

Maldives	
Stakeholder	Role
Ministry of Environment	The Ministry of Environment is responsible for the formulation and implementation of environmental policies and regulations in the Maldives. The ministry plays a crucial role in developing policies and programs related to marine litter management, including monitoring marine litter, promoting sustainable waste management practices, and implementing awareness campaigns. The ministry also collaborates with other government agencies, non-governmental organizations, and international partners to address marine litter issues effectively.
Ministry of Fisheries, Marine Resources, and Agriculture	The Ministry of Fisheries, Marine Resources, and Agriculture is responsible for the management and conservation of fisheries and marine resources in the Maldives. The ministry plays an important role in managing marine litter from fishing activities by promoting sustainable fishing practices, implementing regulations to minimize the impact of fishing gear on the marine environment, and raising awareness among fishing communities about the hazards of marine litter.

[13] https://www.environment.gov.mv/v2/?s=mandate

[14] https://www.environment.gov.mv/v2/en/department/177

[15] http://www.epa.gov.mv/regulations

Maldives Environmental Protection Agency (EPA)	The Maldives EPA is an important stakeholder responsible for environmental protection and management in the country. The agency plays a significant role in developing policies and regulations related to marine litter management, waste management, and pollution prevention. The EPA is involved in monitoring marine litter, conducting assessments of the marine environment, and coordinating initiatives to reduce marine pollution, including plastic waste.

Development organizations as well as non-governmental organizations play significant roles in providing funding, technical expertise, and guidance to support marine litter prevention efforts in the Lakshadweep Sea. Their support helps strengthen the capacity of local stakeholders and promotes sustainable practices for the protection of the marine environment.

Table 4: Development Organisations

Development Organisations	
Stakeholder	Role
SACEP	The South Asia Co-operative Environment Programme (SACEP) is an intergovernmental organization formed by South Asian countries with the aim of promoting and assisting in the preservation, control, and improvement of the environment in the region. It was established during a High-Level Meeting held in February 1981 in Colombo, Sri Lanka. SACEP serves as the Secretariat of the South Asian Seas Programme, which includes Bangladesh, India, Maldives, Pakistan, and Sri Lanka as the marine states. Additionally, the land-locked countries of Afghanistan, Bhutan, and Nepal, which are important watersheds draining into the South Asian Seas, are considered important stakeholders in this Seas Programme. SACEP is registered as a multilateral organization with the UN Secretariat in accordance with Article 102 of the United Nations Charter. Since its establishment, SACEP has implemented various projects and programs in areas such as environmental education, legislation, biodiversity, air pollution, sustainable consumption and production, waste management, climate change, and the protection and management of coastal environments. [16]

[16] https://www.unep.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/regional-seas-programmes/south-asian

European Union	In 2007, the European Union (EU) initiated the SWITCH Asia Project, a campaign designed to encourage sustainable consumption and production practices among small to medium-sized enterprises (SMEs) and consumers within Asia. This endeavour highlights the EU's dedication to environmental preservation and sustainable practices throughout the region. The PROMISE project "Promoting Sustainable Practices & Initiatives for the Marine Environment" is a key component of the initiative which reflects on the EU's commitment in mitigating marine pollution and promoting ocean conservation. By mobilizing government bodies, the business sector, civic organizations, and local communities, aiming to enhance waste disposal methods, advocate for the use of alternative materials, and boost consciousness regarding the importance of ocean conservation, thereby illustrating the EU's dynamic role in the sphere of international environmental policy.[17]
GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit)	The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, a German development agency initiated 'The Global Litter-free oceans', since 2020. It focuses on supporting developing nations in setting up effective waste management and recycling systems to tackle the issue of marine litter[18]. From 2018-2021, GIZ involved in reducing plastic leakage into ocean through partnerships with countries like Egypt, Mexico, Morocco, the Philippines, and India highlighting its integrated approach to sustainable solid waste management[19]. Furthermore, GIZ's work in India under the Circular Economy Solutions Preventing Marine Litter in Ecosystems (CES) project underscores their dedication to environmental conservation. Operational from 2020 to 2023, it focuses emphasizes the adoption of Extended Producer Responsibility (EPR), promoting plastic recycling efforts, and the improvement of digital surveillance of marine debris in specific locales, notably in Kerala. This highlights the importance of public and private collaboration to foster circular economy solutions for preventing marine litter within river and ocean ecosystems[20]. The Waste to Value project in Sri Lanka, is a public-private partnership between GIZ and major brands like Coca-Cola, Nestle Lanka PLC, and Unilever Sri Lanka (Pvt) Limited which aims to reduce plastic waste entering landfills in the Western

[17] Ms. Johanna Doerpinghaus, Ms. Jana Hack, Mr. Amarnath Munnolimath, Dr. Malini Balakrishnan and Dr. Vidya Batra, "POLICY BRIEF (Input Paper): Prevention of Marine Litter in India" (2021).

[18] «Litter-free oceans». GIZ, acceso 4 de septiembre de 2024, https://www.giz.de/en/worldwide/138385.html.

[19] «Turning the tide by reducing marine litter and plastic leakage into the ocean». GIZ, acceso 4 de septiembre de 2024, https://www.giz.de/en/worldwide/89696.html.

[20] «Aiming to reduce marine litter in the Indian Ocean: Circular Economy Solutions Preventing Marine Litter in Ecosystems (CES)». GIZ, acceso 4 de septiembre de 2024, https://www.giz.de/en/worldwide/118706.html.

	Province. The key strategies of the project consisted of awareness campaigns, material recovery facilities (MRF), and EPR implementation mainly targeting local authorities, recyclers, and the community[21].
World Bank	The World Bank has joined together with Parley to launch a massive initiative to combat pollution and related threats through the "Plastic Free Rivers and Seas for South Asia Project." Coordinated by the South Asia Cooperative Environment Programme (SACEP), it's the first and largest project of its kind to combat plastic pollution ending up in South Asian rivers and seas. The five-year initiative and partnership will bring US$50 million to projects that drive direct action, eco-innovation, fair labour opportunities, community education and collaboration to address the global issue of plastics and other pollutants in regions most affected by today's environmental and public health crises.[22]
Organisations engaging with SACEP	SACEP's work programme decided by the country governments, is also supported by several other bilateral and multilateral donors. Organisations such as the Royal Governments of Norway, Swedish International Development Agency (SIDA), UNEP-GPA office in The Hague, Regional Seas Programme of UNEP and its outreach office in AIT, Bangkok, IMO, ESCAP and many others. SACEP has established close working relations and collaboration with other governmental and non-governmental organisations and private sectors to complement and supplement national efforts for the protection of the environment and for achieving goals of sustainable development. These include: United Nations Environment Programme, IMO - the International Maritime Organization, United Nations Framework Convention on Climate Change, World Bank, The Asian Development Bank (ADB), The Convention on Biological Diversity, Convention on International Trade in Endangered Species of Wild Fauna and Flora, CITES, PARLEY for the Oceans, Biodiversity International, International Nitrogen Management System, Institute for Global Environmental Strategies (IGES), United Nations Economic and Social Commission for Asia and the Pacific, United Nations Centre for Regional Development (UNCRD), International Coral Reef Initiative (ICRI).

[21] «Waste to Value: Scaling up waste collection and recycling systems for reducing plastic waste entering landfills in Sri Lanka». TUEWAS.

[22] https://parley.tv/initiatives/world-bank

Private Stakeholders (Brands, NGOs, Consultancies)**:** are there any PPP models available to prevent marine litter, whether in region or in countries. Mention of major brands, NGOs, consultancies (can be waste solution providers) who are working on major marine litter prevention efforts.

Private stakeholders include brands, non-governmental organizations (NGOs), and consultancies which helps in marine litter prevention. PepsiCo, Coco-Cola, Unilever and Nestlé are the among the major brands involved in various initiatives to combat marine litter through innovative solutions and strategic collaborations. They work on both regional and international levels from promoting recyclability to spreading awareness for proper waste management to prevent marine littering.

Table 5: Private Stakeholders

Private Stakeholders	
Stakeholder	Role
PepsiCo	As per the 2025 packaging sustainability agenda, PepsiCo aims to promote recyclable packaging globally by incorporating 25% recycled contents in plastic packaging which equals a reduction of 2.5 million metric tons of virgin plastic accumulation[23]. In 2018, PepsiCo became the founding investor of Circulate Capital's Ocean Fund, the largest impact investment organisation with $165 million of total assets used to battle against ocean plastic pollution in South and Southeast Asia. In India, PepsiCo introduced WE CARE (waste efficient collection and recycling) project in alliance with other companies like Nestle, DS group, Dabur and Petfetti Van aiming to manage disposed multi-layer packaging (MLP) waste[24].
Coco-Cola	Coco-Cola introduces various sustainability initiatives like innovative packaging, recycling and waste management to prevent marine littering. The company aims at "a world without waste" incorporating recyclable packaging by 2025 and to use at least 50% recyclable materials in all their packaging by 2030[25]. As a part of this campaign, Coca-Cola partners with local enterprises and communities to promote recycling. Furthermore, Coco-Cola India is the first company in India to introduce 100% recycled PET (rPET) bottles for its Kinley brand to promote plastic circularity[26]. In connection with "world without waste, Coco-Cola launched 'Adopt a Beach' initiative in the year 2021, in Sri Lanka to prevent marine littering. It aims at

[23] «PepsiCo Recycling and Sustainability Initiatives». Pepsico, https://contact.pepsico.com/pepsico/article/pepsico-recycling-and-sustainability-initiatives.

[24] Pepsico, "Packaging Partnerships Engagement" (2024).

[25] Coco-Cola HBC, "Integrated Annual Report 2023," https://www.coca-colahellenic.com/en/investor-relations/2023-integrated-annual-report.

[26] «Coca-Cola launches 100% rPET bottles in India and Philippines despite recyclate supply struggles». Radhika Sikaria, acceso 16 de abril de 2024, https://www.packaginginsights.com/news/coca-cola-launches-100-rpet-bottles-in-india-and-philippines-despite-recyclate-supply-struggles.html.

	engaging local communities and various governmental bodies to promote regular beach clean-up events in Sri Lanka[27]. Furthermore, through the "PET Return and Recycle" initiative Coco-Cola India collaborates with Zepto - bicycle grocery delivery service which aids the customers to return up to 4 empty PET bottles of any brand during the home delivery trips. In Sri Lanka Coco-Cola introduced Large Returnable Glass Bottles (LRGB) called "Big Buddy Pack" with a concept of affordable and returnable bottles. Returnable glass bottles were also launched in Maldives upholding the Extended Producer Responsibility regulation for circularity[28].
Unilever	Unilever undertakes various sustainability initiatives for battling pollution. The company aims to reduce 30% of virgin plastic footprint by 2026 and 40% by 2028. Furthermore, it ensures 100% of its plastic packaging to be reusable, recyclable, or compostable by 2030 for rigid plastics and by 2035 for flexible plastics[29]. Hindustan Unilever Limited (HUL) already witnessed a decrease in its virgin plastic usage by 13% in 2022 as per the 2019 baseline and also incorporated 55% reusable and compostable plastic packaging. HUL aligns its operations with global sustainability standards such as the UN Sustainable Development Goals. Additionally, HUL's "Swachh Aadat, Swachh Bharat" campaign promotes cleaner and healthier living environments by enhancing health, hygiene, and environmental cleanliness across India[30]. In India, Unilever pioneered in collecting and processing more plastic than it sold and is planning to expand the same in other countries also. In 2022, the company launched the Fair Circularity Initiative in collaboration with NGO Tearfund as well as other brands like Coca-Cola, Nestlé, PepsiCo to promote circular value chains worldwide[31].
Nestlé	In 2022, Nestlé co-chaired the Business Coalition for a Global Plastics Treaty to end plastic pollution in collaboration with the Ellen MacArthur Foundation and the World Wildlife Fund (WWF) and the company aims to make more than 95% of their packaging recyclable with one-third reduction in virgin plastics by 2025. In the year 2023 itself Nestlé showed remarkable

[27] «Coca-Cola reaffirms commitment to a cleaner Sri Lanka on International Coastal Cleanup Day 2022». Coca-Cola, acceso 16 de abril de 2024, https://www.coca-cola.com/lk/en/media-center/international-coastal-cleanup.

[28] Coca-Cola, "Coca-Cola Business Sustainabilty Report" (2022).

[29] «Our ambition is an end to plastic pollution through reduction, circulation and collaboration». Unilever.

[30] Hindustan Unilever Limited, "Integrated Annual Report 2022-23"

[31] Fair Circularity initiative, "Respecting Rights in Circular Value Chains"

	progress in manufacturing 83.4% recyclable packaging[32]. By the commencement of Quick Response (QR) Codes on packaging Nestlé India introduced anti-litter, recycling guidance and sustainable consumption tips. There was a reduction of nearly 800 tons of packaging materials in 2016 by the means of optimization efforts[33]. Nestlé Sri Lanka collaborates with the Central Environmental Authority (CEA) and the Ministry of Education for spreading awareness in waste management amongst 350,000 children from more than 200 schools in Sri Lanka. Paper straws were introduced in all their ready-to-drink beverages aiming to reduce the usage of plastic straws. Nestlé also launched Tetra Pak which is Sri Lanka's first recycling facility for aseptic beverage cartons. The company actively engages in beach clean-up events all around the country. Furthermore, Kurunegala factory of Nestlé has already achieved the zero-waste disposal goal by the means of recycling efforts and sustainable business practices[34].

Table 6: Non-Government Organizations

Private Stakeholders	
Stakeholder	Role
Parley for the Oceans	Parley is one of the main non-governmental organization focussing on the prevention of marine litter. In Sri Lanka, Parley organises activities like beach and ocean cleanups, educational programs, and eco-innovations in collaboration with the country's Marine Environment Protection Authority. The aim is to tackle pollution, overfishing, and habitat loss through both educational initiatives and direct action such as the installation of a custom-made "Ocean Strainer" in the Lunawa Lagoon to intercept plastic waste[35]. Parley conducts events to facilitate sustainable practices in Maldives. The PROMISE project, under the coordination of Maldives National University and various partners including Parley, focuses on preventing waste leakage from land-based sources into the Lakshadweep Sea[36]. Parley for the Oceans in

[32] Nestlé, "Creating Shared Value and Sustainability Report" (2023).

[33] «Building a sustainable planet the smarter way». Nestlé, acceso 16 de abril de 2024, https://www.nestle.in/stories/building-a-sustainable-planet-the-smarter-way.

[34] «Tackling plastic pollution and managing waste: Improving the environmental performance of our packaging and reducing food loss and waste». Nestlé, acceso 16 de abril de 2024.

[35] «Parley Sri Lanka». Irushinie Wedage, https://parley.tv/sri-lanka.

[36] «Creating the blueprint forGlobal Change». Parley Maldives, https://www.maldives.parley.tv/.

	collaboration with Andhra Pradesh government launched Parley India in 2022 followed by a 28km stretch beach clean-up event which collected 76 tonnes of plastic[37].
STENUM Asia	STENUM Asia is a leading non-governmental organization dedicated to providing technical support and spearheading local initiatives to combat marine litter. The organization conducts material flow analysis along Lakshadweep sea to understand and manage waste flows, thereby facilitating effective strategies for marine litter prevention. Through PROMISE project, STENUM Asia conducted a pilot material flow analysis at Paruvar Beach, Kerala, India, revealing over 93,000 items weighing around 300 kilograms of primarily disposable plastics, paper, and glass[38]. Also, the material flow analysis in Hulhumale, Maldives demonstrated that the common waste were plastics, paper, cardboard and Styrofoam plastics of which majority are single use items[39]. Furthermore, STENUM Asia actively engages in a variety of initiatives, including policy roundtables, training programs, and beach cleanup activities to promote sustainable waste management and reduce plastic pollution in Lakshadweep sea.
Saahas Waste Management Pte Ltd	Saahas Zero Waste Pte. Ltd launched `the Let's Transform' project in April, 2022 with the support of Alliance to End Plastic Waste. It worked by integrating waste entrepreneurs and informal waste workers from Bengaluru, Delhi, Kochi, and Pandhurna into the formal economy to reduce the environmental impact of low-value plastics. Four micro-entrepreneurs were collaborated and 3,793 tonnes of plastic waste were diverted successfully from the environment and valorised [40].

2.4 Policy Gaps

In the current institutional environment, there are a number of shortcomings and gaps that hinder the process of implementing long-term solutions to the problem of marine litter. Some of the existing gaps are briefly outlined in this paragraph.

The respective countries do not possess any consolidated marine litter database, there is little data available on the quantities and trends of marine litter in the region. However, effective management relies on accurate baseline data. There are no uniform and standard methodologies for collecting,

[37] «A blueprint for change». Parley India, https://parley.tv/india.

[38] «INDIA: Pilot Material Flow Analysis in Paruvar Beach, Kerala». Germany adelphi.

[39] «MALDIVES: Pilot Material Flow Analysis in Hulhumale Phase 2, Maldives». Germany adelphi.

[40] «Let's Transform». Alliance to end plastic waste, acceso 4 de septiembre de 2024, https://endplasticwaste.org/en/our-work/plastic-waste-free-communities/lets-transform.

analysing and interpreting marine litter data in the region. Furthermore, there are knowledge gaps regarding the consequences of marine litter, that hinder the ability to prioritize mitigation efforts and assess the effectiveness of implementation measures.[41]

There is a lack of proper institutional mechanisms to implement marine litter mitigation activities. Apart from Sri Lanka, the other countries do not have dedicated agencies for the management of marine litter. Hand in hand with the absence of separate institutions, is the absence of specific regulations tailored to marine litter. The development activities for marine management are mainly confined to two activities, such as beach cleaning and recycling of waste at limited levels. However, there is an urgent need to undertake activities such as source reduction, structures for waste conversion to energy, waste reuse and recycling, reception facilities, development of biodegradable fishing gear marking and other activities.[42;43]

Regarding collaboration and institutional efficacy, there is often an apparent lack of stakeholder engagement in state-level decision-making processes. For instance, when it comes to plastic bans in India, they are often carried out in a top-down fashion without consideration of the affected stakeholder groups. To make them work effectively, they need to be designed in a step-wise participatory process and should be complemented by enabling framework conditions that promote the development and use of adequate alternatives and/or services in replacement of banned products.[44]

None of the countries bordering the Lakshadweep Sea posses a dedicated legal framework for regulating marine litter. As mentioned, there are international and regional-level instruments but the enforcement of regulatory and management regimes is very poor. This hold also true for the Maldives, where there is currently no specific policy that addresses the issue of marine litter. Additionally, the overlapping nature of agency responsibility and weak coordination in management efforts have proven ineffective in tackling the root problem.[45] It would be important to implement a national marine litter policy that outlines specific strategies, targets and responsibilities for different agencies. The coordination between the authorities must hence be improved and their technical capacities strengthened to enhance the enforcement. That must go hand in hand with an integrated waste management strategy and policies that reduce or ban single use plastics.

The situation is similar in Sri Lanka. There is no comprehensive marine litter monitoring program. Instead, the management of marine litter is distributed among multiple sectors and agencies. Additionally, most of the agencies do not have full authority over all the components related to the management of marine resources and pollution. This inequality in responsibility results in ineffective management of marine debris[46]. The situation regarding inefficient collaboration and cooperation proves to be similar in the three countries bordering the Lakshadweep Sea. An unclear distribution of responsibilities has resulted from poor coordination among government agencies and a lack of serious political will. Government agencies need to share available and up-to-date information and be transparent with each other when dealing with marine pollution. While there are already difficulties in

[41] South Asia Co-operative Environment Programme, "Report of the sixth inter-governmental meeting of ministers of South Asian Seas Programme" (Dhaka, Bangladesh, 2019).

[42] BOBLME, "BOBLME ICM Best Practices and Lessons Learned South Asia Workshop," BOBLME 2010 Socioec 03 (Colombo, Sri Lanka, 2010).

[43] Fathimath Nistharan et al., "Maldives Marine Litter Action Plan" (Male, Maldives, 2018).

[44] Nistharan et al., "Maldives Marine Litter Action Plan"

[45] Nistharan et al., "Maldives Marine Litter Action Plan"

[46] Iliana Christodoulou-Varotsi, *Marine Pollution Control* (Abingdon, Oxon [UK], New York, NY Routledge, 2018. | Series: Lloyd's practical shipping guides: Informa Law from Routledge, 2018).

coordination within the national authorities, it needs to be developed between the three countries in order to find regional long-term solutions.

An evident problem is the general lack of monitoring and enforcement of existing downstream policies and legislation. Existing rules are partly not followed on the ground and institutions do not sanction rule violations consequently. In general, there are insufficient formal recycling capacities that are at the latest technical level. There is a lack of source segregation and infrastructure to recycle plastic waste and municipal solid waste in general. There is also a lack of sanitary landfills and a prevalence of illegal dumpsites and open burning. The countries have also so far failed to implement market-based and economic instruments, which have proven to be effective in other countries. High tax on untreated landfilling incentivizes recycling, recovery and reduces the risk of waste reaching the marine environment. Further possible options are taxes on packaging, introducing deposit refund schemes or high fees for litter, just to name a few.[47]

One of the most important factors would be a separate legal framework and institutions to prepare regulations and ensure their implementation. Qualified and trained enforcement teams should be deployed. Generally, the public awareness in the region is developed too low. It can be noted that there are not enough large-scale education and outreach strategies to raise awareness about the impact of marine litter on the communities in the respective countries. Efforts on the policy level cannot be successful without public awareness and mobilization on the issue. This in turn, will increase the public compliance with the existing laws and policies.[48]

3. Best practices

In an increasingly interconnected world, the issue of marine litter requires collaborative efforts among nations to effectively address its environmental impacts. This chapter focuses on exploring international best practices in regional marine litter policies, specifically collaborative initiatives undertaken by different countries to combat the pervasive problem of marine debris. By examining successful case studies and cooperative frameworks, they aim to identify key strategies and approaches that have proven effective in reducing marine litter at a regional level. Some of the regional approaches are initiated and implemented by international development organizations, while others might form as an initiative by a ministry or an independent international organization. Through the analysis of international best practices, this chapter seeks to provide valuable insights and recommendations to foster greater cooperation and coordination between nations, ultimately working towards a cleaner and more sustainable marine environment.

Case study 1: PREVENT Waste Alliance

[47] South Asia Co-operative Environment Programme, "Regional Marine Litter Action Plan for South Asian Seas Region" (Colombo, Sri Lanka, 2019).

[48] Nanthi S. Bolan et al., *Particulate Plastics in Terrestrial and Aquatic Environments* (First edition. | Boca Raton CRC Press, 2020.: CRC Press, 2020).

The PREVENT Waste Alliance was established by the German Federal Ministry for Economic Cooperation and Development (BMZ) in May 2019 as a platform for global exchange and cooperation to minimize waste, eliminate pollutants, and promote the reuse of resources. With over 300 members from the private sector, academia, civil society, and public institutions, the Alliance is a platform to facilitate the collaboration among its members to prevent, collect, and recycle waste and increase the use of secondary resources in low- and middle-income countries.

In term of governing structure (Figure 1), the PREVENT Waste Alliance operates through a multi-stakeholder partnership that includes a Steering Committee, which is responsible for making strategic decisions and represents the alliance publicly. The plenary comprises all members of the alliance and meets annually to discuss the working group's results and the next steps. A Secretariat is in charge of organizing and supporting the Steering committees and working groups, and manages the communication and public representation of the alliance. The Advisory board of the Alliance provides advice and support from renowned experts and stakeholders, particularly from international organizations and initiatives. Additionally, PREVENT has established different working groups with specific goals and activities. At present, the Alliance has three Working groups focused on closing plastic cycles, closing waste cycles, and closing organic waste cycles. In addition to the working groups, cross-cutting issues are also addressed, such as analysing and testing possible financing mechanisms to cover the costs of collection and recycling of e-waste and plastic packaging, or exchanging experiences on awareness raising and behavior change. These activities can be accessed by members through the PREVENT HUB.

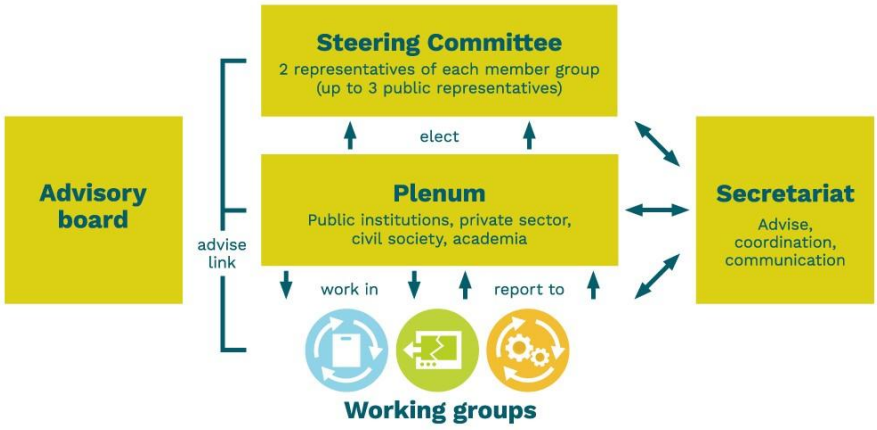


Figure 1. The governing structure of the PREVENT Waste Alliance

Through calls for solutions, the alliance seeks innovative and sustainable solutions that promote a circular economy in low- and middle-income countries and implements them through pilot projects. The alliance has also launched the Innovate & PREVENT program to support members and other organizations in developing innovative solutions for waste prevention. The PREVENT Waste Alliance developed is the EPR Toolbox, which is a collection of internationally relevant knowledge on Extended Producer Responsibility (EPR) for packaging aiming to promote knowledge exchange and enhance development of EPR systems worldwide.

The German Federal Ministry for Economic Cooperation and Development (BMZ) currently supports the PREVENT Waste Alliance financially, but the alliance welcomes funding from other entities. Additional funding will be used to develop new circular economy innovations, replicate or upscale successful solutions and tools, and integrate them into national and international guidelines and standards. Fund providers can choose between two options for financing or co-financing activities, either through the

PREVENT Secretariat (GIZ) or by using the PREVENT Waste Alliance as a platform for project development, implementation, and communication. [49]

Case study 2: The Global Plastic Action Partnership (GPAP)

The Global Plastic Action Partnership (GPAP) is an initiative by the World Economic Forum that seeks to translate commitments made to address plastic pollution into practical action. GPAP was officially launched during the Sustainable Development Impact Summit of the World Economic Forum in September 2018. It is a unique multi-stakeholder platform that brings together 333 organizations and 881 partners, including the governments of Canada and the UK, major corporations such as Nestlé, Coca-Cola Company, PepsiCo, and Dow, as well as international organizations and non-profits like the World Bank Group, GEF, WWF, UNEP, and World Resources Institute. The aim is to expedite the global response to the escalating crisis of plastic pollution.

The GPAP supports the development of Plastic Action Partnerships, which are locally-owned and driven communities that utilize a multi-stakeholder approach to create national action roadmaps on plastic waste and pollution. Plastic Action Partnerships facilitate collaboration between national governments and other key stakeholders to turn commitments on plastic waste and pollution into actionable steps.

The GPAP governing structure comprises of a Director, a Governing Council, a Steering Board, a group of Plastic Action Champions, an Advisory Committee, and Affiliate Members.

Together with its partners, GPAP has created different tools to facilitate countries tackle the plastic waste pollution crisis. For instance, the National Analysis and Modelling Tool (NAM Tool) is an online analytics tool that enables countries to establish practical, science-based roadmaps towards a circular, low-carbon emissions plastics system. Similarly, the Reuse Portal (https://www.reuseportal.org/) serves as an open collaborative platform that provides innovators, policymakers, activists, consumers, and citizens with convenient access to practical guidance, tools, and networks to take action and drive momentum for reuse solutions. Other interventions include the Global Plastic Innovation Network, Refill revolution in Mexico City, and research informing policy in Ghana, among others.

GPAP works with local partners to establish National Plastic Action Partnerships (NPAPs), which are inclusive and impartial platforms that bring together key players across the plastics value chain, from policymakers to consumer goods giants to non-governmental organizations. The aim is to develop and implement a unified national approach to tackling plastic pollution. Since its launch in 2018, GPAP has developed eight NPAPs with eight national governments, namely Indonesia, Ghana, Vietnam, Pakistan, Maharashtra, Nigeria, Mexico City, and most recently Ecuador.[50]

Case study 3: Coordinating Body on the Seas of East Asia (COBSEA)

To supervise the implementation of the Action Plan for the Protection and Development of the Marine Environment and Coastal Areas of the East Asian Seas Region (East Asian Seas Action Plan), which was adopted in 1981 and revised in 1994, aiming at sustainable management and use of the marine and coastal environment, the Coordinating Body on the Seas of East Asia (COBSEA) was found. COBSEA is also one of 18 Regional Sea programmes administered by the United Nations Environment Programme (UNEP). Each regional Seas Programmes was adapted to different regional context and environmental challenges but in common, they support the delivery of global environmental and development goals.

[49] https://prevent-waste.net/

[50] https://www.globalplasticaction.org/

Nine participating countries include Cambodia, People's Republic of China, Indonesia, Republic of Korea, Malaysia, the Philippines, Thailand, Singapore and Viet Nam. COBSEA plays a role as an inter-governmental coordinator. Addressing marine pollution, strengthening marine and coastal planning and management, and improving regional governance for marine environmental management are its main focuses. At the 24th Intergovernmental Meeting of COBSEA (IGM) in June 2019 in Bali (Indonesia), participating countries adopted the revised Regional Action Plan on Marine Litter (RAP MALI) to tackle marine litter issues in the East Asian Seas region. The RAP MALI consists of four main groups of actions: (1) Coordinating Body on the Seas of East Asia, (2) Preventing and reducing marine litter from sea-based sources, (3) Monitoring and assessment of marine litter, and (4) Activities supporting the implementation of the COBSEA RAP MALI. One output of this IGM is the establishment of the Working Group on Marine Litter (WGML). The WGML is tasked to facilitate information exchange, cooperation at regional level and implement necessary environmental framework for sustainable of marine litter in this region.

The institutional structure of COBSEA consists of the COBSEA Secretariat hosted by Thailand acting as the Regional Coordinating Unit and providing overall technical coordination and supervision of the Action Plan implementation. Providing financial support for the Action Plan is through the Trust Fund, which is contributed by member countries. To support the Action Plan and IGM's decisions, Regional Activity Centres (RACs), which are autonomous and can be international or regional organizations, or national institutions, were established. IGM authorizes and COBSEA Secretariat provides guidance to the operation of RACs. In particularly addressing the marine litter, the WGML was formed. At each member country, there is a national focal point acting as the official communication channel between the government and the Secretariat.[51]

Case study 4: Western Indian Ocean Regional Action Plan on Marine Litter (WIO-RAPMaLi)

In response to the United Nations Environment Assembly (UNEA) resolution 1/6, 2/11 and 3/20 to address marine litter regionally, the WIO-RAPMaLi was developed in 2018. This action plan sets the implementation standards for parties of the ***Nairobi Convention***. The Nairobi Convention is also one of 18 UNEP's Regional Seas Programmes, which targets the accelerating degradation of the Western Indian Ocean by engaging with governments (signed parties) of Comoros, France, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, Tanzania, and the Republic of South Africa to join actions for sustainable management, protection and use of their shared marine and coastal environment.

The WIO-RAPMaLi addresses both land and sea-based plastic sources and has four main objectives: (1) to provide guidance and increase knowledge on how to prevent and reduce marine litter and microplastics, (ii) to monitor the amounts and distribution of marine litter and microplastics in order to establish a regional mechanism to deal with the problem, (iii) to manage marine litter and microplastics according to international and regional standards, and (iv) to advocate for the cleanup of existing marine litter through campaigns. This Action Plan sets out clear guiding principles: precautionary, polluter-pays, integration, prevention, public participation principle and Sustainable Production and Consumption. Fourteen (14) actions grouped into six groups on management of marine litter and microplastics were framed in the WIO-RAPMaLi: (1) stakeholder engagement, (2) policy and legal frameworks, (3) operations for reduction of marine litter, (4) education and outreach, (5) monitoring, research and reporting, and (6) capacity development. An implementation and monitoring plan was also presented and envisaged a implementation of five-year period.

[51] https://www.unep.org/cobsea/

The WIO-RAPMaLi is a part of the Nairobi Convention that has a structure composed of a Secretariat, National Focal Points at each member country, a Regional Coordinating Unit (RCU), Partners of the Convention, and expert groups/task forces. The main decision-making body of the Convention lays into its Conference of Parties (COP). The COP is summoned on biannual basis to review the implementation of the Convention. The member parties and countries are in charge of funding for the Convention activities. Thus, a trust fund was established. The management of this trust fund, including secretariat and coordination functions, is provided by UNEP.

At the 9th COP in August 2018, the Secretariat established Group of Experts on Marine Litter and Microplastics in collaboration with the Western Indian Ocean Marine Science Association (WIOMSA). The main objective is to provide a knowledge exchange platform, provide policy guidance and advice to the Nairobi Convention, and synthesize information from relevant research topics[52].

Case study 5: Caribbean Community (CARICOM)

CARICOM belongs to a group of the Regional Economic Organizations (REOs), such as the European Union (EU), the Association of Southeast Asian Nations (ASEAN). REOs are established by countries with the goal of enhancing economic development through economic integration. The structure of existing REOs varies widely in terms of the issues they tackle, the mandates they are given, and the institutional structures that support them.

CARICOM, formed on July 4, 1973, when the prime ministers of Barbados, Guyana, Jamaica, and Trinidad and Tobago signed the Treaty of Chaguaramas, consists of twenty developing countries, in which, fifteen are Member States and five are Associate Members. With the geographical feature stretched from The Bahamas in the north to Suriname and Guyana in the south of the American continent, most of its Members and Associate Members are island states, except for Belize, Guyana and Suriname. The treaty was later amended in 2002 to allow for the eventual creation of a single market and economy, the Caribbean Free Trade Association (CARIFTA). CARICOM operates based on four pillars: economic integration, foreign policy coordination, human and social development, and security.

CARICOM operates through a governance structure that includes organs, bodies, institutions, and other stakeholders. The Principal Administrative Organ is the CARICOM Secretariat. The Principal Organs include the Conference of Heads of Government (and its Bureau) and the Community Council of Ministers. CARICOM also has four bodies, which are the Council for Trade and Economic Development (COTED), Council for Foreign and Community Relations (COFCOR), Council for Human and Social Development (COHSOD), Council for Finance and Planning (COFAP), and Council for National Security and Law Enforcement (CONSLE). Additionally, there are 29 institutions, including 19 community institutions, 4 functional cooperation institutions, and 6 associate institutions, that serve the community as specialist technical agencies. Other stakeholders include governments of member states and associate members, the CARICOM Youth Ambassadors, the Caribbean Forum of African, Caribbean and Pacific States (CARIFORUM), and international development partners.

In the 2019 St. John's Declaration, CARICOM member states encouraged measures to reduce or eliminate single-use plastics, committed to addressing the damage caused by plastics to ecosystems by 2030, and promoted collaboration with the private sector to find alternatives to plastic. The Declaration emphasizes that reducing plastic litter and microplastics in the environment from both land and sea-

[52] https://www.nairobiconvention.org/

based sources is essential to achieving the Sustainable Development Goals for member states and eliminating pollution of the Caribbean Sea and the Atlantic Ocean in the long term (CARICOM, 2019[53]).

https://caricom.org/

4. Recommendations

Develop a legal framework dedicated to the management of marine litter and entrust institutions specifically with the enforcement of the rules.

Currently, there are no legal instruments in place dedicated to the management of marine litter in the region. Therefore, it is a very urgent requirement to prepare a regional level plan, to implement international conventions, agreements, laws, regulations and treaties. It is of importance to implement a national marine litter policy that outlines specific strategies, targets and responsibilities for different agencies.

The monitoring and enforcement of existing downstream policies and legislation must be strongly increased, for example by sanctioning rule violations consequently. Currently, existing rules are partly not followed on the ground and institutions do not sanction rule violations consequently. This is evident for example by the perseverance of illegal dumpsites. The lack of source segregation and infrastructure to recycle plastic waste and municipal solid waste in general must be addressed though policy measures. Besides legislative bans or the improvement of the general recycling infrastructure, market-based and economic instruments, like taxes on the polluting entities could be applied.

Improve institutional coordination within and across different levels of governance through intensified cross-regional ministerial collaboration and enhanced involvement of inter-state agencies

Considering the rising concerns linked to marine litter, intensified cross-ministerial collaboration along the entire value chain will be necessary. It is strongly recommended to include institutions from the central government responsible for the regulation of upstream and midstream parts of the plastic value chain, which will enable a more focused approach at the central level to deal with specific challenges linked to plastic waste by covering all steps of the value chain. Notably, the board should discuss measures not only relating to end-of-pipe solutions for dealing with generated plastic waste, but also examine economic and legislative measures for increasing resource efficiency in polymer and plastic manufacturing including eco-design measures to curb plastic demand.

In addition, it is suggested to further strengthen horizontal coordination mechanisms on waste management through an intra-regional council. In this regard the further conceptualization and initiation of a zero-waste alliance, such as the under the PROMISE Project suggested Lakshadweep Zero Waste Alliance could be a viable approach to enhance cross-regional ministerial collaboration and enhanced involvement of a variety of different stakeholders across all three countries.

Importance of the operational structure of established institutional coordination body

As seen in many cases globally from different groups on addressing plastic waste, in particular, marine litter, their establishment are based on different foundations, such as with or without a Convention in place, as one of Regional Sea Programmes led by a United Nations organization, from a REO, or initiating

[53] CARICOM, 2019, Communiqué issues at the conclusion of the 40th Regular Meeting of the Conference of the Heads of Government of the Caribbean Community, Available online: https://today.caricom.org/2019/07/06/communique-issued-at-the-conclusion-of-the-fortieth-regular-meeting-of-the-conference-of-heads-of-government-of-the-caribbean-community-gros-islet-saint-lucia-3-5-july-2019/, Last accessed : 25.04.2023

by an organization. However, a practically and effectively operational structure with appropriate and regional-context-adopted actions and bringing benefits to members towards addressing common issues on plastic waste and marine litter play a crucial role. Those key aspects ensure to sustain the operation of established institutional coordination in a long term.

Importance to have one body working on it. Then, the operational structure: The proposed Lakshadweep Zero Waste Alliance is not an exception.

Encourage the adoption of Service Level Benchmarks (SLBs) among cities and introduce metrics for end-of-life management of plastic waste and marine litter generation

Since plastic waste management at city level is in itself an issue of municipal solid waste management, the countries should incentivize the adoption of Service Level Benchmarks (SLBs) related to plastic waste by cities. This can be done through means of awards, public recognition, incorporation as a mandatory public disclosure information and fiscal promotion with further facilitation from the national level. Notably, SLBs need to be standardized and benchmarked with other cities (for example cities within the state or similar cities) in order to create a competitive environment for continuous improvement that will allow performance to be measured objectively across all three countries. This will support stakeholders at the state and central level to evaluate, compare and contrast cities and thereby formulate adequate state-level policy responses to address the issue of mis-managed plastics. A range of SLBs on plastic waste management may include:

- Annual generation of plastic waste (absolute and relative as part of total solid waste)
- Amount of plastic waste collected, recovered and recycled annually (absolute and relative as part of total solid waste)
- Annual processing capacity of formal MRFs and recycling units
- Rate of diversion of difficult-to-recycle plastic waste from landfills for reutilization or recycling
- Share of plastic waste used in roads constructed in the city

5. Bibliografía

adelphi, Germany. «INDIA: Pilot Material Flow Analysis in Paruvar Beach, Kerala».

adelphi, Germany. «MALDIVES: Pilot Material Flow Analysis in Hulhumale Phase 2, Maldives».

Alliance to end plastic waste. «Let's Transform». Acceso el 4 de septiembre de 2024. https://endplasticwaste.org/en/our-work/plastic-waste-free-communities/lets-transform.

BOBLME. "BOBLME ICM Best Practices and Lessons Learned South Asia Workshop." BOBLME 2010 Socioec 03, Colombo, Sri Lanka, 2010.

Bolan, Nanthi S., M. B. Kirkham, Claudia Halsband, Dayanthi Nugegoda y Yong S. Ok. *Particulate Plastics in Terrestrial and Aquatic Environments*. First edition. | Boca Raton CRC Press, 2020.: CRC Press, 2020.

Christodoulou-Varotsi, Iliana. *Marine Pollution Control*. Abingdon, Oxon [UK], New York, NY Routledge, 2018. | Series: Lloyd's practical shipping guides: Informa Law from Routledge, 2018.

Coca-Cola. "Coca-Cola Business Sustainabilty Report." 2022.

Coca-Cola. «Coca-Cola reaffirms commitment to a cleaner Sri Lanka on International Coastal Cleanup Day 2022». Acceso el 16 de abril de 2024. https://www.coca-cola.com/lk/en/media-center/international-coastal-cleanup.

Coco-Cola HBC. "Integrated Annual Report 2023." https://www.coca-colahellenic.com/en/investor-relations/2023-integrated-annual-report.

Doerpinghaus, Johanna, Jana Hack, Amarnath Munnolimath, Malini Balakrishnan y Vidya Batra. "Policy Brief (Input Paper): Prevention of Marine Litter in India." 2021.

Doerpinghaus, Johanna, Amarnath Munnolimath, Jana Hack, Samantha Kumarasena y Nisansala Ranundeniya. "Policy Brief (Input Paper): Prevention of Marine Litter in Sri Lanka." 2021.

Fair Circularity initiative. "Respecting Rights in Circular Value Chains."

GIZ. «Turning the tide by reducing marine litter and plastic leakage into the ocean». Acceso el 4 de septiembre de 2024. https://www.giz.de/en/worldwide/89696.html.

GIZ. «Aiming to reduce marine litter in the Indian Ocean: Circular Economy Solutions Preventing Marine Litter in Ecosystems (CES)». Acceso el 4 de septiembre de 2024. https://www.giz.de/en/worldwide/118706.html.

GIZ. «Litter-free oceans». Acceso el 4 de septiembre de 2024. https://www.giz.de/en/worldwide/138385.html.

Hindustan Unilever Limited. "Integrated Annual Report 2022-23."

Hu, Jianhong. «Indian EPR - What do we know so far?». https://www.loraxcompliance.com/blog/env/2022/04/14/Indian_EPR_-_What_do_we_know_so_far.html.

Irushinie Wedage. «Parley Sri Lanka». https://parley.tv/sri-lanka.

Lebreton, Laurent C. M., Joost van der Zwet, Jan-Willem Damsteeg, Boyan Slat, Anthony Andrady y Julia Reisser. «River plastic emissions to the world's oceans». *Nature communications* 8 (2017): 15611. doi:10.1038/ncomms15611.

Ministry of Environment. "Single Use Plastic Phase Out Plan."

Ministry of Environment, Srilanka. "National Action Plan on Plastic Waste Management 2021–2030." https://apps1.unep.org/resolutions/uploads/national_action_plan_on_plastic_waste_management.pdf.

Ministry of Environment, Forest and Climate Change. "Ban on Single Use Plastic in India: Step towards Clean India, Green India." Ministry of Environment, Forest and Climate Change, 7 de enero de 2022. https://static.pib.gov.in/WriteReadData/specificdocs/documents/2022/jul/doc20227169001.pdf.

Ms. Johanna Doerpinghaus, Ms. Jana Hack, Mr. Amarnath Munnolimath, Dr. Malini Balakrishnan and Dr. Vidya Batra. "POLICY BRIEF (Input Paper): Prevention of Marine Litter in India." June, 2021.

National Bureau of Statistics. "Statistical Pocketbook of Maldives." Male, 2020.

Nestlé. «Tackling plastic pollution and managing waste: Improving the environmental performance of our packaging and reducing food loss and waste». Acceso el 16 de abril de 2024.

Nestlé. «Building a sustainable planet the smarter way». Acceso el 16 de abril de 2024. https://www.nestle.in/stories/building-a-sustainable-planet-the-smarter-way.

Nestlé. "Creating Shared Value and Sustainability Report." 2023.

Nistharan, Fathimath, Munshidha Ibrahim, Habeeb Fathimath Shihany y Rifath Naeem. “Maldives Marine Litter Action Plan.” Male, Maldives, 2018.

Parley India. «A blueprint for change». https://parley.tv/india.

Parley Maldives. «Creating the blueprint forGlobal Change». https://www.maldives.parley.tv/.

Pepsico. «PepsiCo Recycling and Sustainability Initiatives». https://contact.pepsico.com/pepsico/article/pepsico-recycling-and-sustainability-initiatives.

Pepsico. “Packaging Partnerships Engagement.” 04/2024.

Radhika Sikaria. «Coca-Cola launches 100% rPET bottles in India and Philippines despite recyclate supply struggles». Acceso el 16 de abril de 2024. https://www.packaginginsights.com/news/coca-cola-launches-100-rpet-bottles-in-india-and-philippines-despite-recyclate-supply-struggles.html.

South Asia Co-operative Environment Programme. “Regional Marine Litter Action Plan for South Asian Seas Region.” Colombo, Sri Lanka, 2019.

South Asia Co-operative Environment Programme. “Report of the sixth inter-governmental meeting of ministers of South Asian Seas Programme.” Dhaka, Bangladesh, 2019.

TUEWAS. «Waste to Value: Scaling up waste collection and recycling systems for reducing plastic waste entering landfills in Sri Lanka».

Unilever. «Our ambition is an end to plastic pollution through reduction, circulation and collaboration».