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STRONGER TOGETHER

The role of regional instruments in
strengthening global governance
of marine plastic pollution

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TABLE OF CONTENTS

Executive summary	5
1 Introduction	10
2 Review of regional instruments addressing marine plastic pollution	13
Regional Seas Conventions and Action Plans	13
Large Marine Ecosystems activities	16
Regional Economic Organisations	17
Regional Fisheries Bodies	21
3 Challenges in addressing marine plastic pollution at the regional level	24
4 Case study: Governance of marine plastic pollution in the Mediterranean	27
5 Leveraging the potential for regional level action	33
6 Conclusion	44
7 References	47
8 Appendices	53
Annex 1	53
Annex 2	57
Annex 3	58
Annex 4	59
Annex 5	60

ABBREVIATIONS

ABNJ	Areas Beyond National Jurisdiction
ALDFG	Abandoned, lost or otherwise discarded fishing gear
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
AU	African Union
CARICOM	Caribbean Community
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CBD	Convention on Biological Diversity
CEP	Caribbean Environment Programme
CITES	Convention on International Trade in Endangered Species
CMS	Convention on Migratory Species
COBSEA	Coordinating Body on the Seas of East Asia
COFI	Committee on Fisheries
CPPS	Permanent Commission for the South Pacific
EAC	East African Community
EC	European Commission
EU	European Union
EPR	Extended Producer Responsibility
ESCAP	Economic and Social Commission for Asia and the Pacific
EO	Ecological Quality Objective
FAD	Fish Aggregating Device
FAO	Food and Agriculture Organization of the United Nations
GEF	Global Environmental Facility
GESAMP	Group of Experts on the Scientific Aspects of Marine Environmental Protection
GFCM	General Fisheries Commission for the Mediterranean
GPA	Global Programme of Action for the Protection of the Marine Environment from Land-based Activities
GPML	Global Partnership on Marine Litter
HELCOM	Baltic Marine Environment Protection Commission – Helsinki Commission
IAATO	International Association of Antarctica Tour Operators
ICCAT	International Commission for the Conservation of Atlantic Tunas
IGO	Intergovernmental Organisation
IMAP	Integrated Monitoring and Assessment Programme
IMO	International Maritime Organization
IOC-UNESCO	Intergovernmental Oceanographic Commission of UNESCO
IOTC	Indian Ocean Tuna Commission
JNRFC	Joint Norwegian-Russian Fisheries Commission
LBS	Land-Based Sources

LME	Large Marine Ecosystem
London Convention	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter
MAP	Mediterranean Action Plan
MARPOL	International Convention for the Prevention of Pollution from Ships
MSFD	Marine Strategy Framework Directive
NAFO	Northwest Atlantic Fisheries Organization
NAP	National Action Plan
NEAFC	North East Atlantic Fisheries Commission
NGO	Non-Governmental Organisation
NOWPAP	Northwest Pacific Action Plan
OECD	Organisation for Economic Co-operation and Development
OFWG	Oceans and Fisheries Working Group
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
PAME	Protection of the Arctic Marine Environment
PERSGA	Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden
PWP	Plastic Waste Partnership
REMPEC	Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea
REO	Regional Economic Organisation
RFB	Regional Fisheries Body
RFMO	Regional Fisheries Management Organisation
ROPME	Regional Organization for Protection of the Marine Environment
RSCAP	Regional Seas Conventions and Action Plans
RSN	Regional Fishery Body Secretariats' Network
RSSD	Regional Seas Strategic Directions
SAARC	South Asian Association for Regional Cooperation
SACEP	South Asia Co-operative Environment Programme
SAP	Strategic Action Programme
SAP BIO	Strategic Action Programme for the Conservation of Biological Diversity in the Mediterranean Region
SAP MED	Strategic Action Programme to Address Pollution from Land-based Activities
SCP/RAC	Regional Activity Centre for Sustainable Consumption and Production
SDG	Sustainable Development Goal
SPREP	Secretariat of the Pacific Environment Programme
SPRFMO	South Pacific Regional Fisheries Management Organisation
TDA	Transboundary Diagnostic Analysis
UAV	Unmanned Aerial Vehicle
UN	United Nations
UN ESCAP	Economic and Social Commission for Asia and the Pacific
UNCLOS	United Nations Convention of the Law of Seas
UNDP	United Nations Development Programme

UNEA

United Nations Environment Assembly

UNEP

United Nations Environment Programme

UNESCO

United Nations Educational, Scientific and Cultural Organization

WCPFC

Western and Central Pacific Fisheries Commission

WECAFC

Western Central Atlantic Fishery Commission

Executive summary

Background to the research

Marine plastic litter has become a widespread problem in all parts of the ocean. In recent years, a multitude of intergovernmental agreements as well as voluntary measures, guidelines, strategies and partnerships with relevance to marine plastic pollution have been concluded at national, regional and global level. While all of these efforts indicate the urgency and willingness to address this issue, plastic litter input to the marine and coastal environment continues and is expected to grow further. Different proposals to enhance the governance framework related to marine plastic litter have been discussed in numerous international fora, including the strengthening of existing regional and sectoral frameworks and negotiating a new global agreement on marine plastic pollution.

This analysis addresses the question which role regional level governance plays as part of a multi-layered approach addressing marine plastic pollution. It looks at what regional organisations have achieved so far and offers recommendations for policymakers on how these efforts can be leveraged, supported and linked to a proposed new global agreement on marine plastic litter. The research aims to inform international discussions and efforts to prevent plastic pollution, including further work under the auspices of the United Nations Environment Assembly.

Contribution of regional instruments in addressing marine plastic pollution

The analysis does not include all regional instruments relevant to marine plastic litter but focuses on Regional Seas Conventions and Action Plans (RSCAPs), Large Marine Ecosystem (LME) activities, Regional Economic Organisations (REOs) and Regional Fisheries Bodies (RFBs). The current roles and main contributions of the four analysed regional instruments towards addressing marine plastic pollution can be summarised as follows:

Regional Seas Conventions and Action Plans

- Adopt Regional Action Plans specific to marine litter
- Provide regional assessments on the state of the environment
- Monitor marine litter within existing monitoring and assessment programmes
- Adopt regional protocols addressing land-based sources of pollution

Large Marine Ecosystem activities

- Identify activities aimed at combatting marine litter or marine debris as part of regional Strategic Action Programmes

Regional Economic Organisations

- The European Union (EU) addresses marine litter through a number of regulations and legally-binding directives

- The Association of Southeast Asian Nations (ASEAN), the Asia-Pacific Economic Cooperation (APEC) and the Economic and Social Commission for Asia and the Pacific (ESCAP) inter alia conduct research on marine litter and provide policy advice, capacity building and technical assistance to their member states

Regional Fisheries Bodies

- Introduce measures to minimise and retrieve abandoned, lost or otherwise discarded fishing gear (ALDFG)

When taking into account these significant efforts in establishing joint, coordinated action to address marine plastic litter at the scale of marine regions, it becomes clear that regional instruments should continue to play a substantial role in addressing the issue of marine plastic litter.

The analysis furthermore indicates that the existing RSCAPs, LME activities, REOs, and RFBs are well-suited to transfer global objectives and standards into regional agreements, roadmaps or action plans. Thus, the regional level can complement and reinforce a new global agreement by providing frameworks for action and implementation which allow for the challenges, needs and characteristics of each region to be considered and furthermore make it possible to go beyond global standards.

Challenges in regional level governance of marine plastic pollution

The analysis reveals four broad challenges which need to be addressed in order to strengthen the existing efforts to address marine plastic litter at the regional level: 1) level of implementation, 2) monitoring and assessment, 3) multi-stakeholder approach, and 4) private sector engagement (see Figure 1). To begin with, the level of implementation of policies, programmes, action plans and projects relevant to marine plastic pollution varies significantly across the different regions. Not all marine regions have adopted action plans or strategies to address marine plastic pollution. In addition, large differences exist in the state of marine plastic litter monitoring and assessment across regions. While (sporadic) assessments of marine plastic pollution have been conducted in some regions, only a few regions implement long-term monitoring and assessment programmes with comparable data on marine plastic litter reported by the member countries or contracting parties, making it difficult to come up with a common knowledge base for management measures. Challenges also exist with regards to harmonising monitoring approaches. Finally, the results of a survey carried out as part of this research indicate that many regional organisations find it difficult to engage with the broad range of stakeholders from government, the private sector, NGOs, and academia at national, regional and international level which are relevant to effectively combat marine plastic litter. Poor levels of engagement of relevant actors are partly due to limited capacities to have continuous, sustainable engagement with all relevant actors. The nature and exact type of the identified challenges varies from region to region and from organisation to organisation, calling for an in-depth assessment of challenges in each region.

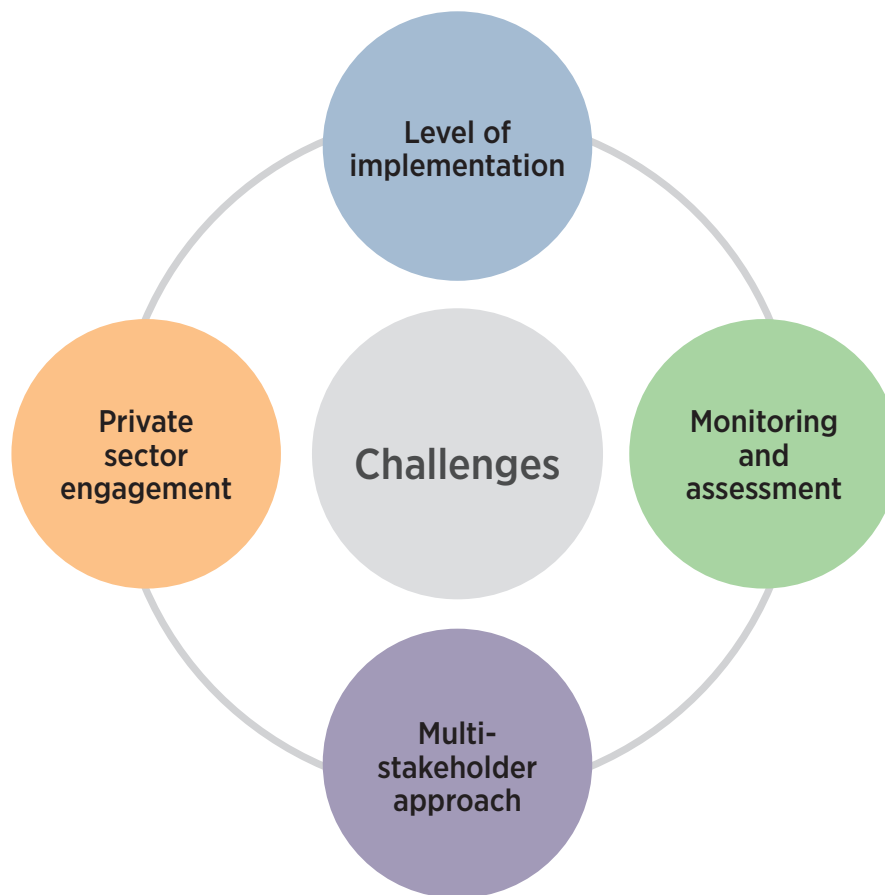


Figure 1: Overview of identified challenges in addressing marine plastic pollution at the regional level.

Recommendations for regional and global action

The different challenges in addressing marine plastic pollution at the regional level require crucial action at the short and medium to long-term. This report puts forward a set of actionable recommendations for initial and further steps and identifies ways how a new global agreement on marine plastic litter may advance regional efforts (see Figures 2 – 5).

The outlined possible contributions of a new global agreement would help to strengthen regional action addressing marine plastic litter and would thus also directly build up the ability of the regional level to support the implementation of a new global agreement. The experience, expertise and capacity regional organisations have with regards to addressing marine plastic litter should be considered as valuable guidance in the development of the provisions of a new global agreement as this will help to guarantee that the future implementation of a global agreement is effective and adapted to the reality on the ground.

When considering the recommendations, it should be kept in mind that the role of regional organisations differs from region to region and that any measures and solutions need to be adapted to the specific context.

	Initial steps	Further steps
Level of implementation	<ol style="list-style-type: none"> 1 Initiate or expand activities under existing RSCAPs, LME projects or REOs 2 Promote and assist development of regional response strategies and action plans 3 Consider adoption of protocol or annex addressing land-based sources of pollution 4 Promote progress in adopting relevant measures on ALDGF 5 Continue, expand or initiate awareness programs and clean-up campaigns 6 Promote regional commitments to ban and address single use plastic, polystyrene and plastic packaging 	<ol style="list-style-type: none"> 1 Evaluate the effectiveness of measures 2 Scale up implementation and enforcement of measures at regional, national and local level 3 Introduce regional thresholds and aims 4 Gradually strengthen existing governance framework at regional, but also national and local level
	Possible contribution of a global agreement	
	<ol style="list-style-type: none"> 1 Set common objectives and minimum standards 2 Develop a globally agreed Plan of Action or Voluntary Guidelines 3 Develop global guidelines and standards supported by bodies of experts 4 Promote the sharing of best practices and technologies across regions 5 Provide capacity building, training and financial support 6 Address matters best tackled at international level, such as guidelines for sustainable product design, illegal discharges from ships in international waters, and global liability and compensation for pollution by plastic. 	

Figure 2: Overview of recommendations for addressing challenges related to varying levels of implementation.

	Initial steps	Further steps
Monitoring and assessment	<ol style="list-style-type: none"> 1 Include indicators on marine plastic litter in existing monitoring and assessment programs 2 Consider innovative approaches for data collection 3 Strengthen the science-policy interface 4 Link monitoring activities with vessel and aircraft operations in the region 5 Employ technologies 6 Standardise and harmonise monitoring approaches and related protocols 7 Establish regional reporting mechanisms 8 Identify and address capacity needs and related costs 	<ol style="list-style-type: none"> 1 Advance the harmonization of data collection protocols and methods 2 Establish a system to assess the effectiveness of measures 3 Advance towards integrated assessments from source-to-sea, across thematic areas and sectors 4 Conclude partnerships and agreements to facilitate data exchange and joint preparation of assessments 5 Improve accessibility and exchange of data 6 Further develop and employ automatized approaches
	Possible contribution of a global agreement	
	<ol style="list-style-type: none"> 1 Establish globally accepted guidelines 2 Propose common targets, indicators and assessment methodologies 3 Set common objectives and minimum standards 4 Harmonise efforts of regional instruments, including RSCAP's, LME activities, RFBs, REOs as well as NGOs and science associations 5 Establish a joint international database and a related data management strategy 6 Identify and feed in relevant data from international organisations and processes 7 Ensure that global assessments on the state of marine plastic pollution are coordinated with and contribute to related global monitoring and assessment processes 	

Figure 3: Overview of recommendations for addressing challenges related to monitoring and assessment.

	Initial steps	Further steps
Multi-stakeholder approach	<ol style="list-style-type: none"> 1 Support continuation and expansion of existing integrative regional platforms for coordination and cooperation 2 Establish overarching mechanisms and formalised cooperation between relevant stakeholders 3 Encourage increased collaboration between RFBs and RSCAPs 4 Encourage global platforms and learning processes which strengthen cross-sectoral and inter-regional cooperation 	<ol style="list-style-type: none"> 1 Systematically expand cooperation and coordination with relevant stakeholders 2 Formalise partnerships with key stakeholders
	Possible contribution of a global agreement	
	<ol style="list-style-type: none"> 1 Provide a central forum for coordinating activities addressing marine plastic pollution across relevant levels and sectors 2 Assist the gathering and sharing of scientific and technical knowledge across sectors by establishing scientific and technical committees or bodies which provide advice 3 Include an obligation for enhanced cooperation by relevant organisations and bodies at national, regional and international level 	

Figure 4: Overview of recommendations for addressing challenges related to a multi-stakeholder approach.

	Initial steps	Further steps
Private sector engagement	<ol style="list-style-type: none"> 1 Explore possibilities to cooperate with the private sector in order to improve production and waste management systems, e.g. through pilot projects 2 Invite private sector representatives to contribute to working groups on marine plastic pollution or participate in relevant projects 3 Build a good understanding of technical innovations and economic systems 	<ol style="list-style-type: none"> 1 Establish long-term partnerships with the private sector 2 Collaborate on the identification of ways to reduce plastic litter input and alternative options for industries based on circular economy aspects
	Possible contribution of a global agreement	
	<ol style="list-style-type: none"> 1 Approve internationally harmonised standards for the industry 2 Fill regulatory and policy gaps with regards to areas such as sustainable product design, labelling and coding systems and EPR 3 Provide financial and/or technical support in areas such as waste management, waste water treatment and port reception facilities 	

Figure 5: Overview of recommendations for addressing challenges related to private sector engagement.

1 Introduction

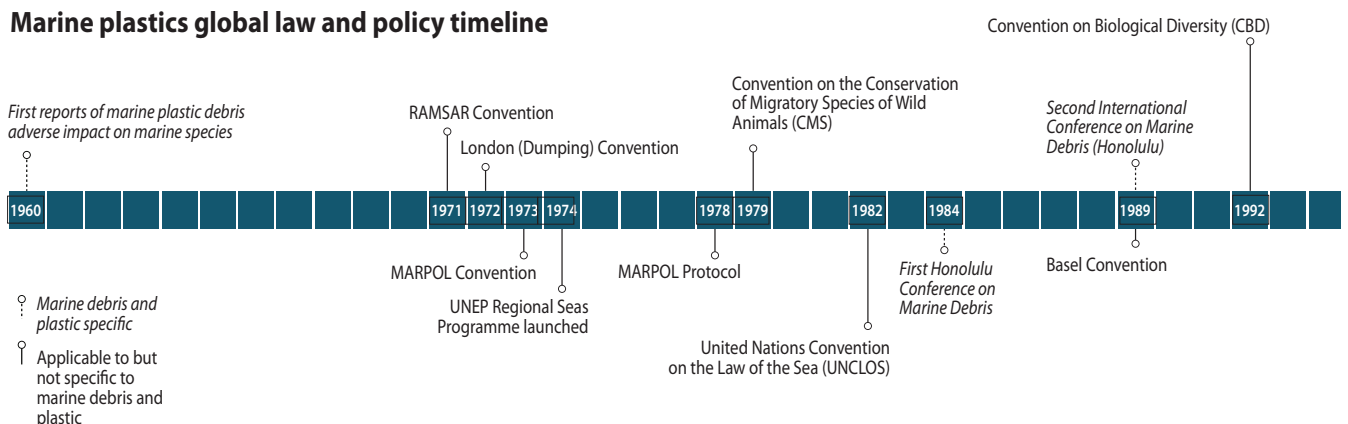
Marine plastic pollution presents a growing problem in the ocean. While the exact amount of plastic litter in the ocean is unknown, research results indicate that plastics are widespread in all parts of the ocean, from Antarctica to the Arctic and from the sea surface to the seafloor, including the deep sea (Gall & Thompson, 2015). Ocean currents carry plastic items across the oceans, making marine plastic pollution a global, transboundary issue.

The sources of plastics accumulating in the oceans can be broadly divided into plastics originating from land-based activities and plastics entering the sea as a result of sea-based activities. Land-based sources of marine plastic pollution are manifold and can be broadly categorised into commercial activities, industrial and agricultural practices and consumers (Mathews & Stretz, 2019). Plastic litter originating on land enters the sea through different pathways, such as rivers, direct wastewater discharges into water bodies, and wind. The actual leakages of plastic litter entering the sea depends greatly on the adequacy of municipal waste management systems (GESAMP, 2016). Sea-based activities leading to the direct discharge of marine plastic litter into the sea include fishing, aquaculture, shipping, ocean dumping and other maritime activities (Gilardi et al., 2020). While land-based sources are predominant on a global scale, marine litter composition data from different locations indicates that sea-based sources are at times prevailing over land-based sources, particularly in areas further away from large human settlements (Bergmann et al., 2015).

Marine plastic litter is amongst the most pervasive and challenging types of litter as it can impact the marine environment for decades (Mæland & Staube-Delgado, 2020). It comes in all sizes and the term ‘*microplastic*’ typically describes plastic particles which have a diameter of less than 5 mm (Jambeck et al., 2020). Some ecological as well as socio-economic implications of marine plastic pollution are now well recognised, while other consequences are more complex and challenging to study. The entanglement of marine organisms in plastic litter is amongst the most evident impacts of marine plastic litter. Entanglement can cause cuts, abrasions and injuries or in the worst case lead to death through drowning, starvation, and strangulation of marine species. Impacts from entanglement are mainly observed for higher taxa organism, such as whales, turtles, seals, sharks and large fish and are typically caused by abandoned, lost and otherwise discarded fishing gear (ALDFG) (Gall & Thompson, 2015).

Figure 6 (part 1): Marine plastics global law and policy timeline. | Source: GRID-Arendal.

Marine plastics global law and policy timeline



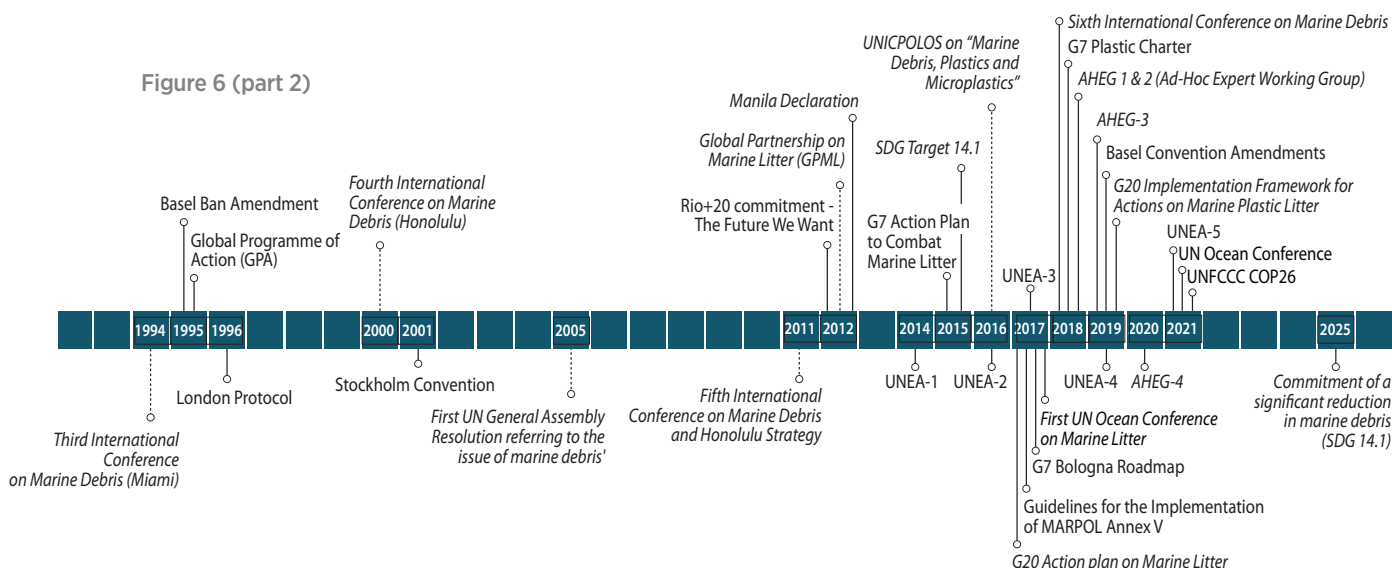
When larger pieces of plastic sink to the sea floor, they can smother benthic organisms, plants and coral. Furthermore, many marine animals swallow plastic particles, which can lead to the partial blockage or injury to their digestive tracts and a decline in feeding due to feelings of satiation, all of which may ultimately lead to poor nutrition and a health decline (Bergmann et al., 2015). Since microplastics can absorb toxins and heavy metals from the sea, the risk exists that toxins bioaccumulate along the food chain and ultimately enter the human diet (UNEP, 2017). In addition, plastic waste can promote microbial colonisation by pathogens implicated in outbreaks of disease in the ocean and facilitate non-indigenous species invasion (GESAMP, 2016).

With the amount of plastic produced globally expected to double over the next ten to fifteen years, urgent action and systemic change is needed to prevent and reduce marine plastic pollution (Williams et al., 2019). Measures upstream are key to preventing plastic litter from both land and sea entering the ocean. Furthermore, recovery activities are needed to remove plastic from the ocean and reduce the impact on marine life.

In the past, binding agreements as well as voluntary measures with relevance to the issue of marine plastic pollution have been adopted under different global conventions, including the International Convention for the Prevention of Pollution from Ships (MARPOL), the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention) and the protocol thereto (London Protocol), the Convention on Biological Diversity (CBD), the Stockholm Convention and the Basel Convention. The issue was furthermore widely discussed within the OECD and at the United Nations Environment Assembly (UNEA) (Figure 6).

Several UNEA resolutions targeted the issue of marine litter, requesting inter alia an assessment of the effectiveness of relevant governance strategies and approaches (UNEA 2/11), the strengthening of the capacity and activity of the United Nations Environment Programme (UNEP) on marine litter (UNEA 3/7), and the establishment of an Ad Hoc Open-Ended Expert Group (UNEA 3/7), tasked to ‘*Analyse the effectiveness of existing and potential response options and activities on marine litter and microplastics at all levels to determine the contribution in solving the global problem*’ (UNEA 4/6, paragraph 7d). In addition, four of the 17 Sustainable Development Goals (SDGs) adopted by the international community in 2015 as part of the 2030 Agenda for Sustainable Development have targets directly related to marine plastic pollution. These targets deal with improving wastewater treatment (Target 6.3), urban waste management (Target 11.6) prevention, reduction, recycling and reuse of waste (Targets 12.4, 12.5 and 14.1) and sustainable management of oceans (Target 14.2 and 14.c) (Löhr et al., 2017).

Figure 6 (part 2)



Moreover, a variety of partnerships and other commitments, including the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) and its Global Partnership on Marine Litter (GPML), the Clean Seas campaign of UNEP, the G20 Action Plan on Marine Litter, the G7 Action Plan to Combat Marine Litter and the IMO Action Plan to Address Marine Plastic Litter from Ships were initiated at the global level in order to address marine plastic pollution.

At the regional level, several Regional Seas Conventions and Action Plans (RSCAPs), Large Marine Ecosystems (LME) projects, Regional Economic Organisations (REOs), Regional Fisheries Bodies (RFBs) as well as NGO initiatives, regional forums and science associations are actively engaged in curbing marine plastic litter.

While all of these efforts as well as the multiple initiatives at national level certainly indicate the urgency and willingness attributed to addressing the issue of marine plastic pollution, noticeable gaps persist in the governance of marine litter (Carlini & Kleine, 2018; Raubenheimer et al., 2018; Simon et al., 2018). Different ways to enhance the existing governance framework have been discussed in numerous international fora, with growing support among States for concluding a new global agreement on marine plastic pollution which would be able to provide a comprehensive framework for addressing marine plastic litter. Such an agreement, whether voluntary or binding, may provide an opportunity to streamline and harmonise the current and future efforts to address marine plastic pollution at global, regional and national levels.

Aim and structure of the analysis

The question this report aims to address is how a stronger governance response at the regional level can be achieved and what form the interplay between regional and global institutions and tools could take as part of a strengthened multi-layered approach to govern marine plastic pollution. To this end, the report provides an assessment of activities which are currently implemented by different regional instruments with regard to marine plastic pollution as well as related challenges and opportunities. A case study of the Mediterranean region is presented in order to provide a deeper understanding of possible ways to govern marine plastic pollution at the regional scale. Based on this analysis, ways in which a potential new global agreement on plastic pollution may underpin the regional level and vice versa are identified and critical steps to enhance the governance of marine plastic pollution at the regional level are proposed.

Methodology

The information presented in this report was gathered through a literature review and further substantiated through an online survey, an online workshop and a peer-review process. The online survey was conducted in July 2020, using both open-ended and close-ended survey questions (Annex 1). In total, 25 participants representing RSCAPs, RFBs, REOs, and LME activities took part in the survey. The online workshop was conducted in October 2020 with a total of 33 participants working within the framework of different regional organisations as well as representatives of inter-governmental organisations (IGOs), academia and government (Annex 2). The diverse range of stakeholders which participated in the survey and/or the workshop provided the authors with an in-depth account and better understanding of work realities, challenges and opportunities encountered by practitioners working at the regional level. It should however be noted that neither the survey nor the workshop were representative.

2 Review of regional instruments addressing marine plastic pollution

In order to assess the current and potential future role of the regional level, it is central to understand opportunities and challenges related to different instruments at the regional level. This chapter provides a broad overview and assessment of the functioning of different regional instruments relevant to combatting marine plastic pollution. The review focuses on four broad groups of instruments: RSCAPs, LME activities, REOs, and RFBs. The analysis does not include all regional instruments relevant to marine plastic litter. NGO initiatives, regional forums, science associations, river basin organisations and several initiatives engaged in curbing land-based pollution through measures such as improved solid waste management, waste water treatment and circular economy do not form part of this assessment but would provide important contributions to the discussion.

Regional Seas Conventions and Action Plans

The UNEP Regional Seas Programme was initiated in 1974, aiming to tackle the increasing degradation of the world's oceans. To date, 18 RSCAPs have been established around the world and more than 143 countries participate in one or several RSCAPs. Of the 18 RSCAPs, seven are administered directly by UNEP, seven were founded under UNEP but are implemented by other organisations, and four are independent partnering programmes (Annex 3, Table 1). All RSCAPs with secretariats participate in annual meetings organised by UNEP and contribute to the Regional Seas Strategic Directions (RSSD) which are prepared every three years. While 13 of the 18 RSCAPs are legally underpinned by a convention and associated protocols (or annexes), the Arctic Council, the South Asian Cooperative Environment Programme (SACEP), the Northwest Pacific Action Plan (NOWPAP), and the Coordinating Body on the Seas of East Asia (COBSEA) are soft legal instruments (Annex 3, Table 1). Under those RSCAPs based on a convention, member states can agree on legally-binding provisions to protect the marine environment in addition to approving non-binding recommendations, decisions, declarations, strategies, action plans, and agreements with regard to marine environmental protection.

The RSCAPs are diverse in terms of their actual functioning but all reflect the political will of their parties for coordinated action regarding joint marine environmental issues (UNEP, 2018). The main work of the RSCAPs pertains to the protection of the marine environment and conservation and sustainable use of marine biodiversity, ecosystems and habitats. Several RSCAPs also actively engage in cross cutting issues, such as governance, capacity building, information management, climate change and sustainable development (UNEP, 2018). In some cases, RSCAPs undertake regional level implementation of marine aspects of global arrangements and agreements, such as the CBD, the Ramsar Convention, the Convention on International Trade in Endangered Species (CITES), the Convention on Migratory Species (CMS), the Basel Convention, the Stockholm Convention and the London Convention/Protocol.

Typically, RSCAPs provide regional baseline assessments of the state of the marine environment and guide regional and national activities by elaborating an overall strategy or action plans, which indicate the priorities and actions to be implemented over a certain time period, usually between five and ten

years. In addition, several of the RSCAPs adopted thematic strategies or action plans covering among others topics such as land-based sources of pollution, marine litter, biodiversity, marine protected areas, climate change, and integrated coastal zone management (UNEP, 2018).

Regional Action Plans specific to marine litter have to date been adopted by 12 RSCAPS and four RSCAPs are in the process of developing such plans (Annex 3, Table 1 and Figure 7). All of the action plans are voluntary in nature, with the notable exception of the Regional Plan on Marine Litter Management in the Mediterranean, which contains legally-binding measures. The action plans typically encourage measures aimed at improving wastewater treatment and waste management systems, preventing, reducing and removing ALDFG, improving port reception facilities to receive garbage from vessels, increasing awareness and stakeholder participation, and improving the policy, legal and regulatory frameworks. In addition RSCAPs promote and facilitate environmentally sound removal actions, monitoring and assessment, the adoption of coherent approaches through the development of region-wide implementation guidelines, and regional and international cooperation. Under HELCOM, an expert network on Marine Litter was set up to assist the implementation of the Regional Action Plan on Marine Litter, promote collaboration with other RSCAPs as well as international fora, and discuss and review HELCOM indicators on marine litter (HELCOM, 2018).

Under the GPML, Regional Marine Litter Nodes were established to support and promote efforts at the regional level, strengthen information management, and assist information exchange and cooperation amongst stakeholders in the region as well as between regions. To date, Regional Nodes are being (co)hosted by RSCAPs in the Caribbean (CEP), the Mediterranean (UNEP/MAP), the Northwest Pacific (NOWPAP), the South Asian Seas (SACEP) and the South Pacific (SPREP). In the East Asian Seas, the establishment of a Regional Node will be considered by the COBSEA Intergovernmental Meeting (GPML, 2020).

Furthermore, the RSCAPs contribute to the implementation of the 1995 GPA. The GPA encourages actions regarding the sources of land-based pollution to be taken at the international, the regional and the national level. At the regional level, RSCAPs support the GPA by conducting regional assessments, identifying priorities for action, promoting shared learning and promoting the adoption and implementation of legally-binding regional protocols addressing land-based sources of pollution and activities (LBS protocols). The LBS protocols adopted under the RSCAPs differ in their scope and provide for different obligations by the contracting parties. First-generation LBS protocols referred to as “shoreline” protocols were limited to prohibiting or regulating certain substances through black and grey listings. Second-generation protocols broadened their scope to include the regulation of sources and activities; allowing in principle for adopting an inclusive approach to addressing marine plastic pollution from land-based sources (UNEP, 2017). Of the 18 RSCAPs, six have so far adopted regional LBS Protocols while four more protocols are pending entry into force (Annex 3, Table 1). In the Black Sea, the Pacific, the Mediterranean and the Northeast Atlantic, regional protocols have in addition been adopted to regulate the direct dumping of waste into the ocean (UNEP, 2019).

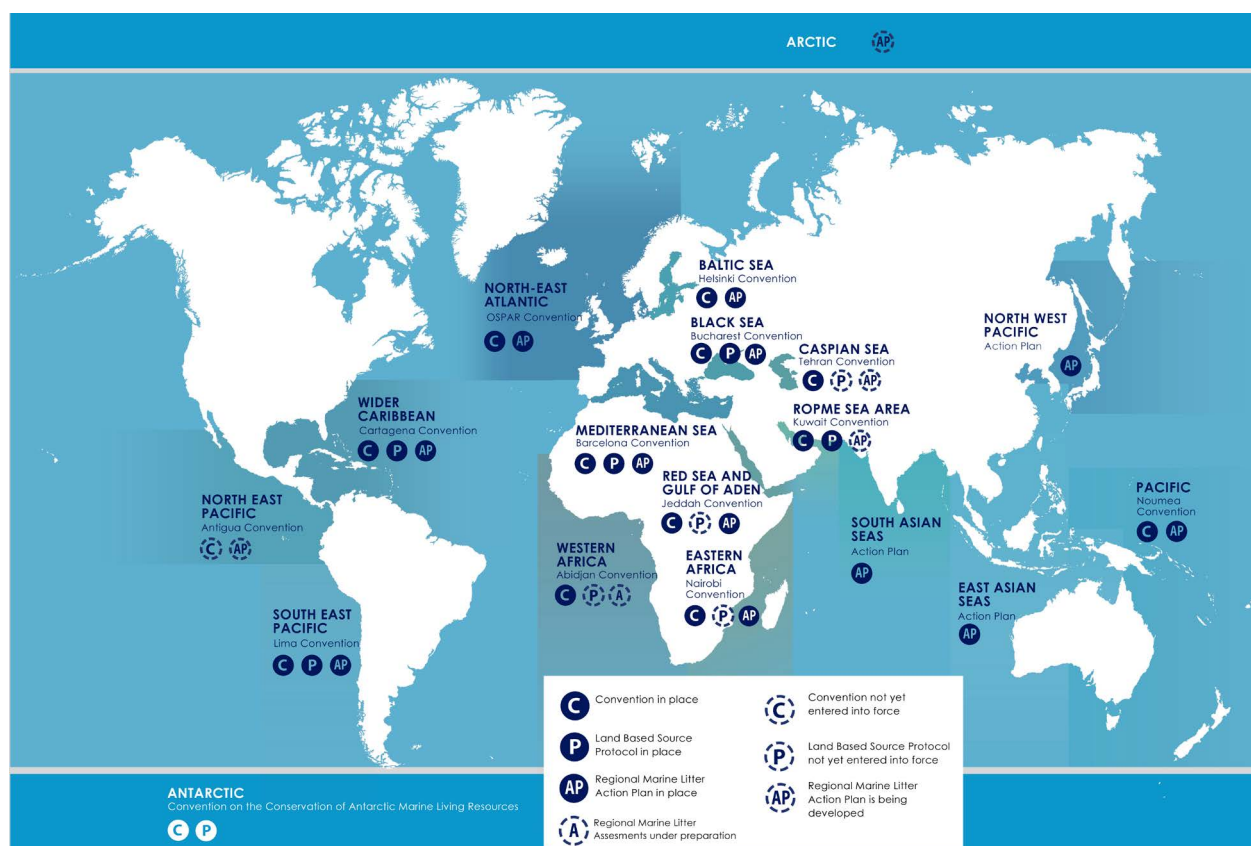


Figure 7: Map indicating RSCAPs and related binding and voluntary instruments addressing marine litter.
Source: Adapted from UNEP, 2019: Figure 1.

All RSCAPs have developed indicators for different purposes, such as monitoring the implementation of their conventions, protocols, and state of environment reporting. Differences exist amongst the RSCAPS with regards to the actual approach to monitoring and assessment, the array and detail of the indicators adopted and the stage of development of data collection, monitoring and assessment activities (UNEP, 2014). Several RSCAPs introduced indicators specific to marine litter in their existing monitoring and assessment programmes. Examples for assessed indicators are marine litter on the beach, sightings of marine litter, litter in the water column, litter on the seafloor, litter ingested by marine organisms, litter associated with seabird colonies, plastic particles in fulmar stomachs, and litter entangling marine organisms (Annex 4, Table 2). The development of indicators for microlitter in sediment is ongoing under HELCOM and OSPAR (HELCOM, 2020) and COBSEA is planning to establish a Marine Litter Monitoring Expert Group under the COBSEA Working Group on Marine Litter (COBSEA & UNEP, 2019).

The UNEP Regional Seas Programme started to develop shared methodologies for a range of indicators, building upon the existing monitoring programmes in the regions. A Regional Seas Indicator Working Group was set up for this purpose and a core set of 22 regional seas indicators was developed. Of these 22 indicators, several RSCAPs are currently applying an indicator related to marine litter on a pilot basis by quantifying and classifying beach litter items (UNEP, 2018).

Large Marine Ecosystems activities

LMEs represent ecosystem-based management units and typically extend to around 200,000 km² or more. They encompass coastal areas of the world's ocean which are characterised by high biological productivity as well as a high level of pressures and threats including pollution and overexploitation (UNDP, 2017). Globally, a total of 66 LMEs were defined and a strategic approach to manage them was adopted by the Global Environmental Facility (GEF) in 1995 (GEF LME:LEARN, 2018). The approach has a Transboundary Diagnostic Analysis (TDA) and the development and formal approval of a regional Strategic Action Programme (SAP) at its core. As part of the TDA, the current status of the marine resources and the environment, the threats and impacts to the LMEs as well as their root causes are assessed. The baseline assessment and identified indicators inform the quality assessment presented in the SAP and are often further developed into regular regional assessments (UNEP, 2018). The SAPs inter alia identify governance reforms, which the participating countries jointly implement in order to address the concerns identified in the TDA.

To date, TDAs were conducted for 16, and SAPs for 25 of the world's 66 LMEs (Annex 5, Table 3 and Figure 8). GEF funded SAP implementation projects are currently ongoing in the Agulhas Current LME, the Somali Coastal Current LME, the South China Sea LME, the Gulf of Thailand LME, the Coral Sea Basin LME, the Indonesian Sea LME, the Sulu-Celebes Sea LME, the Yellow Sea LME, the Caribbean Sea LME, the North Brazil Shelf LME, the Gulf of Mexico LME and the Humboldt Current LME (Annex 5, Table 3). Several SAPs also contain National Actions Plans (NAPs) which are meant to facilitate implementation of the overall, regional SAP at the national level. The process of developing the NAPs greatly differs among the regions but in general they provide an opportunity for involving a broad range of stakeholders and for including required actions into national budgets (GEF LME:LEARN, 2018).

During Annual LME Consultations, marine and coastal practitioners representing GEF and non-GEF funded projects as well as international and national organisations and institutions meet in order to share experiences and promote collaboration and partnerships for ecosystem-based ocean governance and management (GEF LME:LEARN, 2019). In addition, the project LME:Learn was initiated by GEF, UNDP and IOC-UNESCO in order to enhance the governance of LMEs by creating knowledge, building capacity, and facilitating joint learning and exchange of good practices (GEF LME:LEARN, 2018).

LMEs oftentimes correspond with the RSCAPs and there has been close coordination among LME activities and RSCAPs. Targets and corresponding indicators agreed in SAPs have for example been integrated into work-plans and strategic documents of RSCAPs and some RSCAPs were established during or as a result of LME activities (UNEP, 2018). Institutional arrangements supporting the SAP process vary among the regions and are decided upon by the participating countries. Since there is seldom an existing body with a formal mandate covering all LME activities, different regional entities are frequently jointly managing the LME or a new commission is created (UNDP, 2017).

All SAPs analysed in this study recognise marine pollution as an issue and several SAPs identify it as one of the focus areas. In the case of the Mediterranean LME, an entire SAP was focused on addressing pollution from land-based activities. Activities and measures proposed to address the issue of marine pollution include the establishment of advisory groups related to pollution management, pollution monitoring and assessment, control of pollution from land-based sources, as well as the drafting of pollution load compilations and state of pollution reports. In the SAP for the Guinea Current LME, the establishment of a Regional Centre of Excellence for Pollution Management is foreseen.



Figure 8: Map of LMEs which conducted SAPs under GEF International Waters project portfolio. SAPs explicitly addressing marine litter are dashed. | Source: Based on information from <https://iwlearn.net/iw-projects> (Accessed 17 August 2020).

Of the existing SAPs, 11 explicitly mention marine litter and/or marine debris as a concern and identify activities aimed at combatting marine litter or marine debris. The most common activities are public awareness campaigns on marine litter and clean-up campaigns at beaches. Other measures mentioned include the construction of reception facilities for marine litter at ports, the identification of potential investment projects in solid waste/plastics management and the application of the no-special-fee system to ship-generated wastes and marine litter caught in fishing nets (Annex 5, Table 3). Activities mentioned in the SAP often provide a starting point for more activities which may continue after the end of the project implementation through different types of institutions.

Regional Economic Organisations

REOs are founded by countries in order to improve the economic development through economic integration. Economic integration may include the preferential treatment in trade and other matters and the establishment of common standards and practices in a range of areas. The actual design of the existing REOs is very diverse in terms of the issues addressed, the mandates given, and the institutional structures supporting the organisations. While some REOs, such as the European Union (EU) and the Association of Southeast Asian Nations (ASEAN), address a wide range of economic, social, and political issues, and take a lead for example with regard to reporting on aspects of the SDGs, including SDG 14, other REOs have a rather limited scope.

Several REOs have addressed the issue of marine plastic pollution in the past years. The efforts of the EU, ASEAN, the Asia-Pacific Economic Cooperation (APEC), and the Economic and Social Commission for Asia and the Pacific (ESCAP) are especially extensive and will be explained in more detail in the following paragraphs. Additional examples of REOs which have addressed the issue include the South Asian Association for Regional Cooperation (SAARC), the Caribbean Community (CARICOM), the East African Community (EAC) and the African Union (AU).

The SAARC Energy Centre launched the campaign Say No to Plastic to reduce plastic usage and raise awareness¹. CARICOM Member States encouraged in their 2019 St. John's Declaration the introduction of measures to reduce and/or eliminate the use of single use plastics, committed to addressing the damage to ecosystems caused by plastics by 2030 and promoted collaborating with the private sector to find alternatives to plastic (CARICOM, 2019). The East African Legislative Assembly passed the EAC Polythene Materials Control Bill in 2017, aiming to ban the manufacturing, sale, importation and use of the polythene materials across the EAC member states (EAC, 2016). The AU hosted a High level working session on Banning Plastics in Africa in 2019 in order to raise awareness on the impacts of plastics in Africa, facilitate an exchange on strategies and measures being undertaken at national level, and decide on appropriate ways to move joint work on the issue forward².

European Union

Since the beginning of the EU and its precursor the European Economic Community, the protection of the environment has been a key priority. Directives and regulations pertaining to the marine environment amount to over 200 (Sheridan et al., 2020). The 27 Member States are legally bound to the Directives issued by the EU and are required to implement the provisions held within them.

The Marine Strategy Framework Directive (MSFD) was adopted in 2008, providing a Marine Strategy for the EU and its Member States, adjacent to the Northeast Atlantic, Arctic, Mediterranean, Black Sea, and Baltic Sea. The aim of the MSFD is to achieve Good Environmental Status of the EU marine waters by 2020 (EC, 2008). Eleven descriptors were established to define the environment condition when Good Environmental Status has been achieved. Descriptor ten pertains to marine litter, calling on EU Member States to achieve a status where *'Properties and quantities of marine litter do not cause harm to the coastal and marine environment'* (EC, 2008:Annex I). A series of criteria and parameters has been set up in order to monitor macro- and microplastics in seawater, seabed, shoreline and biota in a Commission Decision on the determination of Good Environmental Status (EC, 2017) and a Technical Group on Marine Litter was created to provide assistance to the Member States and promote the implementation of harmonised monitoring protocols (EC, 2013).

¹ See <https://www.saarcenergy.org/sec-launched-awareness-campaign-say-no-to-plastic-on-world-environment-day/>, accessed 16 November 2020.

² See <https://au.int/en/newsevents/20190210/high-level-working-session-banning-plastics-africa-towards-pollution-free-africa>, accessed 16 November 2020.

In 2015, the EU Action Plan on the Circular Economy was presented and a second version was issued in 2020. The action plan sets out targets for the recycling and reduction of waste and proposed legislative amendments to existing directives on waste as well as new strategies (EC, 2020a). The EU Plastics Strategy adopted in 2018 formulates the EU vision for a circular economy. Apart from addressing issues such as the recyclability of plastic packaging and the reduction of microplastics, the strategy explicitly targets plastic littering from sea-based sources and promotes measures such as deposit schemes, Extended Producer Responsibility (EPR) schemes and recycling targets to reduce ALDFG (EC, 2018a). In 2019, the EU adopted a Directive on Single-Use Plastics, outlining measures Member States must implement to address the most common single-use plastic items found on Europe's beaches and seas (EC, 2019). The outlined strategies and directives are complemented by several other EU laws targeting waste prevention, reduction/reuse/recycling, and regulation of waste discharge, all of which are indirectly relevant to preventing marine plastic pollution (Black et al., 2019).

A new Ports Reception Facilities Directive was adopted in 2019, repealing the Ports Reception Facilities Directive of 2000 and amending the Ports Reception Facilities Directive of 2010. The new directive aims, inter alia, to effectively address marine litter from shipping, including from fishing, by providing for financial incentives for delivery of waste to ports, improving monitoring and enforcement of the mandatory delivery obligation and enhancing the management of this waste in EU ports in adequate port reception facilities (EC, 2018b). The EU furthermore conducted a study on circular design of fishing gear in support of EU Plastics Strategy (EC, 2020b).

Association of Southeast Asian Nations

ASEAN was created in 1967 by Indonesia, Malaysia, the Philippines, Singapore, and Thailand in order to '*accelerate the economic growth, social progress and cultural development in the region*' (ASEAN, 1967:2). Today, ASEAN has ten member states and regularly engages other countries in the Asia-Pacific region through other formats such as the ASEAN Regional Forum, the ASEAN Plus Three cooperation or the ASEAN + 6 group.

In 1977, ASEAN established a committee on environmental issues and placed environmental considerations in ASEAN's official policy through the 1985 Kuala Lumpur Declaration on Environment and the 1987 Jakarta Resolution on Sustainable Development. The ASEAN Community Vision 2025 endorsed in 2015 reaffirmed the commitment of strategic measures to '*promote cooperation for the protection, restoration and sustainable use of coastal and marine environment, respond and deal with the risk of pollution and threats to marine ecosystem and coastal environment*' (ASEAN, 2015: 110, section C.1.iii). Regional cooperation in the framework of ASEAN is characterised by an informal and personal approach, by non-intervention in the affairs of other states and by taking collective decisions based on consensus (Altmann, 2002).

In 2017, the ASEAN Conference on Reducing Marine Debris in the ASEAN Region took place. At the conference, the status of marine litter pollution in the region was assessed, information on policies, initiatives and best practices was exchanged, gaps and challenges were identified and possible solutions centred on policy and management and innovative policy and technology were discussed. As an outcome, the conference participants inter alia recommended to develop and implement a regional action plan addressing marine litter in the region (ASEAN, 2017).

Under the ASEAN+3 Marine Plastic Debris Cooperative Action Initiative which was launched at the ASEAN+3 Summit in 2018 by the ten ASEAN member countries as well as China, Japan, and South Korea, the 13 countries committed to collaborate in order to improve plastic waste monitoring in the ocean, collect scientific information about marine litter, assess the impact of marine litter on marine organisms and the ecosystem, and share best practices (ASEAN, 2018).

In 2019, an ASEAN Ministerial Meeting on Marine Debris took place and the ASEAN countries adopted the Bangkok Declaration on Combating Marine Debris in the ASEAN Region and the ASEAN Framework of Action on Marine Debris. The Bangkok Declaration reaffirms ASEAN's commitment to conserve the marine environment and strengthen regional cooperation in addressing marine debris and emphasises the need to strengthen national legislation. Multi-sectoral coordination and a land-to sea approach are other important features (ASEAN, 2019b). The ASEAN Framework of Action on Marine Debris introduces priority areas as well as related actions and suggested activities. The four priority areas are (1) Policy Support and Planning; (2) Research, Innovation, and Capacity Building; (3) Public Awareness, Education, and Outreach; and (4) Private Sector Engagement. The Framework mentions the option to establish an ASEAN Centre on Combating Marine Debris, which would act as an information source for ASEAN members and support regional cooperation and coordination (ASEAN, 2019a).

Asia-Pacific Economic Cooperation

APEC was established in 1989 in order to increase prosperity for the people of the region. Under the Oceans and Fisheries Working Group (OFWG) of APEC, the sustainable use of fisheries, aquaculture, and marine ecosystem resources as well as related goods and service are advanced. In 2014, the APEC Virtual Working Group on Marine Debris was set up in collaboration with the OFWG to encourage innovative way to address marine litter with a focus on land-based solid waste management. The objectives of the working group are inter alia to promote recycling, test innovative technologies, improve information sharing and create partnerships, including with private sector and other regional organisations (APEC, 2015).

In 2016, APEC endorsed the publication *Overcoming Barriers to Financing Waste Management Systems and Reducing Marine Litter: APEC Policy and Practice Recommendations*, aiming to incentivise investment in waste management solutions in APEC member countries (APEC, 2016). APEC also organised several workshops on marine litter issues in the past years, including two workshops on Capacity Building for Marine Debris Prevention and Management in the APEC Region held in Yeosu, Korea, in 2017 and Busan, Korea in 2018, respectively. At the end of 2019, APEC endorsed the APEC Roadmap on Marine Debris. The document encourages APEC member states to take voluntary and concrete steps to combat marine litter, such as the development of an APEC consolidated approach, the sharing of best practices and lessons learned, the improvement of cooperation, the development and enhancement of methodologies and approaches for monitoring, prevention, and reduction, and the increase in access to finance and facilitation of private sector engagement (APEC, 2019).

The proposed Work Plan of the OFWG for 2020 includes the development of an implementation plan for the 2019 Roadmap on Marine Debris (OFWG, 2020). In 2020, an update of the 2009 APEC Report on Economic Costs of Marine Debris to APEC Economies was published (McIlgorm et al., 2020) and a workshop on Marine Debris Monitoring and Modelling was held in Indonesia. The aim of the workshop was to promote a regional monitoring program and better action plans through the APEC Ocean Fisheries Information Center web portal (APEC, 2020).

Economic and Social Commission for Asia and the Pacific

ESCAP was established in 1947 and presents one of the five existing regional commissions created by the United Nations (UN). ESCAP focuses on delivering the 2030 Agenda for Sustainable Development by offering its 53 Member States and nine associate members analysis of economic, social and environmental issues in the region as well as policy advisory services, capacity building and technical assistance. During the fifth session of ESCAP's Committee on Environment and Development in 2018, Member States stressed the need for 'greater regional cooperation to tackle marine plastic debris' (ESCAP, 2018:2).

In 2020, ESCAP launched the pilot project Closing the Loop in four ASEAN cities³. The project trains officials and stakeholders to employ technologies such as remote sensing, satellite and crowdsourced data applications in order to identify, monitor and assess the sources and pathways of plastic litter in urban catchment areas. The project produces plastic waste maps and simulations for the pilot cities, aiming to improve plastic waste management, solid waste management systems as well as related policies and investment strategies. City-to-city networks will be established to promote knowledge sharing on plastic solutions between partners.

The theme study Changing Sails: Accelerating Regional Actions for Sustainable Oceans in Asia and the Pacific which was prepared for the 76th session of ESCAP in May 2020 highlights the mounting pressure of marine plastic pollution as one of the four focus areas for urgent action to address the deteriorating health of oceans and marine ecosystems (ESCAP, 2020a). Based on the recommendations presented in the study, ESCAP Member States adopted resolution 76/1 on Strengthening cooperation to promote the conservation and sustainable use of the oceans, seas and marine resources for sustainable development in Asia and the Pacific. Among others, the resolution encourages the implementation of policies to 'reduce marine pollution from various sources in the region, in particular marine plastic, aiming to reduce additional pollution by marine plastic litter to zero by 2050, including through a life-cycle approach and by promoting environmentally sound waste management, recycling capacity and innovative solutions' (ESCAP, 2020b:3, Section 3b).

Furthermore, ESCAP aims to strengthen existing partnerships and to develop new partnerships, including through participatory, multi-stakeholder dialogue platforms such as the annual Asia-Pacific Day for the Ocean. This platform encompasses a marine pollution component and provides the opportunity for systematic dialogues among civil society, the private sector, governments, the scientific community, and the youth in Asia and the Pacific.

Regional Fisheries Bodies

RFBs encompass different structures established by a number of states or organisations with the aim to agree on formal fisheries arrangements. Several of the RFBs are limited to the management of specific fish species, such as tuna, pollock, halibut and salmon. Common structures include Regional Fisheries Management Organisations (RFMOs) which have a multilateral management entity, Regional Fisheries Management Agreements through which member states directly establish management measures, advisory bodies which provide member states with advice and coordinate efforts and scientific research organisations which only provide scientific advice. Several of the existing RFBs are administered or supported by the FAO.

³ See project website: <https://www.unescap.org/projects/closing-the-loop>, accessed 16 November 2020.

The Regional Fishery Body Secretariats' Network (RSN) was founded to enable information exchange among all RFB Secretariats. Autonomous RSN meetings are organised every two years at the side-lines of the FAO Committee on Fisheries (COFI), providing a valuable opportunity for all RFBs to address the outcomes of the COFI and discuss subjects of key importance to the RFBs.

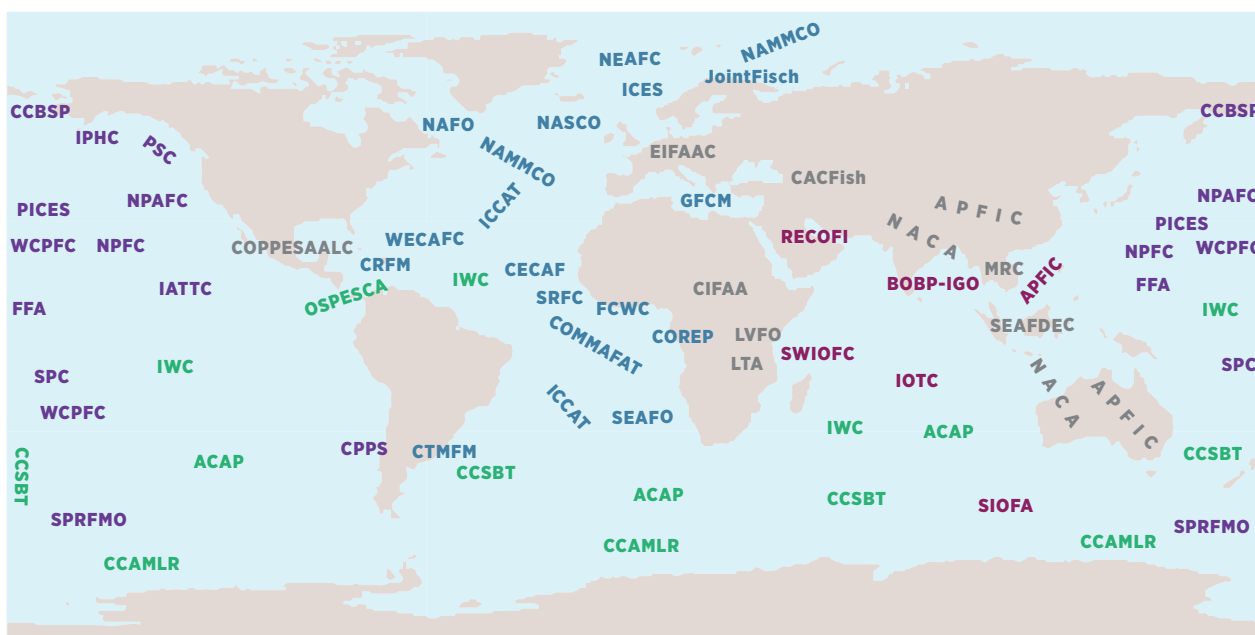


Figure 9: Map of Regional Fishery Bodies. | Source: Adapted from <http://www.fao.org/fishery/rfb/en> (Accessed 17 August 2020).

RFBs offer an essential mechanism for their Member States to agree on and implement measures to address ALDFG, a significant source of marine plastic litter. According to the FAO and UNEP, mitigation, preventive and curative measures are necessary to address ALDFG. Preventive measures are considered to be most effective and encompass inter alia gear markings, on board technology to avoid loss of and improve location of gear, as well as suitable and affordable port reception or collection facilities (Macfadyen et al., 2009). At the 2016 Review Conference on the UN Fish Stocks Agreement, delegations welcomed the ongoing work to address ALDFG and several delegations suggested stronger recommendations for addressing ALDFG (UNGA, 2016). In 2016, the FAO prepared draft guidelines on markings of fishing gear which were further elaborated through a Technical Consultation and endorsed as Voluntary Guidelines on the Marking of Fishing Gear by the 33rd COFI in 2018. The guidelines provide recommendations for addressing ALDFG through the implementation of gear marking systems and associated components, including appropriate monitoring, control and reporting as well as recovery and disposal of ALDFG (FAO, 2019).

The International Convention for the Prevention of Pollution from Ships (MARPOL) is the main international legal instrument addressing the prevention of pollution of the marine environment by ships. Under MARPOL Annex V, the disposal of plastic into the sea is prohibited (IMO, 2011) and vessels above 400 GT need to draft a garbage management plan and keep a garbage record book (IMO, 2016). The implementation of Annex V has been strengthened in 2018 by the adoption of the IMO Action Plan to Address Marine Plastic Litter from Ships. The action plan promotes the reporting of lost fishing gear and the delivery of recovered fishing gear to land-based facilities (IMO, 2018).

A 2016 study of ALDFG related mandates and measures of ten RFBs indicated that the majority did not have explicit mandates to monitor and/or control ALDFG (FAO, 2016). Among the analysed RFBs, only the Western and Central Pacific Fisheries Commission (WCPFC) convention included an explicit mandate to mitigating ALDFG and ghost fishing (WCPFC, 2000: Article 5e). Relevant measures introduced by the assessed RFBs included inter alia gear markings in gillnet and trammel net fisheries (ICCAT, IOTC), the introduction of logbook and/or observer data collection protocols that request for reporting ALDFG (IOTC, JNRFC and WCPFC), and the implementation of less durable and degradable gear (GFCM) (FAO, 2016). In recent years, the International Commission for the Conservation of Atlantic Tunas (ICCAT) and the Indian Ocean Tuna Commission (IOTC) promoted research on/use of biodegradable materials in their respective Fish Aggregating Devices (FAD) management plans (ICCAT, 2019:8, Section 40ii) and IOTC additionally introduced an obligation to remove all traditional FADs encountered from 2022 onwards from the water, retain them on board and dispose them in ports (IOTC, 2019:4/18).

In addition to the ten RFBs reviewed in the study, several other RFBs adopted measures to address ALDFG and marine litter more generally. CCAMLR established its Marine Debris program in 1989 in order to monitor litter levels in the Convention Area, with specific regard to fishing-related items. CCAMLR and the International Association of Antarctica Tour Operators (IAATO) collaborated in refining an e-form for opportunistic sightings of marine litter and agreed that IAATO may form part of a new Intersessional Correspondence Group on Marine Debris of CCAMLR⁴. The Northwest Atlantic Fisheries Organization (NAFO) has binding measures in place pertaining to accidental loss and efforts for retrieval of fishing gears at sea (NAFO, 2019:22) and a draft proposal pertaining to garbage, including fishing gear, will be considered for adoption at the forthcoming NAFO Annual Meeting. The Western Central Atlantic Fishery Commission (WECAFC) recommended that its members implement the FAO Voluntary Guidelines on the Marking of Fishing Gear (WECAFC, 2019). The North East Atlantic Fisheries Commission (NEAFC) broadened its binding measures on retrieval and disposal of fishing gear in 2019 and introduced a new article adding that Contracting Parties shall require their vessels not to deliberately abandon or discard gear (NEAFC, 2020: Articles 7a and 7b). The South Pacific Regional Fisheries Management Organisation (SPRFMO) adopted a Conservation and Management Measure on marine pollution in 2019, introducing inter alia measures related to the minimisation and retrieval of ALDFG and prohibiting vessels from discharging plastics in the sea, except if necessary for security and safety reasons (SPRFMO, 2019).

In conclusion it can be noted that several binding and non-binding measures which directly and indirectly prevent and reduce ALDFG have been introduced by RFBs in the past years. Efforts vary widely amongst the RFBs though and several RFBs have not introduced measures as of yet. Further progress in adopting relevant measures and a harmonisation of management systems are necessary in order to address the issue of ALDFG in a consistent and systematic manner.

⁴ See <https://www.ccamlr.org/en/science/marine-debris>, accessed 16 November 2020.

3 Challenges in addressing marine plastic pollution at the regional level

The assessment of the current activities carried out by regional instruments with regards to marine litter pollution revealed several challenges and gaps. The challenges and gaps presented here were identified based on academic literature, policy and progress reports published by the instruments assessed and were further consolidated through the survey results as well as the workshop discussions.

The chapter focuses on four broad aspects which were considered challenging for most if not all instruments assessed and thus call for further exploration and attention. The nature and exact type of challenges vary from region to region, calling for an in-depth assessment of challenges in each region in order to inform tailor-made recommendations. This is however beyond the scope of this analysis.

The four common challenges in addressing marine plastic pollution at the regional level are 1) the level of implementation, 2) monitoring and assessment, 3) multi-stakeholder approach, and 4) private sector engagement (Figure 10).

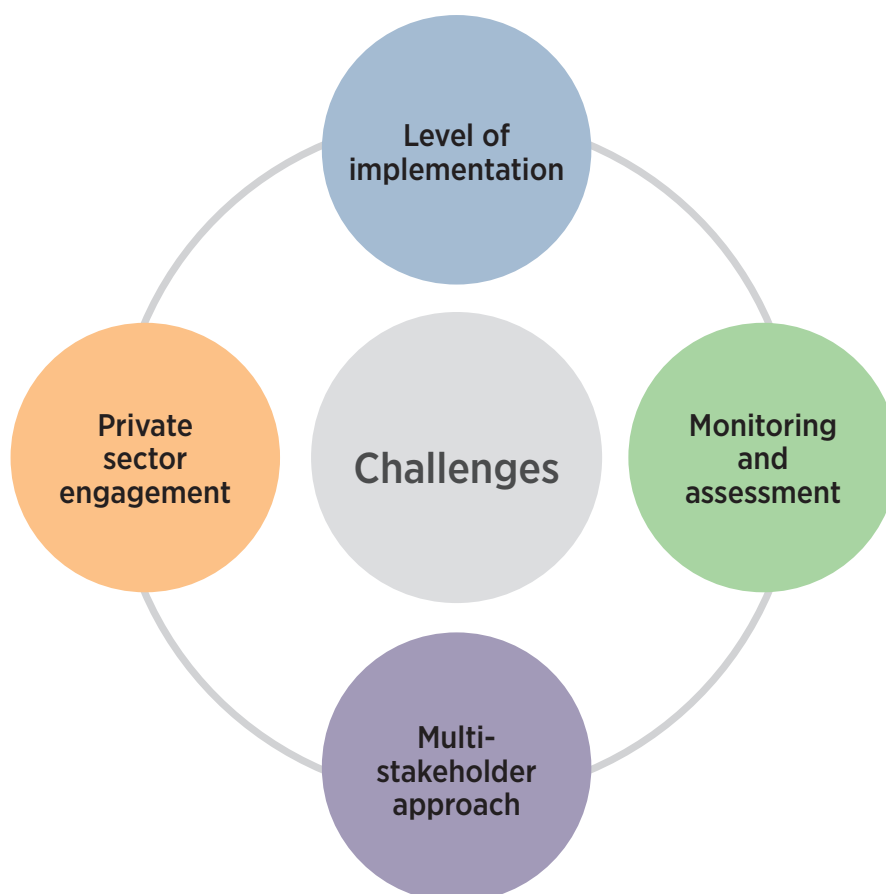


Figure 10: Overview of identified challenges in addressing marine plastic pollution at the regional level.

➤ Level of implementation

The review of regional instruments addressing marine plastic pollution indicated that the level of implementation of policies, programmes, action plans and projects relevant to marine plastic pollution varies greatly across the different regions. This range is amongst others due to differences in mandates, jurisdiction, scope, governance arrangements, capacities and resources of the different regional instruments analysed. Based on the survey results, a common challenge across regional instruments is a lack of financial and human resources that are needed to successfully implement measures that curb marine litter and to monitor compliance. The actual level of implementation of agreed measures and activities is oftentimes not clear as reporting on implementation is limited in some cases.

Furthermore, many of the organisations deal with the issues of marine plastic pollution within the broader framework of addressing pollution and ecosystem degradation. LME projects and RSCAPs typically address numerous pressures impacting coastal ecosystems. Also, LBS protocols and the regional protocols to regulate the direct dumping of wastes have to date entered into force only in a few regions.

The review of REOs and RFBs indicated that some of these organisations are actively contributing to addressing marine plastic pollution. This is however not the case for all REOs and RFBs since some organisations have a more limited scope and mandate.

Last but not least, for some marine regions no regionally agreed action plans or strategies to address marine plastic pollution exist to date. This concerns most Areas Beyond National Jurisdiction (ABNJ) as well as parts of the Southwest Atlantic, the Northwest Atlantic, the Northeast Pacific, the Arctic, Western Africa, the ROPME Sea Area and the Caspian Sea. Some of these areas do not fall under the mandate of any regional instrument which would be able to address marine plastic pollution in an integrated manner, making it more difficult to close the gap.

➤ Monitoring and assessment

Data provided by assessments and monitoring schemes is necessary to inform measures, set priorities, implement strategies, and eventually evaluate the effectiveness of measures undertaken. Large differences exist in the state of marine plastic litter monitoring and assessment across regions. While (sporadic) assessments of sources, sinks, and economic costs related to the impacts of marine plastic pollution have been conducted in some regions, this information is unavailable in other regions.

To date, only a small number of the regions developed and implement long-term monitoring and assessment programmes with comparable data on marine plastic litter reported by the member countries/contracting parties. In most regions, reporting is descriptive and not based on clear, measurable targets and indicators (UNEP, 2018) and some regions have no processes in place for national reporting to the Secretariat (UNEP, 2014).

In regions where regional monitoring and assessment programmes were set up, challenges remain with regards to ensuring regular high-quality data inputs from member countries/contracting parties which would make it possible to detect small changes attained by the adopted measures. Many countries require financial support as well as capacity building in order to develop and maintain the

necessary assessment and monitoring programmes at the national level and to manage the growing data requirements related to different regional and global commitments (UNEP, 2018). On the high-seas or in remote coastal areas, monitoring marine plastic litter is especially costly and logistically challenging given the intensive sampling needed to detect changes (Ryan et al., 2009).

In addition, the employed monitoring procedures for marine litter vary across, and at times also within, regions. The diversity of monitoring approaches employed makes a comparison of absolute pollution indicators and spatial or temporal assessments difficult if not impossible (Bergmann et al., 2015).

➤ Multi-stakeholder approach

A multi-stakeholder approach is critical to address sources of marine plastic pollution. Local governments, the private sector, NGOs, and academia are relevant actors which need to collaborate and take coordinated actions in order to prevent marine plastic pollution at its source. Global, regional, sub-regional, and national management mechanisms are relevant and need to be coordinated and harmonised all the way to the municipal levels where improvements in solid waste management can be achieved. Current approaches to the issue are, however, frequently directed to specific parts of a source-to-sea system and/or a single sector, making them ill-suited to address all sources of marine plastic pollution (Mathews & Stretz, 2019)

At the regional level, a full understanding of the relevant stakeholders at the different levels is needed. Building on this understanding, mechanisms for engagement need to be designed and implemented. The analysis indicated that several regional institutions started to set up mechanisms for multi-stakeholder engagement, such as Regional Marine Litter Nodes under the GPML.

The survey results indicated, however, that regional organisations find it difficult to engage with the broad range of relevant actors at national, regional and international level. These poor levels of engagement of relevant actors are partly due to limited capacities to follow through and engage with all relevant actors.

➤ Private sector engagement

The private sector is a crucial stakeholder in addressing marine plastic pollution as it produces plastic products and develops and funds ways to deal with plastic waste. Engaging the private sector necessitates capacity development for the public and the private sector alike as well as cooperation from both sides to identify economically viable strategies to preventing marine plastic pollution (Mathews & Stretz, 2019).

While private sector engagement is recognised as being crucial in many regional strategies to addressing marine litter, the analysis as well as the survey results indicated that the actual engagement of the private sector is typically weak. Reasons mentioned to hamper increased engagement were limited capacities to engage as well as a lack of financial resources required to improve waste management and support the development of innovative solutions by the private sector.

4 Case study: Governance of marine plastic pollution in the Mediterranean

In continuation, a case study of the Mediterranean region is presented in order to provide a deeper understanding of possible governance structures and interactions between different relevant organisations at the regional scale. In the first part of the analysis, the main governance structures pertaining to marine plastic pollution are introduced. The second part assessed how the challenges previously identified are addressed in the Mediterranean.

Governance of marine plastic pollution in the Mediterranean

The Mediterranean is amongst the areas most affected by marine litter globally (UNEP/MAP, 2017). Its semi-enclosed nature, coupled with heavily populated coasts, intensive coastal tourism, high maritime traffic and litter inputs from large rivers contribute to the high concentration of marine litter in the region (Fossi et al., 2020).

The policies, measures and guidelines developed under the UNEP Mediterranean Action Plan (UNEP/MAP) and the EU provide the main regional framework for addressing marine litter. While EU regulations⁵ only apply to EU member countries, UNEP/MAP provides a regulatory framework and collaborative governance mechanism for all countries of the Mediterranean region (Figure 11). The Barcelona Convention with its seven Protocols sets the legal framework of the Mediterranean Action Plan and represents the primary regional legally-binding agreement (Barcelona Convention, 1995). The protocols under the Barcelona Convention address inter alia dumping from ships and aircraft at sea and the pollution from land-based sources and activities.

Several working programmes and regional activity centres have been set up to assist regional and national implementation of the Barcelona Convention and its protocols, inter alia addressing pollution assessment and control (MED POL and REMPEC), marine protected areas and biodiversity (SPA/RAC), and sustainable consumption and production (SCP/RAC).

To facilitate implementation of the LBS Protocol, a TDA for the Mediterranean LME was undertaken in 1997 and updated in 2005. A Strategic Action Plan (SAP MED) was adopted by the Contracting Parties to the Barcelona Convention, presenting a long term policy (2000–2025) aimed at combatting pollution from land-based sources. SAP MED addresses inter alia municipal wastewater treatment and disposal and urban solid waste management and has led to the preparation of NAPs by all Contracting Parties to the Barcelona Convention (UNEP/MAP, 2015). Work on an updated TDA is expected to start in 2020 and will include an assessment on marine litter.

In 2003, a second Strategic Action Plan (SAP BIO) for the Mediterranean LME was agreed upon to facilitate implementation of the Biodiversity Protocol under the Barcelona Convention. SAP BIO is meant to

⁵ For an overview of relevant EU regulations, see Chapter 2.



Figure 11: Status of Ratification of Barcelona Convention and the LBS Protocols. | Source: Adapted from GRID-Arendal, 2013. Available at: <https://www.grida.no/resources/5911>.

address the sources of pollution not covered by SAP MED, including the proliferation of floating plastic objects and litter. Amongst the agreed measures for addressing floating plastic litter are the establishment of a regional programme to quantify plastic proliferation, the identification of priority areas which are likely to be affected by marine plastic litter, the support of international agreements on the dumping of plastics into the sea, improvements in the recuperation and recycling of plastics, the support of research and application of technology to create photo- and bio-degradable plastics and the promotion of awareness campaigns and beach clean-up activities (UNEP/MAP/RAC SPA, 2003).

In 2012, UNEP/MAP adopted the Strategic Framework for Marine Litter Management and in 2013 the legally-binding Regional Plan on Marine Litter Management was adopted under the Barcelona Convention. The plan comprises policy, legal, institutional, regulatory and technical measures aimed at preventing, reducing and managing marine litter from land- and sea-based sources. Being the only legally-binding regional plan to date, it inter alia obligates member states to close illegal dumpsites, move towards sustainable consumption and production patterns, remove existing marine litter, and monitor, assess and report on implementation (UNEP/MAP, 2013). The implementation timeframe runs from 2016–2025, with many of the measures to be implemented by 2020. Additionally, environmental region-wide reduction targets, Fishing for Litter guidelines, and baselines values for the main marine litter types were adopted in 2016 (UNEP/MED, 2016). Marine Litter Experts groups were established in the framework of MAP/Barcelona Convention to assist both monitoring and measures implementation.

RFBs with a mandate for the Mediterranean are ICCAT and the General Fisheries Commission for the Mediterranean (GFCM). Both have taken initial measures for preventing and mitigating ALDFG⁶.

⁶ See chapter 2.

Apart from the work conducted by the intergovernmental bodies, several regional projects have been initiated with the aim to contribute to tackling marine litter. These projects are implemented by a wide range of stakeholders, including universities, research institutes and government agencies. Examples include:

- Marine Litter MED (2016 – 2019), a project facilitating the implementation of the Regional Plan on Marine Litter Management in the Mediterranean through the implementation of key reduction and prevention measures;
- Marine Litter MED II (2020 – 2023), a project directed at further advancing the implementation of the key reduction and prevention measures in terms of geographical scope and impact;
- EcAp MED II (2016 – 2019), a project focusing among others on the development of national monitoring programmes for marine litter indicators for Algeria, Egypt, Israel, Libya, Lebanon, Morocco and Tunisia;
- ACT4LITTER (2017 – 2018), a project which facilitated the development of effective and targeted measures for combatting marine litter in Mediterranean MPAs;
- BLUEISLANDS (2016 – 2019), a project aimed at identifying and addressing the effects of seasonal differences in waste generation on Mediterranean island; and
- PLASTIC BUSTERS MPAs (2018 – 2022), a project aiming to consolidate Mediterranean efforts to curb marine litter.

At the subregional level, UNEP/MAP signed a Bilateral Cooperation Agreement with the Italian Ministry for Environment, Land and Sea Protection (IMELS) in 2016. The agreement has marine litter management as one of its key components and supports the implementation of UNEP/MAP activities related to marine litter in the Adriatic area⁷.

Assessment of identified challenges for the Mediterranean

➤ Level of implementation

In the majority of the Mediterranean coastal states, marine plastic pollution is caused by a growth of plastic use and unsustainable consumption habits combined with inadequate waste management (UNEP/MAP & Plan Bleu, 2020). Within the Mediterranean region, the existing challenges as well as the actual level of progress achieved when addressing marine plastic pollution at the national level are very diverse. While progress towards a more circular economy has been achieved in the region, national economies in the region are still largely linear. To achieve the desired transition, the political commitments need to be transferred into national legislation, which is not an easy task considering the complex policy landscape in the region and the broad range of sectorial policies which need to be integrated to address complex environmental challenge such as marine litter (EEA, 2020).

⁷ See <http://www.info-rac.org/en/communication/newsletter/med-news-02-2020/memorandum-of-understanding-between-the-italian-ministry-of-environment-land-and-sea-protection-imels-and-un-environment-programme-unep>, accessed 16 November 2020.

To date, most Mediterranean countries improved the regulatory framework for reducing single-use plastic bags and are advancing towards implementing extended producer responsibility (EPR). The infrastructure for the adequate treatment of solid waste and wastewater is, however, still considered insufficient in several countries, especially in the Southern and Eastern Mediterranean and in rural areas. In addition, the implementation of policies and measures is considered a key challenge which requires capacity building as well as improved coordination of national programmes at the regional level (UNEP/MAP & Plan Bleu, 2020).

Monitoring and assessment

UNEP/MAP adopted an Integrated Monitoring and Assessment Programme (IMAP) for the Mediterranean in 2016, presenting a key milestone towards integrated monitoring for the region. IMAP contains 11 Ecological quality Objectives (EOs), one of which centres on marine litter (EO 10). Three indicators have been introduced in order to monitor and assess marine litter in the Mediterranean: 1) litter at the beach, 2) litter in the water column, and 3) litter ingested by or entangling marine organisms. These indicators are in line with the MSFD indicators introduced by the EU. IMAP was developed over a timespan of over three years in collaboration with scientific experts and all Mediterranean countries and its implementation is steered through a governance mechanism, including the Correspondence Groups on Monitoring (CORMON), which are composed of representatives from all Contracting Parties (UNEP/MAP, 2017).

In 2017, UNEP/MAP published the first Quality Status Report for the Mediterranean. The report presents the first assessment which is based on the EOs and indicators established under IMAP and serves as the baseline to measure progress towards Good Environmental Status as defined under the MSFD of the EU. The report was compiled using available data and information from reports and scientific publications. It provides suggestions for measures to be taken and highlights knowledge gaps which should be addressed in next assessment cycles. A roadmap for the 2023 Mediterranean Quality Status Report was endorsed at the 21st meeting of the Contracting Parties to the Barcelona in 2019, to pave the way towards preparation of an *‘integrated DPSIR-based GES assessment, developed on consolidated and quality-assured monitoring data sets, reported and processed through an effective IMAP Info System that is interoperable with national and other regional monitoring and reporting networks’* (UNEP/MAP, 2019:4).

IMAP requires the commitment from the Mediterranean countries as they need to generate and submit quality assured and interoperable data to the IMAP Info System. UNEP/MAP supported its Contracting Parties in updating national monitoring programmes in line with IMAP, inter alia by conducting national training workshops for Southern Mediterranean Contracting Parties such as Algeria, Egypt, Libya, Lebanon, Morocco and Tunisia during 2018–2019⁸.

In addition, several regional projects were initiated to improve monitoring efforts in the region. MED-SEALITTER (2016–2019) for example brought together various scientific organisations and environmental NGOs from several Mediterranean Countries in order to develop easy and cost-effective protocols for monitoring floating macro litter and litter ingested by biota. In 2019, the project delivered the final proposals for the monitoring protocols, indicating estimated costs, level of expertise as well as main benefits and limitations of the different techniques. Recommendations are inter alia to reduce monitoring costs by integrating activities into ongoing vessel operations and/or other monitoring pro-

⁸ See https://www.rac-spa.org/ecapmed_ii, accessed 16 November 2020.

grammes by ferry companies, sailing boats and rescue centres and to employ automatic photography from drones and other Unmanned Aerial Vehicles (UAVs) and manned aircrafts (Bigagli et al., 2019). Under the project ACT4LITTER, a Marine Litter Watch Month was organised in spring, summer, autumn and winter of 2018 in collaboration with organisations in coastal and marine protected areas of seven Mediterranean countries. The initiative provided valuable baseline information regarding the amounts and composition of marine litter encountered in beaches of protected areas in the Mediterranean and served as an example for implementing participatory-science campaigns. AMAre WebGIS and the Mediterranean Biodiversity Protection Platform are engaged in improving marine litter data access, harmonisation, and sharing through online visualisation tools (Interreg Med Biodiversity Protection project, 2019).

While much progress has been achieved in the Mediterranean with regards to establishing a regional monitoring and assessment programme, the challenge remains to make national monitoring programmes fully operational. Data on marine litter sources and quantities exist mainly for short periods of time and localities in the northern part of the Mediterranean, impeding the performance of long-term assessments and the derivation of basin-scale conclusions. In addition, the inconsistency of monitoring protocols and sampling procedures poses challenges for the comparison of the existing data (UNEP/MAP, 2017). National capacities for monitoring and data analysis need to be increased and further investments are needed to advance data coverage and quality, including on enforcement measure (EEA, 2020).

Priorities set for the coming years are the adoption or harmonised monitoring protocols for floating micro-litter and deep-sea areas and the collection of long-term information on marine litter (Interreg Med Biodiversity Protection project, 2019). In countries where national monitoring programmes are not yet fully operational, cooperation with scientific institutions, local authorities and competent NGOs will be enhanced in order to obtain data regarding the quantities and types of litter. Beach clean-up campaigns organised by NGOs were identified as an opportunity in this regard. While they are mostly aimed at raising awareness and not at data collection, they can provide scientifically relevant information and organisers will thus be encouraged to apply harmonised protocols to collect and submit data (UNEP/MAP, 2017).

Multi-stakeholder approach

The 2013 Regional Plan for Marine Litter Management in the Mediterranean clearly states that its implementation necessitates the cooperation with relevant regional and global actors (UNEP/MAP, 2013). In 2016, the Regional Cooperation Platform on Marine Litter in the Mediterranean was established at the invitation of UNEP/MAP in order to assist the coordinated implementation of the Regional Plan. The platform brings together more than 20 international and regional partners representing different sectors including academia, policy-making, industry, fisheries, research institutions, and NGOs with a clear mandate on marine litter management.

In addition, NGOs are actively invited to apply for accreditation as partners of UNEP/MAP. The accreditation is meant to offer a mechanism for NGOs to support the implementation of the Barcelona Convention and its Protocols in a coordinated manner by offering the opportunity to participate as observers in the meetings and activities carried out under the UNEP/MAP Programme of Work (UNEP/MAP, 2009). UNEP/MAP furthermore hosts the Mediterranean Marine Litter Node, the first node developed and made operational under the GPML as well as several regional activity centres and is cooperating closely

with GFCM in the framework of a Memorandum of Understanding signed between the two Organisations in 2012 (UNEP/MAP & FAO, 2012).

Despite the efforts invested in multi-stakeholder engagement, there is still room for improvement of the cross-border cooperation and coordination in the region (Interreg Med Biodiversity Protection project, 2019).

Private sector engagement

The Marine Litter Action Plan recognises the private sector as one of the key stakeholders which should be involved by contracting parties for the effective implementation of the regional plan (UNEP/MAP, 2013a: Article 17). A Regional Action Plan on Sustainable Consumption and Production in the Mediterranean was adopted by the Contracting Parties to the Barcelona Convention in 2016 to promote a shift towards sustainable consumption and production patterns in the region. The Action Plan *inter alia* encourages the Contracting Parties to implement the waste management hierarchy, advance EPR schemes and develop policy instruments to support sustainable design, production and use of goods (UNEP/MAP, 2016). In addition, the regulations and directives brought forward under the EC may go a long way in improving waste management in the EU member states⁹.

SCP/RAC provides a regional centre under UNEP/MAP aimed at promoting innovation and developing sustainable consumption and production patterns within the region. The centre builds capacity, encourages knowledge exchange and leads various projects in areas including cleaner production, green entrepreneurship, green public procurement and sustainable events. In addition, SCP/RAC functions as a Regional Centre of the Stockholm Convention¹⁰.

Going forward, it will be crucial for the region to ensure that Parties are assisted in improving their waste management systems and transition towards a circular economy (EEA, 2020). A few interregional projects were established with a focus on promoting a circular economy in the southern Mediterranean countries, the most notable being SwitchMed (Phase I 2013–2018; phase II 2019–2022). The project offers tools and services to the private sector, assists the development of an enabling policy environment, and enables collaboration and coordination among key stakeholder. SwitchMed is executed by the United Nations Industrial Development Organisation, the UNEP Economy Division as well as UNEP/MAP and SCP/RAC¹¹.

Necessary investments in pollution reduction and prevention in Southern Mediterranean countries are *inter alia* supported through the Mediterranean Hot Spots Investment Programme of the EU. The programme is led by the European Investment Bank in conjunction with other financial institutions and is attached to the National Action Plans developed under the LBS Protocol (EEA, 2020).

⁹ For an overview of relevant EU regulations, see chapter 2.

¹⁰ See <http://www.cprac.org/en/about-us/scp/rac>, accessed 16 November 2020.

¹¹ See <https://switchmed.eu/>, accessed 16 November 2020.

5 Leveraging the potential for regional level action

The analysis presented demonstrates that numerous regional organisations are actively engaged in combatting marine plastic pollution and provide valuable regional frameworks for monitoring and assessing marine plastic pollution in regional seas and agreeing on regional strategies, policies, management tools and protocols to address the issue. Building upon the assessment of activities undertaken by the regional instruments as well as the challenges which were identified, this section aims to provide recommendations for the regional level to improve the delivery of action against marine plastic pollution, taking into account how a future global agreement may contribute to strengthening the regional level actions.

When looking at the recommendations, it should always be kept in mind that the role of regional organisations differs from region to region and that any measures and solutions need to be adapted to the specific context. The proposed actions and related timeframes can only offer an indicative approach and would need to be specifically tailored to each region and organisation. Also, the focus of the recommendations is at the regional level, but additional attention needs to be paid to the local, national, sub-regional and global levels as well as inter-regional connections since efforts at all of these levels are ultimately needed in order to develop and implement an effective governance framework to address the complexities of marine plastic pollution.

The proposals presented in this chapter build on the literature review and were further substantiated by the survey responses as well as discussions during the expert workshop and a peer-review process.

➤ Level of implementation

The assessment provided in section two shows that the efforts and focus of the different instruments and organisations vary greatly, indicating differences in mandates, resources and capacities but also in regional circumstances and specific challenges at hand. While this creates challenges regarding harmonisation, the wealth of activities undertaken by the broad range of organisations provides opportunities to learn from diverse policies and activities. Furthermore, the case study on the Mediterranean illustrated that the regional level is a suitable avenue for agreeing on regional thresholds and targets which can promote rapid, coordinated action among states in the region in addressing the sources of marine plastic pollution.

Initial steps

In regions where the level of implementation of activities regarding marine plastic pollution is low as of yet, actions may be initiated or expanded under existing RSCAPs, LME projects or REOs. Where regional response strategies and action plans are not yet in place, their development under a competent regional organisation, being typically a RSCAP or a REO, should be promoted and assisted by member states and relevant national, regional, and international organisations and initiatives.

Guidelines for the development of Marine Litter Action Plans were published by UNEP in 2019 and several examples exist from different regions worldwide which should be built upon (UNEP, 2019). When drafting regional response strategies and action plans, necessary improvements of regional organisations in areas such as legal structures, mandates, implementation and enforcement mechanisms, resources and capacities should be considered in order for implementation efforts to be successful. In regions where TDAs and SAPs were conducted, these efforts should be taken into account and built upon.

In regions where an overarching convention exists but no LBS protocol was adopted as of yet, the possibility of agreeing on a protocol or annex addressing land-based sources of pollution should be considered since these protocols provide an opportunity to agree on detailed measures and obligations for the region.

In regions where RFBs do not have measures in place to manage ALDFG, progress in adopting relevant measures should be promoted by member states. Possible measures which prevent and remediate ALDFG and ghost fishing include for example reporting of lost gear, the prohibition of intentional discards of fishing gear, the obligation to remove ALDFG and deliver it to port reception facilities, the introduction of gear marking systems, or the obligation to use biodegradable materials in fisheries operations. Existing guidelines and assessments, including the Voluntary Guidelines for the Marking of Fishing Gear of the FAO (FAO, 2019) or the recent scoping study on best practices for the design and recycling of fishing gear produced by OSAPR (OSPAR, 2020) can be used for developing adequate measures. RFBs which already have measures in place should share their experiences and explore further steps. With regards to biodegradable materials, the production and use of materials meeting international standards for biodegradation in the marine environment needs to be ensured along with working on standardised terminology (UNEP, 2017).

On a more general note, existing structures such as the LME Annual meetings, RSCAPs annual meetings under UNEP and biannual RSN meetings should increasingly be used to promote inter-institutional sharing of best practices, build capacities, identify tangible opportunities for collaboration and coordinate and harmonise approaches across regions. Improved coordination and collaboration would be key in reducing duplication of governance efforts and increasing effectiveness in addressing the transboundary issue of marine plastic pollution. In addition, these fora also provide opportunities to link work focused on marine plastic litter with the broader development agenda, including the SDG and explore synergies.

Furthermore, awareness programs and clean-up campaigns should be continued, expanded or initiated as appropriate and regional commitments to ban and address single use plastic, polystyrene and plastic packaging should be promoted. In regions where several organisations engage in similar activities related to marine litter, an overall regional strategy should be elaborated with an aim to coordinate, harmonise and streamline the approaches and activities present in the region.

Further steps

Once all regions have initiated work on marine litter, determined regional strategies, and implemented actions, efforts should be concentrated on evaluating the effectiveness of measures and scaling up implementation and enforcement of measures at regional, national and local level. These improvements should be accompanied and assisted through capacity building measures, trainings and channelling resources and investments to stakeholders which are in need of this assistance.

In addition, regional thresholds and aims should be introduced against which success can be measured and the existing governance framework at regional, but also national and local level should be gradually strengthened.

Possible contribution of a global agreement

Coherent governance across all levels is needed to address marine plastic pollution. A global agreement could contribute to promote and harmonise implementation efforts across all levels by setting common objectives and minimum standards. A globally agreed Plan of Action or Voluntary Guidelines could also be useful in encouraging institutional, legal and policy reforms at the regional and national level and spur the political will needed to initiate the development of a regional response in regions where it is still missing. The development of global guidelines and standards should be supported by bodies of experts in order to ensure a strong science-policy nexus.

In addition to providing objectives and standards, the global level could actively promote the sharing of best practices and technologies across regions and assist regions which are in the initial stages to combat marine plastic pollution by providing capacity building, training and financial support. A funding mechanism could be connected to the global agreement, receiving contributions from member states, the private sector, as well financial institutions such as the Global Environment Facility (GEF) and the World Bank (UNEP, 2017).

Last but not least, some matters, such as guidelines for sustainable product design, illegal discharges from ships in international waters, as well as global liability and compensation for pollution by plastic are best tackled at international level (UNEP, 2017).

Summary

	Initial steps	Further steps
Level of implementation	<ol style="list-style-type: none"> 1 Initiate or expand activities under existing RSCAPs, LME projects or REOs 2 Promote and assist development of regional response strategies and action plans 3 Consider adoption of protocol or annex addressing land-based sources of pollution 4 Promote progress in adopting relevant measures on ALDGF 5 Continue, expand or initiate awareness programs and clean-up campaigns 6 Promote regional commitments to ban and address single use plastic, polystyrene and plastic packaging 	<ol style="list-style-type: none"> 1 Evaluate the effectiveness of measures 2 Scale up implementation and enforcement of measures at regional, national and local level 3 Introduce regional thresholds and aims 4 Gradually strengthen existing governance framework at regional, but also national and local level
	Possible contribution of a global agreement	
	<ol style="list-style-type: none"> 1 Set common objectives and minimum standards 2 Develop a globally agreed Plan of Action or Voluntary Guidelines 	

Level of implementation	Possible contribution of a global agreement
	<ul style="list-style-type: none"> 3 Develop global guidelines and standards supported by bodies of experts 4 Promote the sharing of best practices and technologies across regions 5 Provide capacity building, training and financial support 6 Address matters best tackled at international level, such as guidelines for sustainable product design, illegal discharges from ships in international waters, and global liability and compensation for pollution by plastic.

Figure 12: Overview of recommendations for addressing challenges related to varying levels of implementation.

➤ Monitoring and assessment

Setting up monitoring and evaluation frameworks based on a set of common targets, whether qualitative or quantitative, is critical to addressing the issue of marine plastic pollution. Monitoring is essential to attain a full picture of the sources and sinks of marine plastic pollution and to allow for the development, evaluation and adaptation of regional measures and strategies to address the issue. Regional monitoring programs including indicators on marine litter were initiated under UNEP/MAP, HELCOM, OSPAR and CCAMLR, showing that regional instruments are well-suited to facilitate a common knowledge base about the region and to regularly provide updates regarding the regional progress in addressing marine plastic pollution.

Initial steps

As a first step, existing regional monitoring and assessment programs should be expanded to include indicators on marine plastic litter. In order to put limited resources at best use, it will be important to agree on comprehensive and targeted monitoring efforts which are clearly linked to understanding the sources and impacts of marine plastic litter along the source-to-sea continuum and help to inform and evaluate measures for all significant sources of marine plastic pollution. Guidance on how to identify hotspots and conduct monitoring and assessment exists, for example in form of the GESAMP Guidelines for the monitoring and assessment of plastic litter and microplastics in the ocean (GESAMP, 2019) or UNEPs National Guidance for Plastic Pollution Hotspotting and Shaping Action (UNEP, 2020). Lessons learned from existing monitoring and reporting activities related to marine litter can also be used to establish, expand and improve practices in the regions.

In regions with limited data and capacity to establish comprehensive monitoring programmes, innovative approaches for data collection should be considered as an option to obtaining data on the sources, impacts and sinks on marine plastic pollution. The proactive coordination and collaboration with civil society monitoring programmes and international, regional or national organisations and initiatives collecting relevant data might provide an opportunity in this regard. Several citizen science initiatives employing crowdsourced data applications were established in the past, including the recently launched pilot project Closing the Loop of UN ESCAP or the Marine Litter Watch Month organised in the context of ACT4LITTER project in the Mediterranean. In addition, several global and regional initiatives, such

as the EAF-Nansen programme¹², are mapping and identifying marine debris and microplastics concentration hotspots across the globe. Strengthening the science-policy interface through the proactive coordination of activities of existing organisations and initiatives collecting relevant data with regional organisations working on marine litter should therefore be aimed at, taking into account that identifying the potential data/science providers may require targeted investigation of the stakeholders and processes relevant for a region.

Another option to reduce monitoring costs is to link the activities with vessel and aircraft operations in the region or to employ technologies like remote sensing, drones, automated monitoring, satellite data, and UAVs (Bigagli et al., 2019). Data collected by RFBs could provide a valuable source of information for regional monitoring and assessment programs, especially with regards to ALDFG. While the review showed that currently only a minority of RFBs collects data on ALDFG via logbook or observer programs, these activities may be increased in the future. A good example in this regard may be the activities carried out by WCPFC, which is explicitly mandated to monitor and control ALDFG and ghost fishing (FAO, 2016). RFB activities may furthermore be extended to include surveying activities for marine litter on the sea floor and the water column.

Attempts should be made to standardise and harmonise monitoring approaches and related protocols at all levels as much as feasible and beneficial. Initial work in this regard should be continued and expanded, such as the work on developing shared methodologies for a range of indicators conducted within the framework of the Regional Seas Indicators Working Group under the UNEP Regional Seas Programme or the work of the expert network on Marine Litter under HELCOM which aims to coordinate monitoring and assessment efforts with OSPAR and the Barcelona Convention. Another good example in this regarding is the Caribbean, where a harmonised monitoring strategy was developed following the OSPAR approach.

LME annual meetings, RSCAPs annual meetings and biannual RSN meetings should be used to share lessons learned in the area of monitoring and reporting and to discuss possible common approaches that will allow progress to be compared between regions. In addition, SAP implementation projects should develop their indicators as well as monitoring and reporting guidelines in close cooperation with RSCAPs active in the same area to ensure that the outcomes can contribute to State of Environment and other regional reporting (UNEP, 2018).

Regularity of reporting is another important aspect which should be observed in order to ensure the availability of systematic updates on progress and enable regular assessments and informed actions. Where not yet in place, regional reporting mechanisms should be established.

To facilitate implementation of these recommendations, it will be crucial to identify and address capacity needs and related costs at national and regional level and agree on a tailor-made step-by-step approach.

¹² See <http://www.fao.org/3/CA1389EN/ca1389en.pdf>, accessed 16 November 2020.

Further steps

Looking further ahead, it will be crucial to advance the harmonisation of data collection protocols and methods within and across regions. The harmonisation and standardisation of monitoring approaches could improve the quality of data gathered, enable the assessment and comparison of data on different spatial and temporal scales, and allow for a certain standardisation of related training schemes and capacity-building efforts. Efforts conducted within the scope of implementing the MSFD of the EC may provide a good example on how to harmonise existing data collection protocols and methods. In a similar manner, timelines and methodologies for assessment reporting should be harmonised across all regions.

A system to assess the effectiveness of measures should be established, based on clear targets, indicators and timelines against which progress is measured. For this purpose, purely descriptive reporting should be extended to include specific targets and indicators. Such a move towards indicator-based assessments would enable the identification of sources, pathways and trends, and support adaptive management.

Furthermore, it will be necessary to advance towards integrated assessments of marine plastic pollution from source-to-sea, across thematic areas and sectors. Such integrated assessments are ultimately needed for an integrated management of marine plastic pollution at source. The work undertaken by UNEP/MAP through IMAP can serve as a model in this regard.

Partnerships and agreements with other relevant institutions in the region (e.g. RFBs, scientific bodies, NGOs) should be concluded where beneficial to facilitate data exchange and the joint preparation of assessments. Where national monitoring and reporting systems are weak, targeted support should be offered in order to build national capacities for monitoring and data analysis, and improve both data availability and quality (UNEP, 2018).

Automatised approaches may assist the autonomous large-scale monitoring of marine plastic pollution should be further developed and employed and the accessibility and exchange of data should be improved through appropriate database formats.

Possible contribution of a global agreement

Building on efforts conducted under the Honolulu Strategy (UNEP & NOAA, 2012), a global agreement could assist the regional level to streamline monitoring and reporting efforts by establishing globally accepted guidelines and proposing common targets, indicators and assessment methodologies (UNEP, 2018). It will be crucial to ensure that the global agreement focuses on harmonising efforts of regional instruments, including RSCAP's, LME activities, RFBs, REOs as well as NGOs and science associations and builds on existing reporting and assessments processes so as not to add additional burdens on national and regional bodies (UNEP, 2014).

A joint international database and a related data management strategy could be established under a global framework to ease the collection of and access to data and increase the standardisation and comparability of data (Bergmann et al., 2015). Existing integrated international databases such as the *World Environment Situation Room* established by UNEP¹³ should be built upon in this regard.

¹³ See <https://wesr.unep.org/>, accessed 16 November 2020.

A global agreement could also identify and feed in additional relevant data from international organisations and processes in a systematic manner and ensure that the global assessments on the state of marine plastic pollution are coordinated with and contribute to related global monitoring and assessment processes such as the World Ocean Assessment¹⁴, the Global Environment Outlook assessments and reporting related to the Sustainable Development Goals (UNEP, 2018).

Summary

	Initial steps	Further steps
Monitoring and assessment	<ol style="list-style-type: none"> 1 Include indicators on marine plastic litter in existing monitoring and assessment programs 2 Consider innovative approaches for data collection 3 Strengthen the science-policy interface 4 Link monitoring activities with vessel and aircraft operations in the region 5 Employ technologies 6 Standardise and harmonise monitoring approaches and related protocols 7 Establish regional reporting mechanisms 8 Identify and address capacity needs and related costs 	<ol style="list-style-type: none"> 1 Advance the harmonization of data collection protocols and methods 2 Establish a system to assess the effectiveness of measures 3 Advance towards integrated assessments from source-to-sea, across thematic areas and sectors 4 Conclude partnerships and agreements to facilitate data exchange and joint preparation of assessments 5 Improve accessibility and exchange of data 6 Further develop and employ automatized approaches
	Possible contribution of a global agreement	
	<ol style="list-style-type: none"> 1 Establish globally accepted guidelines 2 Propose common targets, indicators and assessment methodologies 3 Set common objectives and minimum standards 4 Harmonise efforts of regional instruments, including RSCAP's, LME activities, RFBs, REOs as well as NGOs and science associations 5 Establish a joint international database and a related data management strategy 6 Identify and feed in relevant data from international organisations and processes 7 Ensure that global assessments on the state of marine plastic pollution are coordinated with and contribute to related global monitoring and assessment processes 	

Figure 13: Overview of recommendations for addressing challenges related to monitoring and assessment.

➤ Multi-stakeholder approach

The prevention of marine plastic pollution calls for coordination and cooperation of stakeholders from the public and private sector, civil society, industry and academia at local, national, regional and global level that are both impacted by and sources of marine litter. Multi-stakeholder platforms or partnerships bringing together all relevant actors from source to sea would be beneficial in developing common

¹⁴ The Second World Ocean Assessment is expected to be published in 2021. According to the current outline, Chapter 12 will inter alia report on activities resulting in marine debris and present estimates of the sources from land, ships and offshore installations (https://www.un.org/depts/los/global_reporting/10th_adhoc_2018/2018_GOERP_Outline.pdf).

strategies and actions plans, aligning objectives and targets, and coordinating the implementation of activities and measures addressing marine plastic pollution (Notten, 2019).

Integrative regional platforms for coordination and cooperation are in place or under development in several regions, such as the Pacific Islands Forum, the Regional Cooperation Platform on Marine Litter in the Mediterranean, the permanent Ocean Governance Coordination Mechanism in the Caribbean, Regional Marine Litter Nodes or the possible future ASEAN Centre on Combating Marine Debris. In addition, MoUs were concluded between relevant regional organisations, such as RFBs and RSCAPs in various regions.

Initial steps

Where integrative regional platforms for coordination and cooperation are in place, their continuation and possible expansion should be supported and encouraged. Where these mechanisms are not yet in place, the establishment of overarching mechanisms and formalised cooperation between relevant stakeholders should be promoted. If possible, these mechanisms should always be built on existing governance mechanisms in order to avoid duplication.

Where such formalised partnerships are difficult to attain, joint participation in working groups or joint projects could be explored as a way to ensure coordination of efforts. In addition, increased collaboration between RFBs and RSCAPs should be encouraged as a way to address the issue of ADLFG in a more coordinated manner.

The Source-to-Sea Framework for Marine Litter Prevention (Mathews & Stretz, 2019) may present a good approach to identifying the relevant stakeholders across the source-to-sea continuum and establishing the needed engagement, cooperation and coordination among upstream and downstream actors across relevant sectors.

Global platforms and learning processes which strengthen cross-sectoral and inter-regional cooperation, such as the Sustainable Ocean Initiative of the CBD¹⁵ or the Marine Regions Forum¹⁶, should also be encouraged they provide a good opportunity to further strengthen dialogue and share experiences among RSCAPs, RFBs, REOs and other relevant actors across different regions and sectors.

Further steps

In the longer-term, the systematic expansion of cooperation and coordination with relevant stakeholders in the region and the formalisation of partnerships with key stakeholders should be promoted.

¹⁵ See <https://www.cbd.int/soi/>, accessed 16 November 2020.

¹⁶ See <https://www.prog-ocean.org/marine-regions-forum/>, accessed 16 November 2020.

Possible contribution of a global agreement

Currently no main forum exists where stakeholders can coordinate their efforts and foster cooperation (Simon et al., 2018). Building on existing multi-stakeholder initiatives such as the GPML, a global agreement could provide a central forum for coordinating activities addressing marine plastic pollution across relevant levels and sectors. In this manner, a global agreement could assist the regional level by providing a platform to cooperate and coordinate with relevant international organisations and conventions but also with actors from science and the private sector.

In addition, the agreement can assist the gathering and sharing of scientific and technical knowledge across sectors by establishing scientific and technical committees or bodies which provide advice (Raubenheimer & Urho, 2020).

In order to strengthen cooperation and coordination at all levels and promote multi-stakeholder partnerships, a global agreement could include an obligation for enhanced cooperation by relevant organisations and bodies at national, regional and international level.

Summary

	Initial steps	Further steps
Multi-stakeholder approach	<ol style="list-style-type: none"> 1 Support continuation and expansion of existing integrative regional platforms for coordination and cooperation 2 Establish overarching mechanisms and formalised cooperation between relevant stakeholders 3 Encourage increased collaboration between RFBs and RSCAPs 4 Encourage global platforms and learning processes which strengthen cross-sectoral and inter-regional cooperation 	<ol style="list-style-type: none"> 1 Systematically expand cooperation and coordination with relevant stakeholders 2 Formalise partnerships with key stakeholders
	Possible contribution of a global agreement	
	<ol style="list-style-type: none"> 1 Provide a central forum for coordinating activities addressing marine plastic pollution across relevant levels and sectors 2 Assist the gathering and sharing of scientific and technical knowledge across sectors by establishing scientific and technical committees or bodies which provide advice 3 Include an obligation for enhanced cooperation by relevant organisations and bodies at national, regional and international level 	

Figure 14: Overview of recommendations for addressing challenges related to a multi-stakeholder approach.

➤ Private sector engagement

UNEA-3 stressed the importance of eliminating all discharges of litter and microplastics into the oceans¹⁷. To achieve this goal, changes in plastics production and consumption as well as waste management need to be actively promoted and supported. Forging partnerships with the private sector is an important avenue for progressing on ways to reduce plastic litter input into the marine environment. Several regional instruments already engage with the private sector, such as SCP/RAC under UNEP/MAP, the APEC Virtual Working Group on Marine Debris or regional organisations which joined the Plastic Waste Partnership¹⁸ established under the Basel Convention. The Plastic Waste Partnerships aims to mobilise business, government, academic and civil society resources and expertise to improve the management of plastic waste at the global, regional and national level.

Initial steps

Where this is not the case yet, regional instrument should start to explore possibilities to cooperate with the private sector in order to improve production and waste management systems in the region. Working with pilot projects can provide a good entry point in this regard. Furthermore, regional instruments could invite private sector representatives to contribute to working groups on marine plastic pollution or participate in relevant projects.

Regional instruments should also have a good understanding of technical innovations and economic systems as this may help in determining ways to engage the private sector. Reports such as the APEC recommendations on 'Overcoming Barriers to Financing Waste Management Systems and Reducing Marine Litter' (APEC, 2016) or 'The Next Wave: Investment Strategies for Plastic Free Seas' (Ocean Conservancy, 2017) contain guidelines on financing and private sector engagement which may be a useful resource for guiding action in this regard.

Further steps

Long-term partnerships with the private sector should be established and used in order to collaborate on the identification of ways to reduce plastic litter input and alternative options for industries based on circular economy aspects. A strong focus should be on sustainable production and consumption of plastics, including aspects such as the development of alternative, biodegradable materials, the advancement of effective systems for 3R's (reduce, reuse and recycle), and the further improvement of waste and waste water management systems.

¹⁷ resolution 3/7

¹⁸ See <http://www.basel.int/Implementation/Plasticwastes/PlasticWastePartnership/tabid/8096/Default.aspx>, accessed 16 November 2020.

Possible contribution of a global agreement

A global agreement could support the engagement of the regional level with the private sector by approving internationally harmonised standards for the industry. In addition, the global agreement could fill regulatory and policy gaps with regards to areas such as sustainable product design, labelling and coding systems and EPR, thus providing a basis on which to further engage with the private sector at regional, national and local level. In addition, a global agreement might provide financial and/or technical support in areas such as waste management, waste water treatment and port reception facilities.

Summary

	Initial steps	Further steps
Private sector engagement	<div><div>1</div>Explore possibilities to cooperate with the private sector in order to improve production and waste management systems, e.g. through pilot projects</div> <div><div>2</div>Invite private sector representatives to contribute to working groups on marine plastic pollution or participate in relevant projects</div> <div><div>3</div>Build a good understanding of technical innovations and economic systems</div>	<div><div>1</div>Establish long-term partnerships with the private sector</div> <div><div>2</div>Collaborate on the identification of ways to reduce plastic litter input and alternative options for industries based on circular economy aspects</div>
	Possible contribution of a global agreement	
	<div><div>1</div>Approve internationally harmonised standards for the industry</div> <div><div>2</div>Fill regulatory and policy gaps with regards to areas such as sustainable product design, labelling and coding systems and EPR</div> <div><div>3</div>Provide financial and/or technical support in areas such as waste management, waste water treatment and port reception facilities</div>	

Figure 15: Overview of recommendations for addressing challenges related to private sector engagement.

6 Conclusion

There is no doubt that the impacts of marine plastic pollution demand the urgent development of efficient and harmonised approaches at all levels, from the local to the national, regional, and global level. The analysis indicates that RSCAPs, LME activities, REOs and RFBs fulfil an important role in addressing marine plastic pollution in marine regions and are well suited to catalyse and progress work on marine plastic pollution while a new global agreement is being developed, negotiated, and agreed on.

The regional instruments analysed are instrumental in coordinating the actions of their respective member states or contracting parties regarding joint marine environmental issues. Several of the regional organisations have developed regional action plans, frameworks, strategies or SAPs addressing the issue of marine litter and are actively supporting their member states or contracting parties in implementing these by conducting research on marine litter and providing capacity building and technical assistance. Regional organisations have furthermore established a suit of joint work programmes, joint meetings, or platforms such as Regional Marine Litter Nodes to promote information exchange and cooperation amongst stakeholders in the region and beyond. Some regional organisations have also been successful in establishing legally binding provisions addressing marine litter, such as the legally-binding regional action plan addressing marine litter adopted under the Barcelona Convention, legally-binding regional protocols addressing land-based sources of pollution adopted under several RSCAPs and a number of regulations and legally-binding directives aimed at improving ocean health and promoting a circular economy approach adopted under the EU. The regional instruments analysed moreover take on a key role in providing regional assessments on the state of the environment and RSCAPs in the Mediterranean (UNEP/MAP), Antarctic (CCAMLR), Baltic Sea (HELCOM) and North-East Atlantic (OSPAR) have introduced indicators specific to marine litter in their existing monitoring and assessment programmes, thus providing a highly valuable source of information. All of these measures have contributed to establishing joint, coordinated action in addressing marine plastic litter at the scale of marine regions.

When taking into account these significant efforts, it becomes clear that regional organisations should continue to play a substantial role in addressing the issue of marine plastic litter. The four key challenges in further advancing the existing efforts to address marine plastic litter are identified to be the great variation in the level of implementation of policies, programmes, action plans and projects relevant to marine litter across the different regions and amongst the different organisations, as well as monitoring and assessment, the implementation of a multi-stakeholder approach, and the engagement of the private sector. Underlying reasons for these challenges include a lack of capacity, and resources, as well as differing priorities amongst bodies. Also, organisations can only perform within the terms of their respective jurisdictions and mandates and rely to a great extent on the willingness of their member states or contracting parties to address the issue of marine plastic litter. These challenges do not only apply to the regional level but also very much reflect challenges encountered at the global and national level.

A new global agreement could provide a great opportunity for addressing the identified challenges in an integrated manner. While the legal nature and institutional structure and a possible new global agreement are still to be decided upon, several ideas and options were already presented (Raubenheimer & Urho, 2020).

Perhaps most importantly, the new global agreement would be highly beneficial in promoting and harmonising efforts at the global, regional and national level by providing an overarching, comprehensive strategy, setting common objectives and minimum standards, proposing shared indicators and assessment methodologies and carrying out global reviews and assessments. A new global agreement would furthermore be well positioned to undertake coordination and integration efforts among existing regional institutions and between global, regional and national institutions by providing a central forum for coordinating activities addressing marine plastic pollution across relevant levels and sectors. The facilitation of sharing of best practices and technologies, the provision of capacity building, training and financial support and the establishment of a joint international database and a related data management strategy to ease the collection of and access to data are further possible elements of a new global agreement which would strengthen regional level activities. The new global agreement would also be valuable for providing harmonised standards for the industry, including regulations and guidelines for sustainable product design, labelling and coding and EPR, as well as global liability and compensation for pollution by plastic. These issues are located beyond the reach of most of the analysed regional organisations but need to be addressed in order to move towards an integrated life cycle management approach and circular economy.

The described elements which the new global agreement may take on would help to enhance the effectiveness of regional action addressing marine plastic litter and would thus directly strengthen the ability of the regional level to support the implementation of the new agreement. As detailed in the report, the existing RSCAPs, LME activities, REOs, and RFBs are well-suited to transfer the established global objectives and standards into regional agreements, roadmaps or action plans. Thus, the regional level can complement and reinforce the global agreement by providing frameworks for action and implementation. The regional instruments have the great advantage that they allow for the challenges, needs and characteristics of each region to be considered and furthermore make it possible to go beyond the standards established by a new global agreement by creating ambitious regional arrangements which can guide and inspire future action. The regional level offers a real opportunity to address the problem at an ecosystem scale and to bring about the needed concerted action of countries in the region.

The experience, expertise and capacity gathered by the regional organisation with regards to addressing marine plastic litter should be considered as valuable guidance in the development of the provisions of a new global agreement as this will help to guarantee that the future implementation of a global agreement is effective and adapted to the reality on the ground. Regional systems in place for monitoring, reporting, cooperation and coordination are much needed in better understanding and addressing the issue of marine plastic litter at sea-basin and ecosystem scale .

Without a doubt, a system of ocean governance integrating the global, regional, national and local scale is needed to address the issue of marine plastic pollution. Regional instruments have shown that they are an important part of an integrative approach aiming to address marine plastic pollution. By strengthening regional instruments, coordinated efforts to combat marine plastic litter will be advanced, meaning that this is a no-regret approach. The harmonisation of monitoring and reporting procedures at the regional level would for example help to guide national monitoring efforts and simplify the cooperation across national states. Ultimately, this will enable better assessments and better informed actions to be taken nationally, regionally and globally.

While some states still consider whether to support the increasing calls for a new global agreement, or to strengthen existing agreements and regional efforts to reduce marine plastic litter, this assessment shows that a new global agreement needs to build on and strengthen existing instruments from the global to the local level if it is to succeed in addressing marine plastic litter in an integrated manner.

This analysis provides a starting point for understanding the role of the regional level in addressing marine plastic pollution as well as its links with a new global agreement. The analysis is necessarily broad and specific recommendations on how to improve regional level governance mechanisms in a specific region should be developed through collaboration between governance experts and practitioners involved in the relevant competent organisations. In addition to the governance instruments considered in the analysis, other complementary regional efforts undertaken by NGO initiatives, regional forums, science associations, river basin organisations and initiatives engaged in curbing land-based pollution through measures such as improved solid waste management, waste water treatment and circular economy should be considered for a complete picture on regional level action.

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8 Appendices

Annex 1

Marine Litter Survey Questions

Section 1/3: Regional instruments – challenges and opportunities

1. Is the regional instrument you are affiliated with active in the field of combatting marine plastic litter?

Choose one of the following answers

- ☐ Yes
 - ☐ No
 - ☐ Unsure
-

2. Please indicate the overall level of success your organisation has had in combatting marine plastic litter:

Choose one of the following answers

- ☐ 1 = Very successful
 - ☐ 2
 - ☐ 3
 - ☐ 4
 - ☐ 5 = Very unsuccessful
 - ☐ No answer
-

3. Please indicate the overall level of success your organisation has had in combatting marine plastic litter in the following areas:

(a) Actions to combat land-based sources, (b) Actions to combat sea-based sources, (c) Monitoring of marine plastic litter, (d) Research and innovation, (e) Education and outreach, (f) Private sector engagement, (g) Multi-stakeholder engagement (academia, civil society, etc.)

Choose one of the following answers for each area

- ☐ 1 = Very successful
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 = Very unsuccessful
- ☐ Not applicable
- ☐ No answer

If there are other areas relevant areas not mentioned above, please indicate these here:

4. Do you believe that the marine plastic litter activities conducted by the regional instrument should be expanded in the following areas?

(a) Actions to combat land-based sources, (b) Actions to combat sea-based sources, (c) Monitoring of marine plastic litter, (d) Research and innovation, (e) Education and outreach, (f) Private sector engagement, (g) Multi-stakeholder engagement (academia, civil society, etc.)

Choose one of the following answers for each area

- ☐ Yes, to a great extent
- ☐ Yes, somewhat
- ☐ No, not at all
- ☐ Not applicable
- ☐ No answer

If there are other areas for potential expansion, please provide examples:

5. Combatting marine plastic litter remains challenging. What do you believe are the main barriers hindering progress towards achieving measures and targets under the regional instrument you are affiliated with?

Please write your answer here:

6. What are possible opportunities, on a short to long-term basis, to overcome barriers faced by the regional instrument you are affiliated with in combatting marine plastic litter?

Please write your answer here:

Section 2/3: Cooperation and coordination

7. In your experience, please indicate the level of importance for the regional instrument you are affiliated with to cooperate and coordinate on combatting marine plastic litter with the following:

(a) National administrations, (b) Other regional instruments active in same region, (c) Regional instruments in other regions, (d) International instruments, (e) Stakeholders across sectors (e.g. industry, NGOs)

Choose one of the following answers for each category

- ☐ 1 = Extremely important
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 = Not important
- ☐ No answer

8. Please indicate the current level of engagement of the regional instrument in combatting marine plastic litter with the following:

(a) National administrations, (b) Other regional instruments active in same region, (c) Regional instruments in other regions, (d) International instruments, (e) Stakeholders across sectors (e.g. industry, NGOs)

Choose one of the following answers for each category

- ☐ 1 = Extremely important
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 = Not important
- ☐ No answer

Section 3/3: A potential new global instrument on marine litter

9. Do you believe that a new global instrument would be beneficial to you work?

Please provide a brief explanation.

- | | |
|--|----------------------|
| <input type="checkbox"/> Not likely | <input type="text"/> |
| <input type="checkbox"/> Somewhat likely | <input type="text"/> |
| <input type="checkbox"/> Very likely | <input type="text"/> |
| <input type="checkbox"/> Unsure | <input type="text"/> |

10. Please indicate your agreement with the following statement:

The regional instrument I am affiliated with could support the implementation of a new global instrument with the following activities:

(a) Identifying regional research needs, (b) Providing a knowledge base about the region, (c) Providing a regional platform for coordination and cooperation, (d) Agreeing on regional thresholds and targets, (e) Establishing regional monitoring and reporting system, (f) Conducting public outreach and education

Choose one of the following answers for each activity

- ☐ 1 = Agree strongly
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 = Disagree Not No strongly
- ☐ Not applicable
- ☐ No answer

11. How beneficial would the following potential activities under a new global instrument be to your work?

(a) Providing a global platform for coordination and cooperation, (b) Harmonising implementation efforts across regions, (c) Establishing common objectives and principles, (d) Setting minimum standards, (e) Setting joint targets and indicators, (f) Setting common procedures for monitoring and reporting, (g) Providing financial support, (h) Providing capacity building

Choose one of the following answers for each activity

- ☐ 1 = Highly beneficial
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 = Not beneficial No at all
- ☐ No answer

12. Does the regional instrument you are affiliated with support the implementation of existing global legal instruments for the protection of the marine environment (e.g. such as the London Convention, Basel Convention, Stockholm Convention, MARPOL Annex V, CBD Convention, UN Watercourses Convention, RAMSAR Convention)?

Choose one of the following answers

- ☐ Yes
- ☐ No
- ☐ Unsure

Make a comment on your choice here:

Closing section

13. Please rate if the current financial and human resources available (at all relevant scales from national and regional to global) are sufficient to effectively implement measures to combat marine plastic litter.

Choose one of the following answers

- ☐ 1 = Highly sufficient
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5 = Highly insufficient

Make a comment on your choice here:

Annex 2

Agenda of IASS workshop on ‘Combating marine plastic pollution: possible roles and contributions of regional instruments in strengthening global governance’. Conducted on 9 October 2020.

Time	Agenda point
09:00 – 09:10 CET	Welcome Sebastian Unger (Institute for Advanced Sustainability Studies (IASS))
09:10 – 09:15 CET	Introductory remarks Ingeborg Mork-Knutsen (Ministry of Climate and Environment, Norway)
09:15 – 09:30 CET	Preliminary research results Nicole Wienrich (Institute for Advanced Sustainability Studies (IASS))
09:30 – 09:45 CET	Possible core elements of global agreement to prevent plastic pollution Karen Raubenheimer (Australian National Centre for Ocean Resources and Security (ANCORS), University of Wollongong)
09:45 – 09:50 CET	Short break
09:50 – 10:35 CET	Break-out groups <ul style="list-style-type: none">• Group 1: Addressing land and sea-based sources of pollution• Group 2: Monitoring, reporting and informing policy• Group 3: Cooperation, coordination and partnerships
10:35 – 10:50 CET	Break
10:50 – 11:20 CET	Plenary discussion ‘A global agreement on marine litter – What role for regions?’ moderated by Sebastian Unger (Institute for Advanced Sustainability Studies (IASS))
11:20 – 11:30 CET	Wrap up and closing Sebastian Unger (Institute for Advanced Sustainability Studies (IASS))

Annex 3

Table 1: Overview of RSCAPs and marine litter related binding and voluntary instruments. Conventions/protocols which have not yet entered into force and actions plans and monitoring/assessment programmes under development are indicated through brackets [].

	Regional Seas Convention and Action Plan (RSCAP)	Region	Convention	1*	2*	3*
UN Environment-administered RSCAPs	Tehran Convention	Caspian Sea	Tehran Convention	[x]	[x]	
	UNEP Mediterranean Action Plan (UNEP/MAP)	Mediterranean	Barcelona Convention	x	x	x
	UNEP Caribbean Environment Programme (CEP)	Wider Caribbean	Cartagena Convention	x	x	[x]
	Coordinating Body on the Seas of East Asia (COBSEA)	East Asian Seas			x	
	Nairobi Convention	Eastern Africa	Nairobi Convention	[x]	x	
	Northwest Pacific Action Plan (NOWPAP)	Northwest Pacific			x	[x]
	Abidjan Convention	Western Africa	Abidjan Convention	[x]	x	
RSCAPs established under UN Environment, administered independently	The Commission on the Protection of the Black Sea Against Pollution (Black Sea Commission)	Black Sea	Bucharest Convention	x	x	
	Antigua Convention	North-East Pacific	[Antigua Convention]		[x]	
	Secretariat of the Pacific Environment Programme (SPREP)	Pacific	Noumea Convention		x	
	The Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA)	Red Sea and Gulf of Aden	Jeddah Convention	[x]	x	
	Regional Organisation for Protection of the Marine Environment (ROPME)	ROPME Sea Area	Kuwait Convention	x	[x]	
	South Asian Seas Action Plan (SACEP)	South Asian Seas			x	
	Permanent Commission for the South Pacific (CPPS)	South-East Pacific	Lima Convention	x	x	
RSCAPs established and administered independently	Helsinki Commission (HELCOM)	Baltic Sea	Helsinki Convention		x	x
	OSPAR Commission (OSPAR)	North-East Atlantic	OSPAR Convention		x	x
	Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)	Antarctic	Antarctic Treaty	x		x
	Protection of the Arctic Marine Environment (PAME)	Arctic			[x]	
Total in place			13	6	12	4
Total not yet in force/under development			1	4	4	2

1* LBS Protocol

2* Marine litter Action plan

3* Indicators specific to marine litter

Annex 4

Table 2: Overview of Regional Seas Monitoring and Assessment Programmes including indicators on marine litter¹⁹

Regional Seas Convention and Action Plan (RSCAP)	Region	Monitoring and Assessment Programme	Indicators specific to marine litter
UNEP Mediterranean Action Plan (UNEP/MAP)	Mediterranean	Integrated Monitoring and Assessment Programme (IMAP) <ul style="list-style-type: none"> includes 11 EOs to evaluate the status of the Mediterranean, one of which focuses on marine litter (EO 10). 	<ul style="list-style-type: none"> Marine litter on the beach Litter in the water column Litter on the seafloor Litter ingested by or entangling marine organisms (candidate indicator)
Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)	Antarctic	CCAMLR Ecosystem Monitoring Program (CEMP) <ul style="list-style-type: none"> CCAMLR Marine Debris program monitors debris levels in the Convention Area, with specific regard to fishing debris items 	<ul style="list-style-type: none"> Marine debris on the beach Debris associated with seabird colonies Entanglements of marine mammals
Helsinki Commission (HELCOM)	Baltic Sea	12 agreed HELCOM monitoring programmes feeding into indicator-based assessments of the state of and pressures on the marine environment as well as the analysis of long-term trends <ul style="list-style-type: none"> Marine litter is one of the indicators established to assess pressures 	<ul style="list-style-type: none"> Marine litter on the beach (pre-core indicator) Litter on the seafloor (pre-core indicator) Working on an indicator for microlitter in the water column
OSPAR Commission (OSPAR)	North-East Atlantic	Joint Assessment & Monitoring Programme (JAMP)	<ul style="list-style-type: none"> Beach litter Seafloor litter Plastic particles in fulmar stomachs Ingestion of litter by sea turtles <p>Working on an indicator for microplastics in sediment</p>
Northwest Pacific Action Plan (NOWPAP)	Northwest Pacific	State of the Marine Environment Report (SOMER)	In the process of agreeing on the operational criteria and indicators for 5 Ecological Objectives (Biodiversity, Alien Species, Eutrophication, Contaminants and Marine Litter)
UNEP Caribbean Environment Programme (CEP)	Wider Caribbean	State of Convention Area Report on Marine Pollution	Contracting Parties identified microplastics as an indicator to be included in future reports. Choice of Indicator to be guided by Regional Seas Indicator and SDG 14 reporting.

¹⁹ Adapted from UNEP, 2018. Additional and updated information from RSCAP websites.

Annex 5

Table 3. Overview of LME activities involving conduction of TDAs and SAPs²⁰

Regional organisation activities are related to (where applicable)	LME covered	1*	Year of SAP adoption	SAP implementation project under GEF	Activities under the SAP specific to marine litter
Guinea Current Commission	Guinea Current LME	x	2008		<ul style="list-style-type: none"> public awareness campaigns clean-up campaign at beaches construction of reception facilities for marine debris at ports
HELCOM	Baltic Sea LME		2007		<ul style="list-style-type: none"> public awareness campaigns clean-up campaign at beaches application of the no-special-fee system to ship-generated wastes and marine litter caught in fishing nets
Black Sea Commission	Black Sea LME	x	Revised 2009	1996 – 2000; 2002 – 2007	
Benguela Current Commission	Benguela Current LME	x	Revised 2002	2002 – 2013	<ul style="list-style-type: none"> public awareness campaigns
UNEP/MAP	Mediterranean LME	x	1999 SAP for pollution 2003 SAP for biodiversity		<ul style="list-style-type: none"> public awareness campaigns clean-up campaign at beaches
PERSGA	Red Sea LME; Gulf of Aden LME		1998	1999 – 2005	
Nairobi Convention	Agulhas Current LME; Somali Coastal Current LME	x	2009 SAP for the Protection of the Western Indian Ocean from Land-Based Sources and Activities 2015 SAP Policy Harmonisation and Institutional Reforms	Since 2016	<ul style="list-style-type: none"> litter prevention and control marine litter is one of the foci of national action in all the small island states in the region
COBSEA; SEAFDEC	South China Sea LME; Gulf of Thailand LME	x	Revised 2008	Since 2018	
Sulu-Sulawesi Marine Ecoregion Programme	Sulu-Celebes Sea LME		2013		
PEMSEA	Yellow Sea LME	x	2009		<ul style="list-style-type: none"> public awareness campaigns clean-up campaigns at beaches

1* TDA conducted

Regional organisation activities are related to (where applicable)	LME covered	1*	Year of SAP adoption	SAP implementation project under GEF	Activities under the SAP specific to marine litter
PEMSEA; COBSEA; SEAFDEC; Coral Triangle Initiative	Coral Sea Basin LME; Indonesian Sea LME; Gulf of Thailand LME; Sulu-Celebes Sea LME; South China Sea LME; Yellow Sea LME		2012	2007 – 2012; Since 2014	<ul style="list-style-type: none"> • partnerships with regional and international organisations and the corporate sector aimed at preventing, reducing and managing marine litter • identification of potential investment projects in solid waste/plastics management in PEMSEA Partner Countries • scaling up and replication of projects developed and initiated in each country • sharing of best practices • capacity building
Project Coordination Unit located within the IOCARIBE Offices	Caribbean Sea LME; North Brazil Shelf LME	x	2013	Since 2015	
Bay of Bengal Inter-Governmental Organization	Bay of Bengal LME	x	2015		<ul style="list-style-type: none"> • public awareness campaigns • clean-up campaigns at beaches • improve knowledge base • research
SPREP	Small Island States LME		1997	2000 – 2005	
National institutions in charge	Arctic LME		2009		
National institutions in charge	Gulf of Mexico LME	x	Revised 2015	Since 2016	<ul style="list-style-type: none"> • public awareness campaigns • clean-up campaign at beaches
Sub-Regional Fisheries Commission; Abidjan Convention	Canary Current LME	x	2016		<ul style="list-style-type: none"> • construction of reception facilities • for marine debris at ports
National institutions in charge	Humboldt Current LME	x	2016	Since 2018	
Administrative Commission for the Rio de la Plata; Technical Commission for the Maritime Front	Patagonian Shelf LME	x	2007		
Arafura Timor Seas Ecosystem Action (ATSEA) Program	North Australian Shelf LME		2012		<ul style="list-style-type: none"> • public awareness campaigns • clean-up campaign at beaches • construction of reception facilities for marine debris at ports



Institute for Advanced Sustainability Studies (IASS) e.V.

The Institute for Advanced Sustainability Studies (IASS) conducts research with the goal of identifying, advancing, and guiding transformation processes towards sustainable societies in Germany and abroad. Its research practice is transdisciplinary, transformative, and co-creative. The institute cooperates with partners in academia, political institutions, administrations, civil society, and the business community to understand sustainability challenges and generate potential solutions. A strong network of national and international partners supports the work of the institute. Among its central research topics are the energy transition, emerging technologies, climate change, air quality, systemic risks, governance and participation, and cultures of transformation. The IASS is funded by the research ministries of the Federal Government of Germany and the State of Brandenburg.

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