



Preventing and Managing Marine Litter in West, Central and Southern Africa

Workshop Proceedings

3–5 September 2019 in Accra, Ghana
17–19 September 2019 in Windhoek, Namibia
25–27 September 2019 in Rabat, Morocco

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Contributors:

Romain Langeard, Patricia Villarrubia-Gómez, Karen Raubenheimer (primary authors and data reviewers), Sumaiya Arabi (primary author) and Laura I. Acevedo Natale (review assistant and technical support). Miles Macmillan-Lawler, Morten Sørensen and Clever Mafuta (GRID-Arendal), and Alison Amoussou (Abidjan Convention) for contributing with note taking during Rabat's workshop.

Front cover photo by Patricia Villarrubia-Gómez.

Recommended citation

Abidjan Convention and GRID-Arendal (2020). *Preventing and Managing Marine Litter in West, Central and Southern Africa – Workshop Proceedings*.

Acknowledgements of funding and technical support

The Government of Norway and the United Nations Environment Programme (UNEP) provided the necessary funding that made the production of this report possible. The Abidjan Convention Secretariat provided technical and logistical support for convening of the workshops.

Country representatives to the “Sub-regional workshops for the Assessment for the Prevention and Management of Marine Litter for West, Central and Southern Africa” held in Accra (Ghana), Windhoek (Namibia), and Rabat (Morocco) during the month of September 2019 provided expert advice and input into the report (see Appendix 1).

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Abbreviations

BADEA	Arab Bank for Economic Development in Africa
ALDFG	Abandone Lost and otherwise Discarded Fishing Gear
CSIR	Council for Scientific and Industrial Research
DGSM	General Directorate for National Security
IMO	International Maritime Organization
INRM	Integrated Natural Resources Management in Rainfed Agricultural Systems in Morocco
MAP	Mediterranean Action Plan
MEAs	Multilateral Environmental Agreements
MEDPOL	The Programme for the Assessment and Control of Marine Pollution in the Mediterranean
NEA	National Environmental Agency
NGOs	Non-Governmental Organizations
NIMASA	Nigerian Maritime Administration and Safety Agency
NIWA	National Inland Waterways Authority (Nigeria)
PRCM	Regional Partnership for Coastal and Marine Conservation
SAEON	South African Environmental Observation Network
SAPRO	South African Plastics Recycling Organisation
SAWIS	South African Waste Information System
SST	Sustainable Seas Trust
UNEP	United Nation Environment Programme
WRC	Water Research Commission
WWF	World Wild Fund for Nature

1. Background and objectives

1.1. Background

The negative impacts of marine plastic litter and microplastics are widely recognized. The growing knowledge of their biological, ecological and socio-economic effects makes the topic one of global importance.

It is in this context that in 2016, the United Nations Environment Assembly adopted Resolution 2/11: Marine plastic litter and microplastics, and that the United Nations Environment Programme (UNEP) was requested to provide support to countries for the development of marine litter action plans.

Among the six United Nations Environment Programme (UNEP)-supported Regional Action Plans targeting marine litter and microplastics was the process leading up to the Assessment for the Prevention and Management of Marine Litter for West, Central and Southern Africa.

Through a joint project between UNEP, the Food and Agriculture Organization of the United Nations (FAO) and the International Maritime Organization (IMO), knowledge gaps were identified and recommendations provided to feed into the development of a Regional Action Plan on marine litter prevention for the Abidjan Convention. This assessment strengthens the evidence base for action and empowers decision makers to make more informed and effective interventions to lessen the impacts of marine litter on people and the planet.

In addition, the Abidjan Convention Secretariat has initiated the implementation of its CoP.12/7 and CoP.12/16 decisions on Marine Waste and Integrated coastal and ocean management

policy, adopted during COP12, held in Abidjan in April 2017.

To this end, in the framework of the ACP-MEAs III programme funded by the EU and UNEP, the Abidjan Convention is working with partners to develop a regional legal framework and national plans against plastic pollution in the region.

The first phase of this assessment included a review of existing and expert knowledge, showing that globally the number of studies investigating the various environmental and socio-economic impacts of marine litter had significantly increased over the last decades. However, this remains widely understudied when it comes to African West, Central and Southern coastal regions.

1.2. Objectives

With the objective of increasing and sustaining knowledge to support the design of relevant and efficient Regional Action Plans, three sub-regional workshops were jointly conducted by GRID-Arendal and UNEP in Ghana, Morocco and Namibia. These were attended by representatives of the 23 focus countries and invited experts.

This document describes the information collected through the sub-regional workshops, their objectives, the method used to collect the information, and the findings. The information shared through these “Proceedings” is used to complement the knowledge gathered from literature in the preparation of the “Assessment for the Prevention and Management of Marine Litter for West, Central and Southern Africa”. The goal of the assessment is to support the development of the regional and National Action Plans on marine litter and microplastics in West, Central and Southern Africa.



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1.3. Executive summary

Three workshops discussed and evaluated the state of plastic and marine litter in West, Central and Southern Africa, a sub-region that falls under the Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (also known as the Abidjan Convention). Given the limited provision of published reports on plastic and marine litter in the sub-region, the three workshops sought to engage local stakeholders and to obtain supplemental knowledge for use in the production of the Prevention and Management of Marine Litter in West, Central and Southern Africa: A review. Among other things, this review seeks to make a case for a regional action plan for the management of plastic and marine litter in West, Central and Southern Africa.

Using a combination of background papers drafted and presented by experts, and plenary discussions, the workshops involved country representatives compiling a detailed list of the primary sources, drivers and pathways for plastic and marine litter in West, Central and Southern Africa. Also discussed were the various ecological and socio-economic impacts of plastic and marine litter, as well as major barriers and challenges and the associated opportunities and solutions in the management of plastic and marine litter.

Major primary sources of marine litter identified by the three workshops included economic activities such as the manufacturing industry and fisheries, as well as shipping, ports and harbour activities and abandoned, lost or otherwise discarded fishing gear (ALDFG). Human waste-disposal behaviour and population densities were other notable primary sources of marine litter. Awareness levels and urbanization were identified as key drivers for plastic

and marine litter, while rivers, storm water, wind and ocean currents were the major pathways in the transportation of plastic and litter into the oceans.

Notable challenges and concerns in plastic and marine litter management included limited technologies and human capacities, as well as the absence of proper infrastructure and sufficient knowledge to support policy and decision-making. Research, global awareness-raising, institutional coordination and strong governance at both national and international levels, sustainable funding, and strong political and legislative frameworks are also areas of need identified in the workshops.

Despite the identification of barriers and challenges in the management of plastic and marine litter, some opportunities were also noted, including capacity-building, improved waste management and stronger institutional coordination.

The geographical interconnectedness of West, Central and Southern Africa, as well as the applicability of various solutions, present a strong case for a coordinated approach in plastic and marine litter management. Through a strategic approach, all future activities could have the opportunity to address several challenges while supporting related parallel actions. Thus, efficiency can be improved and the global effect strengthened.

Improved knowledge was strongly supported as a key element to solving plastic and marine litter problems in the region. Awareness-raising is necessary to build robust institutional and legal systems in conjunction with strong local stakeholder engagement. By establishing sustainable funding mechanisms, necessary capacity-building and development of appropriate waste management infrastructure is possible, moving towards achieving a supporting implementing framework for marine litter management.

2. Preparation of the workshops

2.1. General approach

Three three-day sub-regional workshops were convened in Accra (Ghana), Windhoek (Namibia), and Rabat (Morocco). One to three representatives of the 23 focus countries – Angola, Benin, Cabo Verde, Cameroon, Côte d'Ivoire, Democratic Republic of Congo, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mauritania, Morocco, Namibia, Nigeria, Republic of Congo, Senegal, Sierra Leone, São Tomé and Príncipe, South Africa and Togo – were nominated (Appendix I) to attend the workshops by the United Nations Environment Programme (UNEP), International Maritime Organization (IMO) and the Food and Agriculture Organization of the United Nations (FAO).

To ensure that information related to both land-based and sea-based sources of marine litter were captured, country representatives of the sub-regional workshops represented the different participating countries with various government sectors including environment, fisheries and maritime transport, and general experts on the prevention and management of marine litter and/or waste.

The workshops were jointly convened by UNEP and GRID-Arendal (facilitation of the workshop, and provision of marine litter and microplastic background content and information), and the Abidjan Convention Secretariat (provision of logistical support).

For the sake of clarity and inclusivity of all the country representatives, the workshops were conducted in both French and English, with simultaneous interpretation. Transcripts were made of recordings and notes taken during all presentations and discussions at the workshops (with the knowledge and verbal consent of all country representatives). For workshop contributions in French, the transcripts are based on the recordings of their simultaneous interpretation into English.

In preparation for the workshops, country representatives were asked to compile national data or knowledge on available data relevant to the assessment (Appendix II). For the countries that did not provide information before or during the workshop, subsequent emails provided the relevant data. Not all countries provided information, and the information that was received has been collated in this document.

2.2. Workshop agenda and procedure

The three workshops took place in Ghana (Accra, 3–5 September 2019), Namibia (Windhoek, 17 –19 September 2019) and Morocco (Rabat, 25–27 September 2019). A detailed agenda is available in Appendix III.

On the first day, representatives from GRID-Arendal, the Abidjan Convention and UNEP presented background information on the marine litter issue as well as the preliminary results from literature reviews specific to the coast of West, Central and Southern Africa. The assessment was introduced, the expected actions outlined and the purpose of the workshop clarified. Thereafter, each attending country provided a 20-minute summary of the status of marine litter in their respective countries.

The second and third day focused on group work activities and discussions on specific topics, with relevant case examples highlighted from the countries. The topics of discussion focused on sources and drivers of marine litter, impacts, monitoring and solutions, and identification of pathways and distribution of marine litter. Funding streams, stakeholder mapping, awareness-raising, inter-ministerial cooperation, and policy enforcement were also discussed. To carry out the focus group activities, the country representatives were divided into two groups based on their respective languages: anglophone and francophone. After reviewing each survey provided by GRID-Arendal, one representative of each group presented their main findings, and the floor opened for general discussion.



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2.3. Introduction and report structure

2.3.1. Compilation of the information and working scoop

Two major sources informed this report. These are: 1) the three workshops held in Accra, Windhoek and Rabat in 2019, and 2) the current body of published literature.

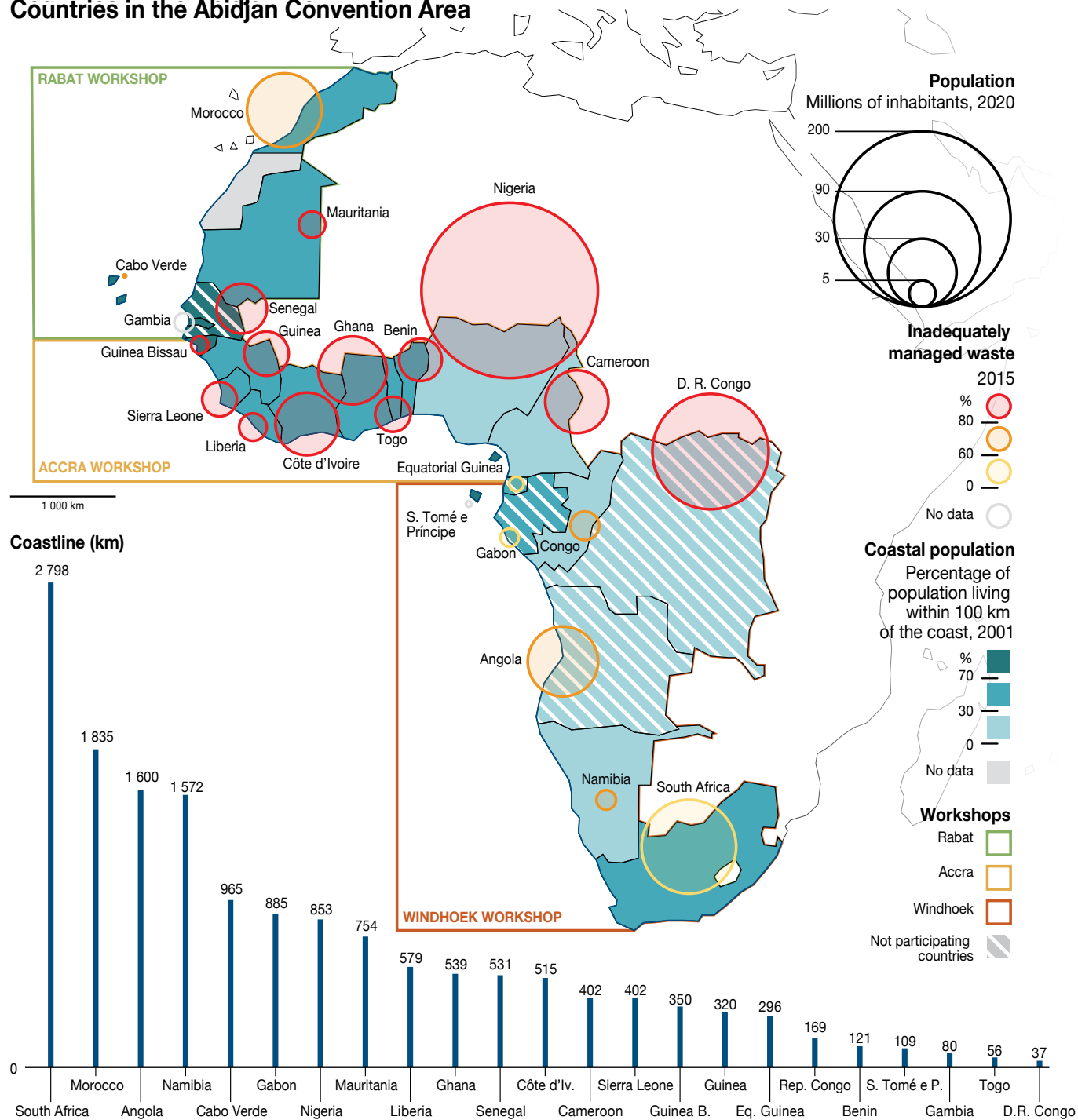
The information was captured through 1) questionnaires that were distributed to countries (see Appendix II), 2) presentations by country representatives (APPENDIX IV), and 3) opinions from experts appointed by the United

Nation Environment Program (UNEP), Food and Agricultural Organisation (FAO) and the International Maritime Organisation (IMO) to the three workshops.

2.3.2. Analysis of the information

The format and agenda were replicated in the three workshops. Findings as reflected in these proceedings were analyzed using a general matrix. The matrix helped determine the relative importance of the different topics within the workshops. Therefore, some of the values presented in this report represent the proportion of country representatives with a shared view.

Countries in the Abidjan Convention Area



Sources: CIA World Factbook, 2008; Worldometer, 2020; Global Environment Outlook 4, 2006; Jambeck et al, Plastic Waste Inputs from Land into the Ocean, Science 347, 2015.

GRID-Arendal/Studio Atlantis, 2020

Figure 1. General information on countries in the Abidjan convention area and countries participating in the workshops (Sub-national workshops conducted by GRID-Arendal and UNEP in 2019)



Example: 11 countries through their respective representatives out of the 18 participating countries mentioned not having a functional monitoring system in place, representing approximately 60 per cent of the country representatives.

2.3.3. Limitations and uncertainties

This document is largely based on qualitative information. It is therefore important to note that some findings in this report need to be supported in the future through primary research and information from published literature. However, the careful selection of country representatives, who included senior government officials and scientists, adds weight to the validity of the report's findings.

3. Findings: Status of marine litter

This section summarizes and highlights the discussions and key message outcomes of the three workshops. It identifies major marine litter sources, justifies the presence of the sources and explains the challenges leading up to the creation of marine litter hot spots. Figure xx illustrates the potential flow of information and decision-making.

3.1. Primary sources and drivers of marine litter

3.1.1. Primary sources of marine litter

The three workshops' country representatives provided a broad overview of the general marine litter sources in their presentations on their respective countries. However, two major categories emerged. The groups considered the different economic sector activities to be responsible for most of the marine litter production (80 per cent) (as Table 2 shows) in West, Central and Southern Africa. This is closely followed by the human presence and behaviour (20 per cent) category. More details are provided in the following sections.

Table 2. Sources of marine litter

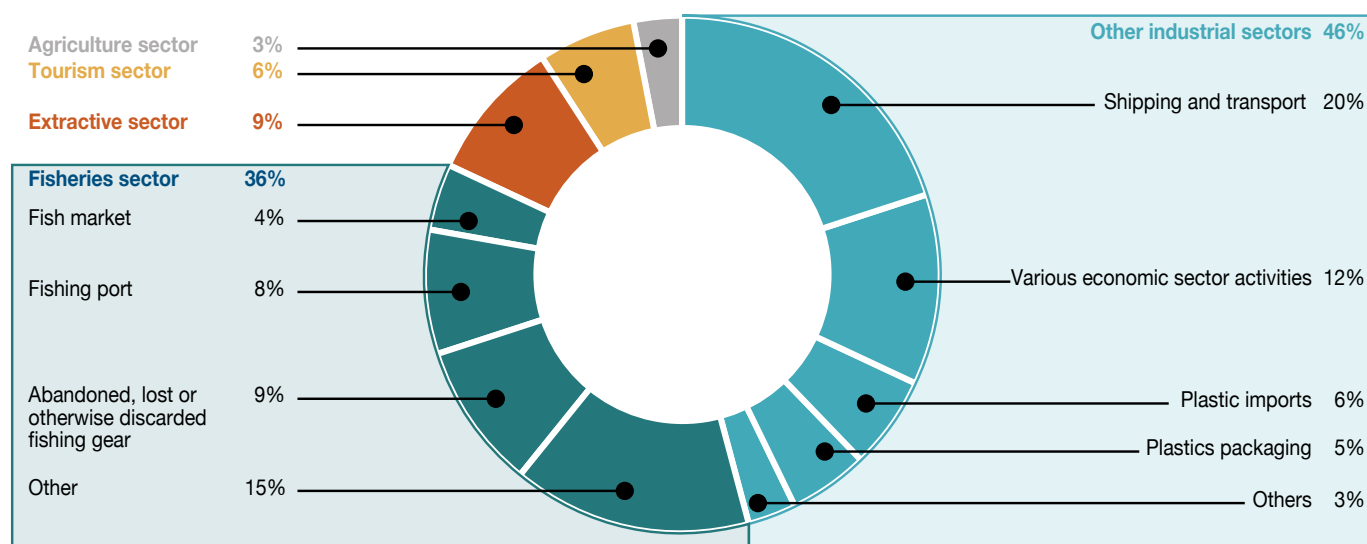
1. Economic Sector Activities	Mentioned in 80 per cent of the presentations
2. Human presence and behaviour	Mentioned in 20 per cent of the presentations

Source: Sub-national workshops conducted by GRID-Arendal and UNEP in 2019

Economic sector activities sources

Economic sector activities have been identified as one of the two major sources of general marine litter. Figure 2 illustrates

Marine litter from economic sector activities



GRID-Arendal/Studio Atlantis, 2020

Figure 2. Proportion of workshop country representatives identifying primary sources of marine litter creation (economic sector activities)

the detailed composition of this category as per information provided by workshop country representatives.

The country presentations determined that among the different sectors of activities considered the major sources of marine litter, the industrial sector and the fishing sector were perceived to be the primary sources of marine litter.

Shipping and transport and various economic sector activities – often located close to water bodies – ranked highly as sources of marine litter, as did Fisheries sector, some of which presented hot spots of marine litter emissions. General fishing activities and ALDFG were also considered to have a significant impact on marine litter levels.

“Especially the small-scale fisheries discarding litter directly into the sea and near to the coastline.” (Ghana)

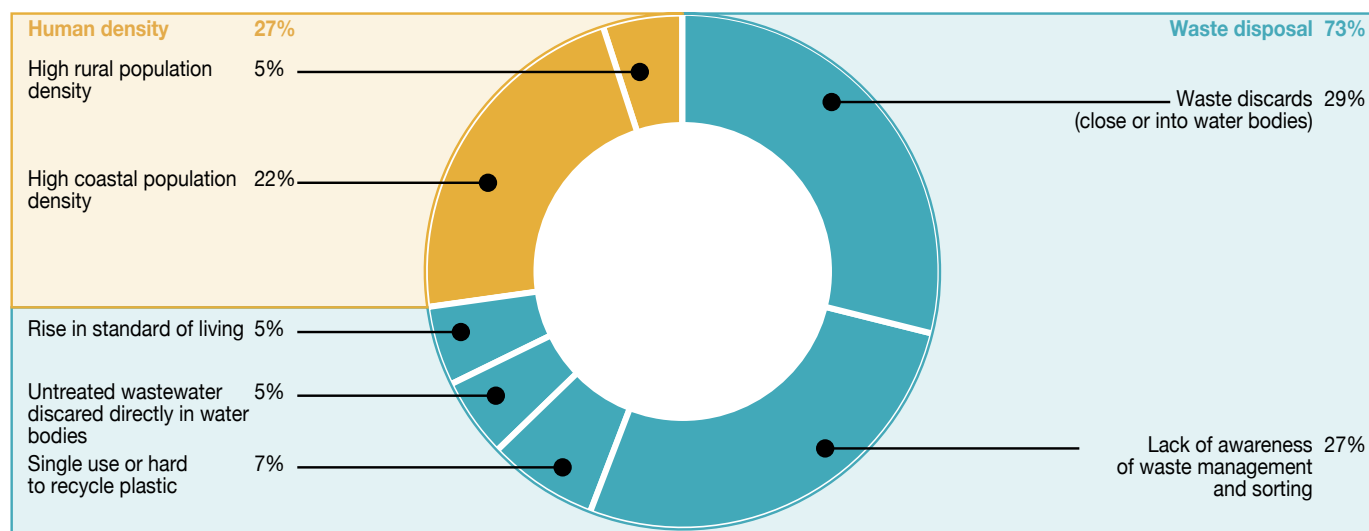
Several countries acknowledged the influence of the plastic industries and their lobbying, which challenges efforts to encourage and assist plastics businesses to become more sustainable.

Human presence and behaviour

The second major source of marine litter, according to the country representatives, is general human behaviour on waste disposal and the human density factor, due to rising population density, particularly in coastal areas. Human presence and behaviour categories that result in increased environmental and marine pollution are listed in Figure 3.

The main driver of such behaviours seems to be the lack of knowledge regarding waste sorting and of a basic understanding of litter pathways and impacts. It is important to note that contrary to expectations, the general increase in

Human presence and behaviour



GRID-Arendal/Studio Atlantis, 2020

Figure 3. Proportion of workshop country representatives identifying primary sources of marine litter creation (human presence and behaviour)

the “middle-class” population does not appear to be paired with increased environmental awareness. In fact, the rise in living standards has led to an increase in the consumption and discard of single-use items.

“People count on the rain to take their waste away; they do not understand the full impact of their actions.” (Liberia)

Based on the previous section of the report, it is clear that the lack of waste management and governance – particularly a lack of waste management facilities and accessibility, or industries offering single-use plastic items and non-biodegradable packaging – are other drivers to be considered.

3.1.2. Primary land-based sources

Table 3. Land-based sources

Land-based sources	Proportion of country representatives who agreed
1. Tourism	31%
2. Households	24%
3. Commercial and industrial (marketplaces, shopping malls, supermarkets, offices, hawking)	12%
4. Agricultural activities	8%
5. Landfills	4%
6. Imported waste	4%
7. Illegal dumping	4%
8. Dump station waste transfers	4%
9. Hospitals	4%

Source: Sub-national workshops conducted by GRID-Arendal and UNEP in 2019

According to the country representatives in the three workshops, the two major land-based sources of marine litter are tourism activities and households, closely followed by commercial activities including local markets and activities close to water bodies.

Several other major land-based sources of marine litter are recognised, such as agricultural activities, landfills, imported waste, illegal dumping, leakage occurring during dump station’s waste transfers, industries and enterprises, and hospitals. Table 3 summarises the contribution of each of these sources.

Tourism

As one of the major marine litter sources identified by country representatives, the tourism sector is also an important contributor to the gross domestic product (GDP) of a majority of countries in the region. Table 4 provides some of the known data.

Countries with minimal coastal tourist activity, such as Mauritania, did not identify tourism as a major source of marine litter. The contribution of this sector was downplayed, however some preventive actions, such as beach clean-ups, are conducted during tourist season.

“Last year (2018), tourism activities constituted 21 per cent of national GDP. However, the contribution of tourism to marine litter is small. Beaches are cleaned up before and during the tourism season.” (Gambia)

Table 4. Importance of the tourism sector to countries’ GDP

Sub-region	Tourism contribution to GDP (%)
North West Africa	14%
Central West Africa	5%
South West Africa	9%

Source: Sub-national workshops conducted by GRID-Arendal and UNEP in 2019

“Tourism contributes approximately 22 per cent of national GDP. In some areas, tourism has been impacted by marine litter so much that they have to hold regular clean-ups to maintain the beaches and make them attractive for the tourists.” (Cabo Verde)

In support of this, there is general agreement that beach cleaning activities are an important tool in addressing the waste generated by the tourism sector and mitigation of the associated economic and environmental impacts.

“We realize that beach cleanliness should not be overlooked. This is why we listed useful actions to prevent litter in coastal areas like continued awareness-raising, creating an eco-label for clean beaches and encouraging beach clean-ups with a ‘most beautiful beaches’ competition.” (Morocco)

Imported waste

It was clear to the country representatives that imported “waste” is an important factor to address. Part of the discussion involved the reuse of a large part of the imported waste and its importance as a low-cost product source. Therefore, use of the term “waste” was determined to be inconsistent among the countries.

“Our definition of ‘waste’ is based on its technical and legal definition, i.e., the product should be abandoned, or it is meant to be abandoned. Therefore, we cannot refer to these imported products as ‘waste’, since they are meant to be used, even if it is just for one day. These products are not yet ‘waste.’” (Guinea)

Even if these imported “waste” materials are necessary and contribute to the local economy – as is the specific case of second-hand vehicles – it is also a source of potential future waste due to a shortened second-life expectancy. The costs and benefits of this system deserve more attention. Existing case studies include Côte d’Ivoire and Guinea-Bissau, where this issue

is already addressed in local laws and legislation. In addition, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Convention) can be used as a starting point, as Morocco mentioned.

“Now, laws are prohibiting the import of certain products depending on the number of years of usage in their country of origin.” (Côte d’Ivoire)

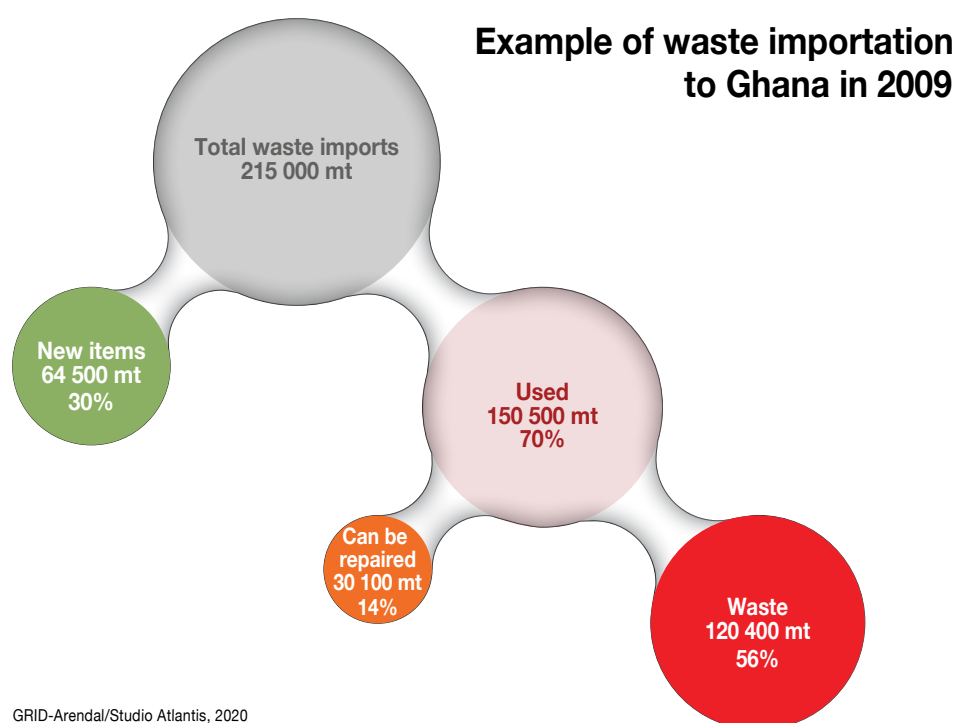
However, managing imported waste and the related sectors that rely on such materials is challenging. If mismanaged, the flow of these materials into countries may reduce the positive impacts of strong national actions taken against specific products identified as major sources of waste.

“Illegal imports of plastic from neighbouring countries are reducing the potential positive impact of our campaigns to control plastic production. It was hard for the local economy, with a lot of local plastic producers forced to close and people losing their jobs, yet plastic continues to be illegally imported and their sacrifice was for nothing.” (Country representatives in the Rabat workshop)

The automotive sector is considered a major contributor to marine litter. Considerable volumes of plastic waste are created through the dismantling of cars and the subsequent sorting of valuable parts followed by the dumping of low-value plastic parts.

“The imported products are needed and used by people in North, Central, and West African countries. However, lots of the materials coming to African countries, particularly electronic waste, are often damaged and can only be used for a short period before ending up in a dump.” (Sierra Leone)

Figure 4 provides a detailed example of the proportion of reusable “waste” from Ghana, illustrating this discussion and showing the importance and complexity of the imported “waste” sector.



GRID-Arendal/Studio Atlantis, 2020

Figure 4. Waste imports by Ghana in 2009 (Accra workshop’s country representatives)

Waste management and disposal trends

The workshops highlighted great disparity in proper waste disposal within participating countries, ranging from 85 per cent of waste properly disposed in Morocco to 0 per cent in Cabo Verde. About a quarter of the respondents estimated that 37 per cent of waste in the West, Central and Southern African region is properly disposed, suggesting a general trend of inadequate waste management systems.

3.1.3. Primary sea-based sources

The country representatives of the three workshops highlighted two major sea-based sources of marine litter. The most prominent are the dumping at sea both from vessels and platforms, and fishing activities including ALDFG and the small-scale fisheries sector. Table 5 provides a breakdown of these sources, as per country representatives opinion.

Table 5. Sea-based sources

Sea-based sources	Proportion of country representatives who agreed
1. Dumping at sea (vessels and platforms)	53%
2. Fishing activities	35%
3. Various vessel activities	12%

Source: Sub-national workshops conducted by GRID-Arendal and UNEP in 2019

Dumping at sea

Several country representatives mentioned that despite international regulations, dumping at sea is occurring regularly, including in places close to the Cabo Verde, Morocco and The Gambia coastlines.

"You can find tanks and black tar balls on the beaches every year." (Country representatives in the Rabat workshop)

Fisheries activities

Small-scale fisheries are considered by many country representatives to be of major concern as a source of marine litter, with crews' behaviour and discarded plastic traps, particularly octopus traps, cited as key contributors.

"Fishing boats, not shipping, are the problem. Fishers and crew spend a long time at sea, so they take many items from the land and discard them directly overboard." (Mauritania)

"The National Institute of Fisheries Research carried out a study on marine litter in the Atlantic. The study showed that some of the collected items were plastic, of which a substantial share was derelict octopus traps." (Morocco)

It seems that, to the best of the country representatives' knowledge, there are no specific data regarding waste-disposal behaviours on board fishing boats. Nevertheless, many country representatives share the same concerns regarding waste disposal at sea by fishing activities.

"International fishing boats are reported to dispose of their waste directly, and intentionally, into the ocean. This comes in addition to the existence of semi-industrial fisheries waste disposal records, but no specific data can be provided yet." (Cabo Verde)

Within the area of fishing activities, the role of the aquaculture sector is frequently mentioned. The majority of country representatives seemed to consider the potential impact of aquaculture activities to be minor, either because of the small-scale development in the sector, or because of its higher environmental control in comparison to capture fisheries, which make it easy to monitor and control their waste production. Flooding seems to be a driver of plastic waste production in the aquaculture sector, but the same is true of a wide range of human-related activities and may therefore not be specific to the aquaculture sector.

"Aquaculture activities are carried out in the country, and just like any other economic activity, it generates waste. However, there are conventions between the government and aquaculture helping to enforce regulations and waste management norms." (Morocco)

3.1.4. Primary drivers of marine litter

Based on the country presentations and workshops, nine major drivers of marine litter were identified, as listed in Table 6.

Table 6. General marine litter drivers

Main drivers	Proportion of country representatives who agreed
1. Disposal behaviours	24%
2. Increased urbanization (especially in coastal areas)	21%
3. Poor waste management	18%
4. Transboundary currents	11%
5. Industrial activities	8%
6. Transportation	6%
7. Population growth	6%
8. Recreational activities	3%
9. Hospitality industry	3%

Source: Sub-national workshops conducted by GRID-Arendal and UNEP in 2019

Disposal behaviours combined with poor waste management systems

The general behaviour of consumers is perceived as a major driver of marine litter production. This is exacerbated by a generally inadequate waste management system, providing limited disposal options to consumers.

“One of the primary sources of marine plastic litter is the combination of human consumption as a source with inappropriate waste disposal behaviours – including fishing gear disposal – and an almost non-existent waste or recycling treatment system.” (Cabo Verde)

Urbanization and population growth

The larger portion of country representatives agreed that urbanization and population growth are major drivers of marine litter production. This is particularly evident in the peripheral areas of large cities where illegal settlements tend to develop and expand rapidly without supporting facilities, including those for waste collection and dumping.

“While the population keeps growing, waste management systems remain inadequate and disorganized.” (The Gambia)

The proximity to the coastline or large water bodies was also noted to be an aggravating factor for waste concentration.

“Coastal areas are the most populated, thus the majority of the litter is found along the coast is brought there by either flowing water or wind, and this affects even established landfills such as the one in the Tangier mountains.” (Morocco)

3.2. Primary pathways of marine litter

It is globally acknowledged that most marine litters find their sources in-land, meaning that their presence in the marine environment involved a vector of transportation through specific pathways. This was confirmed across the country presentations with the identification of 5 major pathways of marine litter summarized below in Table 7.

Table 7. Marine litter pathways

1. Rivers and water bodies	38%
2. Rainfall	24%
3. Wind	14%
4. Ocean currents	14%
5. Storms	10%

Source: Sub-national workshops conducted by GRID-Arendal and UNEP in 2019

3.2.1. Country variations in major marine litter pathways

It is important to note that the major marine litter pathways vary depending on the country. For example, Cabo Verde cited the ocean currents and the wind as the main marine litter pathways,

suggesting transboundary sources, while many other countries cited water systems.

“We only have one small plastic company on the islands. Waste is dragged to Cabo Verde by ocean currents from other countries. Plastic litter beaching on our coastlines have been identified to be from 25 countries and from the 1990s.” (Cabo Verde)

3.2.2. Illegal dumping and litter transportation by wind and rain

According to the country representatives, the main pathway for waste to become marine litter is illegal dumping on land and inappropriate discarding. This waste, is then transported into water bodies by rain or wind, ultimately making its way into the sea.

“Wind transports plastic bags and other plastic packaging to drains and water courses, which reaches rivers and eventually the sea. Significant flood events occur after heavy rain, causing a lot of damage to public infrastructure and putting at risk the safety of citizens.” (Morocco)

“In Cabo Verde, the wind’s impact is constant. This further increases the risk of waste reaching water currents and the ocean from all the unregulated dumps in the country.” (Cabo Verde)

3.2.3. Rain and marine litter discharge peaks

High seasonal rains were cited as a reason for increased marine litter discharge. Marine litter does not pose the only challenges during these seasons, during which waste also reportedly blocks the drainage systems, causing flooding and industrial complications by water system blockages in some cases leading to activity interruption. In addition to the flooding events caused by litter, major concerns were also expressed regarding the health and sanitation risks resulting from accumulated waste.

“In Nouakchott, litter is transported by water, forming a lagoon in the middle of the city. The sanitation system is old, composed mainly of septic tanks and drainage systems. With people throwing their waste directly into the streets, rain events drive all the litter directly into the river.” (Mauritania)

3.2.4. Lack of research on transboundary waste

Concerning transboundary waste, the country representatives acknowledged its importance but did not have specific information on it. There are aspects that are currently being examined, including derelict plastic octopus traps, which could encourage future actions.

4. Findings: Impacts of marine litter

The relationship between increased marine litter and the various ecological, economic and social impacts is generally recognized among the country representatives (as shown in Figure 5). Nevertheless, even if some regional scientific information supports this, it is not currently available.

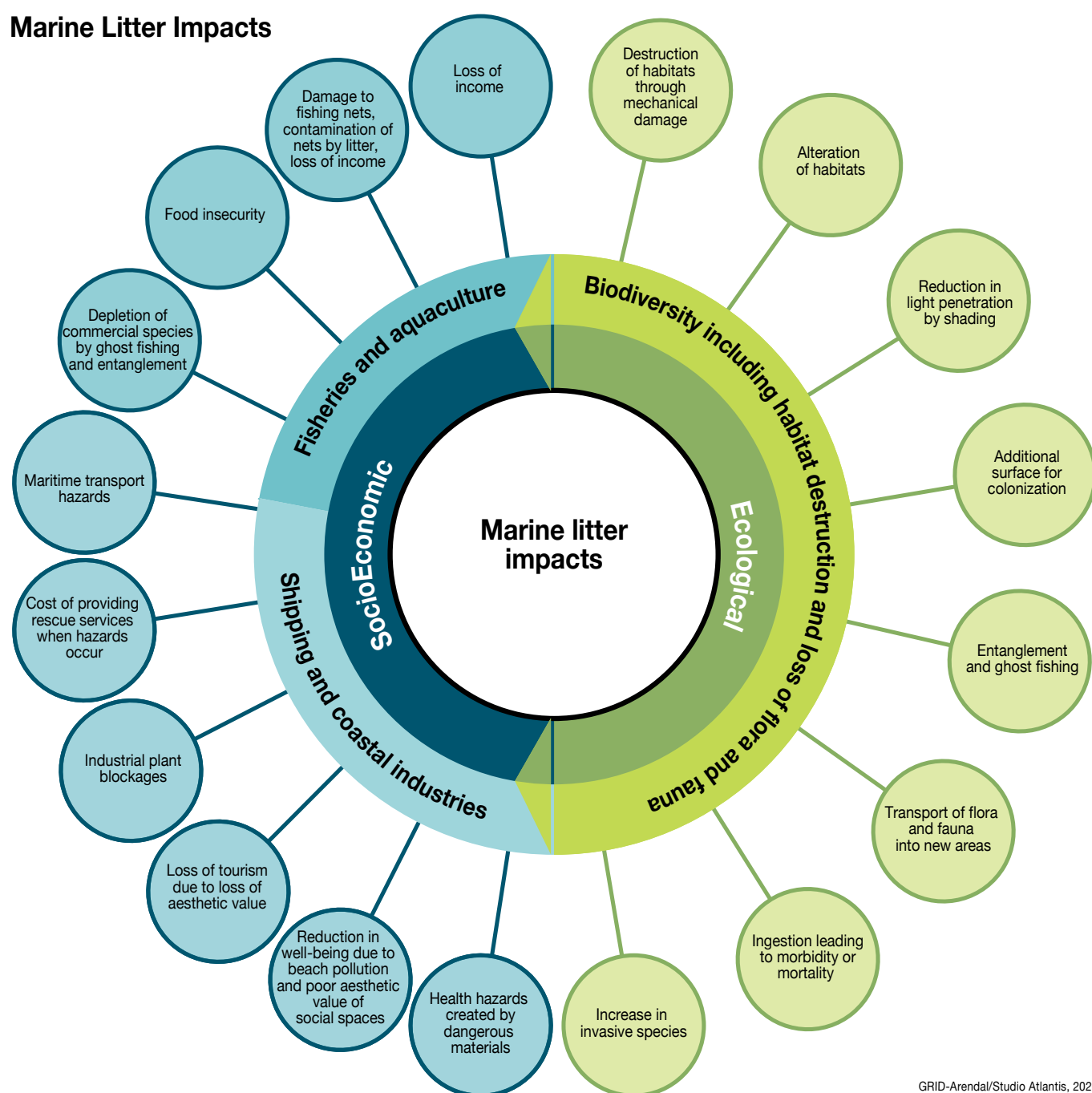
The country representatives in all workshops organized the impacts of marine litter into three main categories with a large portion falling under the ecological impact (63 per cent), followed by the potential human health impact (21 per cent) and economic impact (15 per cent).

Table 8. Marine litter impact categories highlighted by the country representatives

1. Ecological impact	Mentioned in 63 per cent of the presentations
2. Human health impact	Mentioned in 21 per cent of the presentations
3. Socio-economic impact	Mentioned in 15 per cent of the presentations

Source: Sub-national workshops conducted by GRID-Arendal and UNEP in 2019

Marine Litter Impacts



GRID-Arendal/Studio Atlantis, 2020

Figure 5. Summary of the major impacts of marine litter identified by the workshop country representatives

4.1. Ecological impacts

The workshops' country representatives regarded the ecological impacts of marine litter as a major concern. This includes the impact of marine litter on the environment and biodiversity. ALDFG was raised as a significant concern by various country representatives, and this was said to be worsened by the amount and mobility of this type of waste, including the well-recognised issue of plastic octopus traps.

"ALDFG, specifically octopus traps abandoned by traditional fishers, had a negative impact on the fish and seafood population due to their persistence and high mobility, which in turn negatively impact a broad range of fishing communities, whose entire livelihoods depend on fishing activities." (Mauritania)

"We are finding a high number of turtles and migrating birds entangled in ghost fishing gear." (Cabo Verde)

The ecological impacts of marine litter were in turn organized into three categories by the country representatives, namely flora, fauna and ecosystem services. Figure 6 provides details on how the country representatives perceived the magnitude of the impacts.

Fauna

Fauna is impacted by marine litter through entanglement, often leading to death. Marine litter may also provide new habitats, which results in an increase in invasive species.

Flora

The second most impacted ecosystem compartment is the flora. This occurs through ecosystem degradation, pollution of beaches, loss of mangroves and degradation of wetlands. The net result of the impact is a reduction in ecosystem services and the increase of alien invasive species.

"Simultaneously to marine litter increase, we observe an increase in the arrival of alien species, including algal blooms." (Nigeria)



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Ecosystem services

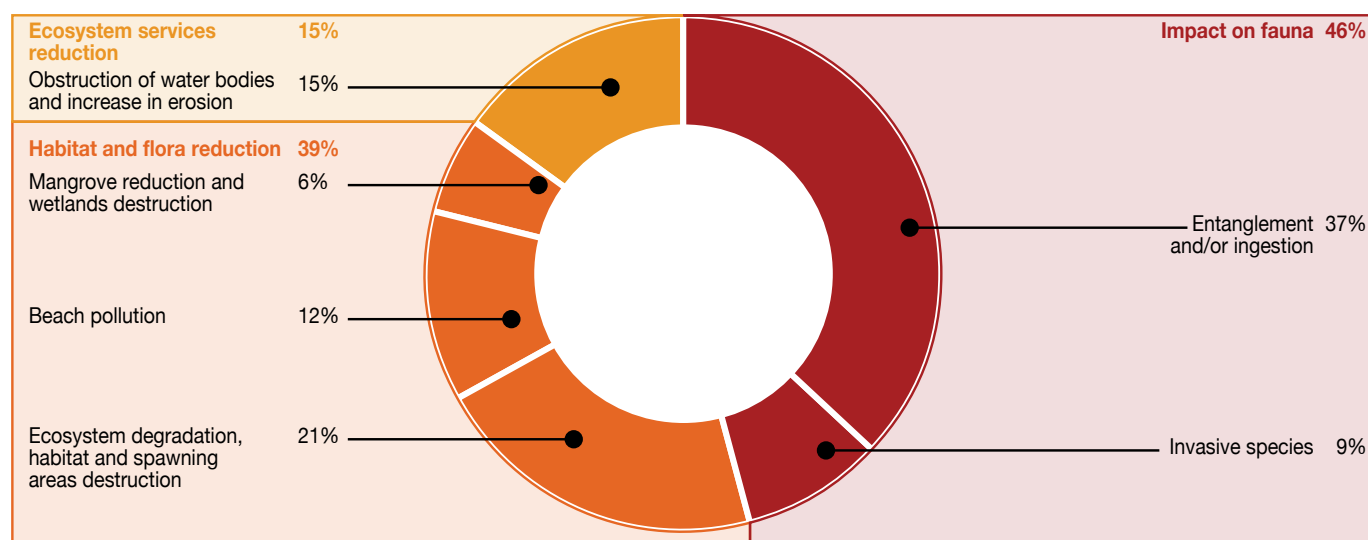
Closely linked to the fauna and flora impacts, impacts from mismanaged marine litter are perceived to reduce ecosystem services overall. This loss is most often due to regular obstruction of water bodies and increased erosion, which can lead to poor water access, as well as worsening the risk of natural disasters.

"Landslides killed nine people after heavy rains flooded a disused iron mine that had been filled with waste." (Guinea)

4.2. Human health impacts

The second most important impact of marine litter identified by the larger part of the workshop country representatives concerns human health. The risks cited included chemical transfer, water contamination, food and physical insecurity, and the spread of diseases, as shown in Figure 7.

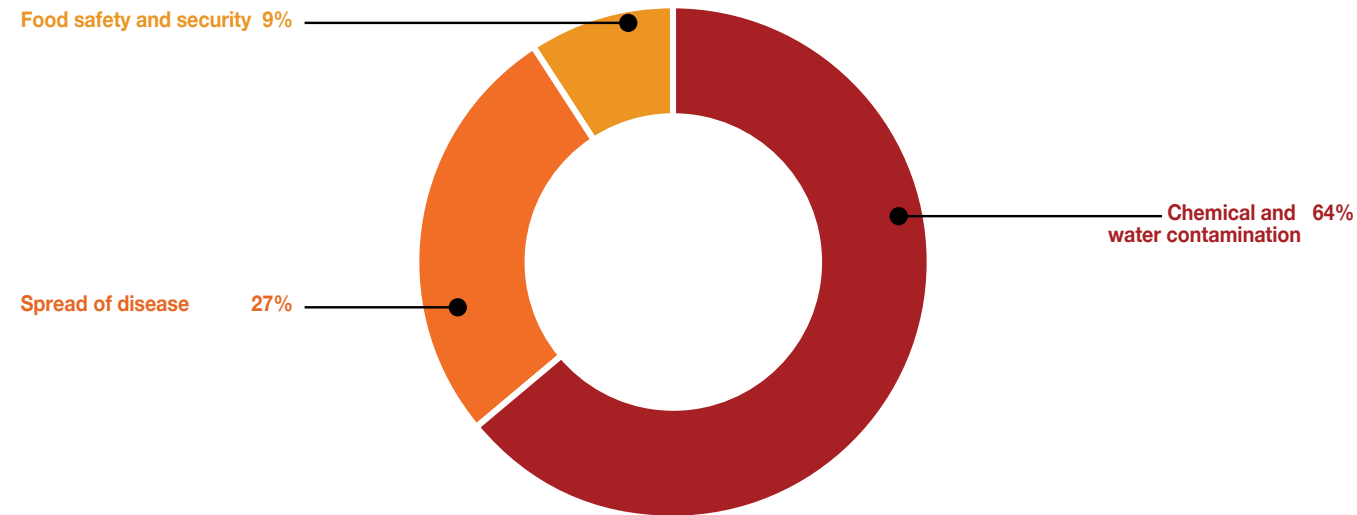
Ecological impacts of marine litter



GRID-Arendal/Studio Atlantis, 2020

Figure 6. Proportion of workshop country representatives identifying major ecological impacts of marine litter

Human health impacts of marine litter



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Figure 7. Proportion of workshop country representatives identifying impacts of marine litter on human health

Chemical transfer

Within the human health impacts, chemical transfers from plastics were cited as the most concerning. As is the case worldwide, there is a significant lack of data and knowledge on this topic in West African countries.

Spread of disease

The impact on human health is more pronounced when accumulated waste led to the spread of diseases among the local population and waste management workers.

“Marine litter and waste present health risks and encourage the spread of water-related diseases such as cholera and typhoid.” (Nigeria)

4.3. Socio-economic impacts

The third most important impact identified by country representatives is the socio-economic category. This is composed

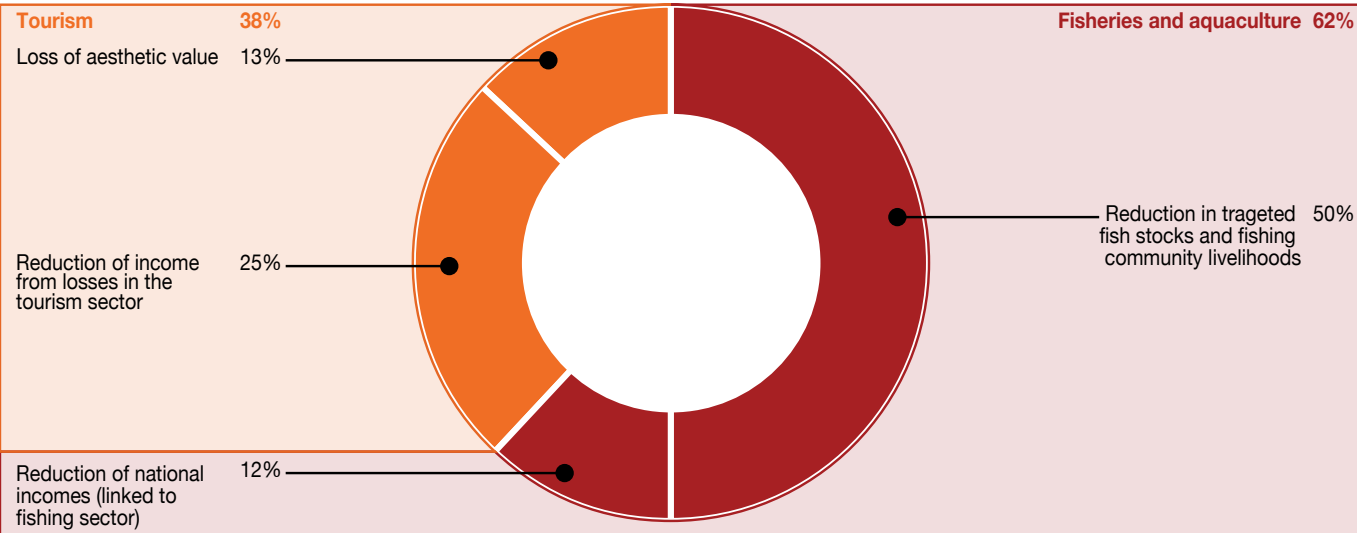
of two major subcategories (as illustrated in Figure 8) with impacts on the fisheries and the tourism sector. In addition to this, the impacts of waste and marine litter on various industrial cooling systems have also been highlighted as a threat to both the economy and livelihoods including potential food security and safety issues in the event of steep declines in natural resources.

Fisheries sector

Marine litter is acknowledged to strongly affect the fisheries sector by direct and indirect reduction of target and non-target fish stocks. This impacts local livelihoods, as well as government revenues.

“Marine litter impacts the local and national economy by decreasing fisheries’ production. As a consequence of the ecosystem degradation and spawning areas, fishers need to travel further to sustain their fish catches, and this often reduces their incomes. The exodus of some fishing communities is being observed.” (Togo)

Major economic impact of marine litter



GRID-Arendal/Studio Atlantis, 2020

Figure 8. Proportion of workshop country representatives identifying major socioeconomic impacts of marine litter



Tourism sector

Several countries rely heavily on the tourism sector and the marine litter impact on this sector was therefore highlighted. Mauritania and Morocco acknowledged the presence of shipwrecks dumped in the oceans, directly impacting tourism and the local marine environment.

“The tourism industry is strongly impacted by marine litter, as the aesthetic value and safety of beaches is lost, with a resultant loss of income from tourism.” (Gambia)

Despite being strongly impacted by the increased volumes of marine litter, the tourism sector has been identified by the fourth most important country representatives’ group as source of marine litter. Therefore, this sector presents strong opportunities to improve best practices in waste and marine litter management, resulting in direct benefits for the sector.

“Before 2014, tourism’s contribution to GDP was around 7.8 per cent, but after 2014 the contribution fell to 2.9 per cent. This figure increased again to 4.9 per cent in 2018 as a result of regular beach clean-ups in areas where tourism activities occurred.” (Sierra Leone)

Industrial installations

The blockage of water-cooling systems and other industrial installations (for example, power plants for water cooling and desalination) by marine litter has been highlighted as a major impact on industry, impairing their ability to provide critical services to citizens.

“The blockages of water-cooling systems are a major issue for the local industries, but to the best of our knowledge, no measures have been taken against it so far.” (Country representatives in the Accra workshop)

5. Findings: Current responses

Possible responses to the issue of marine litter have been categorised into 1) legal and policy frameworks, 2) national actions, 3) the provision of adequate facilities and infrastructure and 4) effective governance. Where country representatives listed such activities within their countries, these were captured and are summarised in Table 9.

Table 9. Current responses to marine litter

1. Legal and policy frameworks	Mentioned in 35 per cent of the presentations
2. National actions	Mentioned in 28 per cent of the presentations
3. Facilities and infrastructure	Mentioned in 21 per cent of the presentations
4. Effective governance	Mentioned in 16 per cent of the presentations

Source: Sub-national workshops conducted by GRID-Arendal and UNEP in 2019

The various country representatives of the workshops shared a selection of the major responses their countries are proposing to address the growing marine litter issue. As summarised in Table 9 and illustrated in Figure 9, a larger group (35 per cent) reported having relevant legal and policies frameworks in place, as well as having taken specific remedial actions (28 per cent). Only a minority were of the view their countries had placed sufficient effort into waste governance systems, facilities and infrastructures (21 per cent). An even smaller number consider that sufficient efforts are being made in marine litter governance and inter-institutional coordination (16 per cent).

5.1. Legal and policy frameworks

Several international legal frameworks are in place, to which most of the participating countries are signatory. Obligations committed to are expected to be adopted within national legislation. At the national level, measures such as the ban single-use plastic cups and plastic bags, are in place in some

Current responses to Marine Litter



GRID-Arendal/Studio Atlantis, 2020

Figure 9. Proportion of workshops country representatives identifying main current responses to marine litter



countries and enforcement measures may include making contraventions a criminal offense.

"Imports of plastic bags have to be requested with a data sheet and must be shown to be made of biodegradable materials. Food packaging and garbage bags are exempted, but they need to be authorized and be part of a management plan." (Cabo Verde)

5.2. National actions

Actions such as awareness-raising through local non-governmental organizations (NGOs), as well as various studies, are being carried out. Some monitoring of waste and marine litter is underway, despite there being limited technical capacity and limited application of findings.

"We are conducting a study on the positive impacts of the current law on waste reduction." (Cabo Verde)

Beach clean-ups and capacity-building of stakeholders towards the decentralization of waste management, aiming to reduce the burden on local municipalities, are further actions to be carried out and strengthened.

"Waste is collected and separated for further recycling by the municipalities or private companies, ensuring that there is no dumping of any materials." (Namibia)

5.3. Facilities and infrastructure

Less represented in participant presentations was the adequacy of facilities within countries to manage waste and marine litter. One out of four countries reported having a waste management centre and four countries reported having a recycling centre. Nevertheless, some countries shared interesting initiatives such as recycling of waste into innovative new items, the use of plastic granulation filters and the involvement of the private sector to compensate for the lack of government capacity in terms of in-house knowledge or human resources.

"A local company uses recycled plastic to make pavements." (Côte d'Ivoire)

5.4. Effective governance

Less than half of the country representatives mentioned having a national plan for marine litter management in their presentations, which is considered a relevant response to the challenges presented. A lower number of country representatives considered that the inter-institutional collaboration within their countries was satisfactory.

6. Findings: Challenges and opportunities

From the various working groups and discussions, six main categories of barriers and challenges were identified by the country representatives of the workshops (illustrated in Figure 10). These include, amongst others, perfectible waste management systems, lack of awareness at political and community levels, not fully effective political and legislative frameworks, lack of and misuse of funding, poor knowledge on marine litter coupled with low-capacity building. These are discussed below in no particular order of importance.

6.1. Waste management

6.1.1. Treatment infrastructure and collection capacities

The lack of suitable treatment infrastructure was one of the most concerning issues raised by country representatives. Dumps are not easily available to everyone, and are often not well constructed, leading to leakage into the environment or insufficient capacity.

“Waste-collection services and treatment facilities exist in developed areas. However, these services are not available to everyone” (Gambia)

6.1.2. Access to suitable technologies and human resources

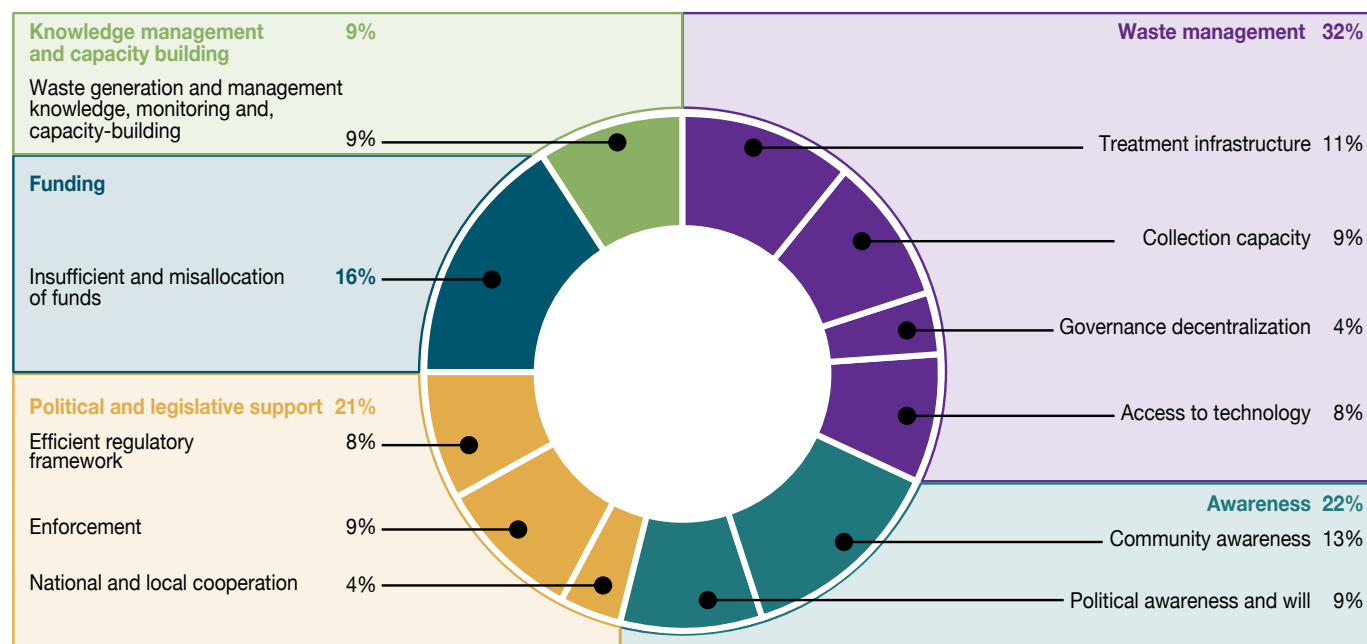
In addition to the lack of funding identified by country representatives as a major barrier to the development of effective waste management systems, there is a general lack of resources, particularly human resources, and low technical capacity to provide suitable infrastructure and products.

“We do not have monitoring programmes in place, institutional frameworks are not well defined, and due to the lack of human resources, lack of funding, and the need for capacity-building programmes, it is hard to put it in place.” (Workshop participant from francophone countries)

Financial and technological access to alternative products to replace harmful plastic products, such as single-use products, is also lacking.

When asked about their respective government priorities regarding waste management, a majority (two-thirds) of the country representatives stipulated that waste management is at the top of the agenda. However, there is a gap between the government official positions and the actual actions taken, as shown in Figure 11.

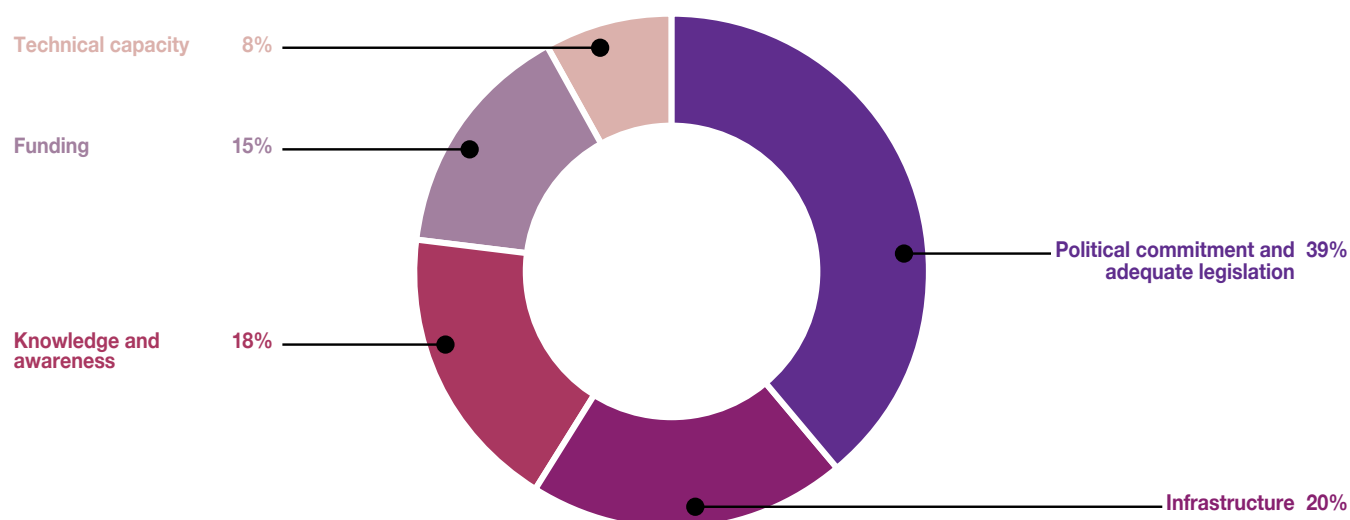
Barriers and challenges to marine litter reduction



GRID-Arendal/Studio Atlantis, 2020

Figure 10. Proportion of workshop country representatives identifying main barriers and challenges in the current responses to marine litter reduction

Barriers to sound waste management



GRID-Arendal/Studio Atlantis, 2020

Figure 11. Proportion of workshop country representatives identifying primary barriers to sound waste management

6.1.3. Governance and decentralisation

Responsibilities, legitimacy and empowerment

The various actors responsible for the design of integrated waste management strategies and the enforcement of the regulations play a critical role in reducing marine litter. However, a successful strategy includes application of the 3R waste hierarchy and activities may span multiple ministries. The establishment of a single governmental body to manage and prevent marine litter, and that includes relevant ministries, should be promoted. This can assist in clarifying roles and responsibilities across sectors.

“For marine litter management, there is not a clear vision of which ministry or department will be in charge, therefore nothing is happening, and even when it is clear who should enforce the decision taken, it is often restricted by inefficient management” (Country representatives in the Rabat workshop)

Waste governance: public vs. private

Depending on local capacities, waste collection services may be provided by the private sector, and in others, the responsibility lies with local authorities. According to country representatives, it is important to consider the benefits and disadvantages of outsourcing waste management to the private. Despite the many advantages of involving actors with broad technical knowledge – one of the major barriers identified in waste management implementation by the country representatives – there are also several drawbacks.

For example, as was highlighted by the Ghana representative, in developed countries, waste management systems are organized, citizens understand the role of waste management, that they are responsible for managing their own waste at home and that certain rules apply to them. On the other hand, in developing countries, such a system is not yet in place. Thus, simply privatizing waste management services in this context may fail from the outset because citizens may not have the basic knowledge of the role they play within the waste management system.

“A significant problem is that due to the insufficient funding from the government, private companies cannot pay their workers on time, which occasionally leads to worker protests, during which they litter the streets with waste” (Country representatives in the Accra workshop)

Waste management systems that are privatised may still require government funding. Private operators can be subject to considerable disruptions in services should government funding not be consistent. Such disruptions can weaken community participation if the system is perceived to be unreliable.

6.1.4. Improving waste management

Recycling sector opportunities

It is important to note that more than 20 per cent of the country representatives see great opportunities for employment and value generation in the development of the recycling sector, including from marine litter. In addition to creating employment, developing the recycling sector could provide access to new products and energies that are not currently being exploited.

“The construction of engineered landfills that can treat solid waste, and automatic waste sorting facilities for solid waste and recycling, present good opportunities to reduce marine litter.” (Ghana)

Infrastructure

Lack of suitable infrastructure for waste management is partly due to the provisions for related activities being either insufficiently represented or completely unrepresented in city planning. This is despite this planning process being perceived by the country representatives as one of the primary steps towards an improved waste management system.

“It is vital that we incorporate waste management systems’ needs into city planning; by doing so in cities we will be able to set standards and allocate dumpsites accordingly.” (Ghana)

Country representatives also declared a need for a clear, standardized definition of what is considered a “dumpsite”, a “landfill” and an “engineered landfill” site. A dumpsite is loosely considered a place where you cannot collect the leachate resulting from the decomposition of the waste materials. It was felt the region should target new sanitary landfill sites over dump sites, allowing for the collection of leachate for further treatment and energy generation.

Technological support and alternative products

Overall, the country representatives agreed that technologies and funding are among the most important factors for a successful waste management system implementation.

“Technology and funding are a bottleneck for marine litter projects.” (Country representatives in the Accra workshop)

Without appropriate technology and funding, supporting change at the population level will remain a challenge, such as the replacement of single-use plastic products with affordable substitutes. As much as communities want to move towards more sustainable consumption, if they cannot afford to do so or if they are not supported by a proper legal framework, they are unlikely to change their behaviour.

“A major constraint for the general public is that plastic substitutes tend to be more expensive in the long term, or that substitutes are not available in their local areas, which makes the old plastic products seem more reliable.” (Guinea)

The lack of suitable alternative products was another recurring topic linked to the lack of new items being developed and poor exploitation of recycling opportunities.

“We should finance more research and development of alternative packaging materials and ensure that plastic products are properly labelled.” (Nigeria)

Examples of best practices in neighbouring countries were shared based on common specific issues and solutions already in place, particularly for the small-scale fisheries sector.

“Following the ban on plastic octopus traps, we supported the development of clay pots as alternative product to disposable plastic traps.” (Morocco)

A good example of financial support coupled with technical training is the case of plastic octopus traps. This is just one example that shows the strong interest in replacing major polluting items, displaying the benefits of developing new technologies to make substitute products more accessible. The country representatives believed economic impact studies were needed, since fishers would not be able to cover the cost of moving from plastic to ceramic traps. The majority of the country representatives felt it was only feasible that the cost of this transition be covered by authorities who are able to communicate, pilot and monitor this transition.

“Maybe the solution to replacing the plastic octopus traps is a state subsidy so people can start manufacturing ceramic traps or transition to another economic activity.” (Country representatives in the Rabat workshop)

Moving towards a more circular economy was raised as an option to reduce waste generation and possibly create new products or energies, such as biogas. The country representatives stressed that the lack of suitable technologies and limited budget were the main barriers to the sound implementation of such an approach.

“The lack of funding and the very limited budget for the development of suitable technologies are barriers to the implementation of a more circular economy and capacity-building of local actors on waste management.” (Country representatives in the Accra workshop)

As an example, to address the lack of national technical knowledge, Cabo Verde is planning to open a “Sea Campus” including a Sea Institute responsible for research, a “University of the Sea”, responsible for higher education programmes, and a “School of the Sea”, responsible for practical training. Another example from Morocco is the creation of two sanitation programmes for the treatment of wastewater and sewage to avoid solid litter entering the natural environment.

Political awareness of the importance of effective waste management

According to the country representatives, the main barrier to implementation of sound waste management systems is low political commitment to the implementation of the agreed plans, and an unsupportive legal framework. Country representatives felt a key lever in driving actions amongst policymakers regarding marine litter is improved quantification of the socio-economic impacts and intensification of awareness-raising actions. Political will is perceived as a major barrier that should be possible to address in the short term.

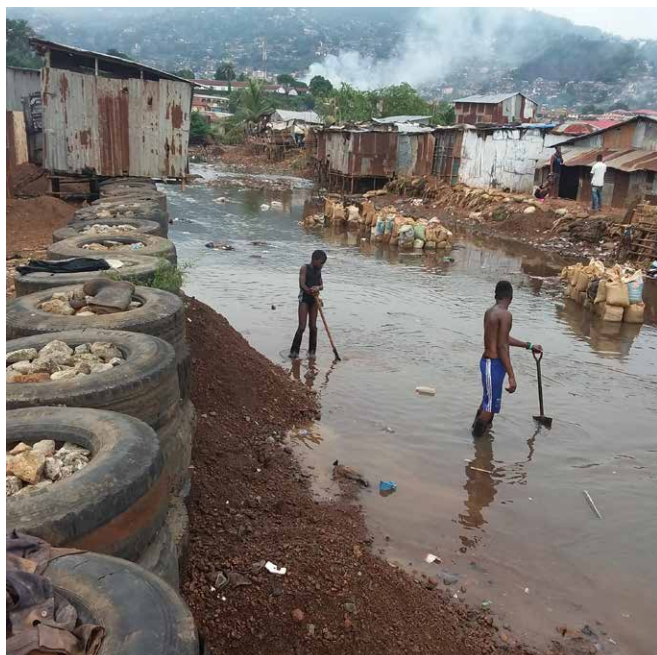
Examples were provided of successful government initiatives that could help raise awareness among policymakers, such as in Gambia, which is witnessing a resurgence of plastic bags since the new government released the pressure on the plastic ban.

“A stakeholder wanted to intervene in the policymaking for the prohibition of a specific type of plastic material, such as sachets. The stakeholder claimed that the ban should be made based on the shape and size of the product. However, the government did not take this matter fully into consideration and did not cite these specifications in the law. In turn, the law might not be fully functional, as when laws are not well defined, their implementation is inefficient.” (Guinea)

Some entry points to address this barrier are stronger political awareness-raising on the impacts of marine litter, monitoring the policies already in place and conducting more specific research to support science-based legislation on marine litter and waste management.

Waste management governance: decentralization and upstream support

Country representatives considered strengthening of waste management governance to be an important component of improvement of the waste management system.



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“Organized groups of citizens carry out Laboma’s beach clean-ups; the governments should find a solution to bring in other stakeholders to join in with this activity and to support and supervise these groups.” (Guinea)

As an example of decentralization of waste management, greater inclusion of younger generations is being encouraged, particularly the unemployed, by appointing marshals. Although informal at first, NIMASA took the initiative to turn the role into a paid position.

“NIMASA took on the responsibility of paying every Marshal 53,000 NGN/month (approximately 146 USD). Every location had a supervisor who was paid 103,000 NGN/month to support the marshals.” (Nigeria)

In Nigeria, the first pilot study appointed 120 marshals. To date, the scheme has performed well and results have been positive. The representative for Nigeria explained that marshals not only maintain the cleanliness of the beaches but also raise awareness among others and encourage them to dispose of their litter in the appropriate bins, which are provided by the Nigerian Maritime Administration and Safety Agency (NIMASA). Consultants were also recruited, working alongside marshals during clean-ups. Long-term, marshals will take over some of the consultants’ activities. The representative of Nigeria noted that this is not a national initiative; it is an initiative led by the agency NIMASA. They also mentioned that the agency went a step further and developed a national action plan. This plan includes broader monitoring schemes, which included the creation of a task force, in which all relevant stakeholders from maritime locations and states (e.g., agencies, NGOs, etc.) are involved in tackling marine litter.

The weak general organization of marine litter governance was mostly justified by a lack of an effective national action plan and the passivity of local institutions towards informal waste economies, targeting only high value waste without taking action on the rest. Lack of reliable knowledge was also considered a barrier to effective waste governance, as well as poor inter-institutional coordination and inconsistency of regulations from one region to another, making compliance a challenge.

Waste management facilities are unregulated and poorly designed due to lack of resources, such as finances and labour. Facilities often have insufficient capacity to deal with the volumes of waste generated, leading to leakage into water bodies.

“At least 25 per cent of waste is dumped in unauthorized sites.” (Ghana)

Global governance improvement, including more sustainable funding, reward and tax systems should incentivise the desired stakeholder behaviour changes.

“We could create a reward system that promotes environmentally friendly behaviour among fishers, and activities such as” fish for plastic.” (Nigeria)

Country representatives were of the strong opinion the informal sector plays an important role in waste management. Several governments are taking action in remote communities where official support is non-existent. An example is the voluntary beach clean-ups organized by self-assembled citizen groups. Such activities could be promoted, particularly where funding is limited. Contextual differences between developed and developing countries must be considered when assessing options for the informal sector. In developed countries, the informal sector is a marginalized social class. Conversely, in developing countries, this sector is not necessarily occupied by a specific social class and provides income to some of the less wealthy members of the population.

6.2. Political and legislative support

6.2.1. Unsupportive regulatory framework

An important factor discussed by country representatives was the legal framework and its questionable efficacy. The points of view diverged slightly here: some countries considered their existing policies sufficient and appropriate but difficult to enforce, while others clearly agreed that there are numerous gaps in the present legal system.

“Our existing policies are good, but we still have some gaps in specific areas that should be addressed.” (Namibia)

“Our policies are good but enforcing them remains a challenge.” (South Africa)

According to the country representatives, the lack of supportive legal framework is among the three primary causes of unmanaged marine litter sources (illustrated in Figure 12).

“We need local and regional policies to implement the international marine conventions and to be able to guarantee their enforcement” (Togo)

“We need to reconcile the plastics industries and public decision makers to draw up agreements on the integrated management of plastic waste” (Côte d’Ivoire)

“Although we have laws and monitoring in place, large fishing trawlers enter areas that they are not supposed to enter – we lack the enforcement power to handle this situation” (Mauritania)

“The law introduced in 2017 limiting the importation and production of single-use plastic was a good step forward. However, now we need to perform studies to evaluate such policies and adapt them accordingly.” (Cabo Verde)

Only 60 per cent of the country representatives who responded (80 per cent of responses over this thematic) indicated having an integrated waste management strategy in place. Some representatives mentioned the need to conduct studies and assessments on the policies already in place to be able to discuss them – which can support the awareness-raising process at both the community and political level – and use the field-based feedback to help policymakers design future legislation.

An important component of developing and sustaining effective marine litter strategies is the establishment of partnerships across the marine litter and waste management sector.

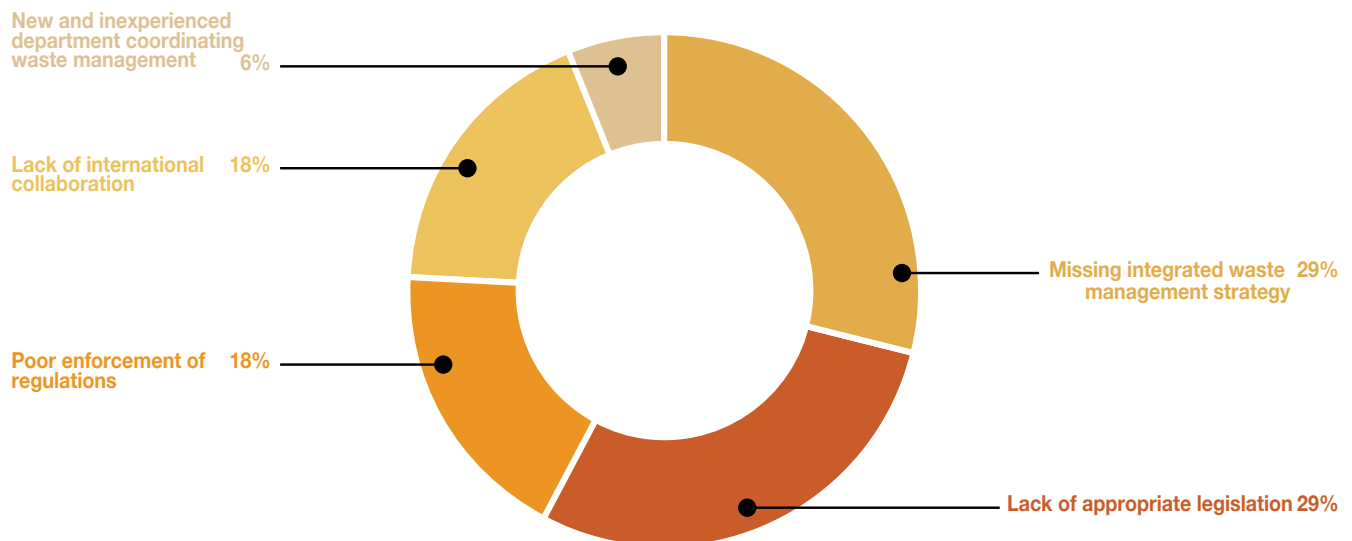
“We would like to finalize the creation of a National Agency for State Action on Maritime Matters (ONAEM) to organize and coordinate the different institutions and ministries working on marine-related issues.” (Togo)

Table 10. List of significant marine litter and waste management policies specific to countries on the West coast of Africa shared by the workshops country representatives

Region/country	Existing marine litter and waste management policies
Mauritania, Côte d'Ivoire, Benin	<ul style="list-style-type: none"> Legislative and regulatory frameworks following the “polluter pays” principle
Ghana	<ul style="list-style-type: none"> Draft Plastic and Plastic Waste Management Policy (currently awaiting approval) Segregation of waste at source National Sanitation Policy 2010 National Environmental Policy 2014 Introduction of the use of oxo-degradable plastic by the Ministerial Directive for the Production of Plastic Environmental Protection Agency Act 1994 (Act 490) Maritime Pollution Act Introduction of policies that prohibit the production and importation of plastic waste at the regional level of Western African counties
Nigeria	<ul style="list-style-type: none"> Monthly National Environmental Sanitation Exercise Merchant Shipping Act 2012
Sierra Leone	<ul style="list-style-type: none"> Environment Protection Agency Act 2008 Draft Marine Pollution Regulation Draft Plastic and Plastic Waste Management Policy
Liberia	<ul style="list-style-type: none"> Environmental Protection and Management Law City Ordinance Law 2017 Maritime Pollution Act 2010
Namibia	<ul style="list-style-type: none"> Various fines for dumping, especially in marine areas (each Namibian ministry has its own regulations) The Ministry of Works and Transport has penalties for the dumping of anything at sea
São Tomé and Príncipe	<ul style="list-style-type: none"> Ban on certain plastics (for which the details were not provided) Marshals from the Maritime Institute enforcing policies
South Africa	<ul style="list-style-type: none"> Plastic bag levy (which is not working, as some actors are using it as additional source of income rather than a substitute product – there is a clear lack of enforcement here) Waste management ban under the Department of Environmental Affairs Division that specializes in compliance, monitoring and enforcement that reports violations of bans to the police once they are implemented A department within the police called the “green scorpions”, specifically designed to monitor and enforce environmental law – anyone can submit a complaint and they will carry out an investigation
Gambia	<ul style="list-style-type: none"> Law in 2015 to criminalize the use and importation of plastic bags
Morocco	<ul style="list-style-type: none"> Law banning the manufacturing, importation, use, production and selling of plastic bags Aim of eventually creating national laws based on these conventions to be able to sanction lawbreakers

Source: Sub-national workshops conducted by GRID-Arendal and UNEP in 2019

Barriers to supportive political and legal framework



GRID-Arendal/Studio Atlantis, 2020

Figure 12. Proportion of workshops country representatives identifying barriers to a supportive political and legal framework

Country representatives referred, among other things, to a need for greater community involvement in the waste management process, more efficient inter-ministerial coordination, and the involvement of the private sector to supplement or even replace government services. The latter is particularly applicable to waste collection at the very local level and in small or remote villages.

6.2.2. Enforcement

As previously highlighted, implementation of the existing legislation can be challenging and presents a real barrier to any appropriate policy that is or could potentially be put in place. This can be addressed at many different levels, such as by raising awareness among actors targeted by specific legislations, or by greater involvement of actors in the informal sector, who have often built close relationships with local populations.

"It is of primary importance to implement decrees properly. The informal sector needs to be included in the process and encouraged to change their practices; we also need to create more policies on awareness-raising, especially among fishers." (Morocco)

In some cases, even if laws are in place and responsibilities defined, enforcement remains complicated due to local representatives' lack of legal power. A long chain of administrative approval procedures or limited power attributed in decentralization can impair local implementation of legislation.

"The marshals from the Maritime Institute are the ones in charge of enforcing the law at the local level, but before doing anything they need the approval of the ministries. The problem is that ministries are very spread out and each of these laws are managed horizontally instead of vertically, which creates conflict and leads to inefficiency." (Country representatives in the Windhoek workshop)

6.2.3. Coordination and stakeholder engagement

Collaboration at the national level

It was mentioned that many different stakeholders have responsibilities in the waste management system, including the government, the private sector, civil society and NGOs. However, their roles are not always official, and the lack of coordination leads to many resources being wasted. In addition, this can lead to negative consequences on the populations' involvement and acceptance in official actions.

To respond to the challenge of how best to encourage populations' involvement in the system, several leads were shared, including assigning clear responsibilities from the national to the local level, establishing communication tools such as forums or regular meetings, and facilitating knowledge-sharing.

"In the case of plastic marine litter, society itself is a stakeholder. Everybody has some level of responsibility and a role to play in marine litter management and this includes civil society, decision makers, politicians, industry and many others, depending on the reach of the actions' design." (Côte d'Ivoire)

Lack of inclusiveness in the design of legislation has been identified as a key factor of policy implementation failure. Many examples were shared by the country representatives of well-intended initiatives that failed due to a lack of stakeholder engagement in the early stages. Particular focus seems to be necessary on the inclusion of the private sector, as it is a stakeholder group that is likely to be directly impacted by new regulations and are likely intended for changes in current approach. Their engagement from the start of any transition is therefore key.

"The government set a decree that prohibits the manufacture and use of certain plastic products. However, it did not work as expected, since two essential stakeholders were against it from the beginning and did not get involved in the decree design. Ultimately, another law was voted in, which was less relevant but involved a broader range of stakeholders." (Côte d'Ivoire)

The inclusion of the public in the legislative process is important, even if only at an informative level. If real efforts are not made around communicating government intentions, public opinion can quickly become unsupportive and mislead by influential actors against the actions.

"After the government ratified a new law without communicating with the general population, the public were persuaded by a few stakeholders to reject the law. They did not understand the government's intentions regarding its application. Some actors argued that a plastic ban would significantly increase unemployment, which with no counter arguments from the government increased the public's support for the industry position. This is a common occurrence: powerful private sectors and a lack of government collaboration." (Côte d'Ivoire)

Several country representatives in the workshops felt that increased collaboration with influential stakeholders, such as scientists, local non-governmental organisations (NGOs) and local representatives, is important to strengthen communication on the governments' actions. This process has the advantage of providing direct feedback and design support to the decision makers, thereby increasing the potential success of the process in the long term.

"Another example where collaboration is necessary in our country is regarding single-use plastic items. People are very attached and used to them. If one side of the solution is to be able to offer affordable alternatives, another side of the equation is to reduce the appeal of these products. To conduct efficient advocacy on their negative impacts and the long-term benefits of refraining from using them, we need stronger collaboration with the scientists and experts giving us science-based evidence to communicate to the public." (Country representatives in the Accra workshop)

As mentioned above, a single national body to coordinate activities across relevant ministries can greatly enhance effective implementation. Mauritania and Morocco's representatives suggested increasing cooperation among ministries, much like these workshops. However, they argue the frequency of such cooperative engagements is important. Examples where cooperation can be strengthened are between the Ministry of the Environment and the Ministry of the Interior, among other bodies, to build sanitary landfills and to control waste discharge. Enforcement can also be strengthened through inter-ministerial cooperation.

"Even though we are all invited to the same events, there is still no close cooperation between us. We should improve our communication and exchanges." (Country representatives in the Rabat workshop)

Collaboration at the local level

At a more local level, several country representatives highlighted the importance of urban centre collaboration with the local population and neighbouring centres. The waste may be produced locally but it is highly mobile and has a wide range of impacts on everyone in the area. In addition to this, many research centres, NGOs and local initiatives have the potential to provide significant knowledge-building and decision-making support.

"Local NGOs work on marine issues in a number of ways, including mentoring, holding workshops and presenting research on marine pollution. They included ministries as relevant stakeholders, especially those dealing with cross-cutting industries, like fishing, environment, waste and transport." (São Tomé and Príncipe)

As suggested, the science-policy interface should be strengthened in the region. This firstly requires prioritising of the research agenda and investment in research and monitoring to build a robust knowledge base. These supporting activities are discussed in sections below.

"From a science to a policy perspective, the representatives recommended holding inter-ministerial workshops in which scientists are included in the discussions. One example could be the international environment fund. The group considers social media an affordable platform allows information to be communicated quickly and easily, helping to close the information gap between the city level and the community level." (São Tomé and Príncipe)

To encourage this type of positive participation, some examples and suggestions are provided throughout this report based on country representatives' suggestions for a more integrated approach. More direct contact can improve the ease of communication, but strong top-down hierarchies seem to be a barrier to achieving change.

6.2.4. Improving political and legislative support

Stronger legal framework and enforcement

Over half of the country representatives felt the need to develop a new or more efficient integrated waste management strategy supported by a stronger legal framework. This includes additional legislation developed for some areas and better enforcement of the regulations already in place, including international commitments.

Global strengthening of policies – through development of new policies or improved enforcement of those already in place – was considered a strong opportunity to tackle marine litter and waste issues, particularly in coastal and beach areas.

"We need to strengthen the implementation of existing policies, especially regarding the transport and small-scale fishing sector." (Mauritania)

Many country representatives mentioned the need for a national legislative body to enforce the rules among local and international stakeholders, and the necessity to expand the

legal initiatives already in place. This was linked with the need for stricter regulations on plastic importation – including a ban on specific items or components like single-use plastic or non-biodegradable plastic bags – specifically targeting the transport and fisheries sectors.

“The effectiveness of the Plastic Levy 2004 and the Tire Levy laws are questionable – it is not clear where the funding from the levy goes.” (South Africa)

Better national and local cooperation

Together with the development of appropriate waste management systems and legislative support, increasing national collaboration among the different stakeholders was considered a powerful lever of improvement for marine litter management.

“Since the marine litter problem is cross-sectorial, the Ministers of Work and Transport, Fisheries and Tourism should cooperate. Collaborating through workshops like the Abidjan Convention could be a great opportunity, in addition to national collaboration.” (Namibia)

The engagement of the relevant stakeholders in the various actions or planning was considered necessary. For this to be achieved, some country representatives suggested that it would be helpful to carry out a standardized analysis and intersectoral stakeholder mapping prior to initiating action.

“For the development of the ‘Coastal Zone Management Plan,’ we established a committee at the lower level and got a representative of each group, including actors who are generally considered less important than others. The objective was to ensure that all parties involved were part of the decision-making process.” (Country representatives in the Accra workshop)

Examples of national coordination and stakeholder engagement
The South African structure engages the national level, the provincial level and the local level. Research institutes, such as the Council for Scientific and Industrial Research (CSIR), provide support to the government. Other relevant institutes are the Water Research Commission (WRC), World Wild Fund for Nature (WWF), and other NGOs such as the Sustainable Seas Trust (SST). Several universities are currently studying the correlation between waste and climate, including ecological impacts. NGOs also hold beach clean-ups and data collection activities, and the Waste Picker Association works together with waste pickers to create a dialogue with municipalities.

Another example is the structure established in Namibia, which includes the Namibia Statistics Agency, local governments, supporting entities to the government and many NGOs. The country drew upon insight from the Ministry of Environment and Tourism to develop the National Solid Waste Management Strategy. There is also a Namibia Community Affairs and Human Rights Advocacy organization, which deals with environmental problems and monitors the compliance of cities with specific regulations. The focus is on raising awareness in Namibian cities that are not performing well in this area. Concerning ocean governance, the departments of maritime transport, environment and fisheries have now merged. One cooperative

called “Cooperative governance and institutional affairs” is working on establishing cooperation processes and engaging institutional leaders. The government will define national priorities, and these will call for increased research. Academic institutions will respond to these calls, with such research listed under national priorities.

“All the ministries work together. We have a logging system accessible by all the ministries that reports the waste that comes in, and also includes what type of waste is entering. There is an agency, part of the Ministry of Fisheries and Marine Resources, that monitors the management of the ministries. We have a waste management book in which everybody enters information.” (Namibia)

In the Republic of the Congo, the Ministry of Environment collaborates with other ministries, providing representation to these ministries. The Congolese country representatives explained that ministries usually receive a scientific focal point to provide them with research and technical information. According to the representative from the Republic of Congo, it is crucial to organize inter-ministerial workshops in which academia is included. In each workshop, one day should be reserved for field visits, such as visiting markets or beaches, including giving on-the-spot presentations that can spontaneously attract civilian audiences. Multiple stakeholder groups can be included in these events.

In São Tomé and Príncipe, if a ministry wants to work on something related to the environment, they can access funds earmarked for this purpose by the Ministry of Environment. However, there are reporting requirements to the government. The representative explained that the Ministry of the Environment, along with the presidency, are not always able to launch projects that are fully funded. Projects may be financed by different international governments, such as for example the Governments of Japan and Namibia.

São Tomé and Príncipe’s representative said they have a beach official working closely with the navy, who also plays a role in awareness campaigns. Based at the beach, this official is a fisher who has taken on the role of working with captains to control the beaches. Aside from being the person in charge of monitoring the beach as a whole, his role is to give weekly reports on fishing, marine pollution, navigation, and who enters and leaves, as well as coordinating monitoring campaigns.

In Namibia, waste separation and recycling are part of the school curriculum. A representative from Namibia said that it is crucial to take into account language barriers when it comes to sharing information. The representatives mentioned that a few years ago, they hosted a climate change workshop for religious leaders and faith-based organizations. They explained that information does not reach certain areas of the country due to language barriers, or because not everyone has a television or even a radio signal in their villages. One of the representatives reiterated the importance of using media as a partner, not just a tool, stressing that it is important to invite them to conferences and workshops.

Another example of organization and coordination between the different stakeholders was shared by the Ghana representative. The challenge was that, despite having put in place trash bins alongside a private collection service and having successfully involved the population in waste management actions, trash bins are filling faster than the private companies can collect the waste, diminishing the positive impact of the whole process. In response to this issue, communities have been told that they can take their waste to a landfill site and receive a token in return. Citizens seem to respond positively to this initiative and a sustainable conscience is growing among the population.

6.3. Funding

6.3.1. Challenges in domestic and international funding sources

Representatives considered sustainable funding to be at the core of effective implementation of best practices. In addition to the funding issues highlighted under Governance above, all representatives agreed that governments should increase allocation of funds for research and awareness campaigns aimed at driving greater local community and authority engagement. Funds collected for waste management should be ring-fenced and allocated to subsidising waste management services.

"In our country, thanks to an effective allocation of funds to awareness-raising, the plastic ban has been effective due to the public leading the action" (Democratic Republic of Congo)

"Concerning funding and paying for waste management services, maybe some funds should be raised specifically for waste collection. However, some countries fail to reinforce these funds. Sometimes money raised is for waste collection but is instead used to pay, for example, for water services" (Ghana)

Despite the availability of national and international support for implementation of action plans, most country representatives cited the lack of funding and limited access to loans as major challenges, together with the need for new regional partners experienced in similar contexts.

Even if the African Development Bank contributes to funding for the development of infrastructure, and the Arab Bank for Economic Development in Africa (BADEA) provides water infrastructure, the country is still struggling with insufficient funds, making the implementation of the national plan challenging. As a 'young country', we are trying to build partnerships with Angola and Ghana who already have experience in marine litter management" (São Tomé and Príncipe)

6.3.2. Improving sustainable funding sources for waste management

As previously addressed by the country representatives, funding is central to implementation of an efficient waste management system, and several options emerged from the workshop discussions. Although most of the country representatives agreed more funds should be raised to support waste

management processes, there was no consensus on the best methods to achieve this.

In some countries, poor communication has a misconception among citizens that the costs of waste management are included in the fees they pay for other services provided by the government, such as water services. Overall, it was felt all sectors should financially support the necessary process, but no clarity could be found on how this could be implemented.

"In reality, it seems like nobody knows who is responsible for waste management, whether it is the citizens or the government. This is one of the reasons why we face lack of information and data on the quantities of waste produced or marine litter on our coasts, because no one is coordinating it." (Country representatives in the Accra workshop)

Some suggested an intermediary approach whereby the state could buy back plastic waste, thus creating value for the waste and enhancing economic feasibility of sorting, collection and disposal processes. Such an approach increases collection of plastic waste, resulting in more waste being returned to recyclers for financial gain. The state could establish cooperatives to support these initiatives. In addition, awareness of waste management strategies can be strengthened.

The need for waste producers to contribute to solutions was expressed, but suggestions of how this could be implemented were not forthcoming. Financial contributions by the community for waste management services was considered a challenge. A taxation approach was felt to be easier to implement, but concerns were raised over fairness and affordability across different socio-economic communities.



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"It is important to consider how countries within the West, Central and Southern Africa region can implement an affordable and effective payment scheme for the waste management system. We could establish a tax system, but it would be difficult to implement, since not everyone can afford to pay these kinds of taxes. So, how do we do it? The effectiveness of waste collection also depends on households' endorsement of these new measures." (Country representatives in the Rabat workshop)

"In our country, it would probably be sufficient and viable if every household were to contribute one Euro. We need to ask for the minimum amount that will facilitate a complete and efficient waste management system." (Country representatives in the Accra workshop)

Creating financial value for waste items can be effective in encouraging collection over disposal. However, the additional financial burden that may be placed on communities must be coupled with effective waste management services. Without the provision of adequate services to cater for the additional waste collected through incentives, confidence in the system will be eroded.

"If we put in place a tax to be paid by consumers, but do not have an efficient waste management system to handle the collection of the new products, then we would have put unnecessary financial pressure on the population with no real impact on marine litter production." (Sierra Leone)

A tourism tax of levy paid by the tourism sector, particularly those with high rates of waste generation, was suggested as an additional source of funding for waste management services. In addition, support could be provided from these funds to those companies in the tourism sector that conduct beach cleaning and other removal activities.

Regarding international funding support, the country representatives are grateful for the help provided, but still believe it remains insufficient due to inadequate allocation of funds for waste management at the international level.

"The international forum set goals for budgeting for certain activities, such as waste management. Current international budgeting may be setting targets too low for our waste management needs, including marine litter." (Ghana)

6.4. Knowledge management and capacity-building

As experienced in other regions, there is a significant lack of knowledge on the state of marine litter, as well as the sources and pathways. There is a strong need to develop a regionally harmonised monitoring programme, supported by research

to provide evidence-based data appropriate to informing decision-makers.

"We have a lack of data and information on waste. There is a real need to carry out research to provide basic knowledge on how marine litter is impacting the environment and quantify the volumes of marine litter at a national level with an efficient monitoring system" (São Tomé and Príncipe)

6.4.1. Knowledge generation

The lack of data on marine litter in the environment extends to limitations in statistical data on the amount of plastic being produced and/or imported to countries within the coastal Western African region. Country representatives strongly supported the need to know how much plastic waste is generated in order to understand the volumes of marine litter generated.

"There is a particular lack of data on plastic stock, its management and plastic rejection" (Guinea)

Research and data

General quantification of marine litter generation is key to providing research-based evidence of impacts and quantification of related socio-economic and environmental costs. Such evidence could support advocacy for promoting best practices. Several initiatives in this regard are underway across the participating countries. These aim to ascertain the volumes of plastics and marine plastic litter, including in Guinea and South Africa. It was, however, felt that lack of collaboration is reducing the applicability of this research.

Other specific needs for additional research and support were raised, including plastic waste composition, knowledge on the sources and pathways of litter, transboundary movement of marine litter, socio-economic impacts of mismanaged waste, development of alternative products, opportunities to establish and expand the recycling sector, volume and type of plastics imported, mapping of stakeholders and the evaluation of effectiveness of measures implemented and considered.

Monitoring programmes

Current status of monitoring systems

Over half of the participating countries do not have a monitoring system in place, while only a fifth have programmes currently in operation (Figure 13).

The number of effective monitoring programmes specifically designed to monitor waste production is lower than for marine litter monitoring programmes. In addition, most focus on the monitoring of iconic marine species, thus covering a

Presence of monitoring system in the participating countries



GRID-Arendal/Studio Atlantis, 2020

Figure 13. Presence of monitoring programmes in participating countries according to the workshop country representatives

Table 12. Monitoring programmes and data from selected participating countries

Country	Monitoring	Data collectors	Published data
Ghana	Some ongoing monitoring of sea turtles.	<ul style="list-style-type: none"> Wildlife services division of the Forestry Commission 	Data exists, but they have not been made available.
Nigeria	Some monitoring data on sea turtles and other marine species.	<ul style="list-style-type: none"> Wildlife division Department of Forestry Department of Fisheries Marine litter marshal programmes National Taskforce on the London Protocol 	Data exists, but they have not been made available.
Liberia	A monitoring programme for sea turtles and other marine species managed by Conservation International and the Forestry Development Authority.	<ul style="list-style-type: none"> Forestry Department Authority Environmental Protection Agency (EPA) Conservation International 	Data exists, but they have not been made available.
Sierra Leone	A reptile and amphibian monitoring programme.	<ul style="list-style-type: none"> The Reptile and Amphibian Program – Sierra Leone (RAP-SL) 	Data exists, but they have not been made available.
Guinea-Bissau	Several monitoring programmes.	–	No data available.
South Africa	Recycling data and plastics statistics, manufacture of plastic, water quality data from the coasts, open access to information from parliament such as on the bans on six types of plastic. Information on waste generation, different types of plastic, recycling associations and quantities of virgin plastic imports and exports.	<ul style="list-style-type: none"> The South African Plastics Recycling Organisation Plastics S.A. The South African Environmental Observation Network The South African Waste Information System (SAWIS) The Parliamentary Mentor Monitoring Group 	–
São Tomé and Príncipe	Program Tatô for monitoring and protecting the marine turtles.	<ul style="list-style-type: none"> MARAPA (Sea, Environment and Artisanal Fisheries – an NGO) 	No data available.
Liberia	No monitoring plan.	–	–
Guinea-Bissau	No monitoring plan.	–	–
Morocco	Mediterranean Sea beach sand quality, a data-collection study on marine litter (including plastics, metals, rubber, textiles and glass and their classifications).	<ul style="list-style-type: none"> Integrated Natural Resource Management European Union and MEDPOL 	Data already available.
Gambia	Coastal zone management plan, environmental impact assessment for agriculture and natural resources.	–	–

Source: Sub-national workshops conducted by GRID-Arendal and UNEP in 2019

small component of marine litter impacts. Table 11 provides a summary of the monitoring programmes in operation in the region, highlighting the institutions responsible for collection and whether data exists or has been made available.

Challenges to implementation of monitoring programmes

All country representatives believed that there is a lack funding, human resources, and technical capacity to implement monitoring programmes. Raising awareness at all levels and sectors of society (for example, policy makers, civil society, the public and private sector) was also suggested to encourage willingness to develop, strengthen and implement such programmes.

“Without a monitoring system to inform us when there is a general lack of awareness and education on environmental issues, to open our eyes and see the impacts, we first have to suffer the consequences.” (Morocco)

6.4.2. Improving knowledge management and capacity-building

Research and studies

All country representatives agreed that more studies need to be carried out to accelerate progress on waste management and marine litter in order to address both efficiently.

Several research topics emerged more frequently than others. These included research on:

- Waste characterization and flows (including the amount of plastic imported, identification of leakage points from various sources, plastic composition and the impact of additives, etc.);
- The recycling sector and opportunities;
- The economic value of plastic waste;
- The environmental and social impacts of plastic and marine litter; and
- Substitute products.

To support this, surveys were suggested, or greater coordination across existing monitoring programmes, including gathering data from existing surveys. This may require developing a regionally harmonised methodology, with training and capacity-building to facilitate standardised and usable information at a country and regional level. Data can be shared through annual reports, databases, mailing lists, establishment of memorandums of understanding (MoUs) to invite countries to establish a data-sharing network, and holding workshops to exchange information. Additionally, workshops could also offer training on relevant methodologies.

“That which is not measured cannot be managed. We all need to shift our ways of thinking and start reliably collecting data to drive better policies.” (Country representatives in the Windhoek workshop)

The representative from Morocco suggested the creation of associations and NGOs could be promoted, specifically tasked with addressing marine litter issues and implementing pilot projects with the aim of characterizing marine litter on beaches, led by the Department of Environment.

Monitoring programmes

National monitoring programmes are a key component of the knowledge required to efficiently and effectively prevent and manage marine litter, thus supporting evidence-based decisions. As mentioned above, many countries in the region are experiencing challenges in developing and implementing such programmes. A regional marine litter monitoring programme can provide harmonised methodologies and reporting, building on successful experiences from the region.

Indigenous knowledge

Indigenous knowledge was considered a key element in the management of marine litter. Remote areas have initiated common local practices prior to the adoption of government policies. These applied to resource management practices in fisheries, as well as waste management. Taking indigenous knowledge into account and including it in the process of waste management design can assist in creating efficient and context-sensitive solutions designed with desired outcomes that are appropriate and suited to the location, and which are accepted among the local communities.

International capacity-building

Increased collaboration between the countries of the West, Central and Southern Africa region was strongly supported by

all workshop country representatives. This includes increasing the number of meetings and scientific workshops and establishing a network of focal points of the Abidjan Convention. Importantly, a significant amount of development in waste management systems is funded by international support. This may increase the need for collaboration of the Secretariat of the Abidjan Convention and member countries, both to facilitate identification of country needs, and to provide support in the application of funds.

From workshop discussions, it became evident that the prevalence of institutions addressing the issue of marine litter is limited. However, international support has facilitated some action.

“A pilot study conducted by the Nigerian Maritime Administration and Safety Agency (NIMASA) and UNEP created a list of actions to tackle marine litter, among which were the creation and recruitment of ‘marshals’, people who monitor the shoreline and coastal communities.” (Nigeria)

The representatives cited the United Nations Development Programme and UNEP as the two primary actors at the global level. At the regional level, a number of Multilateral Environmental Agreements (MEAs) are in place that could provide a platform for capacity-building, including sharing of best practices. These are listed in Table 14, as well as the relevant international actors, including the Abidjan Convention, the Rotterdam Convention, the Algiers Convention, the Stockholm Convention, the Convention on Biological Diversity, the Basel Convention, the Ramsar Convention and the Maputo Convention.

Table 13. Actor mapping at global and regional level

Level	Actors/Conventions/Agreements
Global	UNDP UNEP Rotterdam Convention Stockholm Convention Convention on Biological Diversity Basel Convention Ramsar Convention
Regional	Abidjan Convention Algiers Convention Maputo Convention

The Abidjan and Algiers Conventions were identified as having focal points in each country that work in collaboration with the convention secretariats. Country representatives suggested the formation of a group within the Abidjan Convention that assists the focal points of each country. As commonly practiced within other MEAs, these focal points could provide two-way reporting between their governments and the secretariats and parties to the convention. Workshop country representatives felt there is a need for international support to provide timely information and guidelines to national governments. In addition, assistance can be provided in acquiring funds from both domestic and international sources.

"It is crucial to put more pressure on governments from an international perspective, so they are compelled to allocate funds to marine litter issues appropriately." (Country representatives in the Windhoek workshop)

"At the moment, we are trying to establish inter-institutional cooperation with other eastern and western African countries. Government-to-government cooperation can take a long time in terms of processes, so inter-institutional collaboration is the preferred way of fast-tracking processes. For example, even if the funds from the African Development Bank are obtained, there are too many processes behind it, so it takes time to access these funds. It would be better to receive the actual technology and equipment". (São Tomé and Príncipe)

Collaboration in awareness-raising and knowledge-building

The need for awareness-raising amongst citizens and government was cited. For sensitization of citizens, the representative from the Republic of Congo suggested it is crucial to involve the Ministry of Education and the Ministry of Scientific Research and Technological Innovation in building educational curricula. In addition, awareness of policies and regulations in place is needed to promote compliance. Such awareness is often lacking, reducing the effectiveness of measures.

An improved science-policy interface is needed. For example, scientists could be present at inter-ministerial workshops to provide up-to-date information. In some countries, a political representative was partnered with a technical representative to provide a better understanding of evidence-based scientific information.

"In order to bridge the gap between science and policy, it would be interesting to actively involve scientists and researchers in the political workshops." (Republic of Congo)

6.5. Awareness

Lack of awareness is identified as the second major challenge in marine litter reduction at both the community and political levels.

6.5.1. Community awareness: Households as a major source of marine litter

A number of activities were identified as already underway in the region. However, workshop country representatives felt there is a strong need for awareness-raising and for building stakeholder capacity.

"We need to do more on the development and implementation of educational and capacity-building programmes, including those targeting institutional stakeholders." (Cameroon)

Awareness-raising should be context-sensitive and target the general population. Importantly, relevant governmental actors, particularly those responsible for waste management systems, should also be targeted to improve awareness of marine litter impacts, but also to strengthen the technical knowledge required to fulfil their duties and inform policy design.

"We need to conduct more awareness-raising and sensitization of citizens, especially women, since they are the ones in charge of household purchases." (Guinea-Bissau)

Consumption and disposal habits

Regarding the usage of certain products, some country representatives referred to this as "psychological obsolescence", explaining that nowadays, both developed and developing countries have a throwaway culture where we are constantly reminded by the media to use and dispose of certain products.

"We need to pay more attention to youth, as they are the ones who will break the chain of pre-established behaviours and reverse current consumption and disposal trends." (Ghana)

To address this issue, it seems important to be able to present realistic alternatives that are accessible – both economically and technologically – and suitable for consumers' needs. Some biodegradable products, for instance, failed to replace single-use items because of their limited durability. Hence, it is important to identify users' needs and raise awareness to convince consumers to change, even if it is to switch to a less "efficient" product that is more sustainable in the long-term.

The country representatives stressed that capacity-building and awareness-raising are linked to the establishment of effective collection services. They can also positively impact the current culture of littering by businesses and citizens.

Ghana provided an example of an awareness strategy, implemented by the National Commission for Civic Education. This institution is mandated by law to educate the public on every aspect of the Ghanaian economy, including marketing and waste management, and operates at the grass roots level. Communications are highly targeted and include geo clips in various languages directed at the youth, those involved in waste management and industry. Media campaigns are robust, spreading to all regions of the country. As a result, all citizens are educated on the topic. The second part of the strategy is the district assembly. Ghana has an environmental health department that ensures citizens maintain their community surroundings. The department targets all communities, providing educating on best practices for protecting their local environment.

Morocco's representatives suggested that broadcasting information on television and involving artists in environmental issues can be very effective. Here again the role of teachers in raising awareness among the youngest generation is perceived as essential.

"There is a convention by teachers who are part of the Association of Teachers of Sciences and Earth studies working in conjunction with the EU MEDPOL programme. This kind of organization has drafted Terms of Reference to develop a catalogue of marine debris, which will be published in due course." (Morocco)

Rural focus

Common across all countries is a lack of monitoring and quantitative data in both rural and urban areas regarding the amount of waste generated, collected and properly disposed of.

"It is likely that in rural areas, waste-collection services do not exist at all, and to the best of our knowledge, collection service improvements in rural areas are not yet being earmarked for development." (Country representatives in the Rabat workshop)

As reflected by country representatives, waste management systems are generally better developed in urban areas and sometimes non-existent in rural areas. Similarly, awareness of regulations and policies is lower in rural areas, contributing to poorer waste services than is experienced in urban areas.

“One of the biggest problems is the lack of awareness of existing policies, especially in rural areas.” (Country representatives in the Windhoek workshop)

“People in wealthy areas pay for collection services, and the major urban areas have at least one dump.” (Gambia)

Single-use items

Recognition was given to the benefits provided by some single-use plastic items, particularly in the preservation of food. However, eliminating those items commonly at risk of becoming marine litter must be balanced with the potential additional environmental burden alternative materials may generate. The prevalence of problematic items varies among different socio-economic groups, requiring consideration when developing preventive strategies.

“Not all food plastic packaging is bad, and some even provide benefits. For instance, food can be preserved for longer periods. In addition to this, some alternative packaging may have a larger environmental impact in terms of energy consumption during their production and/or use.” (Mauritania)

Alternatives have been adopted in some regions and for some items, as shown in Table 10. The use of these alternatives can be promoted in other regions, where appropriate, and the feasibility of potential alternatives listed in Table 10 evaluated.

The proliferation of single-use items is of significant concern in all countries, with several countries implementing bans on specific items. However, the results have shown mixed success, including positive adoption of substitute items or, in some cases, the negative outcome of the development of illegal markets.

“Plastic bags have been banned since 2015 but can still be found on the streets and the beaches. This is because they come from Senegal which has no ban on them, being either blown in by the wind or illegally introduced into The Gambia.” (Gambia)

Table 14. Problematic single-use plastics in countries from the West-Central and West-Northern Africa coastal region and potential or already-in-use long-term substitute items

Type of problematic single-use plastics	Example of single-use plastic	Possible substitute
High-density polyethylene (HDPE)	Flexible or light plastics for carrier bags, and plastic foam for packaging (e.g., food containers)	Jute bags and other natural fibre bags (e.g., cotton), plants and tree leaves for wrapping food, paper, biodegradable plastic, cloth and net bags
Polypropylene (PP)	Plastic caps/ polyethylene terephthalate (PET) bottles, plastic straws, lollipop sticks and cotton swabs	Paper sticks for lollipops and cotton swabs
Polyethylene (PE)	Plastic straws	–
Low density polyethylene (LDPE)	Sachet water bags	Improved pipe-borne water systems, stainless-steel cups, ceramic cups, glass, and biodegradable plastic
Extruded polystyrene foam (XPS)	Plastic cups	Clay, glass, ceramics, bamboo, calabash, paper cups
Polyester, acrylic and nylon	Synthetic wigs/ hair Fishing rope	– –
Polypropylene (PP)	Diapers	Napkins
Polyamide, polyethylene, polyester	Fishing nets (monofilament fishing nets)	Cotton/jute nets, biodegradable fishing gear
Polyester, rayon, acrylic or nylon spandex	Polyester clothing	–
Cellulose acetate	Cigarette butts Medical waste Rubber	– – –
Aluminium	Cans	–
Glass	Glass bottles	–

Sources: Accra, Windhoek, Rabat workshops

Most country representatives felt the continuing presence of single-use plastic items in some areas is most likely linked to a lack of awareness about their negative impacts – both environmental and socio-economic – and due to limited availability of alternatives. It is important that prohibitions are supported by ensuring the availability of alternatives with the accompanying awareness on the options available.

“Our ban on plastic bags has successfully reduced their presence in our country. However, plastic cups and bottles are still found in landfills and on the streets. Single-use plastic cutlery remains a concern, since it is still a commonly used item, and citizens seem to be unaware of the environmental damage they cause.” (Morocco)

“After the plastic bag ban was introduced in 2015, citizens started using cloth bags. Since citizens are not always provided with alternatives to plastic bags in a timely basis, this leaves room for local retailers to begin selling cloth bags before the supply of paper bags began.” (Gambia)

A number of reasons for the limited access to substitutes for plastic products were cited. These included the higher cost of substitute products, either due to their manufacturing costs or their degradability requiring more frequent replacement. In some cases, there simply are no alternatives.

“As for fishing nets, biodegradable nets are interesting. One concern is that since they degrade, they have to be repurchased from time to time. Therefore, they are perceived as more expensive.” (Gambia)

Some alternative products are well accepted among the population, while others still present too many challenges in replacing their single-use plastic equivalents. Nonetheless, it seems that there is a positive correlation between the introduction of a substitute product and awareness-raising campaigns. Examples of such campaigns were highlighted by the representatives from Cabo Verde, Mauritania and Morocco. However, it was felt that legal frameworks and control protocols are more effective in changing consumer behaviour, together with the engagement of local plastic manufacturers in the process.

“Plastic-making and importing companies expressed their discontent in newspapers and media regarding the plastic ban and the introduction of substitute products. The Moroccan state gave them a deadline to get rid of their stocks.” (Morocco)

Biodegradable items

There is a lack of communication around biobased and biodegradable plastics, including the misconception that they will simply “disappear” if discarded into the environment. This can encourage inappropriate community behaviour and further contribute to the accumulation of litter in the environment.

“We are surprised and concerned when oxo-degradable plastic products are seen as a solution to marine litter. These so-called biodegradable products are nothing but fragmentable products. The plastic will disappear from sight but will remain there, becoming even harder to capture and more intrusive in natural systems, including human systems” (Guinea)

A challenge noted in this regard is the lack of certification and labelling to identify the specific composition of the bioplastic bags sold in the country on both the formal and informal markets.

“Formal and informal market vendors offer biodegradable plastics, most likely produced in Morocco and not imported. However, we cannot tell which biodegradable material these bags are made of. All we know is that they are not single-use.” (Morocco)

The country representatives placed particular emphasis on increasing the communication of incentives for recycling, as well as seeking alternatives to harmful products and discussing biodegradable materials and their myths. In particular, the myth must be dispelled that product labelled with the term ‘bio’ can be discarded in natural settings with no consequences. There is a crucial lack of awareness and education on such topics, even among the more educated societies.

Focus on fishing and coastal communities

According to more than 40 per cent of the country representatives, awareness-raising should include a strong focus on fishing communities and the coastal population.

Table 15. Areas identified for the focus of awareness-raising efforts

Awareness focus	Proportion of country representatives who agreed
General awareness-raising on waste management and impacts	24%
Awareness-raising focused on fishing and coastal communities	24%
Awareness-raising on waste sorting	21%

Source: Sub-national workshops conducted by GRID-Arendal and UNEP in 2019

6.5.2. Improving awareness

Raising political awareness

The need for awareness-raising amongst government authorities was raised by more than half of the country representatives. This leads to a lack of political will to take decisive action on marine litter. Pressure from the plastic industries is also a factor, as well as lack of awareness of the impacts and costs of inaction.

Systematic stakeholder mapping prior to awareness-raising actions

The importance of mapping the various stakeholders across the life cycle has been highlighted several times and is seen as a first step towards a more efficient and relevant orientation of awareness-raising actions. This should allow existing structures and stakeholders – who are potential targets for awareness-raising actions and necessary partners in its implementation – to be acknowledged in the actions before they are carried out.

“Mapping stakeholders before implementing awareness-raising actions means that information gaps and necessary actions can be discovered in advance. Inviting stakeholders at this early stage and ‘making them the pioneers of the activity’ will increase stakeholder engagement.” (Namibia)

Policy communication

Many citizens are unaware of the problem of marine litter, its impact, or the existence of the Abidjan Convention. The public, particularly in remote areas, are not familiar with or aware of the existence of policies to mitigate these issues. This can play a role in the illegal importation of prohibited plastic items and, possibly, the corruption of local actors in charge of enforcing the

law. Country representatives believe that it is important to have good communication on local regulations and to monitor the enforcement thereof.

“Awareness-raising campaigns are probably the most critical aspect for policy enforcement. These campaigns also help avoid bribery. When people know what the situation is, the impacts, and so on, they will not fall victim to corruption or incentivize it.” (Republic of Congo)

Examples of awareness-raising initiatives in use in the region

Table 16 provides a selection of awareness-raising approaches highlighted by workshop country representatives. Such examples may prove helpful in regional capacity-building workshops.

Table 16. Various examples of awareness-raising approaches shared by the workshop’s country representatives

Country	Awareness action(s)
São Tomé and Príncipe	<p>National Youth Organization is working on a big marine litter campaign.</p> <p>The Port and Maritime Institute is planning to conduct a campaign the week after the IMO orientation workshop, hosting the International Day of the Sea. The aim of these activities is to engage with every ministry, including their staff.</p>
South Africa	<p>“Marine Week” is used to carry out an awareness programme on the coast in which schools, universities, and the rest of the community are invited to participate.</p> <p>Schools are targeted; students become more sustainable and can bring about change in the rest of the community. For example, one school team examined the purpose of marine protected areas and explained it to their families and the rest of the community through this event.</p> <p>The problem with socio-economic impacts is that they cannot evoke negative emotions, using animals that people feel emotionally connected to (including penguins, seals, turtles, etc.) to explain marine litter impact issues. Infographics are used as a way to easily demonstrate a socio-economic consequence of marine litter – for example, showing the time and cost required for beach clean-ups – in the various South African languages.</p> <p>The aquarium in Cape Town holds mini campaigns such as #RethinkTheBag and #StrawsSuck to raise awareness.</p> <p>The “Litterboom Project” involves individuals from rural communities in placing floating pipe systems in problematic river systems. These individuals are trained on cleaning and waste separation. Afterward, the project’s country representatives sort and recycle the items collected in the systems. The Durban municipality has recently started testing this system in the Durban port. They have tried to implement this for years but were not sure there would be enough people available to participate in this project. Fortunately, the municipality received funding to train people in carrying out this task.</p> <p>There are also a couple of NGOs, funded by the PET Recycling Company (PETCO), working on “eco-bricks” that are stuffed with non-recyclable items and later used as construction materials. These NGOs involve kids in the production of these eco-bricks in food gardens and then use the bricks to build foundations, benches, etc. There is a group called Coast-K working on coastal management and beach clean-ups. One of the country’s representatives explained that the government partners with an NGO for this campaign to bring funding streams together.</p>
Republic of Congo	<p>The country representative highlighted the need to include church figures to communicate the message. Since followers in his country are very attached to their religious leaders, they are the right people to target to explain the importance of these waste-related issues. More awareness campaigns have to be held in collaboration with leaders in different communities and towns, particularly the chiefs in neighbourhoods and at city level.</p>
Morocco	<p>National observatories also include marine litter issues in their agendas during thematic days aimed at raising citizens’ awareness. Other actions include beach clean-ups, and this year, awareness-raising campaigns focusing on “plastic-free beaches” have been created by the Royal Family. The country broadcasts awareness-raising campaigns on television, radio, etc. Annual reports on beach water quality are also prepared.</p>

Sources: Accra, Windhoek, Rabat workshops

6.6. Diagrammatic summary of suggested opportunities

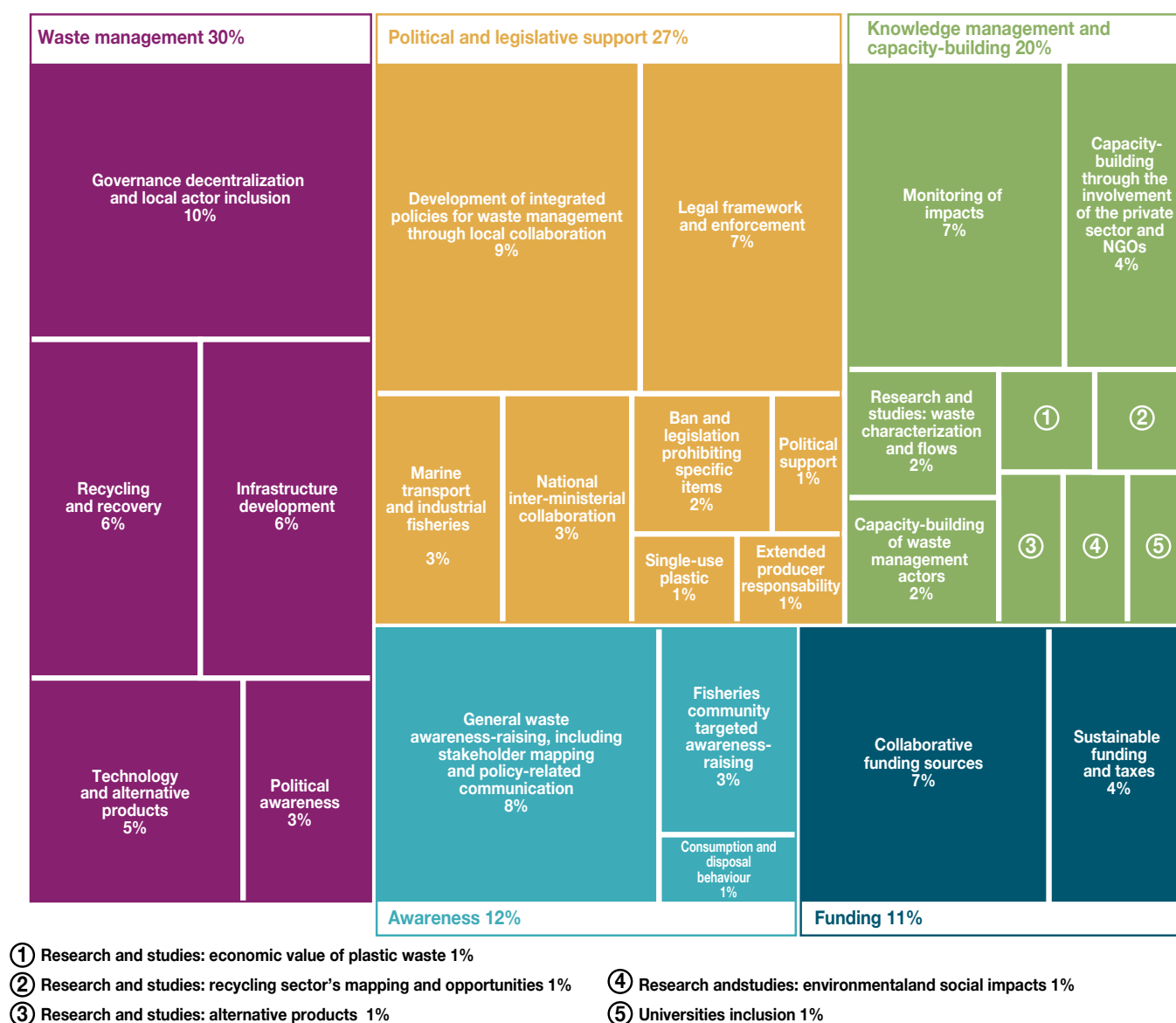
This section has discussed the core areas for the prevention and management of marine litter as highlighted in participant presentations and workshop discussions. These are:

1. improvement of waste management systems;
2. more supportive political and legal frameworks (including improved coordination and engagement in all processes);

3. sustainable and collaborative funding;
4. enhancement of waste-management related knowledge and capacity-building; and
5. robust and sustained awareness-raising on waste management implementation.

These areas of opportunity are detailed in Figure 14, indicating the weighting given by country representatives to subcomponents of each opportunity area.

Solutions and opportunities



GRID-Arendal/Studio Atlantis, 2020

Figure 14. Proportion of workshop country representatives identifying major solutions and opportunities for marine litter reduction

7. Summary of workshop proceedings

The three workshops held in the West African region had the primary goal of identifying knowledge gaps in the status and environmental and socio-economic impacts of marine litter. The workshops provided information on various thematic areas around marine litter and plastic waste management issues, including primary sources and drivers of marine litter; identified impacts of marine litter; and current challenges and potential opportunities for improvement.

Primary sources of marine litter are economic sector activities, dominated by industrial and fishing sectors, as well as human activities, largely represented by human behaviour on waste disposal and the human density factor. A significant proportion of household waste is composed of organic materials and plastic.

Primary land-based sources include household, as well as tourism, commercial and industrial activities. For most countries involved in the workshops, even if it is not identified as the major source of marine litter production tourism is a significant part of their GDP. Targeted actions like beach clean-ups are perceived as useful tools to mitigate the economic and environmental impacts of marine litter from tourism sources. Imported waste is a particular area that needs attention, as this waste contributes to the local economy while also presenting short-term threats to the environment.

Primary sea-based sources identified in the report are dumping at sea and fishing activities. International and local regulations do not prevent dumping in international and national marine areas. This is even more visible in fisheries' activities with widespread negative waste disposal behaviours on boats. Aquaculture's contribution to marine litter production remains uncertain.

Primary drivers of marine litter production included disposal behaviour, as well as human consumption, inappropriate waste management systems and high urbanization rates, especially in coastal areas and water bodies. Notable primary pathways of marine litter include illegal dumping and hydraulic transportation, generally poor waste management systems, and transboundary currents.

Impacts of marine litter are very broad and largely understudied. Workshop country representatives identified three main categories of impacts – socio-economic impacts, ecological impacts and human health impacts.

The ecological impacts are impacts on fauna, including physical entanglement and ingestion of plastics, and the proliferation of invasive species. The degradation of habitats through pollution of beaches and reduction of mangroves, among other factors, impact ecosystems negatively by

obstructing waterbodies, and may increase erosion and flooding events.

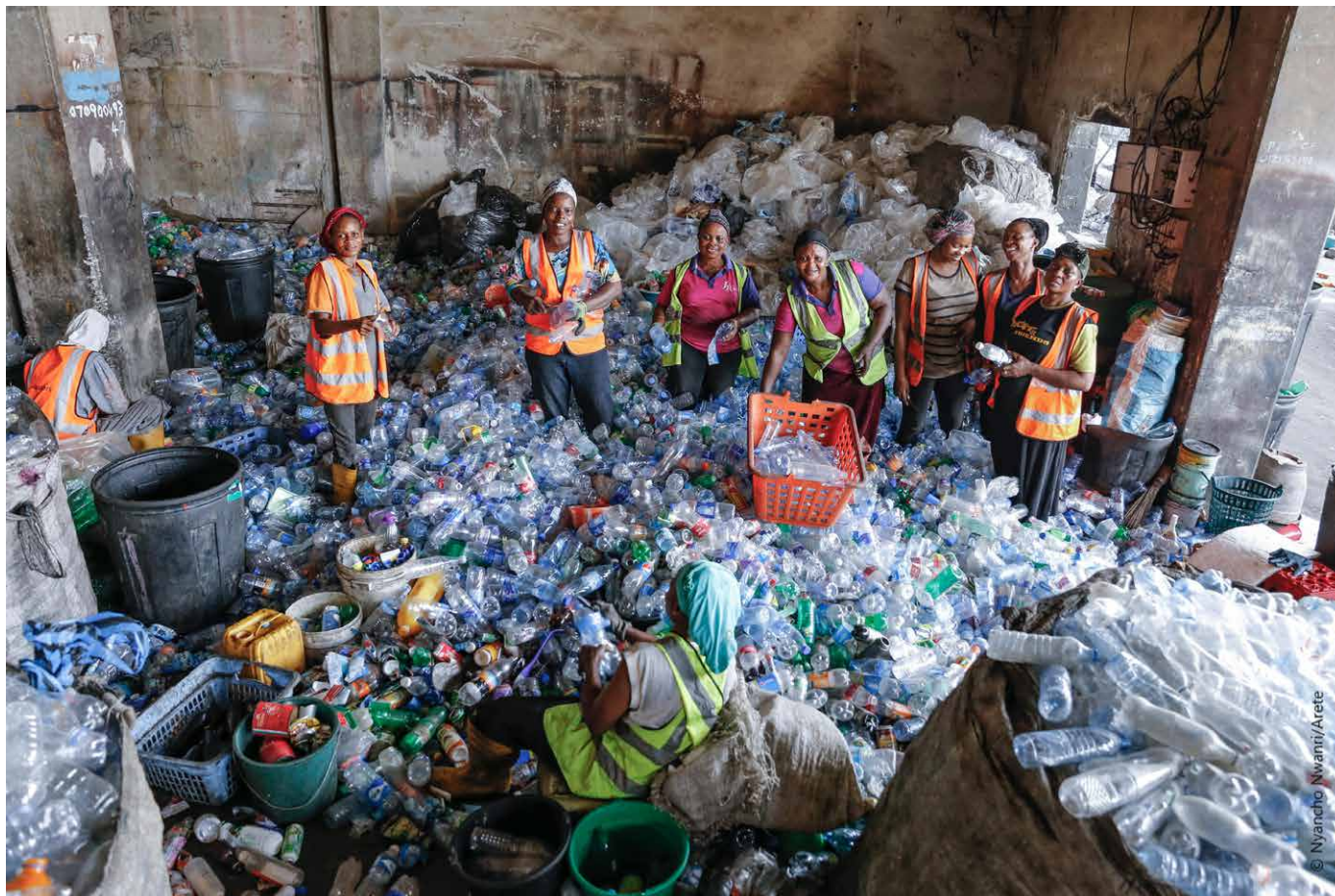
The ecological impacts and the decrease of ecosystem services exacerbate the economic impacts of marine litter. Two sectors of the economy that are highly affected are the fisheries and tourism sectors. Stock reductions and ecosystem degradation often have a compounding effect that extends from the local level all the way up to national revenue.

Although further studies are required, the impacts of marine litter on human health are undeniable. These impacts are vast, from exposure to chemicals and nanoparticles and increased spreading of disease to food security issues.

Current responses are mostly built on policies (national and International policies, bans and regulations), local actions (awareness-raising, monitoring, beach clean-ups, capacity-building), infrastructure development (waste management centers, recycling centers) and governance to support waste management systems.

There are several challenges in the management of marine and plastic litter, including:

- **Weak waste management systems:** A majority of participating countries stated that proper waste disposal systems were a challenge. They also mentioned that waste treatment infrastructure and technologies, waste collection capacities and accessibility were the biggest challenges for marine litter reduction.
- **Low support stemming from weak legal frameworks:** Low support seems to arise from inadequate or inappropriate policies, in addition to a lack of willingness or limited capacity to improve and enforce them. A strong link with the low level of knowledge and awareness around the marine litter impacts is highlighted, calling for a need for more integrated waste management strategies, more specific legislations, higher levels of enforcement, and stronger international collaboration.
- **Insufficient governance:** There are strong limitations on the implementation of the regulations already in place as levers for actions against marine litter production. The responsibilities, legitimacy and empowerment of the key actors in waste management seem to be insufficient.
- **Lack of coordination and inclusion:** This includes lack of community integration in the waste management process and low inter-ministerial coordination. The broad range of marine litter impacts calls for stronger international, national and inter-institutional coordination to facilitate inclusive approaches and solutions while supporting effective law enforcement.



- **Lack of or inappropriate use of funding:** Funding is a key factor in the management of marine litter. While sufficient amounts of funding are important, its use also presents significant challenges. Allocation of the available funding does not always match the actual identified needs.
- **Insufficient knowledge:** There is a critical need for knowledge development. There are many areas in which research needs to be conducted, including technological development (alternative products, recycling infrastructure), awareness of socio-economic impacts (plastic waste impacts, economic value of marine litter and plastic waste, waste importation), marine litter sources, drivers and pathways (leakages into the environment and sources of marine litter) and other

topics around waste management systems and the main stakeholders involved.

- **Lack of awareness:** There appears to be a lack of awareness of the marine litter issue both at the community and political level. Households are identified as one of the major sources of waste, especially through inappropriate waste disposal behaviours. This can be explained by a lack of affordable alternatives but is also closely linked to ignorance or misunderstanding of the scale of the marine litter issue. This is also true at the political and decision maker level, where willingness to support strong waste management measures can sometimes appear low and is strongly linked to a lack of information and knowledge on the real cost of inaction.

8. The way forward

Understanding the interconnectivity of opportunities and challenges can be greatly beneficial in the design of future action plans. These interconnections bring more complexity to the waste management system and can potentially help identify solutions, as well as present opportunities to address several barriers and challenges through common levers.

Example: Community awareness-raising can both enhance the acceptance of legal framework and have a positive impact on major marine litter drivers, such as household waste disposal behaviours.

In addition, understanding these interconnections can support prioritization by identifying prerequisite conditions for the general steps towards a sound marine litter management system.

Example: Knowledge generation is necessary to support relevant policy and the development of awareness-raising campaigns.

Figure 15 collates the elements outlined in this report into a possible workflow incorporating the discussions and findings highlighted by workshop country representatives. The workflow may assist in identifying gaps in prerequisite conditions towards an efficient and effective marine litter prevention strategy.

It all begins with knowledge

Knowledge feeds all the awareness-raising activities, both at the political and community level, and supports the design of supportive and relevant legal frameworks.

As highlighted by the workshop country representatives, it is not possible to address something that is not understood. This makes knowledge the starting point of every set of actions, as first we must understand the challenges, then identify the barriers and related opportunities and solutions, and finally, use this knowledge in awareness-raising and sensitization while putting in place a sound marine litter management system.

Insufficient knowledge has been consistently reported, which calls for more targeted research and development of effective monitoring systems. Research seems to be necessary in the field of substitute product development, plastic composition and the impacts of marine litter (including related costs), recycling, waste and marine litter source drivers and pathways (including waste importation). Effective monitoring systems were considered one of the cornerstones to long-term policy development and adaptation, sensitization and acceptability of actions.

Central position of awareness-raising and sensitization

Awareness-raising and sensitization were considered another important cornerstone in the process of facilitating sound marine litter management. It is fed by the development of relevant knowledge and directly supports the establishment

of supportive legal and social frameworks for the future implementation of action plans. It can target two distinctive categories of actor: political actors and decision makers, and communities (including populations but also other actors potentially impacted by actions taken).

The sensitization of the political class can increase its willingness to act, evidenced as political actors become efficiently informed of the challenges, impacts and solutions regarding marine litter. Specific research can support short-term decisions leading to relevant action plans alongside the adapted legal framework and governance system with empowered actors facilitating enforcement of the approved actions.

A regular monitoring system feeding into efficient awareness-raising actions will allow a dynamic legal system to stay relevant in the long term despite the rapid evolution of the global marine litter situation, and will increase its legitimacy with science-based evidence being globally shared and understood.

Social awareness-raising and sensitization – along with decentralized governance – enhance the inclusion and probability of cooperation of local actors, whose livelihoods will be the first impacted by changes, while simultaneously being indispensable to successful local actions.

Coordination and inclusion

High national coordination among the marine litter management system presents some challenges but also advantages. National coordination allows a great transparency and consistency across the different social and economic layers that strengthen the clarity and impact of actions. Decentralization of waste management responsibilities, in addition to lowering the burden of already stressed central institutions, can allow a process of inclusion that will reinforce a supportive social framework.

International and national coordination can open avenues of funding while providing increased benefits of knowledge sharing. International support is already widely in place through, amongst others, the Abidjan Convention and UNEP. However, local funding mechanisms were raised in the workshops is an area requiring attention.

Towards a supportive implementing framework for marine litter management systems

A sound marine litter management system is most effective when based on robust knowledge. This can be achieved, together with the required knowledge, through supportive legal and social frameworks, development of secure sustainable funding and encouragement of all relevant actor inclusion across the life cycle, maximizing the effectiveness of the implementing framework. Underpinned by targeted capacity-building across a broad range of actors and appropriate infrastructure development, the effectiveness of the implementing framework can be facilitated in the long term.

Marine Litter Management Framework

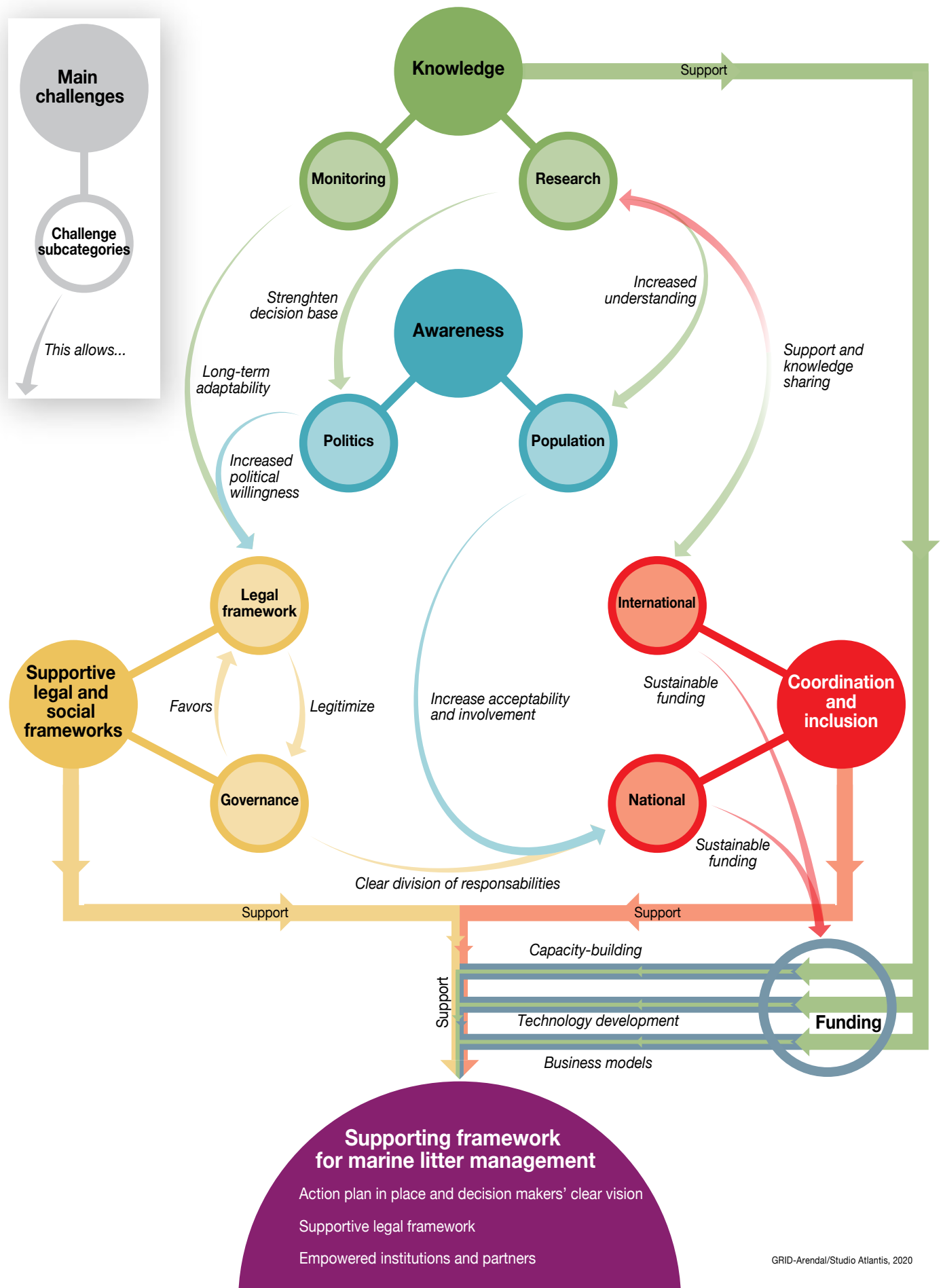


Figure 15. Marine litter management framework

Challenges and Opportunities in Marine Litter Management

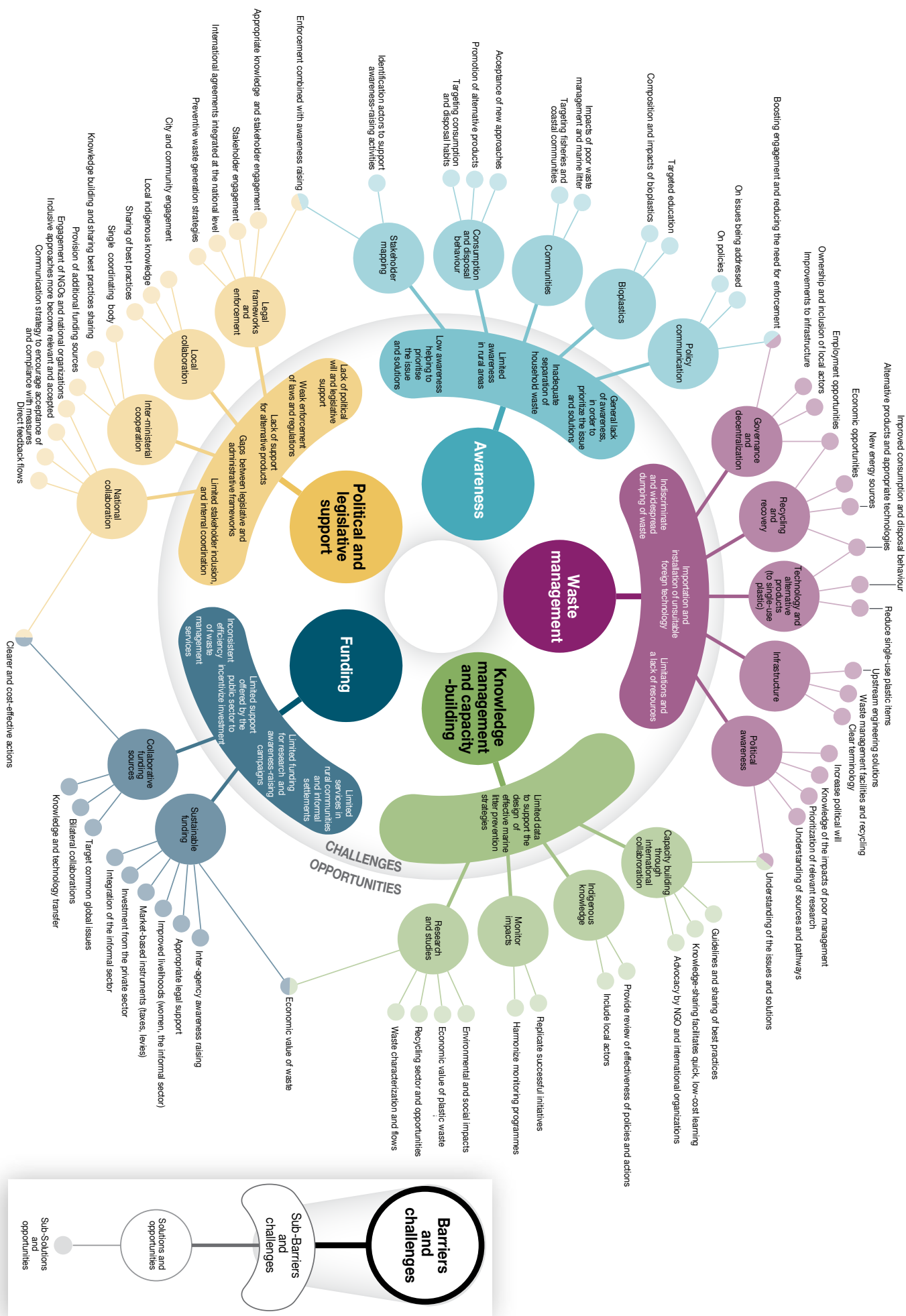


Figure 16. Summary of challenges and opportunities identified by the workshop country representatives

Appendices

Appendix I. List of country representatives

Accra, Ghana, 3–5 September 2019

Benin

Fabrice Metonwaho Yehonnou Tchegbenton
Head of The Marine Environment Protection Department,
National Directorate of the Merchant Navy, Merchant Marine
Directorate/Ministry of Infrastructure and Transport

Bernard I. Akitikpa
Head of the Artisanal Marine Fishing Division at the Fisheries
Directorate, Ministry of Agriculture, Livestock and Fisheries

Faustine Coovi Sinzogan
Focal Point of Abidjan Convention, Ministry of the
Environment and Sustainable Development

Cameroon

Dr Joseph Yepka
Chief of Service, Inland and Maritime Artisanal Fisheries,
Ministry of Livestock, Fisheries and Animal Industries

Elvis Difang
Chief of Service, Marine Environmental Protection,
Department of Maritime Affairs, Ministry of Transport

Cote d'Ivoire

Prof Ossey Bernard Yapo
Deputy Director, Ivorian Anti-Pollution Centre (CIAPOL)

Ghana

Godson Cudjoe Voado
Programme Manager, Environmental Protection Agency

Numbu Issahaque Sumabe
Maritime Administrative Officer, Ghana Maritime Authority

Eunice Ofoli-Anum
Senior Fisheries Officer, Fisheries Commission

Linda Ofei
Environmental Protection Agency

John Pwamang
Executive Director, Environmental Protection Agency

Guinea

Mohamed Lamine Sidibe
Director-General – Marine and Coastal Zones, Ministry of
Environment, Water and Forests, Fatoumata

Saran Sylla
Deputy National Director of Maritime Fisheries at the Ministry
of Fisheries, Aquaculture and Maritime Economy

Moudjitaba Sow
Pollution and Dangerous Goods Section Chief, Ministry of
Transport

Guinea-Bissau

Octávio Cabral
Ministry of Environment

Robalo Hermenegildo
Ministry of Fisheries

Vladimir Joaquim Da Costa
Maritime Port Institute

Liberia

Daniel Tarr
Director of Marine Environmental Protection

Abayomi B.C. Grant
Senior Waste Management Officer, Environmental Research
and Standards Unit, Environmental Protection Agency

Joyer Kume
Supervisor, Coastal Zone, National Fisheries and Aquaculture
Authority

Nigeria

Joyce Iya Kitakang
Abidjan Convention Division, Federal Ministry of Environment

Hafsat Ochuwa Abdullah
Principal Fisheries Officer, Federal Ministry of Agriculture and
Rural Development

Stephen Aishatu Atiyaye
Assistant Chief Marine Environment Management Officer,
Nigerian Maritime Administration and Safety Agency
(NIMASA)

Sierra Leone

Sheku Mark Kanneh
Environmental Protection Agency

Abdul Aziz Kamara
Inland Waterways Officer, Sierra Leone Maritime
Administration

Togo

Aziaba Ayikoé Galév
Agricultural Works Engineer, Ministry of Agriculture, Animal
Production and Fisheries

Akouso Ayitou
Maritime Affairs Administrator, Ministry of Infrastructure and
Transport

Leliwa Tchèzoutèma
Marine Engineer, Directorate of Maritime Affairs, Ministry of
Infrastructure and Transport

Windhoek, Namibia, 17–19 September 2019

Congo, Republic of

Dave Mboumba
Continental Desktop Chief, Directorate-General of Environment
and Water, Ministry of Environment

Namibia

Flavianus Ashipala
Senior Ship Surveyor, Ministry of Works and Transport
(Directorate of Maritime Affairs)
Vilho Kambonde
Marine Superintendent, Ministry of Fisheries and Marine
Resources

Sao Tome and Principe, Democratic Republic of

Fernando Trindade
Engineer Head of Division, Ministry of Environment
Aleris Frank Do Nascimento Mendes
General Director, Maritime and Port Institute

South Africa

Sumaiya Arabi
Environmental Research Scientist, Council of Scientific and
Industrial Research (CSIR), Durban
Motebang Nakin
Ministry of Environmental Affairs
Zaynab Sadan
Circular Plastics Economy Research Officer, Policy and Futures
Unit, World Wildlife Fund (WWF) South Africa

Rabat, Morocco, 25–27 September 2019

Cabo Verde

Malik Duarte Lopes
Director-General for the Maritime Economy, Ministry of
Maritime Economy

Gambia

Olimatou Danso
Gambia Maritime Administration

Mauritania

Camara Dramane
Technical Adviser on the Marine Environment and Coastal
Areas, Ministry of Environment and Sustainable Development
Souleymane Boubacar Dramane
Officer, Ministry of Fisheries and Maritime Economy
Traoré Mohamedou
Deputy Director of the Merchant Navy, Ministry of Fisheries
and Maritime Economy

Morocco

Fatima Hakimi
Merchant Navy Directorate
Amanou Siman
Maritime Fisheries Department
Labbi Bennaouar
Ministry of Maritime Fisheries
Khadija Rhayour
State Secretariat in charge of Sustainable Development
Sami El Ikilil
The Mohammed VI Foundation for Environmental Protection
Loubna Salhi
Merchant Navy Directorate
Amal Mellack
State Secretariat in charge of Sustainable Development
Baissan Emenouar
State Secretariat in charge of Sustainable Development

Appendix II. Country questionnaire

Development of an Assessment for the Prevention and Management of Marine Litter for West, Central and Southern Africa

Important note: the deadline for the submission of this information to GRID-Arendal will be before or during the workshop. Please send this completed document to patricia.villarrubia@grida.no and sorensen@grida.no.

We are happy to count on your expertise, commitment and participation in the workshop taking place in Accra (Ghana) from 3–5 September 2019.

Prior to the workshop, and in order to make our time in Accra more efficient, we are hereby circulating this survey, which each participating country is kindly requested to complete. We acknowledge the difficulty that might arise in answering all these questions within such short notice. We deeply appreciate your contribution. By agreeing to participating in this workshop, you are agreeing to provide reliable and accurate information to the best of your knowledge. All the information collected from this survey will help to better understand and create background knowledge about the current state of marine litter for West, Central and Southern Africa. This is why we need to compile as much information as we can during the workshops, and through this survey.

We also ask you to make a 20-minute presentation about the situation in your country. It would be nice if you could coordinate this with your colleagues, and perhaps merge your collective ideas into one presentation.

Your input will also be used during the drafting exercise taking place on Wednesday.

Please answer the following questions to the best of your knowledge. In order to be able to have the best understanding of the situation possible, be as specific as possible and add any examples you consider to be relevant for each question. Please include references to literature and/or Internet links with your answers if possible, as this information will be cited in the final report.

1. Marine litter hotspot location and key impacts

- What is the total population of your country?
- What is the percentage of people in your country living in urban vs. rural areas?
- What is the amount of solid waste generated in your country in kg/capita/year?
- What are the most populated coastal and riverine areas in your country?
- What is the amount of municipal solid waste generated in kg/capita/day in rural areas and urban areas?

2. Proportion of plastic/synthetic litter

- What is the composition of waste in your country?

	Food and green waste	Glass	Paper/ cardboard	Plastic	Metal	Rubber and leather	Wood	Other
Household								
Municipal								

- Rural vs. urban: What is the percentage of waste composition in rural areas vs. urban areas?

	Food and green waste	Glass	Paper/ cardboard	Plastic	Metal	Rubber and leather	Wood	Other
Urban								
Rural								

3. Sources of the litter

- What do you think are the main drivers for marine litter?
- Please estimate the percentage of waste that is disposed of properly in rural and urban areas.
- Does your country receive imports of other countries' waste? If so, please indicate the top five source countries. If known, please indicate the tonnage.
- What are the most problematic single-use plastic items and plastic polymers found in the environment in your country? Is there any data source that you could list, e.g. International Coastal Cleanup?
- Please indicate if there are any existing ecological or local substitutes for these plastics, or if there are any potential substitutes in development. Have you monitored these substitute products? Are they being well accepted among citizens? Are there any barriers or possible rewards for replacing plastic items with substitutes?
- How much does tourism contribute to your country's GDP and how many visitors does your country receive annually? Do you think tourism is a major source of litter? Do you think the tourism sector is also impacted by marine litter? How substantial is this as a challenge? What are the possible solutions?
- Is there any plastic manufacturing company operating in your country? If so, what do they produce?

4. Sea-based marine litter

- Are there records of how much abandoned, lost or otherwise discarded fishing gear (ALDFG) is lost at sea annually?
- Is there any estimation on how much economic value is lost due to ALDFG annually?
- Are you aware of aquaculture practices being a source of marine litter?
- Are you aware of fishers' disposal behaviour once at sea?
- What is the contribution from other shipping sources of marine litter?
- What is the contribution from offshore resource exploration and exploitation?

5. Trends in abundance of litter and adequacy of monitoring

- When were plastic products first introduced for commonplace, everyday use by citizens in your country?
- Are there any records of how much plastic is consumed in your country, in kg/capita/year?
- What is the scale of single-use plastic use in your country, in kg/capita/year?
- Can you estimate when (e.g. 5 years ago, 10 years ago) plastic pollution became a major problem in your country? Describe this in a relevant anecdote.
- What do you think are the main environmental and social impacts of marine litter?

6. Funding sources for litter control

- What are the major funding sources for waste management in your country?
- Is the funding for waste management adequate, and if not, what is the funding gap?
- How sustainable is the funding for waste management?

7. Adequacy of waste management infrastructure

To the best of your knowledge, fill in the following tables.

- Dumpsites

Name of dumpsite	Location (name of the city and latitude/longitude)	Estimated amount of waste disposed (kg)	Informal sector (number of people)	Status (active/closed/planned)	Population served	Source of information

- Sanitary landfills

Name of landfill	Location (name of the city and latitude/longitude)	Estimated amount of waste disposed (kg)	Informal sector (number of people)	Status (active/closed/planned)	Population served	Source of information

- Mechanical biological treatment plants (MBT)

Name of MBT	Location (name of the city and latitude/longitude)	Year established	Annual capacity	Status (active/closed/planned)	Population served	Source of information

- Biological treatment plants

Name of plant	Location (name of the city and latitude/longitude)	Year established	Type of treatment	Scale	Source of information

- Disposal methods (in %) for the whole country

Open dumps	Plastic to fuel	Landfill	Recycling	Composting	Incineration	Other methods

- Are there any recycling facilities operating in your country? Please provide examples beyond the collection of waste.
- What is the flow of fishing gear materials and products? Are they locally produced?

8. Political will and capacity to implement good practices

- What do you think will highlight the relevance of marine litter issues to local or national policy makers?
- Is waste management/plastic pollution a priority on the political agenda of your country? Could you specify if awareness about marine litter is low, medium or high? What are your ideas on how to increase it?
- Do you think that the decisions and actions of law/policy makers are influenced by scientific data? Or by other kinds of data from other sectors (e.g. international sector, NGOs, etc.)? If more data are not needed, what are other gaps that need more attention?
- What are the barriers to implementing sound waste management practices?

9. Adequacy of domestic and international law, policy and standards

- Does your country have an integrated waste management strategy?
- What is the current record of enforcement for existing laws and do resources exist for enforcement? If so, what was (or would be) the starting date of this legal strategy?
- Does your country adhere to any international or regional treaties regarding sound waste or marine litter management?
- What types of policies do you think are required, or would be more beneficial, to control marine litter? What resources would be needed for these to be enforced?

10. Please make a list of the major barriers or challenges to tackling marine litter in your country.

- Etc.

11. Please make a list of the major opportunities or positive incentives/motivations for tackling marine litter.

- Etc.

12. The networks of influence to deal with this issue

- What kind of collaborations and boundary crossing is needed to raise awareness of marine litter?
- Which collaborations are more important: international or national?
- Are there organized informal waste pickers in your country? How can disenfranchised groups be represented better and included in new economy developments when creating better regulations and working practices? What unintended consequences could there be in the enforcement of unsafe waste management? Could you provide a list?
- Is there inter/cross-sectorial participation (e.g. academia, activists, etc.) towards decision-making?
- What constraints do you find/face when working in collaboration with other sectors?
- To the best of your knowledge, please list the main organizations (e.g. NGOs, local movements, private companies, etc.) working on the issue of marine litter in your country.

Appendix III. Workshop agendas

Accra, Ghana

Sub-regional workshop for the Assessment of the Prevention and Management of Marine Litter in West, Central and Southern Africa

3–5 September 2019

Preliminary agenda

Tuesday 3 September 2019

9 a.m. – 9.15 a.m.	Welcome by a representative of the Government of Namibia and GRID-Arendal
9.15 a.m. – 10.15 a.m.	Round of self-introductions by country representatives Introduction to marine litter pollution and the assessment <ul style="list-style-type: none">• Background of the marine litter problem (Patricia Villarrubia-Gómez)• Marine litter and the Abidjan Convention (Clever Mafuta)• Introduction to the assessment – purpose, structure, approach, etc. (Morten Sørensen, GRID-Arendal)• Introduction to the workshop process by the facilitator (Clever Mafuta, GRID-Arendal)
10.15 a.m. – 10.30 a.m.	<i>Break</i>
10.30 a.m. – 11.30 a.m.	Country status reports (20 minutes per country) <ul style="list-style-type: none">• São Tomé and Príncipe• South Africa
11.30 a.m. – 1. p.m.	<i>Lunch</i>
1. p.m. – 1.45 p.m.	Country status reports (20 minutes per country) <ul style="list-style-type: none">• Republic of the Congo• Namibia
1.45 p.m. – 3.30 p.m.	<i>Break</i>
3.30 p.m. – 3.45 p.m.	Key messages from the Accra Workshop (Patricia Villarrubia-Gómez, GRID-Arendal)
3.45 p.m. – 5.30 p.m.	Discussion

Wednesday 4 September 2019

9 a.m. - 10.30	Status of marine litter in West, Central and Southern Africa <ul style="list-style-type: none">• Applicable governance frameworks (Clever Mafuta)• Sources and sinks (Patricia Villarrubia-Gómez, GRID-Arendal). Group review of Draft 0 Group activities on governance frameworks and sources and sinks Groups report back
10.30 a.m. – 10.45 a.m.	<i>Break</i>
10.45 a.m. – 12.30 p.m.	Status of marine litter in West, Central and Southern Africa <ul style="list-style-type: none">• Pathways and distributions (Clever Mafuta, GRID-Arendal) Group review of Draft 0 Group activities on pathways and distributions Groups report back
12.30 p.m. – 1.45 p.m.	<i>Lunch</i>

1.45 p.m. – 3.30 p.m.	<p>Status of marine litter in West, Central and Southern Africa</p> <ul style="list-style-type: none"> • Biological, ecological impacts, i.e. interactions with biota (Laura Acevedo, GRID-Arendal) • Socio-economic impacts (Sumaiya Arabi, the Council for Scientific and Industrial Research) <p>Group review of Draft 0</p> <p>Group activities on impacts</p> <p>Groups report back</p>
3.30 p.m. – 3.45 p.m.	<i>Break</i>
3.45 p.m. – 5 p.m.	<p>Status of marine litter in West, Central and Southern Africa</p> <ul style="list-style-type: none"> • Ongoing efforts in marine litter management <p>Group review of Draft 0</p> <p>Group activities on ongoing efforts</p> <p>Groups report back</p>

Thursday 5 September 2019

8 a.m. – 11.15 a.m.	<p>Workshop recap</p> <p>Cross-cutting issues for discussion in plenary</p> <ul style="list-style-type: none"> • Stakeholder mapping • Financing • Data
10.30 a.m. – 11.15 a.m.	<i>Break</i>
11.15 a.m. – 1 p.m.	<p>Workshop recap</p> <p>Cross-cutting issues for discussion in plenary</p> <ul style="list-style-type: none"> • Awareness-raising • Inter-ministerial cooperation • Policy enforcement
1 p.m. – 1.45 p.m.	<i>Lunch</i>
1.45 p.m. – 4 p.m.	<p>Way forward and closing remarks (GRID-Arendal and Abidjan Convention).</p> <p>Field trip (TBC)</p>

Windhoek, Namibia

Sub-regional workshop for the Assessment of the Prevention and Management of Marine Litter in West, Central and Southern Africa

17–19 September 2019

Preliminary agenda

Tuesday 17 September 2019

9 a.m. – 9.15 a.m.	Welcome by a representative of the Government of Namibia and GRID-Arendal
9.15 a.m. – 10.15 a.m.	<p>Round of self-introductions by country representatives</p> <p>Introduction to marine litter pollution and the assessment</p> <ul style="list-style-type: none"> • Background of the marine litter problem (Patricia Villarrubia-Gómez) • Marine litter and the Abidjan Convention (Clever Mafuta) • Introduction to the assessment – purpose, structure, approach, etc. (Morten Sørensen, GRID-Arendal) • Introduction to the workshop process by the facilitator (Clever Mafuta, GRID-Arendal)
10.15 a.m. – 10.30 a.m.	<i>Break</i>
10.30 a.m. – 1 p.m.	<p>Country status reports (20 minutes per country)</p> <ul style="list-style-type: none"> • São Tomé and Príncipe • South Africa

1 p.m. – 2 p.m.	<i>Lunch</i>
2 p.m. – 3.30 p.m.	Country status reports (20 minutes per country) <ul style="list-style-type: none"> • Republic of the Congo • Namibia
3.30 p.m. – 3.45 p.m.	<i>Break</i>
3.45 p.m. – 5 p.m.	Key messages from the Accra Workshop (Patricia Villarrubia-Gómez, GRID-Arendal) Discussion

Wednesday 18 September 2019

9:00 – 11 a.m.	Status of marine litter in West, Central and Southern Africa <ul style="list-style-type: none"> • Applicable governance frameworks (Clever Mafuta) • Sources and sinks (Patricia Villarrubia-Gómez, GRID-Arendal). Group review of Draft 0 Group activities on governance frameworks and sources and sinks Groups report back
11 a.m. – 11.15 a.m.	<i>Break</i>
11.15 a.m. – 1 p.m.	Status of marine litter in West, Central and Southern Africa <ul style="list-style-type: none"> • Pathways and distributions (Clever Mafuta, GRID-Arendal) Group review of Draft 0 Group activities on pathways and distributions Groups report back
1 p.m. – 2 p.m.	<i>Lunch</i>
2 p.m. – 3.30 p.m.	Status of marine litter in West, Central and Southern Africa <ul style="list-style-type: none"> • Biological, ecological impacts, i.e. interactions with biota (Laura Acevedo, GRID-Arendal) • Socio-economic impacts (Sumaiya Arabi, the Council for Scientific and Industrial Research) Group review of Draft 0 Group activities on impacts Groups report back
3.30 p.m. – 3.45 p.m.	<i>Break</i>
3.45 p.m. – 5 p.m.	Status of marine litter in West, Central and Southern Africa <ul style="list-style-type: none"> • Ongoing efforts in marine litter management Group review of Draft 0 Group activities on ongoing efforts Groups report back

Thursday 19 September 2019

09 a.m. – 11 a.m.	Workshop recap Cross-cutting issues for discussion in plenary <ul style="list-style-type: none"> • Stakeholder mapping • Financing • Data
11 a.m. – 11.15 a.m.	<i>Break</i>

11.15 a.m. – 1 p.m.	Workshop recap Cross-cutting issues for discussion in plenary <ul style="list-style-type: none"> • Awareness-raising • Inter-ministerial cooperation • Policy enforcement
1 p.m. – 1.45 p.m.	<i>Lunch</i>
1.45 p.m. – 4 p.m.	Way forward and closing remarks (GRID-Arendal and Abidjan Convention). Field trip (TBC)

Rabat, Morocco

Sub-regional workshop for the Assessment of the Prevention and Management of Marine Litter in West, Central and Southern Africa

25–27 September 2019

Preliminary agenda

Wednesday 25 September 2019

9 a.m. – 9.15 a.m.	Welcome by Heidi Savelli (UN Environment), Alison Amoussou (Member of the Abidjan Convention Secretariat), the host, Mme Benabdallah Samira (Director of the Hassan II International Environmental Training Center), and Khadija Rahyour (Ministry of Environment) Round of self-introductions of country representatives
9.15 a.m. – 10.15 a.m.	Introduction to marine litter pollution and the assessment <ul style="list-style-type: none"> • Background of the marine litter problem (Heidi Savelli, United Nations Environment Programme) • Marine Litter and the Abidjan Convention (Alison Amoussou, Abidjan Convention Secretariat) • Introduction to the assessment – purpose, structure, approach, etc. (Miles Macmillan-Lawler, GRID-Arendal) • Introduction to the workshop process by the Facilitator (Clever Mafuta, GRID-Arendal)
10.15 a.m. – 10.30 a.m.	<i>Break</i>
10.30 a.m. – 1 p.m.	Country status reports (20 minutes per country) <ul style="list-style-type: none"> • Morocco • Mauritania • The Gambia • Cabo Verde
1 p.m. – 2 p.m.	<i>Lunch</i>
2 p.m. – 3.30 p.m.	Country status reports (20 minutes per country) Discussion
3.30 p.m. – 3.45 p.m.	<i>Break</i>
3.45 p.m. – 5 p.m.	Key messages from the Accra and Windhoek Workshop (Patricia Villarrubia Gómez, GRID-Arendal) Status of marine litter in West, Central and Southern Africa <ul style="list-style-type: none"> • Applicable governance frameworks (Karen Raubenheimer, University of Wollongong) Discussion

Thursday 26 September 2019

9 a.m. – 11 a.m.	Status of marine litter in West, Central and Southern Africa <ul style="list-style-type: none"> • Sources and sinks (Patricia Villarrubia-Gómez, GRID-Arendal) Group review of Draft 0 Group activities on governance frameworks and sources and sinks Groups report back
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11 a.m. – 11.15 a.m.	<i>Break</i>
11.15 a.m. – 1 p.m.	<p>Status of marine litter in West, Central and Southern Africa</p> <ul style="list-style-type: none"> • Pathways and distributions (Clever Mafuta, GRID-Arendal) <p>Group review of Draft 0</p> <p>Group activities on pathways and distributions</p> <p>Groups report back</p>
1 p.m. – 2 p.m.	<i>Lunch</i>
2 p.m. – 3.30 p.m.	<p>Status of marine litter in West, Central and Southern Africa (Laura Acevedo, GRID-Arendal)</p> <ul style="list-style-type: none"> • Biological and ecological impacts • Socio-economic impacts <p>Group review of Draft 0</p> <p>Group activities on impacts</p> <p>Groups report back</p>
3.30 p.m. – 3.45 p.m.	<i>Break</i>
3.45 p.m. – 5 p.m.	<p>Status of marine litter in West, Central and Southern Africa</p> <ul style="list-style-type: none"> • Ongoing efforts in marine litter management <p>Group review of Draft 0</p> <p>Group activities on ongoing efforts</p> <p>Groups report back</p>

Friday 27 September 2019

8 a.m. – 10 a.m.	<p>Workshop recap</p> <p>Cross-cutting issues for discussion in plenary</p> <ul style="list-style-type: none"> • Stakeholder mapping • Financing • Data
10 a.m. – 10.15 a.m.	<i>Break</i>
10.15 a.m. – 12 p.m.	<p>Workshop recap</p> <p>Cross-cutting issues for discussion in plenary</p> <ul style="list-style-type: none"> • Awareness-raising • Inter-ministerial cooperation • Policy enforcement
1 p.m. – 1.45 p.m.	<i>Lunch</i>
1.45 p.m. – 4 p.m.	<p>Way forward and closing remarks (GRID-Arendal, United Nations Environment Programme and Abidjan Convention)</p>

Appendix IV. Summary of the countries' presentations

Accra workshop (Ghana)

Sources and drivers				
Sierra Leone	Guinea-Bissau	Benin	Côte d'Ivoire	Ghana
<ul style="list-style-type: none"> • Significant plastic industry, with more than 24 plastic manufacturing companies, importing unknown quantities of virgin plastic • Majority of products come wrapped in plastic • High population density and growth rate • Unprecedented urban development rates and the emergence of slums among coastal communities • Poor waste management; estimations that 84 per cent of waste is mismanaged • Plastic waste generation is estimated at 96,655 tonnes yearly (0.14 kg/person/day) 	<ul style="list-style-type: none"> • Presence of many rivers and river mouths bringing plastic waste downstream • ALDFG • Fishing markets • Shipping activities 	<ul style="list-style-type: none"> • Fishing activities • Tourism activities 	<ul style="list-style-type: none"> • Many economic and sociocultural activities take place at the banks of water bodies • 57 per cent of the population lives in rural areas • In Abidjan, the waste generation ratio in low-economic income neighbourhoods is lower than higher economic income households • Low awareness around waste disposal • Arrival of plastic waste from other countries 	<ul style="list-style-type: none"> • Rapid population growth and corresponding increases in waste generation • Daily waste generation in urban centres ranges from 2,800 to 3,200 metric tonnes • In cities, at least 25 per cent of waste is dumped in unauthorized locations • Plastic represents 17.69 per cent of all domestic waste generated • Indiscriminate dumping of litter • Land-based sources: • Waste and wastewater management: Generation, collection, transportation, treatment and disposal of either municipal, commercial and/or industrial waste • Transportation and logistics: discarded vehicle tyres and paper and plastic packaging materials • Extractive sector, construction and tourism: food wrappers, PET bottles, sachets for water and alcohol, discarded containers • Sea-based sources: • Fisheries and aquaculture, including lost nets, nets and twine discarded in the sea by fishers, nets destroyed and carried away by other boats and ships, discarded fishing buoys, any fishing-related materials made of wood, plastic and/or metal • Shipping activities, including discarded plastic waste and packaging materials • Offshore oil and gas exploration and exploitation activities

Pathways and distributions

Sierra Leone	Guinea-Bissau	Benin	Côte d'Ivoire	Ghana
<ul style="list-style-type: none"> • Inadequate city drainage systems • Dumpsites located near the coast (e.g. Granville Brooke and Kington) • Individuals defecating directly into mangroves 	<ul style="list-style-type: none"> • Riverine inputs, especially during the rainy season • Fishing ports 	<ul style="list-style-type: none"> • Majority of litter is deposited in Lake Nokoué • Large market located near Lake Nokoué where a lot of waste is deposited • Ports and containers 	<ul style="list-style-type: none"> • Waste is dumped indiscriminately in streets, rivers, and on coastlines by citizens • All waste is transported by evacuation channels • Direct disposal of litter from ships in the open ocean • Plastic has been found floating on the surface in water bodies after heavy storms • Currents transport litter from neighbouring countries • Both household and industrial waste are transported into the sea via waterways 	<ul style="list-style-type: none"> • Dumpsites and landfills • Disposal of waste in unauthorized locations • Wetlands, where economy activities are carried out • Drainage systems • Roads • Rivers and streams • Fishing and shipping activities • Markets/commercial areas

Interactions with biota and impacts

Sierra Leone	Guinea-Bissau	Benin	Côte d'Ivoire	Ghana
<ul style="list-style-type: none"> • Entanglement and mortality of marine animals • Transfer of chemicals • Enhancement of biological growth and spread of diseases • Mangroves have decreased • Increased risk of floods 	<ul style="list-style-type: none"> • Entanglement of sea turtles • Contamination of riverine sides 	<ul style="list-style-type: none"> • Litter blockages in the Lake Nokoué, which drains into the sea • Waste accumulates close to the river mouth • Pollution of the beach by marine litter 	<ul style="list-style-type: none"> • Waste blocks rainwater systems, exacerbating the effects of floods • Waste is present even in inhabited areas • Ébrié Lagoon has lost about 17 m of depth; it is full of tyres and plastic waste • Very rapid transfer and disappearance of macrowaste in lagoon bays following rainy episodes 	<p>Ecological impacts:</p> <ul style="list-style-type: none"> • Destruction of habitats used as spawning grounds • Pollution of beaches, estuaries, and wetlands • Death of marine animals due to entanglement and/or ingestion • Littering of the ocean floor and beaches • Dwindling fish stock in the oceans • Microplastics entering the food web more easily and its potentials effects such as bioaccumulation of pollutants • Reduction of fish stocks • Polluted coastal wetlands and mangrove forests <p>Socio-economic impacts:</p> <ul style="list-style-type: none"> • Reduction of household income due to a reduction of fish stock, leading to poverty among fishing communities • Reduction of national income from fishing activities • Reduction of tourism related to coastal businesses, leading to a reduction of revenue for the tourism sector both locally and nationally

Waste management infrastructure challenges and other barriers

Sierra Leone	Guinea-Bissau	Benin	Côte d'Ivoire	Ghana
<ul style="list-style-type: none"> • No waste management infrastructure • Two major dumpsites in Freetown sit directly on the Sierra Leone River Estuary • Poor recycling techniques • Inefficient technology • Limited data available to inform decision makers • Lack of administrative and legal frameworks to prevent waste and plastic litter from entering the sea 	<ul style="list-style-type: none"> • Inexistent waste management services and infrastructure 		<ul style="list-style-type: none"> • In Abidjan, 61 per cent of the waste produced is collected • Some areas do not have access to a formal waste management system • Presence of informal waste collectors • Two days after clean-up in Cocody Bay, Abidjan, the bay was full of waste again • No institution that manages waste from lagoon waters 	<ul style="list-style-type: none"> • Citizens' attitudes towards waste generation and management • Indiscriminate dumping of waste/litter • Lack of data and monitoring • Lack of adequate engineered landfills • Weak enforcement of laws • Lack of adequate capital for injection into the waste management sector • Lack of political commitment • Poor promotion of waste prevention and minimization strategies

Current responses and potential Solutions

Sierra Leone	Guinea-Bissau	Benin	Côte d'Ivoire	Ghana
<p>Current responses:</p> <ul style="list-style-type: none"> • Installed a plastic granulating machine • Establishing a recycling centre and setting up agreements with recycling factories • Using scavenging as an economic activity • Developing a Draft Marine Pollution Bill on marine transport • Implementing the Integrated Health Waste Management Policy • Developing policies on plastic and waste management 	<p>Potential:</p> <ul style="list-style-type: none"> • Volunteers picking up waste at ports • Developing alternatives to single-use plastic • Awareness-raising and sensibilization of citizens (mainly women, since they are in charge of purchasing livelihood goods) • Create waste management infrastructure 	<ul style="list-style-type: none"> • Planning and development programme to protect beaches • Strengthening daily beach clean-up activities • Installing technologies that intercept litter at river mouths • Making biodegradable bags available • Raising awareness in partnership with NGOs • Implementing coastal protection programmes • Integrated Marine and Coastal Zone Management Project (GIZMAC) in Benin <p>Conventions and legislative framework:</p> <ul style="list-style-type: none"> • Abidjan Convention • Law of the Sea • Bilateral Memorandum of Understanding (MoU) with the Norwegian Agency for the Development Cooperation to implement the Clean and Healthy Ocean Programme • Law No. 98-030, the Environmental Framework Law • Law No. 2017-39 of 26 December 2017 prohibiting the production, importation, exploitation, marketing, possession, distribution and use of non-biodegradable plastic bags in the Republic of Benin • April 2018 • Framework Law No. 2014/19 of 7 August 2014 on Fishing and aquaculture in the Republic of Benin • Using recycled plastics to make pavements • Carrying out citizen mobilization campaigns encouraging them to participate in clean-ups • Improving and creating recycling programmes • Working on procuring new infrastructure for wastewater systems 	<ul style="list-style-type: none"> • Disposal systems are outdated • Carrying out sensibilization campaigns • Adding economic value to plastic waste (105 companies can collaborate on the implementation of this initiative) • Using recycled plastics to make pavements • Carrying out citizen mobilization campaigns encouraging them to participate in clean-ups • Improving and creating recycling programmes • Working on procuring new infrastructure for wastewater systems 	<ul style="list-style-type: none"> • Need to create proxy data for marine litter • Privatizing waste management companies in every metropolitan, municipal and District Assembly area • Constructing engineered landfills that can treat solid waste • Continuing regular beach clean-ups • Installing automatic waste sorting facilities for solid waste and recycling • Controlling and inspecting ports • Taking note of observations during National Sanitation Day • Companies are using recycled plastics • Raising awareness through educational efforts • Strengthening existing legislations on littering and waste management • Establishing courts that deal with polluters • Carrying out beach clean-up activities • Using oxo-degradable additives in flexible plastics • Installing more trash bins to separate waste at source in urban areas • Establishing plastic recycling plants • Establishing collection facilities at ports • Carrying out port state control inspections

Sources and drivers				
Liberia	Cameroon	Togo	Nigeria	Guinea
<ul style="list-style-type: none"> • Migration • Trade • Commerce • Transportation (e.g., shipping) • Tourism • Agricultural activities • Industries • Commercial fishing cargo, oil exploration and exploitation • Low awareness and citizens' littering behaviour 	<ul style="list-style-type: none"> • Citizens' lack of awareness • Small-scale fishers and transporters dumping waste directly into rivers and the ocean • ALDFG from artisanal fishing activities • Toilet facilities located above rivers • Production and supply of single-use plastic items • Waste management facilities cannot cope with the amount of single-use plastic produced 	<ul style="list-style-type: none"> • Citizens' littering behaviour • Rapid urban and rural growth in coastal zones • Growth of ports, industry, transportation, fishing and tourist infrastructure • Increase in maritime traffic • Increase of new hotel constructions • Illicit disposal of waste from industrial, agricultural and tourism activities, fisheries, hotel facilities and ships 	<ul style="list-style-type: none"> • High population density, especially in urban areas • Increased urbanization rates • Rising standard of living • Increased waste generation in households, commercial institutions and individual activities • Citizens' poor attitudes towards waste management • Abandoned shipwrecks • ALDFG • Oil spills • Vessels discarding waste during their sea-based activities • Nuclear submarine, military and industrial waste is improperly discarded 	<ul style="list-style-type: none"> • High population density in big cities • Inexistent collection and disposal waste management infrastructure • Citizens' littering behaviour • Industries producing flexible plastics

Pathways and distributions				
Liberia	Cameroon	Togo	Nigeria	Guinea
<ul style="list-style-type: none"> • Indiscriminate dumping of waste into drains and rivers • Waste in runoff, storm water and sewage drains and on coastlines • Fishing, shipping activities in the ocean and marketplaces are close to riverbanks 	<ul style="list-style-type: none"> • Untreated water discharges directly into water bodies • Direct discharge at sea during sea-based activities • Rivers transporting waste 	<ul style="list-style-type: none"> • Inland water charged with solid waste runoff to lagoon systems (e.g. Mono Lagoon) and rivers 	<ul style="list-style-type: none"> • Wind blows waste from streets and landfills • Litter washes into storm drains and waterways • Litter is redistributed after storm events and high tides • Rampant discharge of water effluents, untreated sewage, oil spills, plastic and other debris into the coastal environment, which is common in Lagos and other major industrialized cities in the Niger Delta region of Nigeria such as Warri and Port Harcourt 	<ul style="list-style-type: none"> • Waste (from citizens and all industries) is directly dumped into waterways, canals and rivers and later swept out to sea

Interactions with biota and impacts

Liberia	Cameroon	Togo	Nigeria	Guinea
<ul style="list-style-type: none"> • Environmental degradation • Entanglement and ingestion of discarded litter, including ALDFG • Transport of pollutants over long distances, serving as new habitats for invasive species, etc. • Hazards for sea turtle hatching grounds 	<p>Environmental:</p> <ul style="list-style-type: none"> • Ingestion of and entanglement by ALDFG resulting in morbidity of marine fauna • Habitat damage • Transport and arrival of non-native species 	<p>Ecosystems:</p> <ul style="list-style-type: none"> • Degradation of marine ecosystems • Loss of marine biodiversity • Arrival of invasive species <p>Socio-economic:</p> <ul style="list-style-type: none"> • Public health risk • Proliferation of water-related diseases • Decrease of household income • Decrease in fishery production, due to which fishers need to travel further to catch fish • Exodus 	<p>Ecosystems:</p> <ul style="list-style-type: none"> • Threat to fish, seabirds, marine reptiles and marine mammals • Ingestion and entanglement (e.g. in ALDFG) resulting in death • Arrival of alien species, which have been associated with increased red tides and algal blooms • Fish are displaced from their habitats • Radioactive substances released by military exercises and industry • Contamination of sediments, creating cloud water <p>Socio-economic:</p> <ul style="list-style-type: none"> • Loss of aesthetic value • Destruction of touristic areas (e.g. due to contamination of swimming areas) • Health risks and spread of water-related diseases (e.g. cholera, typhoid, etc.) 	<p>Ecosystems:</p> <ul style="list-style-type: none"> • Fish and birds ingesting debris and becoming entangled in ALDFG (especially nylon lines) <p>Socio-economic:</p> <ul style="list-style-type: none"> • Nine people were killed after heavy rains caused a landslide in a former iron mine that was filled with waste

Waste management infrastructure challenges and other barriers

Liberia	Cameroon	Togo	Nigeria	Guinea
<ul style="list-style-type: none"> • Lack of awareness and education, specifically on the damage caused by single-use items • Limited infrastructure to recycle plastic • Poor waste management • Limited resources, including funding, logistics, equipment and trained human resources • Difficulty in data collection to plan for, prevent and manage waste 	<ul style="list-style-type: none"> • Insufficient sensitization of citizens • Inadequate technical capacity and insufficient human resources to monitor marine litter • Weak law enforcement • Insufficient legislation information to address marine plastic litter issues 	<ul style="list-style-type: none"> • Lack of data on how marine litter affects biodiversity and ecosystems • Lack of a national plan for the prevention and management of marine litter • Need to build the capacities of specialists from the different administrations involved in the prevention and management of marine litter • Strengthening the legal and regulatory frameworks • Strengthening measures to tackle industrial pollution • Creating marine protected areas • Increasing awareness • Assessing marine litter 	<ul style="list-style-type: none"> • Most marine litter is plastic • Lack of awareness-raising activities among retailers • Lack of governmental interest in marine litter issues • Lack of strong policies, and of enforcement, to prevent disposal of waste at sea • Lack of continuity in the implementation of the existing governmental policies • Lack of appropriate waste management infrastructure • Lack of affordable alternatives to single-use plastic packaging such as paper, or multiuse and recyclable plastic items • Nonadherence to the Code of Conduct for Responsible Fisheries by the artisanal fishers and industrial trawlers • Financial and operational constraints 	<ul style="list-style-type: none"> • Sanitation services are overwhelmed, and are incapable of treating all waste produced • Need to identify and lay out a controlled discharge system • Inefficient management of plastic waste • Need to include waste management systems in city planning

Current responses and potential Solutions

Liberia	Cameroon	Togo	Nigeria	Guinea
<ul style="list-style-type: none"> • Developing and implementing key legislations • Engaging, educating and raising awareness among stakeholders at all levels of society • Developing proper infrastructure <p>Current responses:</p> <ul style="list-style-type: none"> • Hosted the Blue Oceans Conference in cooperation with the Swedish Embassy and Conservation International • Performing regular beach clean-ups 	<p>Current responses:</p> <ul style="list-style-type: none"> • Ban on production and supply of plastic items in place since 2009 • Bilateral agreement between fisheries and navy departments to tackle illegal fishing • Making pavements and construction materials from recycled plastics • Developing and implementing educational and capacity-building programmes • Enforcing national laws • Creating an inter-ministerial task force for the eradication of pollution • Developing a national strategy on waste management • Including local communities in waste management, focusing on the inclusion of stakeholders in traditional communities <p>International legislation:</p> <ul style="list-style-type: none"> • International Convention for the Prevention of Pollution from Ships (MARPOL) <p>Regional Legislation:</p> <ul style="list-style-type: none"> • Economic Community of Central African States (CEMAC) Merchant Shipping Code on litter management <p>National Legislation:</p> <ul style="list-style-type: none"> • Cameroon Merchant Shipping Code 1962 • Environmental Framework Law • Flag State measures • Port State measures (joint inspection between the Ministry of Transportation, Ministry of Environment, Protection of Nature and Sustainable Development and Port) 	<p>Current responses:</p> <ul style="list-style-type: none"> • Developing POLMAR, a national action plan (2014) • Including different stakeholders in the creation of the national action plan • Adopting the Penal Code on Marine Pollution • Developing an emergency intervention plan against the disposal of oil in the sea • Organizing periodic surveys, surveillance, and patrolling of the coastline • Carrying out awareness-raising campaigns (e.g. during ocean national days) • Carrying out periodic beach clean-ups in collaboration with citizens and NGOs • Creating a National Agency for State Action on Maritime Matters (ONAEM) to organize and coordinate the different institutions and ministries working on marine issues 	<p>Current responses:</p> <ul style="list-style-type: none"> • Quarterly and monthly oil monitoring in the marine environment • Implementing Appendix V of MARPOL • Carrying out beach clean-ups and NIMASA building an education and awareness-raising campaign • Collaborating with UNEP, the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities and NIMASA on the formulation of a National Action Plan on Marine Litter Management • Strengthening the role of all stakeholders (e.g. the Wecyclers organization that recycle plastic) • NIMASA created marine marshals, informal figures who perform regular clean-ups and monitor marine litter <p>Solutions needed:</p> <ul style="list-style-type: none"> • Create more affordable alternatives for plastic • The government should create a collaborative model with industries to encourage plastic recycling and production of multiuse items • Improve the organization of waste management systems • Actively collaborate with national and international agencies • Build capacities, surveillance and sensibilization of fishers and the fishing sector • Create a reward system that promotes environmentally friendly behaviour among fishers, as well as activities such as “fish for plastic” • Set up a committee to ensure national agencies and private companies work together on respecting the principles on preventing marine litter • Engage children and adults in recycling waste; companies are already paid to recycle waste • Finance more research and development of alternative packaging materials • Ensure that plastic products are properly labelled 	<p>Solutions needed:</p> <ul style="list-style-type: none"> • Establish an effective waste management system • Strengthen existing regulations • Identify and develop a waste storage site • Create education and awareness-raising campaigns, focusing on schools and children • Professionalize the waste management sector • Manufacture utensils using “thermoforming” • Find sustainable sources of financing • Establish extended producer responsibility among companies that produce and/or import plastic • Establish a waste collection fee • Identify and develop a controlled landfill • Develop a recycling system • Establish a national authority • Ban single-use plastics

Windhoek workshop (Namibia)

Sources and drivers

South Africa	Namibia	Democratic Republic of Congo	São Tomé and Príncipe
<ul style="list-style-type: none"> • Globalization, exporting 18 per cent of total plastic waste, diverted to landfills • Rapid increase of the middle-income class in all provinces • High population growth and density, and rapid urbanization, demanding more waste management facilities • Higher consumption and waste production rates than recycling rates • Large plastic manufacturing companies • Imports of large quantities of virgin plastic • Mining operations • Lack of sense of belonging in shared and common spaces, leading to disconnection from nature, which drives the lack of caring and compassion for the environment 	<ul style="list-style-type: none"> • Dumping of waste material into the ocean by vessels • Citizens littering • Airports 	<ul style="list-style-type: none"> • Fossil fuels, mining, and oil sector 	<ul style="list-style-type: none"> • Increase of population density • Citizens littering • Disposal of waste from vessels and small-scale fisheries

Pathways and distributions

South Africa	Namibia	Democratic Republic of Congo	São Tomé and Príncipe
<ul style="list-style-type: none"> • Illegal dumping of waste onto streets and river systems 	<ul style="list-style-type: none"> • Wind 		<ul style="list-style-type: none"> • Rain driving litter into storm drains waterways

Interaction with biota and impacts

South Africa	Namibia	Democratic Republic of Congo	São Tomé and Príncipe
	<ul style="list-style-type: none"> • Wildlife becoming entangled in ALDFG (especially seals) 		<ul style="list-style-type: none"> • Fish are increasingly being impacted

Waste management infrastructure challenges and other barriers

South Africa	Namibia	Democratic Republic of Congo	São Tomé and Príncipe
<ul style="list-style-type: none"> • Exports of plastic waste are not included in the current recycling rate (claimed to be 43 per cent); if so, recycling waste could drop to 17 per cent • Weak law enforcement • Insufficient budgetary provision; in some municipalities, waste management exceeds their budgeted revenue (Treasury 2011) • Treatment includes incineration, but no incineration of waste to energy • The effectiveness of the Plastic Levy 2004 and Tyre Levy laws is questionable; it is not clear where the funding from the levy goes and the price of the levy per bag is not high enough • Lack of household separation at source, thus collection of recyclable material is low and inefficient • Large informal waste economy; low valuable plastics are abandoned and not collected • Government was working with the Recycling and Economic Development Initiative of South Africa (REDISA), but poor funding management made the government cancel the project • The plastic industry has strengthened lobbying for packaging materials • Low public awareness and negative attitudes (e.g. illegal dumping) • Lack of sense of belonging in shared and common spaces 	<ul style="list-style-type: none"> • Multitude of departments and it is difficult to make them work together • Lack of data • Multitude of regulations; there are many ministries organizing the national waste management system and each one of them introduces their own regulations • Regulations change regularly 	<ul style="list-style-type: none"> • Level of exploitation of natural resources is the biggest waste management problem (e.g. fossil fuels) 	<ul style="list-style-type: none"> • Lack of a waste management system • Waste is directly collected or dumped in open dumpsites, burned and buried • Lack of data, information and monitoring of waste • Lack of supervision and control over citizens' behaviour • Lack of awareness among citizens • Lack of government support at port reception facilities • No legislation or mechanisms on how to deal with waste • Lack of funding

Current responses and potential solutions

South Africa	Namibia	Democratic Republic of Congo	São Tomé and Príncipe
<p>Current responses:</p> <p>National legislation:</p> <ul style="list-style-type: none"> • Integrated Pollution and Waste Management Policy 2000 • Plastic Levy 2004 • Tyre Levy • The Waste Classification and Management Regulations and the Norms and Standards for the Assessment of waste for Landfill Disposal 2013 • National Waste Amendment Act (NEM) in 2014 • Pricing Strategy 2016 • Operation PHAKISA for the chemicals and waste economy, based on a circular economy model, aimed at engaging in opportunities to reduce the environmental impact while contributing to the growth of GDP and creation of jobs <p>Solutions needed:</p> <ul style="list-style-type: none"> • Introduce taxes instead of levies on single-use plastic items • Provide more licenses for waste management activities (the current national number of licenses is 1,057, and the activities include waste treatment, composting, effluent, wastewater or sewage treatment, storage of waste, and/or waste incineration) • Department of Environmental Affairs carrying out coastal monitoring • Introduce mesh collectors to prevent litter entering the ocean such as those used in the Litterboom Project 	<p>Current responses:</p> <ul style="list-style-type: none"> • The government put a waste management system in place which involves the collaboration of Ministry of the Environment and Tourism, Ministry of Fisheries and Marine Resources, Ministry of Works and Transport and the municipalities • Creation of the Environmental Management Act • Every municipality has a landfill, and they self-organize, regulating these landfills themselves • Waste is collected and separated for further recycling by the municipalities or a private company, ensuring no dumping of any materials • Creation of agreements with a plastic packaging company to improve recycling and move towards a more sustainable packaging system • Developing two incinerators, mainly dealing with hospital medical waste • Creating marine protected areas • Implementing strict laws for coastal ecosystems • Strengthening vessel patrolling • Citizens carrying out awareness-raising campaigns e.g. "Keep Namibia Clean" • MoU to deal with waste management in mining operations and hospitals • Involving three types of personnel: inspectors, observers and pollution keepers, in giving penalties 	<p>Current responses:</p> <ul style="list-style-type: none"> • Following international Conventions such as the Stockholm Convention, the Maputo Convention or the Basel Convention • Ministry of Environment and Tourism dealing with waste management • Law 003/91 of 23 April 1991 on Protection of the Environment • Circular No. 0613 /MEFDDE/ CAB/ DGE specifying the conditions for the management of waste of any kind • Decree of 3 May 2019 on waters, taking into consideration marine litter • Involving the police in penalizing anyone committing infractions • Public sector working in collaboration with other organizations • Recycling of organic waste to make clay, compost and metals • Education and collaboration with NGOs • Burying non-toxic solid waste, allowing its monitoring 	<p>Current responses:</p> <ul style="list-style-type: none"> • A beach official reports to the navy on a weekly basis <p>Solutions needed:</p> <ul style="list-style-type: none"> • Include decision makers in the conversation • Carry out research to provide basic knowledge on how marine litter is impacting environment and quantify the volume of marine litter at a national level • Create awareness-raising campaigns, including in the media, focusing on educating communities • Increase control of the exclusive economic zone to supervise vessels' dumping practices

Rabat workshop (Morocco)

Sources and drivers

Morocco	Mauritania	The Gambia	Cape Verde
<ul style="list-style-type: none"> • Citizens littering • Intense linear urbanization processes • Concentration of commercial and economic activities in coastal areas • Development of seaside tourism activities • Urban and rural areas 	<ul style="list-style-type: none"> • Fishing activities (especially small-scale fisheries) • Oil and gas production • Rapid urban development and proliferation of illegal dumpsites on coastlines • Increase of maritime transport • Direct disposal of waste into the marine environment 	<ul style="list-style-type: none"> • Citizens disposal behaviour, especially in waterways • Illegal dumping by vessels • Illegal dumpsites in wetlands • Rapid urbanization • Rapid population growth, especially around urban areas, concentrated along the coastline • Trucks from mining activities dumping waste in rivers • Illegal trade of plastic bags from Senegal • ALDFG 	<ul style="list-style-type: none"> • Citizens littering behaviour • Only one plastic producing company, but it is very small

Pathways and distributions

Morocco	Mauritania	The Gambia	Cape Verde
<ul style="list-style-type: none"> • Main vectors are wind, water and land • The country is at a crossroads between large maritime routes through which many pollutants travel 	<ul style="list-style-type: none"> • Maritime transport • Landfills • Ocean currents sweeping marine litter into international waters 	<ul style="list-style-type: none"> • Wind • Watercourses and littoral drift determines the litter distribution • Activities around the Gambia River • Runoff during rainy seasons, particularly from river systems like the Gambia River and Allahein River 	<ul style="list-style-type: none"> • Waste is directly dumped into open dumpsites • Waste is swept in from other countries by marine currents • Plastic litter beaching on Cabo Verdean coastlines have been identified as being from 25 countries since the 1990s

Interaction with biota and impacts

Morocco	Mauritania	The Gambia	Cape Verde
<ul style="list-style-type: none"> • Loss of biodiversity 	<ul style="list-style-type: none"> • Accumulation of marine litter at the beaches and sea bottom; • Ingestion, asphyxiation, and entanglement of ALDFG; • Migration to use foreshore as a nursery; • Arrival of alien species; • Bioaccumulation of contaminants; • Decrease of animal reproduction for sensitive species (e.g., eggs & larvae from 1 to 10 ppm, or turtles than cannot lay their eggs due to the amount of litter in sandy beaches); • Potential problems related to Food Security and food safety. 	<ul style="list-style-type: none"> • Entanglement of animals 	<ul style="list-style-type: none"> • Wildlife, particularly sea turtles, entangled in ALDFG

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<ul style="list-style-type: none"> • Lack of data on rural waste management 	<ul style="list-style-type: none"> • Squid fishing activities are mainly small-scale and uses prohibited types of fishing gear • Lack of legislation on marine litter, particularly lacking the inclusion of legislation for small-scale fisheries' misconduct • Lack of waste collection at seaports • Issue with octopus traps 	<ul style="list-style-type: none"> • Inadequate waste management systems, particularly along the coastline • Limited tax collection • Inadequate funding from councils responsible for waste management, leading to the cancellation of beach clean-up activities • Inadequate monitoring mechanism because of limited resources • Inadequate political commitment • High cost of plastic substitute products • Lack of sensitization of citizens • Absence of projects focusing on preventing waste and marine litter at source 	<ul style="list-style-type: none"> • Lack of technology and infrastructure for waste collection • Lack of a recycling and waste management system • Lack of legislation to sanction polluters • Lack of information

Current responses and potential solutions

Morocco	Mauritania	The Gambia	Cape Verde
<p>Current responses:</p> <ul style="list-style-type: none"> • Development of a Regional Plan on Marine Litter Management, setting up programmes and measures to prevent and reduce the adverse effects of marine litter (UNEP/Mediterranean Action Plan [MAP] in 2013) • Creation of a monitoring programme on sand quality, organizing beach clean-ups and awareness campaigns for citizens (including schoolchildren) and tourists in accordance with the UNEP/World Food Programme Environment Protocols • Adoption of the Protocol Concerning Pollution from Land-Based Sources and Activities (LBS Protocol) in 1980 by the Contracting Parties to the Barcelona Convention (UNEP/MAP) • Identification of marine litter as one of the 11 ecological objectives recognized for the integrated assessment of the marine environment • Framework Law 99-12 aims for integrated coastal zone management • Merchant Navy ensures that ships comply with the standards and regulatory measures, and operates under the maritime code framework, as well as the IMO, regional and bilateral agreements • Establishment of participatory marine litter coastal zone management programmes in Tangier-Tétouan-Al Hoceima and Rabat-Salé-Kénitra region (Horizon 2020 project) in partnership with the European Union • Creation of an action plan in collaboration with the European Union • Creation of surveillance programmes such as working with fishermen to carry out “fishing for plastic” projects; pilot projects such as “adopt a beach” • The Marine Litter-MED Project provides a comparative database for the fisheries sector • Creation of laws prohibiting plastic octopus traps, and provision of clay pots as an alternative to disposable plastic traps • Encouraging fishers not to dump ALDFG in the sea • Awareness-raising by creating communication tools and campaigns to help determine marine litter sources • Mechanisms <p>National legislation:</p> <ul style="list-style-type: none"> • Framework Law No. 99-12 on the National Environmental and Sustainable Development Charter • Law No. 81-12 on integrated coastal zone protection and management • Law No. 28-00 (2006) on Waste Management and Disposal • The law (77-15 of 7 December 2015) prohibiting the manufacture, importation, export, marketing and use of plastic bags 	<p>Current responses:</p> <ul style="list-style-type: none"> • Decree banning the sale of single-use plastic bags • National initiatives, including the participation of the state, civil society and NGOs, particularly to raise awareness in coastal communities • Adoption of national and international regulations • Data collection <p>Solutions needed:</p> <ul style="list-style-type: none"> • Strengthen the implementation of existing policies • Improve existing environmental governance of national regulations • Need for capacity-building and training programmes as well as awareness-raising campaigns • Improve management and governance • Implement marine pollution codes of conduct, especially for industrial fisheries • Improve data collection and monitoring on litter flows • Add value to waste (including fishing nets and octopus traps, since 80 per cent of collected octopus traps can be reused) – adding value to plastic would create jobs • Raise awareness, especially among fishers and schoolchildren 	<p>Current responses:</p> <ul style="list-style-type: none"> • Creation of an Environmental Court • Ban on Plastic Bags Order (2015), although the current government is not supporting it • Anti-littering regulations (2007) • Funding for major coastal clean-up sensitization activities • Civil society organization activities on the beaches <p>Potential solutions:</p> <ul style="list-style-type: none"> • Provide affordable alternatives to plastic for the general population 	<p>Current responses:</p> <ul style="list-style-type: none"> • Developing preventive measures on land waste production • Carried out a study on the positive impacts of the current waste reduction law • Creation and implementation of a residual waste, waste treatment and recycling system • Preparation of an economic and social study on the impact of the existing law banning single-use plastic • Organization and celebration of the “Annual Cabo Verde Ocean Week,” to raise awareness of marine-related issues • Development of a Blue Economy finance observatory project with the Food and Agriculture Organization of the United Nations (FAO) and the African Development Bank aimed at creating new jobs that involve using the responsible and sustainable use of the ocean • Imports of plastic bags have to be requested with a data sheet and proven to be biodegradable; food packaging and garbage bags are exempt, but they need to be authorized and be part of a management plan <p>Potential solutions:</p> <ul style="list-style-type: none"> • Develop legislation prohibiting the use, free distribution, importation and production of non-biodegradable plastic bags • Develop legislation to ban the introduction of plastic single-use products into the country • Improve the waste collection and management system

West Africa's contribution to Africa's GDP growth has increased over the last few years – from below 7 percent in 2016 to more than 28 percent in the last two years. This growth, compounded by various drivers of marine litter production, leads to predictions of a steady increase in the volume of litter entering the ocean from land in the West, Central and Southern African coastal region.

To efficiently respond to marine litter management challenges, both land- and sea-based sources must be addressed. Most human activities that contribute to marine litter are related to the production, manufacturing, transport, trade, consumption and inappropriate disposal of goods. Governance has a key role to play in this area. A number of agreements have been adopted at the international and regional levels with direct or indirect measures to prevent marine litter, yet large knowledge gaps remain in translating these measures into regional and national action plans.