

CONFERENCE PAPER*

Marine litter and the commons: How can effective governance be established?

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Abstract

The massive pollution of the world's oceans with plastic debris presents an urgent global challenge. This pollution is primarily caused by everyday practices such as consumer patterns and poor waste management. Plastic debris, *e.g.* packaging materials, fishing nets and small plastic fragments, have a severe impact on marine ecosystems as well as on society and the economy. The global community has therefore adopted a series of environmental conventions to protect the seas and oceans, such as the international convention MARPOL. Furthermore a number of regional conventions also addressing land-based sources have come into force, such as OSPAR and HELCOM or the EU Marine Strategy Framework Directive. There are also a considerable number of regional initiatives that, among other endeavours, run clean-up or awareness campaigns. Nevertheless, the comprehensive and sustainable governance of plastic still remains an ambitious goal. Gaps between formal law and its enforcement, competing policy priorities and resource constraints, as well as uncertainties and different perceptions of key issues can be identified as major obstacles to preventing further pollution of the world's oceans.

Against this background, this paper presents a 'stocktaking' of the marine litter regime. It outlines the key players, global and local negotiations arenas, and management strategies to combat marine litter. The key questions are: who is involved, how do the various actors frame the problem, where do negotiations take place and what are the (possible) management strategies for effectively tackling the issue? This analysis is based on a literature review, participatory observation and a transdisciplinary social-ecological research approach.

Keywords

Marine litter, commons, governance, actors, regulatory framework

Acknowledgements

I thank Johanna Kramm and Ashley Hedger for their invaluable input and the inspiring discussions.

The junior research group 'PlastX – Plastics as a systemic risk for social-ecological supply systems' is funded by the German Federal Ministry for Education and Research (BMBF) as part of the 'Research for sustainable development (FONA)' programme. In FONA, PlastX is part of the funding priority 'Junior research groups in social-ecological research'.

* XVI Biennial IASC-Conference 'Practicing the Commons: Self-governance, cooperation, and institutional change', Utrecht, the Netherlands, 10 – 14 July 2017

1. Introduction

Global common-pool resources such as the seas and oceans have been used for centuries as a repository for waste under the assumption that the seas and oceans are immune to ecological damage due to their vastness (De Wolff, 2014; Stöfen-O'Brien, 2015). However, modern production and consumption patterns have resulted in an exponential increase in waste, creating a problem that has global repercussions since waste is continuously accumulating in the marine environment (UNEP, 2016a; PlasticsEurope, 2016; Ellen MacArthur Foundation, 2015). Even though scientific warnings were issued back in the early 1970s, awareness of marine litter has long been dormant, while slowly but steadily becoming impressively visible. Thus in recent years, marine pollution has received considerable global attention and interest from a broad audience; becoming a hot topic in science, politics and society, and a high priority on the international agenda (Derraik, 2002; Stöfen-O'Brien, 2015; UNEP, 2016a).

Marine litter, also commonly referred to as marine debris, is defined by the United Nations Environment Programme (UNEP) as “*any persistent, manufactured, or processed solid material that is discharged, disposed of or abandoned in the marine and coastal environment*” (UNEP, 2009). It is associated with a variety of negative environmental, social and economic impacts: among other things marine fauna becomes entangled in floating fishing gear or packaging residues, sea birds ingest plastic particles, floating debris is a navigation hazard for sailors, and littered beaches lead to income losses in the tourism sector (Derraik, 2002; Gregory, 2009; UNEP, 2016a).

In the context of marine litter, one material in particular has gained in notoriety: plastic. Since large-scale plastic production began in the 1950s, the amount of plastic has increased twenty-fold from 15 million tonnes in 1964 to 322 million tonnes in 2015 (WEF, 2016; PlasticsEurope, 2016). Plastic is now one of the most ubiquitous materials in modern economies since it has great functional benefits and a wide range of applications. Plastic products such as single-use plastic bags or packaging are an integral part of everyday life and their consumption is largely inconspicuous. However, the drawbacks of the plastic economy are becoming ever more apparent, stressing the ambivalence in the use of plastics as an everyday material. The short first-use cycle of plastic packaging is in contrast with the material's durability in the environment (Kramm and Völker, 2017; WEF, 2016; Ellen MacArthur Foundation, 2015). Today, three-quarters of all marine litter consist of plastics. It is estimated that around 140 million tonnes of plastics are floating in or lying on the floors of oceans today (Jambeck *et al.*, 2015; MacArthur Foundation, 2017, 2015; PlasticsEurope, 2016). It slowly fragments in the water and accumulates in convergence zones, water layers and sediments (Jambeck *et al.*, 2015; UNEP, 2016a).

The primary cause of plastic pollution is the combination of prevailing production patterns, everyday practices, lifestyle habits and frequently porous or barely existing waste and wastewater infrastructures in many countries (Jambeck *et al.*, 2015; GIZ, 2015; UNEP, 2016a). Every year, about 4.8 to 12.7 million tonnes of plastic end up in the world's lakes and oceans, transported from the world's landmasses *via* rivers, untreated sewage and stormwater discharges or carried by the wind. It is estimated that land-based sources, including the plastics industry, agriculture and coastal tourism, account for around 80 per cent of marine litter worldwide (Jambeck *et al.*, 2015, Ellen MacArthur Foundation, 2015).

Against this backdrop, marine pollution symbolises a critical societal relationship to nature, with marine litter as an unintended side effect of the normal mode of operation of modern societies (Renn and Keil, 2008; Völker *et al.*, 2017). Nevertheless, it is at least theoretically an avoidable problem. Thus “*there is the strong moral case that humanity should not allow the oceans to become more polluted by plastic debris and microplastic*” (UNEP, 2016a: 173; Ryan, 2015). This statement emphasises the need for global collective action. There is the prospect of this being successful: “*although the marine environment is unlikely to return to the condition it was in before the ‘plastic era’, it is an example of an environmental restoration challenge where successful governance and environmental stewardship would likely result in a healthier global oceanic ecosystem*” (Vince and Hardesty, 2016: 1). In light of this, the international community, along with stakeholders from environmental and civil society organisations and the private sector, have implemented a series of measures. The global community has adopted several international conventions to protect the seas and oceans, such as the International Convention for the Prevention of Pollution from Ships (MARPOL) and the United Nations Convention on the Law of the Sea (UNCLOS), as well as regional conventions such as the EU Marine Strategy Framework Directive (MSFD). Other endeavours include clean-up and awareness campaigns, funding for infrastructure improvements and voluntary undertakings.

Nonetheless effective governance, where actors meaningfully collaborate and the implemented solutions have the intended effect, remains an ambitious task for six reasons: i) marine litter cannot be traced back to a single source because it is the result of many types of diffuse discharges, ii) it is difficult, if not impossible, to quantify the amounts and sources of plastic debris entering the waterways and oceans, iii) as a fluid waste plastics have the potential to travel long distances, crossing any (state) borders and implying cross-scale interlinkages, where the causal relationship between its origin and its adverse effects often falls apart, iv) it involves a plurality of actors with their own perceptions of the problem and competing views about solutions, v) it is costly and finally vi) the impact of the efforts might potentially only be visible several decades later, triggering a wait-and-see attitude. Thus it is hardly surprising that international efforts to limit plastic pollution have so far been considered to have failed: “*Neither legal provisions banning the dumping at seas nor voluntary action plans or multi-stakeholder partnerships working on waste management have been adequate to reduce the amount of plastic waste*” (Simon and Schulte, 2017: 7).

As outlined above, marine litter is embedded in a social-ecological system. The transboundary pollution of the world’s seas and oceans is the cumulative effect of countless actions by a large number of actors. In order to avoid global marine pollution, many actors at various levels need to make (costly) decisions to reduce further plastic pollution. Yet, everyone benefits from reduced plastic pollution, even if they do not make any effort themselves to achieve this aim (Ostrom, 2010a: 550). This constitutes a global collective-action problem (Ostrom, 2010b). It often calls on Hardin’s image of users trapped in an “*inexorable tragedy of overuse and destruction*” (Ostrom, 2010b: 9; Hardin, 1968). In this line, the problem will only be solved, if an external authority determines appropriate action, monitors behaviour and imposes sanctions. Certainly, this is an oversimplified portrait (Araral, 2014; Stern, 2011; Ostrom, 2010b; Agrawal, 2003; National Research Council, 2002). Fortunately, various units

can undertake many activities at diverse scales that cumulatively make a difference (Ostrom, 2010a: 550). In this vein, the concept of polycentricity “*connotes many centres of decision-making which are formally independent of each-other*” (Ostrom, 2010a: 552). Polycentricity is widely considered to be desirable, making social-ecological systems more resilient, adaptive and sustainable (Thiel, 2016; Gruby and Basuro, 2014; Armitage, 2008; National Research Council, 2002). Hence, encouraging polycentric efforts facilitate achieving benefits at various scales and make problem solving more independent from long negotiating endeavours at global level. Notwithstanding, global efforts are a necessary part of the long-term solution (Ostrom, 2010a). In this vein, the present marine litter governance architecture is built upon a polycentric approach. As yet, the multi-level approach to stem marine litter falls short of expectations. While the earliest regulatory endeavours date back to the 1970s, political attempts have not had the intended effects. Similarly, multi-stakeholder frameworks have gained momentum, though they remain restricted to voluntary commitments or fail because of conflicting interests. The question is, why?

To address this question, this paper highlights the background of marine litter governance by outlining the collection of actors, framings and outcomes. The results are based on a literature review, informal talks and participatory observation.

2. Governance of marine litter

2.1 Who is who?

As mentioned above, addressing plastic pollution will not be achieved by relying solely on state actors and international organisations. It must be complemented by efforts from multiple stakeholders, including plastics-related industries, non-governmental environmental organisations, civil society organisations, international development agencies and academia (Simon and Schulte, 2017: 38). Hence, this task needs to be addressed by quite a heterogeneous group.

The key players were identified by screening network participants, participants at international events, authors of international reports and the signing parties of treaties, agreements and voluntary commitments.

There are a handful of powerful actors on national and supranational jurisdictional levels, most prominently the United Nations and the European Union. As a key player, the United Nations has dedicated multiple agencies within its organisation to focus on, develop, implement and assess strategies to combat marine litter: the International Maritime Organization (IMO), the United Nations Environment Programme (UNEP), the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO), the joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), the International Union for Conservation of Nature (IUCN) and the World Bank. All these agencies are interlinked and work closely together. They are briefly described below:

- The IMO mainly deals with sea-based sources since it is responsible for the safety and security of shipping and the prevention of marine pollution by ships, and develops

regulatory instruments, adopts legislation and monitors compliance. Furthermore, it conducts training and implements examination and certification procedures. However, enforcement is down to the governments of member states. IMO pioneered the prohibition of the disposal of plastics from ships and encouraged refuse management at port reception facilities.

- UNEP is an umbrella agency that hosts several marine litter multi-stakeholder and multi-level programmes, such as the Global Partnership on Marine Litter (GPML) and the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA). It promotes the consistent implementation of the environmental dimensions within sustainable development and serves as an authoritative advocate for the global environment. By (co-)publishing scientific reports and toolkits for decision-makers and conducting training courses, it is probably one of the most influential disseminators of information.
- IOC-UNESCO is the competent organisation for marine science within the UN. It promotes international collaboration and programmes in research, services and capacity building. Its Global Ocean Science Report informs governments, international organisations, donors and academia about the overall scientific capacity to address present marine challenges. It is also the lead agency for one of GESAMP's working groups.
- GESAMP is an advisory body consisting specialists who are nominated by sponsoring agencies such as IMO, IOC-UNESCO and UNEP. GESAMP is also supported by non-member experts. It provides scientific advice to sponsoring agencies on the prevention, reduction and control of marine degradation due to marine debris. The experts there act in an individual capacity to ensure the independence of GESAMP recommendations. It is divided into working groups that assess one particular theme for a certain period of time.
- IUNC is the first government-organised non-governmental organisation and has members from over 170 countries. It focuses on nature conservation and biodiversity and is the only environmental organisation with official United Nations observer status, which gives it the ability to participate and consult at the UN level. It provides multi-stakeholders with information and advice through lobbying and partnerships, and engages in several marine litter (research) projects.
- The World Bank provides funding for marine litter projects, mainly through the Global Environmental Facility (GEF). The GEF has 183 participating countries, of which 39 are donor countries. Activities include the prevention and management of marine pollution in the East Asian Seas and on West African coastlines. The World Bank also launched the Global Partnership for Oceans (GPO).
- Within the European Union, the Directorate-General for Environment of the European Commission (DG Environment) proposes policies and legislation to protect natural habitats. DG Environment also ensures that member states apply EU environmental law correctly. It addresses marine litter through different directives and strategies, targeting both the marine environment and the economy, and funds research programmes.

- The European Environment Agency (EEA) provides information to all the actors involved in developing, adopting, implementing and evaluating environmental policy, as well as to the general public. For example, it reports on the state of Europe's seas, using MarineLitterWatch among others for data collection.

National governments along with their ministries and authorities are a highly unequal group since they differ in respect of their socio-economic and ecological backgrounds, policy agendas and scope for action, e.g. southern countries rely on international grants to a greater extent. National governments are engaged in two ways, firstly by implementing and enforcing international- and supranational requirements and secondly – at least in some cases – by encouraging and stimulating the debate. Furthermore national governments use their scope for action differently. A prime mover at the moment is Germany, which has placed marine litter on the agenda of its G7 and G20 presidency.

Non-governmental environmental organisations, such as Ocean Conservancy or the World Wildlife Fund (WWF), promote environmental protection, educate the general public, e.g. by conducting and funding (awareness-raising) projects, collect data and advising governments.

Civil society organisations are of major importance when it comes to education, awareness raising and clean-up campaigns. Citizens have mainly contributed to beach clean-ups and to studies on where marine litter is found and what it is comprised of. Rather more institutionalised, some of them, for example the Plastic Pollution Coalition, aim to free the world from plastic pollution altogether (Simon and Schulte, 2017).

Industries contributing to marine litter include the following sectors: production, packaging, cosmetics and personal care, textile, food and drink, agriculture, shipping and fisheries, as well as aquaculture. Trade associations or networks such as PlasticsEurope or the Recycling Partnership are key players on the international stage. The industry has established frameworks to enhance product stewardship, and individual companies have joined a range of partnerships and undertaken comparable efforts (Simon and Schulte, 2017: 39).

From a broader perspective, multi-level stakeholder platforms can be regarded as actors, too. For example, the voluntary multi-stakeholder Global Partnership on Marine Litter (GPML) acts as a coordinating forum that brings together a multitude of stakeholders on all scales, such as international agencies, local authorities, the private sector and civil society organisations. It is built on the Honolulu Strategy and aims to reduce ecological impacts (UNEP/NOAA, 2011; GPML, 2017). The Global Partnership on Waste Management (GPWM) is another multi-stakeholder platform that complements the GPML initiative by promoting a holistic approach to waste management. Parley for the Oceans brings together policymakers, producers and consumers, by among other things organising high-profile events that guarantee media attention. It seeks to intensify collaboration with the small island states affected by plastic pollution washing up on their shores (Simon and Schulte, 2017). The Global Alliance for Incinerator Alternatives (GAIA) is a global network of grassroots and national NGOs acting on the ground to implement zero-waste solutions. Local zero-waste networks have led to improvements in individual cities, but *“have not spearheaded a waste reduction revolution”* on a global scale (Simon and Schulte, 2017: 30).

2.2. Coming together

Striving for the best way forward, actors frequently meet in negotiation arenas. At least two arenas of negotiation can be identified:

- A global arena, which means international and supranational political bodies such as the UN General Assembly, DG Environment, G7 and G20, and then less formalised settings such as international conferences, stakeholder platforms, *e.g.* Global Partnership on Marine Litter, that set the stage for a global action framework;
- A local arena at a regional and sub-/national level that includes regional and national committees, round tables, expert talks and conferences.

Both arenas can either be restricted to certain parties, *e.g.* the UN Environmental Assembly or G7 as closed circles for high-level representatives, or open to all stakeholders, as it is the case with the Global Partnership on Marine Litter or international conferences. The arenas reflect both top-down and bottom-up instruments. Naturally, negotiation arenas are spaces for advocating the parties' own interests, discussing scientific evidence or recommendations, and deciding on the regulations and measures to be adopted. As mentioned above, key players frequently participate in different events on all scales, thus linking the various levels to some extent. At first glance, it is the same actors who repeatedly speak up. This raises two questions: is the debate dominated by a few leading actors, and does marine litter really only attract a small group – which would be in contrast with the high level of attention – or are arenas of negotiations more closed than presumed.

2.3 What's the topic?

There is considerable consensus among all the actors involved: firstly that marine litter exists and secondly that it needs to be addressed. As yet, there is no silver bullet to resolve these issues, but there is a variety of possible strategies.

The plethora of possible solutions includes: i) the improvement of solid waste and wastewater management around the world, but especially in developing and transition countries, ii) the introduction of a circular economy in which waste is minimised by being designed out of the production cycle, adopting the 6 Rs (reduce, redesign, remove, reuse, recycle and recover), iii) closely related to this, the introduction of an extended producer responsibility, which is also a variant of the 'polluter pays' principle, iv) the phasing out of certain products, such as single-use plastic bags or microbeads in cosmetics, and v) the invention of a more sustainable alternative, namely biodegradable plastics.

To make informed decisions, reliable data and shared knowledge are key prerequisites. Over the last decade, countless articles, reports, statements, policy briefs etc. have been published by researchers, international, governmental and non-governmental organizations and private sector associations. Many offer a wide range of recommendations (UNEP, 2016a, b; Gold *et al.*, 2013; Vince and Hardesty, 2016). In general, there is broad knowledge base concerning adverse impacts. Yet, no reliable quantitative comparison between input loads of macro and microplastics and the relative importance of different sources, sectors, regions and pathways

is at hand which represents a significant knowledge gap. Moreover, the total amount of plastics in the aquatic environment can only be roughly estimated (UNEP, 2016a). Since large uncertainties remain, the interpretation of the presented evidence and recommendations diverges. This of course also influences the perception of envisaged solutions while knowledge gaps hamper the ability to prioritize management strategies and to assess the effectiveness of implemented measures.

Unsurprisingly, the actors' perceptions of a problem and its proposed solutions often fall apart. Likewise, when analysing actors' positions, a tendency to pass the buck can be identified. Roughly speaking, the perception is double-edged: plastics are a hazardous material versus plastic itself is not the problem. The latter argument claims that if a problem exists, it is rooted in handling plastics. Against this backdrop there are also discussions about whether or not there is sufficient evidence to apply the precautionary principle to legitimise action. When it comes to responsibilities, some say the prime responsibility lies with industry, others say it lies with the consumers, and still others say it lies with the regulatory bodies. In general, it is fairly difficult to identify single positions as they are seldom straightforward. Some of these positions are nonetheless outlined below.

The United Nations and European agencies have no doubt that the primary responsibility lies with the industry, and are therefore promoting a circular economy, a phasing out of microbeads in cosmetic products and fees on single-used plastic bags by stressing both the precautionary and 'polluter pays' principle (UNEP 2016b; EU 2015a, b). The potential of biodegradable plastics has been critically evaluated because some studies suggest that the use of biodegradable plastics could encourage inappropriate discharges and thus contrast with the intended behavioural change (UNEP, 2015). Efforts should be complemented by infrastructure improvements and promoted by a harmonised governance framework and coherent implementation of policies. Arguments shift, when it comes to industries: Plastic-producing and plastic-applying industries consider marine litter to be rooted in the use and disposal of plastics. In general terms, industry is only providing what customers want, emphasising its useful functional properties, *e.g.* in the food sector. Any product ban would be considered a short cut. Nonetheless, some cosmetic companies have committed themselves to eliminating microbeads, probably against the backdrop of consumer pressure, regulation and risks to reputation. It can be assumed that concessions are made when plastic is either easy to substitute or new business models can be developed. As a reaction to shifting responsibilities in countries that have a strong wastewater infrastructure operators of treatment plants argue against an upgrade of treatment plants as this implies higher costs and greater efforts. Moreover, the responsibility to prevent (micro)plastics entering the aquatic environment would shift to the 'end of pipe' rather than being addressed at source.

2.4 What is being done?

Management strategies to combat marine litter are mainly based on regulatory and participative approaches, although market-based instruments are increasingly in the focus of attention. They can either work top-down or bottom-up. Global management strategies include all regulatory, participatory and market-based measures that are developed, adopted and enforced by the international community and that address marine litter across all

governance levels. In contrast to this, local management strategies involve activities conducted by both state and non-state actors in a given local context and regulations that, even if not necessarily limited to this, enforce global requirements on a sub-/national level.

Marine litter is part of the greater regulatory context of marine pollution and environmental law that only recently emerged as an issue requiring focused regulation (Stöfen-O'Brien, 2015). The regulatory framework comprises both soft law (non-binding arrangements between parties) and hard law (legally-binding contracts with compulsory requirements) to address marine pollution. Up to now, the framework for land-based sources is less rigid because it is not legally binding. Since there is a plethora of regulatory instruments, some of these are profiled below for the purposes of illustration (for an overview see Gold *et al.* (2013), WBGU (2013), Chen (2015), Vince and Hardesty (2016), Simon and Schulte (2017)).

The first negotiations date back to the early 1970s and initially addressed sea-based sources since the shipping and fishing industries were regarded as the main polluters. The London Convention of 1972 was the first international agreement on waste entering the marine environment and aimed to ban at-sea disposal, dumping from ships and offshore activities (IMO, 2017). It initially allowed some dumping until it was amended by the much stricter and wider-reaching London Protocol in 1996 (enforced in 2006), which prohibits all dumping of waste except for materials on a 'reverse list' (IMO, 2017). To date there are 48 parties to the Protocol (IMO, 2017). The International Convention for the Prevention of Pollution from Ships (MARPOL) adopted in 1973 is the main international convention to address sea-based pollution. MARPOL's Annex V, revised in 2011 and enforced in 2013, bans the disposal of refuse at sea and explicitly focuses on plastics. The United Nations Convention on the Law of the Sea (UNCLOS) shaped modern law of the seas and established a comprehensive regime governing all aspects of the oceans (Stöfen-O'Brien, 2015). In a rather broad fashion, UNCLOS calls on countries to protect and preserve the marine environment, and obliges them to take sea-based and land-based pollution into account (Simon and Schulte, 2015: 25). Even though it covers land-based sources, it leaves management of it up to domestic regulations

The Regional Seas Programme (RSP) acts as an umbrella for several multilateral agreements covering a total of 18 regional areas. Regional action plans address the particular environmental characteristics and restoration needs of the region. All the programmes have action plans and some have also established more meaningful standards, with conventions that are in part even supplemented by protocols on specific topics. Thus programmes differ with regard to their legal strength (Simon and Schulte, 2017). Two examples of legally binding conventions are OSPAR (North East Atlantic) and HELSINKI (Baltic Sea), which is one of the first incorporated sea-based and land-based action plans. The former gained some attention for its Fishing for Litter initiative. However, in most conventions plastic only plays a minor role and is often not specifically mentioned (Simon and Schulte, 2017: 29).

The most relevant instrument for tackling marine debris in the EU is the Marine Strategy Framework Directive (MSFD) (EU, 2008). It is an integral policy instrument for the protection of the marine environment and the first core directive that aims to address marine litter directly. The directive sets out a framework within which all member states shall take

action to achieve or maintain a Good Environmental Status (GES) by 2020. Here, marine litter is one of the descriptors for GES, which requires that “*properties and quantities of marine litter do not cause harm to the coastal and marine environment*” (EU, 2008). Furthermore, the EU addresses plastics through its Green Paper (2013) and the Action Plan for a Circular Economy (2015).

Along the lines, numerous voluntary agreements exist such as the Honolulu Strategy and the Global Programme of Action. The Honolulu Strategy is a voluntary framework of possible actions to combat marine litter. It was formulated by multi-stakeholder involvement on the fringes of the Fifth Marine Debris Conference 2011. It has set three overarching goals to combat marine debris that are accomplished by strategies and actions, and thus serves as a practical reference for parties to take action (UNEP/NOAA, 2011; Chen, 2015; Simon and Schulte, 2017). The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) aims to prevent degradation of the marine environment by land-based activities. It primarily addresses waste management strategies, including improved waste collection, recycling and an overall reduction in solid waste generation. It specifically names plastics as a form of waste that harms the marine environment, but at the moment lacks compliance mechanisms and funding (Simon and Schulte, 2017: 28).

Finally, the Sustainable Development Goals (SDGs) are the latest and perhaps most all-embracing framework to address plastics in general and marine plastic pollution in particular through Goal 11 (sustainable cities and communities), 12 (responsible consumption and production) and 14 (life below water).

This listing might create the impression of discontinuous management strategies. But this impression is deceptive. Many management strategies are closely intertwined which can be briefly illustrated by the example of the Regional Seas Programme.

The Regional Seas Programme (RSP) is one approach to transfer the universalistic norms and rules by UNCLOS into regional treaties. Therefore, the regional programmes develop action plans and adopt conventions. The programme as part of UNEP is thus linked to other UNEP activities. For instance, several RSP are closely connected to the Global Program of Action (GPA) when it comes to land-based pollution, as the conventions and protocols contribute to achieving the overall objectives of GPA (Simon and Schulte, 2017: 28). Additionally, UNEP RSP and GPA have embarked on the development of a Global Initiative on Marine Litter (Chen, 2015). Furthermore, the Global Partnership on Marine Litter supports the different Regional Seas Programs by implementing the Honolulu Strategy, which are both in turn a result of joint efforts by multiple organizations of all levels.

Moreover, the UNEP Regional Seas Program itself stands for inter- and intraregional linked strategies since it serves as an umbrella for about fifty international treaties and today includes 18 regions and more than 143 countries. Regional collaboration between the different programs exists, but so far is rather an exception than the rule (WBGU, 2013). However, a good example is the collaboration between OSPAR (North East Atlantic) and HELCOM (Baltic Sea) regarding the development of harmonized monitoring indicators. Furthermore,

the regional programs or conventions respectively are interlinked via other supranational frameworks such as the EU Marine Strategy Framework Directive (MSFD). In fact, OSPAR, HELCOM and UNEP/MAP (Mediterranean Sea) all contribute to the development of MSFD Good Environmental Status (GES) descriptors for example by bringing baseline studies and indicators into accord.

The previous section reveals that the regulatory framework is both scattered and closely linked, with some emphasising ‘a patchwork of conventions’ in the former case and in the latter ‘an overlap of competences’ (Gold *et al.*, 2013; Stöfen-O’Brien, 2015). Furthermore, it highlights some loopholes. None of the existing instruments have so far been able to effectively tackle the problem. Gold *et al.* (2013), Chen (2015) and Simon and Schulte (2017) list numerous reasons for this:

Limits in addressing land-based sources

- Insufficient coverage of land-based sources in international agreements.
- Instruments that do include land-based sources are voluntary parts of binding conventions or limited in scope, UNCLOS for example simply requests member parties to address marine litter through domestic regulations

Insufficient enforcement mechanisms

- Although annexes to protocols can be legally binding, parties to a convention are often allowed to pick and choose which annexes they want to sign, *e.g.* UNCLOS is not ratified by all, the US being the most prominent example, several parties to MARPOL have not ratified Annex V, and the legally-binding London Protocol so far only counts 48 members.

Non-compliance

- Sanctions in case of violation are frequently missing
- If penalties are included, they often do not sufficiently deter unlawful behaviour
- Imposition is often left to member parties and does thus hardly ever happen, and if so, vague language leaves a lot of room for interpretation, *e.g.* MARPOL and UNCLOS
- To enforce obligation, parties often have to overcome high thresholds. Under UNCLOS, for instance, the violator must be witnessed by a state, which is extremely difficult without a tracking system.
- Opt-outs and exemptions impede the monitoring of compliance, *e.g.* MARPOL and UNCLOS exempts incidental losses of waste and MARPOL exempts most fishing vessels from reporting in the Garbage Record Book (GRB). If vessels do report, it is far from easy to prove if the information given in the GRB is truthful.

Divergent legal foundations

- Some regional seas programmes have created more meaningful, enforceable standards than others. Thus, some regions lag far behind others.

3. The way forward

Taking these shortcomings as a starting point, Gold *et al.* (2013), Chen (2015) and recently Simon and Schulte (2017) argue for a new convention. The idea behind is, to address plastic pollution in a comprehensive way; a standalone agreement that supports an effective governance stemming the tide of plastic marine litter. The suggestions by the various authors point in the same direction, and hence most core elements overlap. However, each proposal emphasizes its own foci. Furthermore, the proposals differ regarding their detailedness: while Simon and Schulte (2017) focus on presenting the core elements, Gold *et al.* (2013) sketch out a new treaty as part of a Top 10 list of preventive actions. Aside from that, Simon and Schulte also critically discuss some suggestions by Gold *et al.* (2013) and Chen (2015) the key elements of which are: the legally-binding nature of agreements reflected in a binding goal, a combination of top-down (binding goal) and bottom-up (national toolbox, meaningful stakeholder participation) approaches, the emphasis on land-based plastic pollution along with enforceable standards, strengthened compliance mechanisms.

Against the backdrop of current international policy, two aspects are controversially discussed in this context: Firstly, there is the question of the starting point. Is it preferable to create a new convention from scratch or to amend an existing agreement. Secondly, the design and the issue of binding or non-binding goals have to be decided upon. With respect to the first point, to amend conventions seems at first glance less costly. Conventions that come to mind are for example the Basel Convention on hazardous waste or the Convention on Biological Diversity. But there is a high risk to end up with another piecemeal solution. In contrast, a new convention supports a comprehensive approach but might end in talk only. With respect to the second point, the lack of enforceable standards and compliance is regarded as a major drawback, thus, there are good reasons for binding goals. On the other hand, a binding goal might fall short of expectations due to consensual decision-making. Although all points are justly made, the current attempt favours a standalone solution focusing on plastic waste management within national jurisdictions and targeting a binding goal (Simon and Schulte, 2017: 32).

In the light of recently observed discussions, the proposal gave new impetus to the debate on an update of the marine litter governance framework. The idea of a standalone solution gained momentum, outpaced the somewhat 'idealistic connotation', and thus became a serious object of negotiations. Accordingly, it has been taken up by the UN Environment Assembly. Albeit, there it has to compete with other (broader) suggestions that were for example made the German Advisory Council on Global Change favouring a holistic, systematic ocean governance over strengthening sectoral governance (WBGU, 2013). For the time being, given the long time required to reach and implement a new convention, Gold *et al.* (2013), Chen (2015) and Simon and Schulte (2017) recommend to adjust the existing management strategies as well as possible in order to close some of the loopholes.

4. Conclusion

To sum up, various state and non-state actors engage to combat marine litter. They share in some way or another, the perception that marine litter needs to be addressed by global collective action. Yet, the sharing of responsibilities among the groups remains to be negotiated. Along the same lines, there is a general agreement on possible management strategies, but striving for the best possible means remains a difficult endeavour. Furthermore it is still open who will bear the costs of collective decisions. Here, the capability of actors and the scope for possible actions to combat plastic pollution will play a key role in negotiations. At the same time, the regulatory framework has several shortcomings and loopholes and, as argued by various actors, will never be capable to address marine litter properly. Recommendations on how to enhance governance are at hand. They propose encouraged polycentric governance, experimentation and mutual learning from experience with diverse policies. Though, it remains to be seen, to what extent these efforts are capable to establish effective governance.

Taking the ‘stocktaking’ as a starting point, I will consider *inter alia* following aspects in my PhD-Thesis:

- Reciprocal influence of global and local management strategies
- Linkages of discourses that are taking place among actors and across scales
- Formal and informal relationships of power
- Characteristics of governmental challenges regarding marine litter
- Prerequisites for stable collaborative arrangements

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