Plastik in der Umwelt

Quellen · Senken · Lösungsansätze

The Transnational Governance of Plastics

Actors, Structures and Processes

Anja P. Jakobi, Bastian Loges & Denise Päthe

Chair of International Relations

Institute for the Social Sciences

TU Braunschweig

REPLAWA Reduction of the Input of Plastics via Wastewater into the Aquatic Environment

Authors

Anja P. Jakobi, TU Braunschweig

Bastian Loges, TU Braunschweig

Denise Päthe, TU Braunschweig

Acknowledgments & Disclaimer

Table of Contents

List of Tables

List of Boxes

List of Abbreviations

CCOA	Commonwealth Clean Ocean Alliance
ECHA	European Chemicals Agency
EC	European Commission
EU	European Union
G7	Group of Seven
GPA	Global Plastics Alliance
IO	International Organization
IR	International Relations
MARPOL	International Convention for the Prevention of Pollution from Ships
NGO	Non-governmental Organization
PLASTICS	Plastics Industry Association
UN	United Nations
UNCLOS	United Nations Convention on the Law of Sea
UNEA	United Nations Environment Assembly
UNEP	United Nations Environment Programme
WTO	World Trade Organization

Abstract

Plastic and its daily use have emerged as a contested topic due to its impact on the environment and on disposal systems, as well as to other consumer concerns. Regulation and standardization in this field are of high technical relevance, while little research exists in International Relations (and Political Science) that analyzes the specific actors, structures and processes involved in these diverse regulatory activities. This paper provides a framework for such an analysis: In a first step, we present the complexity of problems linked to plastic and its transnational governance. In a second step, we present actors and contexts of current governance efforts, identifying plastics governance as a field in which a multitude of regulatory processes can be found, but less so specific governance outcomes. Given the lack of overarching and comprehensive regulations on plastics, we elaborate in a third step on the different processes of current cooperation and conflict in plastics governance. Finally, we summarize the current state of governance in this field and outline different research strands in IR to which research results on plastics governance can contribute.

1   Introduction

How is plastic governed as part of international, national and transnational regulations? For around a century, the existence of plastic was a welcomed development, enabling new applications in consumption, production and many other sectors: Plastic supported hygiene in medicinal contexts and in food packaging, and it also cheaply replaced wood, ceramics and many other, traditional materials. In this time, the governance of plastic was mainly focused on ensuring the supply of plastic products, their non-toxicity as well as adequate disposal. The salience of these elements differs: Health concerns were raised as part of plastics governance, focusing on the impact of some plastic products on humans. The issue of growing pollution, caused by the longevity and visibility of plastic on land and sea, is based on activism, on the one hand, against the proliferating use of plastic, but also, on the other hand, on disposal problems, linking growing manufacturing and consumption to long term problems on a global scale and with regard to different aspects.

At the same time, the governance of plastics is not only a theoretical problem, but it also has important policy implications. It is a highly complex issue area, as the use of plastics is deeply interlinked with daily activities and lifestyles worldwide. Many consumers remain unaware of the different sorts of plastics, their necessity and their possible substitutions, so there is a large degree of technical knowledge needed to reduce plastic consumption. Disposal systems are rarely the subject of wide-ranging public debates and seldom provoke much interest. At the same time, environmental damage – usually exemplified with pictures of damaged marine environments and animals injured by or entangled in plastic products – is becoming increasingly visible, increasing the emotional engagement of consumers and activists.

In light of the negative effects of plastic consumption, especially its contribution to growing pollution, states, international organizations and different non-state actors (defined as civil society, non-profit actors, business actors, associations and the like) today debate the proper production, use and disposal of plastic products. These debates are highly fragmented, since not only do countries

and groups of actors differ, but also the manifold applications of plastics, the problematization linked to plastics, as well as possible policy solutions. This paper outlines the central actors, structures and processes related to the governance of plastics, including accompanying elements of cooperation and conflict. Governing plastics includes a diverse range of standards and laws that range from prohibiting specific applications to restricting import of plastic waste, to regulating disposal and campaigning for consumer awareness. Such governance includes plastics producing companies, companies linked to waste management but also environmental activists and proponents of an alternative lifestyle. Taken together, governing plastics represents a prime example for the complexity of current transnational governance. Such a perspective – closely linked to debates on global governance (e.g. Zürn, 2013) – highlights the fragmentation of plastics governance that has resulted from functional, political, economic and societal causes. As Peter Dauvergne notes with regard to plastics:

> "Governance is fragmented across jurisdictions, sectors, and product lines. There is little policy coordination across states, with international institutions functioning as little more than dialogue forums. National and subnational policies are highly uneven, with loopholes and erratic implementation. Standards are inconsistent and systemic illegalities are common across much of the world" (Dauvergne, 2018b, p. 22).

In order to systematically map this terrain, the following section outlines the specificities of plastics, its problematization and possible demands on its transnational governance. In a second step, we outline the variety of actors that engage in regulatory action regarding plastic pollution and summarize structural factors that constitute multiple contexts as a background for these activities. In a third step, we distinguish between cooperative and conflictive elements of plastics governance. While cooperation in the field results in a number of different initiatives that also include regulation, norm entrepreneurship and network-building, conflicts materialize in contestation regarding measures and interests, but also differing values. We conclude with a summary and an outlook to central research questions.

2 The Global "Plastic Problem"

The complexity of plastic regulation starts with definitional issues, which ultimately have important practical implications: From a perspective of materials science, the term 'plastic' is misleading, and the more accurate word would be 'polymer.' This term indicates that a wide range of specific materials with quite different qualities and characteristics are subsumed under the umbrella of 'plastic,' including polyamides, polyethylene, polypropylenes and many others (UNEP, 2015, p. 13). Some producers combine these different polymers, with the intention of combining positive properties of different individual substances, into one product, which in turn creates a fundamental problem for appropriate recycling (Dauvergne, 2018b, p. 24). Questions of definition thus directly impact regulatory requirements. The variety of materials – and the complexity of regulation – has become broader with the innovation of biodegradable plastics, which has created more problems for regulation when a special treatment of these materials is considered. Such plastics degrade under specific conditions of warmth and moisture, but these conditions are often not met in the cold waters of the oceans, where most plastics end up (UNEP, 2018b, p. 8). In this regard, not only is defining "biodegradable" a demanding task, but international standardization is largely missing for these new materials. Also, still in debate is whether these plastics are safe to use or toxic for the ecosystem and human body (McDevitt et al., 2017, p. 6614; Rochman et al., 2015, p. 10760).

Aside from the material aspects of plastics, a basic concern is their ubiquity: Plastics appear virtually everywhere – purposely as a material of most handy products, but also unintentionally as waste on land or as litter in aquatic systems from rivers to oceans. From the first production of plastic in the 1930s to the 400 million metric tons of plastic produced in 2018, plastic has become a highly successful but also problematic product (Dauvergne, 2018b, p. 24). There is essentially no area or place in the globalized world where plastic is absent. Yet, there are international and regional differences and shifts in the production and consumption of plastics: Whereas US-Americans consume plastic products more than other populations, globally speaking (followed by European and Japanese consumers), China has recently advanced to become the biggest producing country in the plastic market. Its share of the global plastic production reached 28 percent

in 2016 (Dauvergne, 2018b, p. 24). Yet, plastic producers are still increasing their output by 40 percent due to new manufacturing plants (Taylor, 2017).

These figures regarding plastic production and use can only be approximations, since assessing international shares is difficult. Estimates suggest that, of all plastics used worldwide, less than 10 percent is recycled, around 12 percent incinerated, and almost 80 percent is disposed in landfills or the natural environment (Geyer, Jambeck, & Law, 2017, p. 1). From open landfills in coastal regions and other places of disposal, plastics often find their way into aquatic environments, like freshwater or marine ecosystems: "A recent report calculated that the introduction of plastic into our oceans is increasing at an alarming rate, with 4.8−12.7 million metric tons of mismanaged plastic waste entering in 2010 and 10 times that amount projected by 2025" (McDevitt et al., 2017, p. 6612; see also Vince & Hardesty, 2016, p. 1). Supporting this alarming trend are the 2017 findings from the annual International Coastal Cleanup Day, organized by the US-based Ocean Conservancy. Collecting waste at the coasts, the organizations found that all top ten items collected were made of plastic (Ocean Conservancy, 2018).

International studies show that sources of pollution are unevenly distributed worldwide: In recent years, Asia has become the most severe source of marine plastic litter. Numbers indicate that 60 percent of global plastic pollution comes from five Asian countries alone: China, Vietnam, Thailand, the Philippines and Indonesia. In addition, India has also been found to contribute massively (Dauvergne, 2018b, p. 25; UNEP, 2018a, p. 4). The reasons for Asia's leading position are manifold: The economic boost from the last years has led to an increase in the consumption of plastics that have not been matched by recycling systems to properly collect all these items, of which most are packaging materials. The spread of open landfills in Asia has increased this problem. Furthermore, importing plastic waste from the Global North has significantly added to the amount of plastic in the region, especially in China (Dauvergne, 2018b, p. 25). Despite these regional numbers, plastic pollution nonetheless constitutes a global problem, since "(Micro)plastic particles do not respect political frontiers and, thus, accumulate in interregional waterbodies. For this reason, the need to treat this emerging environmental issue in an international context is increasing" (Brennholt, Heß, & Reifferscheid, 2018, p. 268).

Generally, plastic pollution takes different forms, but the basic distinction is between 'microplastics' and 'macroplastics.' Microplastic is usually defined as plastic products smaller than 5 mm, while macroplastic is technically larger and thus constitutes a wide range of products, from plastic bags to huge fishery nets or plastic containers (Xanthos & Walker, 2017, p. 18). An important relation between both categories is that, through degradation, macroplastics may ultimately end up as microplastics. Such microplastic is commonly characterized as "secondary microplastic," or microplastics produced in larger form that slowly degenerated into smaller pieces (Dauvergne, 2018b, p. 23). Secondary microplastic can be the result of a littered plastic bag in the ocean that decomposed due to the tide, but it can also come from the abrasion of tires or from the fibers of synthetic-based clothes. On the other hand, "primary microplastic" is a specific form of plastic specially manufactured to be tiny. It is used in cosmetics or as pellets in a variety of production processes (UNEP, 2016, p. 41; Xanthos & Walker, 2017, p. 18). Due to insufficient disposal systems, any plastic product can potentially end in aquatic systems. There, due to its very high durability and slow decomposition over centuries, especially in cold and dark waters, it can constitute a particular threat to the ecosystem (Dauvergne, 2018b, p. 23). But apart from larger plastic pieces found on shorelines or in gigantic gyres, it has become apparent that a specific form of microplastic, so-called microbeads used in cosmetics, constitutes a danger for the whole ecosystem. Studies on the Great Lakes of North America have found that microbeads are responsible for one-fifth of all microplastic pollution in the lake. Moreover, microbeads have been documented in aquatic systems all over the world (Eriksen et al., 2013; Lusher, 2015, p. 261). Also, another form of microplastic adds to this growing pollution: Plastic microfibers that wash out from synthetic clothes pose a particular problem since the wastewater treatment systems lack filters to capture them, thus releasing them back into the waterways (Browne, 2015, pp. 234 - 238).

The long-term consequences of plastic pollution are severe and constitute potential harm to animals as well as to humans. Since plastic interacts with ecosystems, flora and fauna are affected and at times even damaged, as many studies have shown (for an overview see Xanthos & Walker, 2017, p. 18). Different studies have concluded that microplastic not only litters aquatic systems but also

harms fish, corals, seabirds, zooplankton and other creatures. Microplastics may be "ingested by a range of organisms including commercially important fish and shellfish and in some populations the incidence of ingestion is extensive. Laboratory studies indicate that ingestion could cause harmful toxicological and/or physical effects" (Thompson, 2015, p. 185). Other studies suggest a realistic concern that microplastic will enter the food chain since it can be found in seafood but also in a wide array of products, from honey to beer (Kramm & Völker, 2018, p. 229). This problem has exacerbated, with now even smaller plastic pieces, so-called nanoplastics, that can even pass cell walls (Dauvergne, 2018a, p. 5). Also, the findings for chemical additives in plastic are alarming: In a test on water in plastic bottles from different brands, 90 percent show signs of chemical contamination. Moreover, 83 percent of tested samples of tap water contain plastic microfibers. Also, these substances can affect the human body. Studies found that 95 percent of all tested adults had chemical components of plastic in their urine, which can do harm since many of them "are suspected to be carcinogenic or to have hormone-disrupting properties" (Vidal, 2018). While these direct impacts from plastic products are often debated in the literature, less can be found on how specifically plastic waste impacts the use of water, including recreational use. Pictures of beaches and islands covered in plastics are widely shared. There are some reports that, while the tourism industry is one cause of their pollution, it can also be a solution, as concerned guests may push some tour operators to more restrictive policies on plastics (UN Environment Assembly Campaign, 2019).

Bringing these aspects together shows that the 'plastics problem' consists of a variety of direct and indirect consequences of plastic usage: Direct, local problems are environmental pollution due to plastic's ubiquity, caused by both a growing use as well as a lack of adequate waste treatment and recycling. Potential health risks emanate from plastic use in case of toxic or otherwise health-impairing properties. Direct consequences vary significantly across countries, depending on the prevalence of its use, its waste treatment, and the regulation of health risks. Indirect, transnational consequences stem from plastic's impact on the habitat, with global, transborder consequences: It affects fauna and flora, in particular in the marine environment, and plastic can enter the human body through the food

chain. Other, more indirect, and rarely discussed consequence might the impact of plastics on the recreational use of water, including tourism.

Box 1. Local and Transnational Effects Linked to Plastics

Local effects	Local environmental pollution due to amount of plastics, due to inadequate treatment/recycling
	Health risks during usage due to chemicals from plastic
Transnational effects	Plastic contamination of global habitat, e.g.:
	• Impact on fauna and flora, particulary marine environment
	• Impact on food chain
	• Impact on the use of water, incl. recreational use/tourism

Source: Authors

Regulating plastics thus faces difficulties that are political as well as technical, resulting from the material's characteristics, its national and international use and cross-border impacts on ecosystems. Different regulatory preconditions, levels and contexts, the multitude of different actors and interests complicate decision-making. The remainder of this paper focuses on questions of cooperation and conflict in regulatory activities, showing which actors, structures and processes contribute to the transnational governance of the emerging global plastic problem, as well as how they contribute.

3   Actors and Contexts in Global Plastic Governance

Global governance efforts are based on different actors, and they develop against different backgrounds and perspectives. Given the recent emergence of plastics on the global agenda, neither the design nor the effects of governance structures have been analyzed in-depth. Moreover, the complexity of the 'plastic problem' results in different contexts of plastics governance and different possible regulatory initiatives. With a view to actors, plastics governance is transnational, engaging

state and non-state actors across borders and on different levels. A first assessment of plastics governance thus requires a more detailed picture of relevant actors and contexts.

3.1   Actors Linked to Global Plastics Governance

The first type of actors are governmental actors like states and state associations, including IOs, unions of states and networks. From a perspective of regulation, states are central since they are the only actors that can enact binding legislation, like bans or taxations on plastic or plastic products. In principal, prohibitions may concern plastic products (single-use plastics like straws) or the plastic used in products (microbeads in cosmetics). Adding to national efforts, states also cooperate at the international level, although plastic regulation at the global level is strikingly absent. Only recently has the United Nations Environmental Program (UNEP) become the central international forum to address plastic pollution. Acting rather as orchestrators (Abbott, Genschel, Snidal, & Zangl, 2015) than effective legislators, international organizations have established mainly networks and campaigns aiming at different actors. But, more informally and regionally restricted, states with common interests have begun to build networks or craft international agreements, as the G7 or the Commonwealth have done.

A second type of relevant actors for plastics governance are those from the business sector. Business actors are often the addressees of governance efforts, but sometimes they also take an active part in them. This includes setting up voluntary commitments, but also framing accountability in their own terms. As nearly every industry is linked to plastic or plastic products, many companies are either the cause of plastic pollution or otherwise affected by it. Basically, one can distinguish between those businesses that produce plastics and those that use plastic for packaging or as a product, and this differentiation indicates different interests in regulation. For instance, producers of plastic emphasize the utility of plastics and emphasize all their benefits, for example the packaging that makes global trade much more efficient and convenient. Thus, they engage in initiatives that focus on mitigating and removing plastic waste, not so much on preventing its use. Often, they aim at learning processes and the development of best practices.

For example, the US-American Plastics Industry Association (PLASTICS, formerly SPI), which represents companies in the entire plastic industry supply chain, engages in Operation Clean Sweep to reduce losses of plastic particles in production processes (Plastics Industry Association, 2018a). Regarding specific topics, business actors frequently focus on questions of litter, but do not necessarily debate broader environmental concerns. For instance, PlasticsEurope, the European Association of plastic producers, assembles roughly 100 members that produce more than 90 percent of the plastics in EU member states and other European countries. They regularly organize events on waste management, including litter in oceans (PlasticsEurope, 2018b).

The third category of actors linked to plastics governance are members from civil society who consider themselves to be advocates who raise awareness for the problems of plastic pollution. Organizations in the field range from large environmental NGOs like Greenpeace to newly founded networks and movements like Break Free From Plastic or the Plastic Pollution Coalition, which bring together diverse civil society and grassroots organizations to increase the transfer of knowledge and raise public attention. Their strategies include large campaigns that use social media, such as Facebook, Twitter or Instagram. For example, Greenpeace uses its cleanup campaigns to collect data on the nature and origin of plastic waste to thus put pressure on the plastic-using industry (Greenpeace, 2018). But initiatives that address consumers and their behavior are also very common, aiming to raise awareness and restrict the use of plastic products. In addition to campaigning to consumers and blaming the plastic industry, NGOs also lobby at different levels in order to further political debate or to initiate tougher regulation. For instance, the small '5 Gyres Institute' – a NGO which frames plastic pollution as a global health problem – now has a special consultative status with the United Nations to foster the international standardization of plastic pollution (5 Gyres Institute, 2018).

Table 1. Actors and Initiatives Regarding Global Plastics Governance

Types of Actors	Examples	Initiatives
Governmental Actors		
- States	Regulatory activities	Environmental standards, bans, taxes (exist worldwide)
- Network of States	G7, Commonwealth	Ocean Plastic Charter; Commonwealth Clean Ocean Alliance
- Regional Governmental Organizations	EU	EU Strategy for Plastic in the Circular Economy
- Global Governmental Organizations	UN, UNEP, World Bank	Sustainable Development Goals; Global Partnership of Marine Litter; Clean Seas Campaign; PROBLUE fund
Business Actors		
- Individual Companies	Coca Cola, Starbucks, McDonalds, Colgate-Palmolive, Unilever, Johnson & Johnson	Corporate campaigns to communicate intention of plastic reduction, better recycling etc.
- Business Associations	World Plastic Council, Plastic Europe, PLASTICS, Cosmetics Europe	Advocacy and campaigning like "Declaration of the Global Plastics Associations for Solutions on Marine Litter" or "This is plastic"
Civil Society Actors		
- Environmental NGOs	Greenpeace	Both types: Advocacy and campaigns, addressing consumers, political and business actors; local activities like ocean clean-ups
- Anti-Plastic Networks or Movements	Break free from Plastic, Plastic Pollution Coalition	

Source: Authors

In sum, plastics governance assembles a similar large number of actors and divergent interests, as many other attempts of global governance do. Their number and diversity might even increase if regulatory efforts affect a growing number of diverse policy fields, possibly leading to different regime complexes forming around plastics governance. This complexity of plastics governance also becomes visible with regard to the diversity of contexts to which it relates.

3.2   Contexts of Global Plastics Governance

Political factors are an important – though not only – determinant of how plastics governance is addressed. The likelihood of engaging in political activism is foremost dependent on the political system, which may or may not provide "political opportunity structures" for plastics governance (McAdam, McCarthy, & Zald, 1996; Stroup & Murdie, 2012). These opportunity structures not only differ among democratic political systems, but also in comparison with authoritarian systems, where civil society activism is sometimes restricted (Cavatorta, 2013). Moreover, environmental activism has been institutionalized within societies quite differently, creating path dependencies. This enables a range of different possible activities, based on whether awareness for environmental concerns has been long-existent or whether there have been more recent, path-breaking, initiatives in those countries that traditionally subordinate environmental concerns to other societal needs. Studies on transnational movements also show that environmental activism at the global scale is linked to heated debates between the Global North and the Global South: Since many Southern governments have argued that environmental ideas from the industrialized countries may hinder their own economic development, the formation of civil society groups has evolved slowly and their number is limited in comparison to Northern activism. The frame of "sustainability" has unified aspects of economic development and environmental protection, enabling global, transnational activism (Gupta, 2012; Joshi, 2014).

Legal contexts include the existent and envisaged regulation on the international, regional and national level. Regulations relevant for plastics governance are usually not established on the global level, nor do they directly address plastics governance (Brennholt et al., 2018, p. 242). Instead, legislation

at the national level exists, of which some specifically regulates the use of plastics and plastic products. Microbeads that have been banned in some countries, as well as plastic bags and single-use plastic, are increasingly regulated in all regions of the world. Yet, regions differ with regard to the instruments used: While regulation on plastic bags in Africa is largely based on bans, European governments tend to apply economic instruments and especially public private agreements, a form of plastic regulation which is only found in Europe (UNEP, 2018a, pp. 23-26).

Global plastics governance still lacks a nucleus in legal terms, for example for a comprehensive international convention on plastics, since the gap between the existing agreements hinders an appropriate regulation (Raubenheimer, McIlgorm, & Oral, 2018; Simon et al., 2018). So far, the international legal context for plastics governance includes a regime complex of different agreements, mainly on marine pollution but also on hazardous chemicals. Among them are the United Nations Convention on the Law of the Seas (UNCLOS), the International Convention for the Prevention of Pollution from Ships (MARPOL) and the Convention on the Prevention of Marine Pollution by Dumping of Waste and other matter (London Convention). All of these are legally binding but lack a focus on plastics. The international legal background is added by different regional conventions on marine littering and non-binding frameworks coming from the Sustainable Development Agenda or the Honolulu Strategy, both of which aim to reduce marine debris and foster international cooperation in this area (Simon et al., 2018, pp. 18-20; UNEP, 2016, pp. 8-18).

Regulatory activities vary along institutional settings and along different levels: Different policy foci in international organizations, their bureaucracies and procedures, but also national institutions and their regulatory approaches each form an important context for plastics governance. How such structures influence organizational behavior, enable specific political solutions and preclude others has often been analyzed in literature, most recently in studies on institutional logics and organizational ecologies (Abbott, Green, & Keohane, 2016; Thornton, Ocasio, & Lounsbury, 2012). This variance not only concerns plastics, but environmental politics more generally: As there is no global environmental organization which deals with different environmental problems and centralizes solutions (Biermann & Bauer, 2005), sectoral approaches to regulation have characterized the field and

led to a fragmented landscape of regime complexes (Faude & Gehring, 2017; Raustiala & Victor, 2004). The single global institution in environmental politics, UNEP, represents merely a forum for exchange and the production of knowledge. Its programmatic, rather than operational, character is underlined by its mandate with a focus on monitoring, standard-setting, coordination and support for national policies and institutions (Ivanoca, 2009, p. 154). With regard to plastic, UNEP and especially the United Nations Environmental Assembly (UNEA) have recently made recommendations to initiate a broader debate within the global realm, although with lacking tangible outcomes (Simon et al., 2018, p. 25). Organizational structures, specifically the international division of labor between sectoral UN agencies and bodies, their specific voting procedures but also their agenda setting capacity, thus highly affect and fragment plastics governance. In contrast to the UN, the European Union has more capacities to set agendas on plastics. Based on a highly formalized system, the European Commission started a first effort to regulate plastics, to be coordinated with the European Parliament, the Council and EU member states (European Commission, 2018b). Despite such central coordination, however, national bureaucratic structures and logics still shape the regulatory action, and the division of labor among different ministries makes comprehensive regulation in plastic affairs a demanding endeavor. For instance, in Germany waste and packaging are a subject for the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, while the Federal Ministry of Food and Agriculture is responsible for topics of hygiene, and finally, regulations targeting automobile tires are under the auspices of the Federal Ministry of Transport and Digital Infrastructure (BMEL, 2019; BMU, 2019; BMVI, 2019).

Adding to the complexity of political and legal backgrounds, economic conditions influence the production, consumption and regulation of plastics. International markets for plastic materials and products have increased significantly in the last decades, and numbers indicate that these markets will grow further in the coming years (Plastics Industry Association, 2018b; PlasticsEurope, 2018a). However, relevant regional differences regarding the production and consumption of plastics are becoming apparent. While North America, Northern Europe and China are the largest markets for producing and consuming plastics, the plastic use per capita varies largely. China's numbers result from its huge

population, whereas North America and Western Europe have a very high per capita plastic use (Ryberg, Laurent, & Hauschild, 2018, p. 29). Another feature of an increasing globalized market in plastics is the trade with plastic waste, which is internationally termed as a trade in resources. For some time, Asian companies, especially from China, bought used plastics worldwide in order to recycle them. In 2012, China imported plastic waste worth 505 million US Dollars from the US alone (O'Neill, 2018, p. 87). On the other hand, plastic pollution can also be framed as a problem in economic terms, indicating the expanding costs related to plastics in general (Newman, Watkins, Farmer, Brink, & Schweitzer, 2015). These numbers can affect the inclination to engage in specific regulatory activism or not. Plastics governance is thus highly dependent on the economic significance of plastics in general, as well as the economic possibilities and alternatives that are available in a given country.

Table 2. Contexts of Plastic Governance

Type of Context	Effects of Context	Implications for Governance
Political	Differences in environmental activism; different political systems and preferences for specific regulations, instruments and actors	Globally divergent reactions regarding plastic problems
Legal	Restricted to regulation with regard to marine litter or hazardous chemicals, no specific focus on plastic yet	Specific international agreements (UNCLOS, MARPOL, London Convention, Different regional conventions); National legislation on waste, chemicals etc.
Institutional/Bureaucratic/ Organizational	Division of labor among different IOs in the field of environmental governance; Specific agenda-setting processes and/or voting procedures within IOs	UNEP initiatives; Debates within the UN Environmental Assembly; EU-agenda setting by the Commission
Economic	Global market for plastic material and products, but also plastic waste (as a resource)	Patterns of specific trade relations at the global level; Growing international interdependencies culminating in a global plastic economy
Scientific/Professional/ Technological	Fragmented procedures and methods to scientifically grasp the impact of plastic pollution; Technological differences in waste (water) management	Still no robust causal knowledge about the effects of plastic pollution; gaps in the translation of knowledge from one discipline to another – but also from one country to another

Source: Authors

The question of alternatives for plastics is also a scientific and technological one and forms a further context of plastics governance. Research on the characteristics or fate and behavior of plastics in the environment, the toxicity of microplastic but also the quantities of plastic pollution is still evolving. Lacking information is also the result of different disciplines involved in interdisciplinary research on plastics and problems associated with translating results from one discipline to another. One prerequisite for appropriate regulation is proper knowledge about the object of regulation, particularly in complex matters where ecological systems and regulatory logics interfere. From a perspective on regulation, this adds to insights from the growing literature on professionalism and its significance for the ways which issues become transnationally discussed and ultimately regulated in a very specific form (Henriksen & Seabrooke, 2015; Seabrooke & Henriksen, 2017). Moreover, it underlines the importance of epistemic communities as a context for proper regulation with effective outcomes (Cross, 2013; Haas, 1992). Table 2 summarizes these different contexts of plastics governance, their effects and implications.

3.3   Plastics and Global Governance

The different actors, but also their relations and the context in which they act, add to the complexity of plastic regulation and governance. Such complexity also results in a magnitude of possible research perspectives, at the most basic level with regard to whether the analytical interest is outcome- or process-focused. Outcome-oriented perspectives emphasize the impact and feasibility of plastics governance, ultimately asking whether governance contributes to solving the underlying environmental problem. Policy-analysis on the global and national level contribute to this task. As empirical results show, there are many anti-plastics activities (Jakobi & Loges, 2019), yet little global regulation emerges from these activities. Moreover, plastics governance suffers from questions regarding the actual problem, contributing to a lack of activity at what are considered later stages of the policy cycle. Scientific evidence on the exact quality and quantity of the plastics problem and its impact has long been subject to discussion. Marine litter is relatively easy to assess, at least at the surface, yet other forms of pollution are less so. Moreover,

impact analyses are often unavailable (Newman et al., 2015, p. 368). The complex behaviors of plastic in the environment over time, but also different disciplines involved in plastics research with their specific language, methods, and assumptions, result in research difficulties. This creates not only obstacles for assessment, but also for assigning responsibility (Dauvergne, 2018b, p. 29). As causal relations are usually needed to direct policy proposals, the myriad of aspects linked to plastic pollution, and the gap in assessments of harms and responsibilities, lead to a reluctant uptake of regulations (Dauvergne, 2018a, p. 6; Stone, 1989). As a consequence, the global governance of plastics is rather patchy, and its overall impact and outcome are hard to analyze as a whole.

In contrast to impact analyses, a process-oriented perspective can focus on the different dimensions of global governance (Zürn, 2013), by which plastics are debated and regulated. Global governance usually addresses global problems, in this case the global pollution by plastics, but analyses vary in their focus on regulations, actors, structures and decision-making processes. This results in a large number of possible objects of analysis: A focus on regulation can target different stages of the life cycle of plastic, distinguishing between sources and pathways of plastic pollution (Browne, 2015, p. 230). Some regulation focuses on specific materials or products, like microbeads, plastic bags, cutlery or straws, and therefore addresses the producers of plastic products and, to a lesser degree, consumers. Regulation targeting the pathways of pollution covers diverse sets of land-based or water-based policies (Brennholt et al., 2018, p. 240), including improved recycling infrastructure and behavior, sewage treatment and innovation in private and public filter systems, but it can also cover clean-up initiatives of littered areas. Not all of these varieties can be applied to all environmental problems, however. For instance, once some areas have been contaminated by microplastic, complete removal is technically impossible (McDevitt et al., 2017, p. 6613). Since the governance of plastic is still evolving, different efforts by various actors in differing formations exist, ranging from individual norm entrepreneurship to advocacy networks that argue for governmental action and hierarchical regulation or for vertical forms of regulation, namely self-regulation and public-private partnerships.

From a rational choice perspective, plastics governance is a likely case for international cooperation, as the problem is global in scope and since shared interests for reducing pollution exist - in particular concerning marine litter affecting multiple countries simultaneously. At the same time, interests can diverge due to the different contexts outlined above, turning plastics governance into a field in which conflict and cooperation co-exist - the institutional complexity and the fragmentation of global plastics governance is one result of this tension. The following sections will analyze lines of cooperation and conflict in more detail.

4 Cooperation in Global Plastic Governance

Different types of cooperation result from the shared interests and problems linked to plastics: We distinguish here three basic forms, namely coordinated regulation, common norm development and informal networks of like-minded actors. Coordinated regulation is usually linked to hard law, and might include enforcement, though other forms exist, too (Abbott & Snidal, 2000). Norm dynamics represent a softer approach to regulation since they aim to adjust behavior to new realities and normative assumptions. Norm entrepreneurs raise awareness and try to reach addressees via persuasion and incentivization (Finnemore & Sikkink, 1998). A third category includes looser initiatives or network-building, none of which necessarily aims to establish strict regulation or behavioral change.

4.1 Coordinated Regulation

International cooperation regarding plastics can result in one of many forms of regulation. Broader definitions of 'regulation' include almost every form of political activity by different actors, while others emphasize state-centered actions, especially with regard to legislation. Narrower definitions focus on bureaucratic and administrative, and less so legislative rule-making (Levi-Faur, 2013, p. 6). In any case, regulation is linked to "issues of control" as part of governance activities (Baldwin, Cave, & Lodge, 2010, p. 12). We here distinguish prohibitions, cost-sharing and taxation as main means of coordinated regulation.

Common prohibitions or international bans of plastic products are one form of international cooperation against plastics – but only few cases exist so far: One of the most prominent is the European Commission's (EC) aim of regulating the handling of single-use plastic for EU member states. Single-use plastic items are a major source of plastic leakage into the ocean, because they are often used outside of households and are difficult to recycle. In reaction to these problems,

the EC will ban plastic in some products via market restriction, for instance cotton buds, cutlery, plates, straws, drink stirrers and sticks for balloons. For all these products, alternatives from alternative materials are affordable and readily available (European Commission, 2018b).

For other plastic products, however, non-plastic alternatives do not exist, which puts the responsibility of producers or traders in the spotlight: For instance, the extended producer responsibility in EU member states obliges producers of single-use plastic items to share the costs of collecting and disposing plastic. This applies, for example, to packaging materials, food containers or lightweight plastic carrier bags. For drinking bottles, every member state has to implement a collection system with a deposit refund scheme (European Commission, 2018a). Other European initiatives focus on innovation based on long-term regulatory plans. For example, the European Commission has adopted a strategy for plastics that is linked to the background of a so-called 'circular economy' (European Commission, 2018a). The EU Strategy for Plastic in the Circular Economy transforms the way plastics and plastic products are designed, produced, used and recycled. By 2030, all plastic packaging should be recyclable (European Commission, 2018a).

Another alternative instrument of regulation, unlike prohibitions or bans, is the taxation of plastic products. Many states have already taxed internal use of plastic bags via national legislation. Working together at the international level, the Commonwealth Clean Ocean Alliance (CCOA) is an example of international cooperative regulation, where states from different regions and at different stages of development uses taxation as an instrument of regulation. The CCOA, led by the United Kingdom and Vanuatu, aims to work together to prevent plastics from entering the marine environment. Since its announcement, Australia, Fuji, Kenya, St. Lucia, Ghana, New Zealand and Sri Lanka have joined the alliance. In addition to a ban on microbeads, the alliance has implemented a 5p plastic bag charge to reduce the plastic bag consumption with taxation (GOV.uk, 2018).

4.2   Shared Norms Relating to Plastics

A second component of plastics governance are norms, defined as 'standards of behavior for actors with a given identity' (Finnemore & Sikkink, 1998, p. 891).

Norms dynamics initiate behavioral change through new normative understandings, usually caused by norm entrepreneurs: Dissatisfied with the status quo, these actors advocate for change, including the strategic framing of problems, calls for change and proposals for political solutions. Normative dynamics can, though not necessarily, result in regulatory activities (Finnemore & Sikkink, 1998, p. 897; Wunderlich, 2013, pp. 32-37).

The UN is the focal point for global norm entrepreneurship regarding plastics governance: For example, the Sustainable Development Goals (SDGs) include ocean protection, thus indirectly addressing plastic pollution. In particular, goal 14 is dedicated to the conservation, protection and sustainable use of the oceans, seas and marine resources. The effort to avoid plastic waste is recorded in target 14.1: "By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution" (United Nations - The Ocean Conference, 2017). Also, the leading global environmental authority, the United Nations Environment Program (UNEP), tries to transform habits, practices, standards and policies in order to reduce marine litter by connecting individuals, civil society groups, industry and governments (Clean Seas, 2018).

Besides norm dynamics emanating from the UN, many awareness campaigns of civil society organizations underline the importance of changing behavior around plastics production and consumption. As one among many examples, the Dutch 'Plastic Soup Foundation' supports the implementation of new social standards. The foundation focuses on microplastics in cosmetics and synthetic fibers from clothing, but also on the reduction of single-use plastic and technical solutions to remove plastics from waterways (Plastic Soup Foundation, 2018).

Even business actors, like the Global Plastics Alliance (GPA), engage in normative action. Producers of plastic foreground the benefits of plastic as a material but still push for a standard to prevent environmental plastic pollution. Within the Declaration of the Global Plastics Association for Solutions on Marine Litter, the signatories voluntarily agree to support efforts in the working area of education about and research on plastic pollution. The normative support is also reflected in the sharing of best practice that helps industry, government and other stakeholders to understand what has been successful in preventing marine litter

and in advancing knowledge of recycling and recovering plastics. In addition, the declaration shows the signatories' responsibility to the environment by promoting comprehensive science-based policies and enforcing existing laws to prevent marine litter (Marine Litter Solutions, 2018a, 2018b).

4.3   Networks in Plastics Governance

There are many networked initiatives to achieve plastics governance, often also cutting across regulatory efforts and normative change. The tasks undertaken vary, as do the motivations for founding these network initiatives.

As a network of states, the G7 focuses on marine plastic litter and technological innovation. One of the goals is to create a platform for sharing know-how and promoting innovation, especially in those countries considered the biggest source of plastic in the seas. Above all, these innovations include a sustainable use of plastic products and a social innovation in the production of plastic and in the reuse and management of plastic waste. The G7 also determines the Ocean Plastic Charter, which commits signing states to take action toward a resource-efficient lifecycle management approach to plastics in the economy. This charter focuses on sustainable design, production and after-use markets, collection, infrastructure, sustainable lifestyles and education, research, innovation and new technologies, and coastal and shoreline action (G7, 2018). The G7's Ocean Plastic Charter aims to connect different actor groups, ranging from entrepreneurs to innovators, small and medium-sized enterprises, researchers, non- profit organizations and large multi-national companies, to support initiatives along the entire plastic lifecycle (G7, 2018).

Supplementary to these schemes, some cooperative networks focus on sharing knowledge, expertise or experience. For instance, 'PLA-NET,' a research network on plastic by a German federal institution and the International Center for Water Resources and Global Change, aims to pool and develop knowledge on plastic in freshwater and coastal areas (PLA-NET, 2018). The CCOA network forms partnerships of business actors and NGOs, including the World Economic Forum, Sky, Waitrose, Coca-Cola-Company, Fauna and Flora International and WWF, to share expertise and experience (GOV.uk, 2018). The global network

'#breakfreefromplastic' unites organizations and individual activists worldwide and coordinates programs and actions. Since its inception in September 2016, around 1300 organizations have joined the movement. All members share the same values of environmental protection and social responsibility. The common goal of the movement is to create a holistic approach for combating plastic pollution across the entire plastic value chain, focusing on prevention and effective solutions (Break free from plastic, 2018).

Finally, networks also directly target consumers of plastics: The 'Plastic Pollution Coalition,' a global alliance of organizations and activists that aims to achieve a world free of pollution, urges consumers to take the "4Rs pledge": Refuse, Reduce, Reuse, Recycle (Plastic Pollution Coalition, 2018). Such consumer orientation that aims to change consumer behavior is also reflected in the 'Zero Waste Movement' which conveys the vision of a garbage-free society and tries to reach this goal through education and knowledge transfer as well as the promotion of ideas and activities on reducing waste. In Europe, the network, Zero Waste Europe, assembles communities, local leaders, businesses, experts, influencers as well as other individuals to support 29 national and local NGOs promoting the Zero Waste strategy for a more sustainable Europe (Zero Waste Europe, 2018). Another form of activist network is established through the global campaign, #CleanSeas, launched by UNEP. #CleanSeas wants to end marine litter by eliminating microbeads in cosmetics and the excessive, wasteful usage of single-use plastic by 2022 through means of a ban or taxation (UNEP, 2018c).

All in all, cooperation in plastics governance takes many forms, but most are loose networks developed around normative actions instead of regulatory cooperation. It remains to be seen whether lacking 'hard law' or other forms of formal legalization will have an influence on the effectiveness of such cooperation (Abbott, Keohane, Moravcsik, Slaughter, & Snidal, 2000). Softer, explicitly non-legalized norms have been promoted by different actors, aiming to change the behavior of consumers regarding plastic use. So far, networks on plastics governance are mushrooming, but not yet maturing or being institutionalized, so limits to sharing knowledge, pooling resources and exerting political pressure are likely to exist.

5   Conflicts in Plastic Governance

Plastics governance is also a topic of conflict, ranging from contestation about specific regulatory instruments to conflicting beliefs regarding plastic use. Conflicts can also lead to a lack of regulation, more so in some fields of plastics governance than in others, turning it into a crucial variable to explain the absence of governance. From a conceptual perspective, early regime theory has already developed different explanations for the likelihood of international cooperation, and we apply this approach as a basic tool for analyzing plastics governance: While one strand of regime theory focuses on issue-areas or policy domains, another approach analyzes the problem structure of possible cooperation as a determinant of cooperation. This "object of contention" can be classified in different ways, representing either a) conflicts about values, b) conflicts about means, and c) conflicts about interests. Conflicts about interests can be either relative or absolute (Hasenclever, Mayer, & Rittberger, 1997, p. 63). Following this classification, conflicts about values are substantial, where both sides contest the frame of the other, and chances for cooperation are very low. Conflicts over means are more likely to lead to cooperative solutions because the actors involved share a common goal but differ in their beliefs about appropriate strategies and instruments to achieve it. Conflicts of interest are contingent on the type of cooperation: If the object of contention is perceived as relative in nature, which often results in a zero-sum game, the likelihood of cooperative action is rather low. But if the object is seen as absolute, the propensity for cooperation is high (Hasenclever et al., 1997, p. 64). In the following, we use these considerations to illustrate the contestation and conflict, but also to explain gaps and obstacles, in global plastics governance.

5.1   Conflicts Over Values in Plastics Governance

In the field of plastics governance, the term value refers to the valence of plastic as a raw material and the various ways or criteria to access this valence. Also, with regard to this type of conflict, two differing perspectives can be identified. The first one views plastic as a valuable and necessary resource which brings many

opportunities and benefits for human use. This view therefore rejects any demonization of plastic. Opposed to this narrative, the countercurrent supports a critical view, where plastic is considered a threat for the environment and, as a consequence, for human health as well. Plastic straws and packing materials are useful examples to illustrate this value conflict.

The perspective of the plastic industry emphasizes the importance and irreplaceability of the material, an attitude which is particularly evident on the official website of the Plastic Industry Association and its This is Plastics campaign mentioned earlier. Headlines such as "Fluoropolymers do what other materials can't," "The power of plastics" or "The many benefits of PVC" underline their general stance on plastics (This Is Plastics, 2019). For example, the Plastic Industry Association wants to "change the way we think about straws," pointing out that plastic straws, by being waterproof, flexible and cost-effective, represent the best stage of development of this product. No alternative, be it paper, glass, metal or wood, combines these three attributes as plastics straws do. In addition, the association emphasizes the dental benefit of straw-usage with sugar-containing beverages, since teeth are less exposed to acid and sugar. Furthermore, plastic straws are also valuable for people with disabilities, since they provide them with a way to consume liquids safely. A demonization of plastic straws would add another hurdle for these people to live their lives independently (This Is Plastics, 2018). To underline the special economic and normative benefits of plastic for societies, the campaign frames the benefits of plastic packaging in highly positive terms. According to their statistics, almost 50 percent of all food worldwide goes to waste, one third of which is caused by the food's appearance. Consequently, the Plastic Industry Association underlines the quality of plastics to keep food fresh, decreasing the likelihood of being thrown away. From this perspective, plastic packing furthers positive development in normative and environmental terms: It not only helps to reduce food waste but also leads to fewer greenhouse gas emissions from wasting foods (This Is Plastics, 2019).

The opposite side indicates that plastics, shown here in the example of straws, threaten the environment. The organization, 'For a Strawless Ocean,' argues that plastic straws are an especially dangerous plastic form for the environment as they are allegedly rarely mechanically filtered out for recycling due

to their low weight. Straws are technically recyclable, but in practice this does not happen nearly as often as it should. This leads to a greater threat to the environment, especially for the water environment and its animals. To underline this connection, The Plastic Pollution Coalition uses a popular video about the removal of a straw from a turtle's nose (Plastic Pollution Coalition, 2017). The impact on human health is another point in the discussion about the value of plastic straws. An article by the Plastic Pollution Coalition expresses the risks of injury that plastic straws present to the eyes, mouth and nose of children (Plastic Pollution Coalition, 2017). Activists emphasize that plastic straws can be replaced easily by existing alternatives and that only in exceptional cases should straws be made of plastic. Thus, the value of plastic, especially of plastic straws, is not particularly high for these organizations. For them, the substance is considered as replaceable and a danger to marine and human life (For a Strawless Ocean, 2019).

This illustration shows that there is a fundamental conflict over values, exemplified by single-use plastics. As has been shown, one perspective emphasizes the importance and necessity of plastic. It argues that plastic is irreplaceable and that, through proper disposal and increased recycling, straws and packaging are no danger for the environment. The other perspective identifies single-use plastic as a danger to the environment and therefore relies for instance on alternative materials for the production of straws. In their interpretation, plastic needs to be replaced because of its effects on the environment and human health. These contesting views on the value of plastic exemplify a conflict about values for plastics governance and indicate that the likelihood of an agreement on such matters is low, since values inform interests and vice versa. From a global governance perspective, this means that either one side 'wins' enough supporters to ultimately outweigh and marginalize the other, or that this issue remains an unresolved and ongoing tension, even when actors agree on means to govern plastics.

5.2   Conflicts Over Means in Plastics Governance

In conflict over means to achieve a goal, the probability of forming a regime, according to Hasenclever et al (1997), is moderate because stakeholders agree on the objective but pursue different paths. In plastics governance, the goal of

reducing plastic waste that ultimately ends up in the sea is explicitly stated by many stakeholders. However, there are numerous ways to reach this goal. If these activities are not complementary but compete against each other, then contestation within the field of plastics governance will ensue. In fact, to achieve long-term reduction of plastic waste, two principal ways have been observable. The first focuses on reducing plastic consumption, the other on primarily changing the handling of plastic waste. In the former case, recommendations will target producer and consumer behavior; in the latter, waste management and recycling rates are central.

The example of single-use plastics, like straw, cotton buds or cutlery, illustrate such conflict over means. These plastic products have become the focus of international activism from NGO and regional organizations. Among these actors, 'Zero Waste Europe' is a civil society organization geared to change European consumer behavior towards the elimination of waste in society. To implement this goal, it forms a network that promotes and supports sustainable lifestyle and consumption. By reducing the use of plastic at the end of the supply chain, it hopes for a reduction of plastic production in total – as less plastic production and use leads to less plastic waste (Zero Waste Europe, 2018). Another strategy against these plastic products are bans. The European Commission is pursuing such a strategy with its proposal for a single-use plastic directive from May 2018. The strategy includes a ban on certain single-use products, for example plastic cotton buds, cutlery, drink stirrers and straws (European Commission, 2018b). In contrast, the second perspective aims at reducing plastic waste through better recycling. A growing recycling rate could reduce the loss of plastic material from a circular economy. PlasticsEurope, the association of plastic-producing businesses, uses an initiative called 'Zero Plastic to Landfill' to emphasize the usage of the full potential of plastic. It wants to achieve a full recovery of all plastic waste (PlasticsEurope, 2019).

These illustrations underline conflicts about means in plastics governance, but some positions can also complement each other. For example, the European Commission´s strategy includes, in addition to its single-use plastic reduction measures, approaches to improve recycling. In contrast to this complementary strategy, the attitude of Zero Waste Europe and PlasticsEurope focuses on very

different methods. Still, from a conceptual perspective, cooperation is possible in these situations – if the variety of means furthers the common goal.

5.3 Conflicts Over Interests in Plastics Governance

Conflicts over interest can be absolute or relative, and this influences cooperation. The perception that interests are relative and constitute a 'zero-sum' game makes cooperation less likely, while the perception that interests are absolute terms makes cooperation more likely. In plastics governance, regulatory action regarding microbeads shows how interests structure patterns of cooperation and conflict. Intentionally added plastic particles are common in a variety of cosmetic products. In recent years, not only have the harmful effects of microbeads become more visible and widely discussed (Dauvergne, 2018a, p. 582; UNEP, 2015, p. 7; Xanthos & Walker, 2017, p. 18), but also NGOs have started campaigns to tackle microbeads by targeting consumers and producers alike. Among the most prominent initiatives has been the Dutch Plastic Soup Foundation. Starting in 2012, its "Beat the Microbead" campaign has effectively raised awareness on the dangers of microbeads in aquatic systems. Other campaign initiatives include a label for cosmetics that are 100 percent plastic free, an app to scan cosmetic products and get immediate information on their ingredients, and strategic twitter campaigns (Beat the Microbead, 2018). The NGO has succeeded in channeling civil society activism for an anti-microbeads norm, and it has also helped to further political momentum for bans on microbeads in specific products and countries.

One outcome of this intensifying debate has been regulation by different states in their national and subnational legislations. For instance, after findings suggested that the North American Great Lakes were highly polluted with microbeads, a group of eight US states started regulatory action from 2014 onwards, effectively banning microbeads in care products (Xanthos & Walker, 2017, p. 23). In 2015, the federal government passed the 'Microbead-Free Waters Act' banning manufacturing and sale of microbeads and products that contain them. Calculations estimate that "the Act may prevent >2.9 trillion pieces of microplastic from entering waterbodies per year" (McDevitt et al., 2017, p. 6613). As of 2017, Sweden started an initiative at the European level to find partners for coordinated

regulation on microbeads in cosmetics. Finland, France, Iceland, Ireland, Luxemburg and Norway joined this initiative to ban microbeads by 2020, while Italy and New Zealand announced that they will also begin similar legislation (Roscam Abbing, 2017). Furthermore, some of these countries have informed the WTO that they propose bans on microbeads in rinse-off products in order to have their legislation in line with trade law regarding quantity and scope, especially making sure that these initiatives do not constitute a technical barrier in trade (Kentin, 2018, p. 246). In June 2018, the UK adopted a robust ban which some voices from civil society understood as "the strongest and most comprehensive ban to be enacted in the world so far" (Kinsey in: Barr, 2018). According to the new legislation, UK retailers will "no longer be able to sell rinse-off cosmetics and personal care products that contain microbeads" (Department for Environment Food & Rural Affairs, 2018). Apparently, interests of governments and NGOs were complementary, enabling a shared course of action.

Business actors, in contrast, play an important role in the production and use of microbeads, yet their interests are not necessarily aligned within the industry or with other actors. At first, relations between different stakeholders did not appear to be conflictive at all. Quite the contrary: "In the cosmetics industry, the evidence presented by the coalition between scientists and activists was not seriously contested" (Kramm & Völker, 2018, p. 231). Here, cosmetic companies uphold an eco-friendly claim that they voluntarily phased out microbeads before legislation was in force. Indeed, Johnson & Johnson, Unilever, and Colgate-Palmolive stopped using microbeads in 2014 and 2015. This was explained by acknowledging that "protecting the marine environment from the potential impact of micro-plastics is an important issue" (Johnson & Johnson, 2017; Unilever, 2018) while also announcing to "monitor the science and evaluate our use of polymer-based ingredients to ensure continued improvements in the environmental profile of our products" (Colgate-Palmolive, 2019). Also, Cosmetics Europe, the European trade association representing over 4,500 companies from the cosmetics and personal care industry, has played an important role in framing the industry's norm entrepreneurship (Cosmetics Europe, 2018). In the end, the association announced "an impressive decrease of 97.6% in the use of plastic microbeads for cleansing and exfoliating purposes in wash-off cosmetic and personal care products, noted

between 2012 and 2017" (Cosmetics Europe, 2018). Therefore, even plastic-processing actors share the goal of phasing out microbeads.

Nonetheless, the broader outcomes of different stakeholder interactions indicate conflicting interests rather than cooperative action. Although environmental concerns and reputational motivation triggered an earlier phase-out of microbeads, the cosmetic industry has promoted it, basically in order to keep those microbeads in other products (Dauvergne, 2018a, p. 6; Kramm & Völker, 2018, p. 231). From the very beginning of this process, a definitional difference was made between two groups of products: While the industry has agreed that so-called "rinse-off" (toothpastes, cleansing soaps, etc.) products shall not contain microbeads anymore since they immediately wash out during use and since natural alternatives to the microbeads were available, they have lobbied hard to keep the beads for other so-called "leave-on" products (make-up, sunscreen and crèmes) (Dauvergne, 2018a, pp. 2, 10; Kentin, 2018, p. 245). Moreover, they have repeatedly tried to slow the process down by extending timelines for a phase out, to create and use loopholes in the scope of regulation and also to use forms of new plastics that are slightly different from traditional microbeads (Plastic Soup Foundation, 2015). Also, the cosmetic industry's perception of the object of contention appears not to be in line with an absolute perception of goods since "the reduction of microbeads has not occurred evenly across jurisdictions, firms or products" (Dauvergne, 2018a, p. 2). In other words: Transnational corporations have perceived the need to react to US or European regulation in advance but have kept their production schemes including microbeads intact regarding their unbranded products or when they supply markets in developing countries. In sum, critical accounts suspect that initial cooperative behavior was basically motivated by a desire to appear eco-friendly and sustainable while benefitting from regulation in at least two ways: First, natural alternatives were already found and met with demands by consumers and second, regulation involved no costs for the industry (Dauvergne, 2018a, p. 9; Kentin, 2018, p. 245). Therefore, conflicts and contestation only arose with regard to costly adjustments that included stay-on products as well. Here, industries perceived regulation as no longer in their interests, thus, understanding them in relative rather than in absolute terms.

More recent developments in this regard show that the assessment of the object in contention can change, bringing conflicts about interests not only from absolute to relative readings but also closer to value conflicts. When Cosmetics Europe proposed that their members discontinue the use of microbeads in a voluntary agreement, the Dutch branch of the organization refused to support the association's action. Instead, it expressed doubts about the legality of these agreements between manufacturers in light of the European competition right that has been usually interpreted by the Commission quite strictly (Kentin, 2018, p. 248). Here, a very recent development by ECHA, the European Chemicals Agency, may act as a game changer in both regards – the product scope and the lawfulness – since it "has assessed the health and environmental risks posed by intentionally added microplastics and has concluded that an EU-wide restriction would be justified" (ECHA, 2019). ECHA especially refers to the unknown impact that the long-term exposure of microbeads to the environment may have and the impossibility of removing them to justify their decision. For the industry that lobbied hard against a comprehensive ban on all microbeads and other microplastics, this is an unwanted development. Although producers have a transition period of some years to adjust their products, and although forms of nanoplastics or liquid plastics are still not covered by the proposal (Kentin, 2018, p. 245; Prabhakar, 2019), the consequences of the ECHA's proposal will be hard: "According to a 2018 presentation by trade association Cosmetics Europe, a ban would force the industry to find new recipes for 24,172 formulas with no readily available alternative, and cost the sector more than €12 billion a year in lost revenue" (Kent, 2019). Therefore, contestation of plastics governance will presumably increase in intensity.

Taken together, our analysis indicates that those forms of cooperation that require low investment from actors are the most frequent ones: Loosely cooperating networks form around different topics, bringing together actors from different countries, but often not bridging across diverging interests or values systematically. Also, norms linked to 'environmental protection' can mobilize large numbers of different actors, resulting in larger societal changes based on individual activities and decisions. In contrast, more formalized cooperation, like common regulation, is harder to find.

Box 2 Summarizing Cooperation and Conflict in Plastic Governance

Cooperation	Coordinated Regulation
	• prohibitions, cost-sharing, taxation
	Shared Norms and Principles
	• environmental protection, new social standards, best practices
	Cooperating Networks
	• G7 Charter, research networks, civil society networks
Conflict	Conflicts over Values
	• plastics as valuable resource or as threat to the environment
	Conflicts over Means
	• waste reduction by less consumption or by better waste management
	Conflicts over Interests
	• costs of plastics industry and necessity of environmental protection

Source: Authors

Similarly, conflicts form an obstacle in regulating plastics: Values like environmental protection are widely shared, yet not necessarily prioritized against industry interests, which are mirrored significantly in existing regulations, also because plastic is in some areas indispensable. In some cases – such as reduction of plastic pollution – political implications range from 'reducing plastics' to 'increasing capabilities of waste management,' resulting in a struggle for agenda setting of political priorities (see box 2).

6   Conclusions: Plastic Governance and IR

Plastic pollution will remain a challenging global problem because of its many dimensions and implications, ranging from maritime pollution to food safety and waste management. Thus, the process of governing plastics assembles varied groups of actors, states, business, and civil society, each of them with different, partially contrary interests and moral points of view. At the same time, plastics is embedded in a multitude of contexts and structures: Political, legal, organizational, economic and technological contexts bring forward a wide array of not only environmentally framed questions, ranging from pollution to renewable materials and overconsumption. Therefore, chances for cooperation, but also for conflict or contestation multiply. In the end, global plastics governance needs to bridge these different contexts, but also to bring together countries whose domestic contexts and audience differ greatly.

Using regime theory, this paper applied a first basic framework to provide an overview on the shared aims, but also the fault lines of global plastics governance. Other theoretical frameworks can be used to provide more details on the emerging governance in this field: For instance, following on from regime approaches, the idea of 'regime complexes' could serve as a starting point to explore outcomes of the emerging regulation of plastics. Following Raustiala and Victor (Raustiala & Victor, 2004, p. 279), regime complexes are considered "an array of partially overlapping and nonhierarchical institutions governing a particular issue-area." In particular, due to the different regulatory contexts in which plastics are targeted, regime complexes are likely to occur: Health issues and environmental concerns are closely linked to recycling opportunities but also to plastic waste as an international trading good, thus touching very different regimes in the international realm. Moreover, a regime complex perspective adds analytically to the principles of cooperation and conflict depicted in this paper.

The diversity of actors and regulatory initiatives found in plastics governance is particularly common in global environmental governance. Apart from regime complexes, a growing body of literature examines the effects of global (environmental) governance in terms of fragmentation or polycentricity.

Fragmented governance architectures are constituted by patchworked institutions, actor motives and coalitions but also regarding their background in the public or private realm and geographical scope. Biermann, Pattberg, van Asselt and Fariborz (2009) analytically employ "three criteria to differentiate between degrees of fragmentation: degree of institutional integration and degree of overlaps between decision-making systems; existence and degree of norm conflicts; and type of actor constellations." With regard to outcomes, Zelli and van Asselt emphasize that fragmentation can lead to regulatory and legal uncertainty, but also to a significant lack of coordination institutions, actors or levels (Zelli & van Asselt, 2012). However, others like Abbott (2013) or Keohane and Victor (2010) also show the advantages of the flexibility of a fragmented policy field, which can take on the adaptation and solution of emerging problems more dynamically. Whether the emerging fragmentation of plastics governance is thus making regulation more or less effective would be a further point for research.

A related debate centers on 'polycentric governance' and understands issues of peripheral coordination, not necessarily as ending in fragmentation but as a possible foundation for multi-level governance systems. Polycentric governance in environmental politics, as defined by Elinor Ostrom, is a system of "multiple governing authorities at different scales" (Ostrom, 2010, p. 552). Ostrom and her colleagues argue that polycentric governance achieves benefits in shorter time because of a smaller scale, of number of involved actors and of the intrinsic motivation to learn about better solutions (e.g. Andersson & Ostrom, 2008). The significance of this new form of global environmental governance is still undecided. Nonetheless, optimistic assessments exist regarding the long-run potential of polycentric bottom-up approaches in environmental politics, especially in regard to climate change (Jordan, Huitema, van Asselt, & Forster, 2018). If the same holds true for plastics, governance needs to be clarified in further research.

The question whether institutions generate outcomes in regime complexes and in systems of polycentric governance or fail to have an impact due to increasing fragmentation brings outcome-oriented perspectives back to procedural aspects of institutionalization. Here, from a rational design perspective (Koremenos, Lipson, & Snidal, 2001), studies on 'non-regimes' and 'empty institutions' may function as an explanation why a missing impact is sometimes actually the desired outcome of

state-centered institutions. At times, governments are not willing or not able to create international institutions, meaning that they have no interest in an institution, or they simply fail to generate one during negotiations. 'Non-regimes' are thus defined "as a transnational public policy arena characterized by the absence of multilateral agreements for policy coordination" (Dimitrov, Sprinz, Digiusto, & Kelle, 2007). The authors explicitly relate international non-regimes to the existence of national regulation in the same specific field in question, thus making it a highly fitting perspective for plastics governance, where the pure number of national regulations exceeds the quantity and quality of international agreements and treaties. On the other hand, 'empty institutions' are institutions that have come into force but have been "deliberately designed not to deliver," and function rather to cover failures in international negotiations and/or to answer claims for regulatory action by creating an institution rather than a proper policy (Dimitrov, 2019). Here, the examples are still rare due to missing institutional outcomes but e.g. the UNEA Ad Hoc Open-ended Expert Group on Marine Litter could be systematically scrutinized as an empty institution. Yet, as state-centered frameworks, rational design perspectives often leave out non-state interests and activities. Given the importance of non-state advocacy in plastics governance, civil society efforts are a likely cause of regulatory activities. Therefore, we add two strands of literature that focus on non-state actors and their discrete agency via professional knowledge and processes of issue adoption. As seen before, the regulation of plastics requires a high degree of technological insight, since every plastic (and product) is a complex mixture of different, sometimes even largely unknown polymers and additives (Brennholt et al., 2018, p. 259). In other fields of global governance, for instance cybersecurity or conflict minerals, the dependency on professional knowledge has secured scientists, professionals, and also businesses a central role in governance (e.g. Flohr, Ried, Schwindehammer, & Wolf, 2010; Haufler, 2015) It remains to be seen whether this equally applies to plastics governance. Our analysis indicates a prominent role of civil society actors, but also a variation of their agency in regard to topics, products or campaigns, thus leaving e.g. the abrasion of tires or the washing-out of synthetic fibers largely unaddressed. Here, the debates on issue adoption by transnational networks (Carpenter, 2007, 2010) may provide conceptual tools to clarify the possible reasons for advocacy

and help explain why regulatory outcomes are only seen in specific areas of the broader plastics problem.

On a more general level, diffusion studies in global governance research could provide theoretical arguments on why regulations exist, and why they take a specific design, including how non-state actors are involved in standard-setting and regulation (Büthe & Mattli, 2011; Simmons, Dobbing, & Garrett, 2008). Therefore, the global regulatory activism linked to plastics governance embodies a case of norm and policy diffusion. Here, particularly quantitative research could shed light on which countries introduce which regulations, and why. Also, quantitative research could show leaders and laggards in regulation, or which kind of regulation is more widely spread than others. All in all, research on plastics governance is likely to proliferate in future years, and it remains to be seen whether the global scale of the problem and the well-networked advocacy will result in a new model of global governance.

7   References

5 Gyres Institute. 2018. "What´s the mission of the 5 Gyres Institute?" . https://www.5gyres.org/faq, Accesed on 13 November 2019

Abbott, Kenneth W.. 2013. "Strengthening the Transnational Regime Complex for Climate Change." Transnational Environmental Law, 3 (1): 57-88.

Abbott, Kenneth W., Genschel, Philipp, Snidal, Duncan, and Zangl, Bernhard, ed. 2015. International Organizations as Orchestrators. Cambridge: Cambridge University Press.

Abbott, K. W., Green, Jessica F., & Keohane, Robert O. 2016. "Organizational Ecology and Institutional Change in Global Governance." International Organization, 70 (2), 247 - 277. doi:10.1017/S0020818315000338

Abbott, Kenneth W., Keohane, Robert O., Moravcsik, Andrew, Slaughter, Anne-Marie, and Snidal, Duncan. 2000. "The Concept of Legalization." International Organization, 54 (3), 401-419.

Abbott, Kenneth W., and Snidal, Duncan. 2000. "Hard and Soft Law in International Governance." International Organization, 54 (3), 421-456.

Andersson, Krister P., and Ostrom, Elinor. 2008. "Analyzing Decentralized Resource Regimes from a Polycentric Perspective." Policy Sciences, 41 (1), 71-93. doi:10.1007/s11077-007-9055-6.

Baldwin, Robert, Cave, Martin, and Lodge, Martin. 2010. "Regulation—the Field and the Developing Agenda." In The Oxford Handbook of Regulation. Oxford: Oxford University Press. p.3 - 16.

Barr, Sabrina 2018. "Microbead Ban on Rinse-off Products comes into effect from today". https://www.independent.co.uk/life-style/microbeads-ban-toothpaste-scrubs-plastic-pollution-ocean-uk-government-a8405941.html Accesed on 13 November 2019.

Beat the Microbead. 2018. "Strategy". https://www.beatthemicrobead.org/strategy/, Accesed on 13 November 2019.

Biermann, Frank, and Bauer, Steffen, eds. 2005. A World Environment Organization. London: Routledge.

Biermann, Frank, Pattberg, Philipp, van Asselt, Harro, and Fariborz, Zelli 2009. "The Fragmentation of Global Governance Architectures: a Framework for Analysis." Global Environmental Politics, 9 (4), 14-40.

BMEL. 2019. "Rechtsgrundlagen für die Lebensmittelhygiene". https://www.bmel.de/DE/Ernaehrung/SichereLebensmittel/Hygiene/_Texte/Rechtsgrundlagen.html#doc379670bodyText6, Accesed on 13 November 2019.

BMU. 2019. "The Packaging Act has entered into force: Less packaging – more transparency and recycling". https://www.bmu.de/en/pressrelease/das-verpackungsgesetz-ist-in-kraft-getreten-weniger-verpackungen-mehr-transparenz-und-recycling/, Accesed on 13 November 2019.

BMVI. 2019. "Sicherheit im Straßenverkehr".
https://www.bmvi.de/SharedDocs/DE/Artikel/StV/strassenverkehrssicherhei
t.html, Accesed on 13 November 2019.

Break free from plastic. 2018. "About".
https://www.breakfreefromplastic.org/about/, Accesed on 13 November
2019.

Brennholt, Nicole, Heß, Maren, and Reifferscheid, Georg. 2018. "Freshwater
Microplastics: Challenges for Regulation and Management." In Freshwater
Microplastics. Emerging Environmental Contaminants?. Springer VS. 239 -
272.

Browne, Mark A. 2015. "Sources and Pathways of Microplastics to Habitats." In
Marine Anthropogenic Litter. Springer VS. 229 - 244.

Büthe, Tim, and Mattli, Walter. 2011. The New Global Rulers: The Privatization of
Regulation in the World Economy. Princeton: Princeton University Press.

Carpenter, Charli R.. 2007. "Studying Issue (Non)-Adoption in Transnational
Advocacy Networks." International Organization, 61 (3), 643-667.

Carpenter, Charli R. 2010. "Governing the global agenda: "gatekeepers" and "issue
adoption" in transnational advocacy networks." In Who Governs the Globe?.
Cambridge: Cambridge University Press. 202-237.

Cavatorta, Francesco, ed. 2013. Civil Society Activism under Authoritarian Rule: A
comparative perspective. London: Routledge.

Clean Seas. 2018. "About the #CleanSeas Campaign". http://cleanseas.org/about,
Accesed on 13 November 2019.

Colgate-Palmolive. 2019. "Our Policy on Ingredient Safety: Earning Your Confidence
for Generations, Every Day". https://www.colgatepalmolive.com/en-us/core-
values/our-policies/ingredient-safety, Accesed on 13 November 2019.

Cosmetics Europe. 2018. "Over 97% of plastic microbeads already phased out from
cosmetics- Cosmetics Europe announces".
https://www.cosmeticseurope.eu/news-events/over-97-plastic-microbeads-
already-phased-out-cosmetics-cosmetics-europe-announces, Accesed on 13
November 2019.

Cross, Mai'a K. Davis. 2013. "Rethinking epistemic communities twenty years
later". Review of International Studies, 39 (1), 137-160.

Dauvergne, Peter. 2018a. "The power of environmental norms: marine plastic
pollution and the politics of microbeads." Environmental Politics, 27 (4),
579-597.

Dauvergne, Peter. 2018b. "Why is the global governance of plastic failing the
oceans?." Global Environmental Change, 51, 22-31.

Department for Environment Food & Rural Affairs. 2018. "World leading microbeads
ban comes into force: Ban on the sale of products containing microbeads
comes into effect". https://www.gov.uk/government/news/world-leading-
microbeads-ban-comes-into-force, Accesed on 13 November 2019.

Dimitrov, Radoslav S. 2019. "Empty Institutions in Global Environmental Politics."
International Studies Review, 0, 1-25.

Dimitrov, Radoslav S., Sprinz, Detlef, Digiusto, Gerald M., and Kelle, Alexander
2007. "International Nonregimes: A Research Agenda." International Studies
Review, 9 (2), 230-258.

ECHA. 2019. "ECHA proposes to restrict intentionally added microplastics". https://echa.europa.eu/-/echa-proposes-to-restrict-intentionally-added-microplastics, Accesed on 13 November 2019

Eriksen, Marcus, Mason, Sherri, Wilson, Stiv, Box, Carolyn, Zellers, Ann, Edwards, William, Farley, Hannah, and Amato, Stephen. 2013. "Microplastic pollution in the surface waters of the Laurentian Great Lakes." Marine Pollution Bulletin, 77, 177 - 182.

European Commission. 2018a. "Circular Economy". http://ec.europa.eu/environment/circular-economy/index_en.htm, Accesed on 13 November 2019.

European Commission. 2018b. "Single-use plastics". https://ec.europa.eu/commission/news/single-use-plastics-2018-may-28_en, Accesed on November 2019.

Faude, Benjamin, and Gehring, Thomas. 2017. "Regime complexes as governance systems." In Research Handbook of the Politics of International Law. Edward Elgar. 176 - 204.

Finnemore, Martha, and Sikkink, Kathyrn. 1998. "International Norm Dynamics and Political Change." International Organization, 52 (4), 887-917. doi:10.1162/002081898550789.

Flohr, Annegret, Ried, Lothar, Schwindehammer, Sandra, and Wolf, Klaus Dieter. 2010. The Role of Business in Global Governance. Corporations as Norm Entrepreneurs. Houdmills/Basingstoke: Palgrave.

For a Strawless Ocean. 2019. "Understanding Plastic Pollution". https://www.strawlessocean.org/faq/, Accesed on 13 November 2019.

G7. 2018. "G7 Innovation challenge to address marine plastic litter". https://g7.gc.ca/en/g7-presidency/themes/working-together-climate-change-oceans-clean-energy/g7-ministerial-meeting/joint-chairs-summary/g7-innovation-challenge-address-marine-plastic-litter/, Accesed on 13 November 2019.

Geyer, Roland, Jambeck, Jenna R., and Law, Kara Lavender. 2017. "Production, use, and fate of all plastics ever made." Science Advances, 3 (7). doi:10.1126/sciadv.1700782.

GOV.uk. 2018. "Commonwealth unites to end scourge of plastic" - Press Release, 15 April https://www.gov.uk/government/news/commonwealth-unites-to-end-scourge-of-plastic

Greenpeace. 2018. "These 10 companies are flooding the planet with throwaway plastic". https://www.greenpeace.org/international/story/18876/these-10-companies-are-flooding-the-planet-with-throwaway-plastic/, Accesed on 13 November 2019.

Gupta, Jay. 2012. "Changing North-South Challenges in Global Environmental Politics." In Handbook on Global Environmental Politics. Cheltenham: Edward Elgar. 97 - 112.

Haas, Peter M. 1992. "Introduction: epistemic communities and international policy coordination." International Organization, 46 (1), 1-35.

Hasenclever, Andreas, Mayer, Peter, and Rittberger, Volker. 1997. Theories of International Regimes. Cambridge: Cambridge University Press.

Haufler, Virginia. 2015. "Corporations, conflict minerals, and corporate social responsibility." In Corporate Social Responsibility in a Globalizing World. Cambridge: Cambridge University Press. 149-180.

Henriksen, Lasse Folke, and Seabrooke, Leonard. 2015. "Transnational organizing: Issue professionals in environmental sustainability networks." Organization, 23 (5), 722-741.

Ivanova, Maria. 2009. "UNEP as anchor organization for the gobal environment." In International Organizations in Global Environmental Governance. London: Routledge.

Jakobi, Anja P., and Loges, Bastian. 2019. "Not More Than the Sum of its Parts: De-Centered Norm Dynamics and the Governance of Plastics." Article in preparation.

Johnson & Johnson. 2017. "Safety & Care Commitment. Microbeads". https://www.safetyandcarecommitment.com/Ingredients/Microbeads, Accesed on 13 November 2019.

Jordan, Andrew, Huitema, Dave, van Asselt, Harro, and Forster, Johanna, eds. 2018. Governing Climate Change. Polycentricity in Action? Cambridge: Cambridge University Press.

Joshi, Shangrila. 2014. "North-South Relations. Colonialism, Empire and International Order." In Handbook of Global Environemental Politics. Abingdon: Routledge. 272 - 283.

Kent, Sarah. 2019. "Microplastics Ban Could Cost Beauty Sector Billions". https://www.businessoffashion.com/articles/news-bites/microplastics-ban-could-cost-beauty-sector-billions Accesed 13 November 2019.

Kentin, Esther. 2018. "Banning Microplastics in Cosmetic Products in Europe: Legal Challenges." In Proceedings of the International Conference on Microplastic Pollution in the Mediterranean Sea. Springer Nature. 245 - 250.

Keohane, Robert O., and Victor, David G. 2010. "The Regime Complex for Climate Change." The Harvard Project on International Climate Agreement.

Koremenos, Barbara, Lipson, Charles, and Snidal, Duncan. 2001. "The Rational Design of International Institutions." International Organization, 55 (4), 761-799.

Kramm, Johanna, and Völker, Carolin. 2018. "Understanding the risks of microplastics: A social-ecological risk perspective." In Vol. 58. Handbook of Environmental Chemistry. Switzerland: Springer Nature. 223 - 237.

Levi-Faur, David. 2013. "The regulatory state and regulatory capitalism: an institutional perspective." In Handbook on the Politics of Regulation Cheltenham: Edwad Elgar. 662 -672.

Lusher, Amy. 2015. "Microplastics in the Marine Environment: Distribution, Interactions and Effects." In Marine Anthropogenic Litter. 245-307.

Marine Litter Solutions. 2018a. "The Declaration of the Global Plastics Association for Solution on Marine Litter. 4th Progress Report. Executive Summary". https://www.marinelittersolutions.com/wp-content/uploads/2018/04/Marine-Litter-Report-2018.pdf, Accesed 13 November 2019.

Marine Litter Solutions. 2018b. "Declaration of the Global Plastics Associations for Solutions on Marine Litter". https://www.marinelittersolutions.com/wp-

content/uploads/2016/11/MLS-Declaration-2016_V3-002.pdf, Accesed on 13 November 2019.

McAdam, Doug, McCarthy, John D., and Zald, Mayer N., eds. 1996. Comparative Perspectives on Social Movements. Cambridge: Cambridge University Press.

McDevitt, Jason P., Criddle, Craig S., Morse, Molly, Hale, Robert C., Bott, Charles B., and Rochman, Chealsea M. 2017. "Addressing the Issue of Microplastics in the Wake of the Microbead-Free Waters Act—A New Standard Can Facilitate Improved Policy." Environmental Science & Technology, 51 (12), 6611-6617. doi:10.1021/acs.est.6b05812

Newman, Stephanie, Watkins, Emma, Farmer, Andrew, ten Brink, Patrick, and Schweitzer, Jean-Pierre. 2015. "The Economics of Marine Litter. In M. Bergmann" Marine Anthropogenic Litter. Cham: Springer. 367 - 428.

O'Neill, Kate. 2018. "The new global political economy of waste." In A Research Agenda for Global Envionmental Politics. Cheltenham: Edward Elgar. 87-100.

Ocean Conservancy. 2018. "For First Time in Over Three Decades, Plastics Sweep Top Ten List of Items Collected during Oceans Conversavancy's International Coastal Cleanup". https://oceanconservancy.org/news/first-time-three-decades-plastics-sweep-top-ten-list-items-collected-ocean-conservancys-international-coastal-cleanup/, Accesed on 13 November 2019.

Ostrom, Elinor. 2010. "Polycentric systems for coping with collective action and global environmental change." Global Environmental Change, 20 (4), 550-557.

PLA-NET. 2018. "PLA-NET – The Plastic Network" https://www.plastic-network.org/, Accesed on 13 November 2019.

Plastic Pollution Coalition. 2017. "Are Drinking Straws Dangerous?" https://www.plasticpollutioncoalition.org/pft/2017/4/28/are-drinking-straws-dangerous, Accesed on 13 November 2019.

Plastic Pollution Coalition. 2018. "Take Action". http://www.plasticpollutioncoalition.org/take-action-1/, Accesed on 13 November 2019.

Plastic Soup Foundation. 2015. "Johnson & Johnson reveal opposition to microbeads bill". https://www.plasticsoupfoundation.org/en/2015/06/johnson-johnson-reveal-opposition-to-microbeads-bill/, Accesed on 13 November 2019.

Plastic Soup Foundation. 2018. "About Plastic Soup Foundation - Mission and Vision". https://www.plasticsoupfoundation.org/en/organisation/mission/#missie, Accesed on 13 November 2019.

Plastics Industry Association. 2018a. "About". http://www.plasticsindustry.org/about-us , Accesed on 13 November 2019.

Plastics Industry Association. 2018b. "Plastics report shows strong demand, growth for plastics industry." - Press Release, 31 October https://www.plasticsindustry.org/article/plastics-report-shows-strong-demand-growth-plastics-industry-0

PlasticsEurope. 2018a. "Plastics - the Facts 2018". https://www.plasticseurope.org/en/resources/publications/619-plastics-facts-2018, Accesed on 13 November 2019.

PlasticsEurope. 2018b. "Promote Innovation".
https://www.plasticseurope.org/en/about-us/what-we-do, Accesed on 13
November 2019.

PlasticsEurope. 2019. "Zero Plastics to Landfill".
https://www.plasticseurope.org/en/focus-areas/circular-economy/zero-
plastics-landfill, Accesed on 13 November 2019.

Prabhakar, Madhuri. 2019. "Echa Proposes to ban intentionally added
microplastics". https://www.beatthemicrobead.org/echa-proposes-to-ban-
intentionally-added-microplastics/, Accesed on 13 November 2019.

Raubenheimer, Karen, McIlgorm, Alistair, and Oral, Nilüfer. 2018. "Towards an
improved international framework to govern the life cycle of plastics."
Review of European, Comparative & International Environmental Law, 27
(3).

Raustiala, Kal, and Victor, David G. 2004. "The Regime Complex for Plant Genetic
Resources." International Organization, 58 (2), 277-309.

Rochman, Chelsea M., Kross, Sara M., Armstrong, Jonathan B., Bogan, Michael T.,
Darling, Emily S., Green, Stephanie J., Smyth, Ashley R., Veríssimo, Diogo.
2015. "Scientific Evidence Supports a Ban on Microbeads." Environmental
Science & Technology, 49 (18), 10759-10761. doi:10.1021/acs.est.5b03909

Roscam Abbing, Michiel. 2017. "Ban On Microbeads in UK, Italy and New Zealand".
http://www.beatthemicrobead.org/ban-on-microbeads-in-uk-italy-and-new-
zealand/, Accesed on 13 November 2019.

Ryberg, Morten W., Laurent, Alexis, and Hauschild, Michael. 2018. "Mapping of
global plastics value chain and plastics losses to the environment. With a
particular focus on marine environment."
http://gefmarineplastics.org/publications/mapping-of-global-plastics-value-
chain-and-plastics-losses-to-the-environment-with-a-particular-focus-on-
marine-environment, Accesed on 13 November 2019.

Seabrooke, Leonard, and Henriksen, Lasse Folke. 2017. "Issue Control in
Transnational Professional and Organizational Networks." In Professional
Networks in Transnational Governance. Cambridge: Cambridge University
Press. 3 - 24.

Simmons, Beth A., Dobbing, Frank, and Garrett, Geoffrey, eds. 2008. The Global
Diffusion of Markets and Democracy. Cambridge: Cambridge University
Press.

Simon, Nils, Knoblauch, Doris, Mederake, Linda, McGlade, Katriona, Schulte, Maro
Luisa, and Masali, Supriya. 2018. "No more Plastics in the Oceans - Gaps in
Global Plastic Governance and Options for a Legaly Binding Agreement to
Eliminate Marine Plastic Pollution."
https://www.ecologic.eu/sites/files/publication/2018/simon_knoblauch_et_al
_2018_no_more_plastics_in_the_oceans_global_treaty.pdf, Accesed on 13
November 2019.

Stone, Deborah A. 1989. "Causal Stories and Formation of Policy Agendas." Political
Science Quarterly, 104 (2), 281 - 300.

Stroup, Sarah S., and Murdie, Amanda. 2012. "There's no place like home:
Explaining international NGO advocacy." The Review of International
Organizations, 7(4), 425-448.

Taylor, Matthew. 2017. "$180bn investment in plastic factories feeds global packaging binge". https://www.theguardian.com/environment/2017/dec/26/180bn-investment-in-plastic-factories-feeds-global-packaging-binge, Accesed on 13 November 2019.

This Is Plastics. 2018. "Change the Way We Think About Straws". http://www.thisisplastics.com/environment/change-the-way-we-think-about-straws/, Accesed on 13 November 2019.

This Is Plastics. 2019. "Rethink Plastic Packaging". http://www.thisisplastics.com/plastics-101/rethink-plastic-packaging/, Accesed on 13 November 2019.

Thompson, Richard C. 2015. "Microplastics in the Marine Environment: Sources, Consequences and Solutions." In Marine Anthropogenic Litter. Springer VS. 185 - 200.

Thornton, Patricia H., Ocasio, William, and Lounsbury, Michael. 2012. The Institutional Logics Perspective: A New Approach to Culture, Structure and Process. Oxford University Press.

UN Environment Assembly Campaign. 2019. "Paradise Lost? Travel and tourism industry takes aim at plastic pollution but more action needed". https://www.unenvironment.org/news-and-stories/story/paradise-lost-travel-and-tourism-industry-takes-aim-plastic-pollution-more, Accesed on 13 November 2019.

UNEP. 2015. "Plastic in Cosmetics: Are we Polluting the environment through our personal care? - Plastic ingredients that contribute to marine microplastic litter". https://wedocs.unep.org/bitstream/handle/20.500.11822/9664/-Plastic_in_cosmetics_Are_we_polluting_the_environment_through_our_personal_care_-2015Plas.pdf?sequence=3&isAllowed=y, Accesed on 13 November 2019.

UNEP. 2016. "Marine plastic debris and microplastics- Global lessons and research to inspire action and guide policy change". https://wedocs.unep.org/handle/20.500.11822/7720, Accesed on 13 November 2019.

UNEP. 2018a. "Single Use Plastics: A Roadmap for Sustainability". https://wedocs.unep.org/bitstream/handle/20.500.11822/25496/singleUsePlastic_sustainability.pdf?isAllowed=y&sequence=1, Accesed on 13 November 2019.

UNEP. 2018b. "The State of Plastic. World Environment Day Outlook". https://wedocs.unep.org/bitstream/handle/20.500.11822/25513/state_plastics_WED.pdf, Accesed on 13 November 2019.

UNEP. 2018c. "UN Declares War on Ocean Plastic". http://web.unep.org/unepmap/un-declares-war-ocean-plastic, Accesed on 13 November 2019.

Unilever. 2018. "Micro-plastics". https://www.unilever.com/sustainable-living/what-matters-to-you/micro-plastics.html, Accesed on 13 November 2019.

United Nations - The Ocean Conference. 2017. "Sustainable Development Goal 14" https://oceanconference.un.org/sdg14, Accesed on 13 November 2019.

Vidal, John. 2018. "The plastics crisis is more urgent than you know. Recycling bottles won't fix it." The Guardian.

https://www.theguardian.com/commentisfree/2018/mar/28/plastic-crisis-urgent-recycling-bottles-no-fix, Accesed on 13 November 2019.

Vince, Joanna, and Hardesty, Britta Denise. 2016. "Plastic pollution challenges in marine and coastal environments: from local to global governance." Restoration Ecology, 25 (1), 123-128. doi:10.1111/rec.12388

Wunderlich, Carmen. 2013. "Theoretical Approaches in Norm Dynamics." In Norm Dynamics in Multilateral Arms Control: Interests, Conflicts, and Justice. University of Georgia Press. 20 - 48.

Xanthos, Dirk, and Walker, Tony R. 2017. "International policies to reduce plastic marine pollution from single-use plastics (plastic bags and microbeads): A review." Marine Pollution Bulletin, 118 (1), 17-26.

Zelli, Fariborz, and van Asselt, Hasso. 2012. The Fragmentation of Global Climate Governance and its Consequences across Scales. Paper presented at the Lund Conference on Earth System Governance, Lund.

Zero Waste Europe. 2018. "About". https://zerowasteeurope.eu/about/, Accesed on 13 November 2019.

Zürn, Michael. 2013. "Globalization and Global Governance." Handbook of International Relations. London: Sage. 401 - 425.