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INTERNATIONAL COOPERATION FOR THE PROTECTION OF GLOBAL PUBLIC GOODS

TOWARDS A GLOBAL PLASTICS TREATY

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ABSTRACT

International Cooperation for the Protection of Global Public Goods- Towards a Global Plastics Treaty (Master Thesis)

Ina Tessnow-von Wysocki

An estimated 150 million tonnes of plastics have accumulated in the world's oceans and the problem increases, as waste management and recycling systems are unable to cope with the rising plastic production. Marine plastic pollution has consequences on the global ecosystem, coastal communities, industries including tourism, shipping and fishing and its impacts on food security and human health remain unknown. Negative effects span borders of national jurisdiction and a solution to the problem requires international cooperation. Policies to prevent plastic pollution have been implemented on local, national, regional and international levels. However, efforts to adequately address the problem have failed so far. When faced with such transboundary problems that threaten global public goods in the past, states have formed international regimes through negotiating legally binding treaties to effectively cope with the issue. This thesis examines factors for success and failure of international regimes for the protection of global public goods and investigates two cases of one successful and one unsuccessful international regime to cope with transboundary pollution problems. Results of the analysis of the successful Montreal Protocol show that an advantageous cost-benefit analysis, active leadership of actors pushing for an agreement, support by non-state actors on the domestic level, as well as perceived urgency for action were success factors. The treaty design constituted a necessary condition for success by using the following treaty elements: a) common but differentiated responsibilities, b) trade restrictions, c) financial mechanism, and d) adjustments and amendments. Findings from the Kyoto Protocol case study indicate reasons for failure, namely the disadvantageous cost-benefit analysis, perceived unfairness due to the exemption of developing countries from costs, domestic compliance incapacity, as well as inadequate targets to address the problem. The treaty design was a necessary condition for failure of the regime by including: a) one-sided responsibility, b) an inadequate scope to deal with the problem, as well as mechanisms that allowed for loopholes and complicated monitoring, c) rigidity incentivising short-term policies and preventing innovation, as well as d) lack of compliance and enforcement mechanisms. This thesis demonstrates that treaty design is significant for setting incentives for participation and compliance, as well as for deterring non-compliance.

The treaty design of a successful international agreement to eliminate marine plastic pollution would require the use of: a) the principle of common but differentiated responsibilities, b) an adequate scope to address the problem by including land- and sea-based sources, as well as chemical additives and all stages of the life-cycle of plastics, c) issue-linkage to international plastics trade, d) a financial mechanism to support developing countries, e) flexibility to adapt to changes, f) effective reporting, monitoring and review procedures, and g) enforcement through incentivising compliance and deterring non-compliance. This research demonstrates that treaty design is a key determinant for success of international regimes. This thesis contributes to research by reviewing academic literature on the emergence and maintenance of international regimes, mapping the problem of marine plastic pollution and identifying treaty elements that will contribute to success of a legally binding mechanism on the global scale to adequately address marine plastic pollution. Implications go beyond the topic of marine plastic pollution and global environmental problems, and can also be useful for academics, policymakers, and civil society actors in other areas of international law and global governance.

Contents

List of Abbreviations

ANCORS	Australian National Centre for Ocean Resources and Security
AU	Australia
CA	Canada
CDM	Clean Development Mechanism
CFC	Chlorofluorocarbon
DE	Germany
EPR	Extended Producer Responsibility
EU	European Union
FAO	Food and Agriculture Organisation
G7	Group of 7
GHG	Greenhouse Gas
GPG	Global Public Good
IPCC	Intergovernmental Panel on Climate Change
ISOE	Institut für Sozial-Ökologische Forschung (Institute for Social-Ecological Research)
JI	Joint Implementation
KP	Kyoto Protocol
MARPOL	International Convention for the Prevention of Pollution from Ships
MP	Montreal Protocol
NGO	Non-Governmental Organisation
SDG	Sustainable Development Goal
UN	United Nations
UNCLOS	United Nations Law of the Sea Convention
UNEA	United Nations Environmental Assembly
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
UTas	University of Tasmania
UVB	Ultraviolet B

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Introduction

International cooperation is necessary to solve the global environmental problems our world faces today. Despite their sovereign policy-making, states have often recognised the need for international cooperation and negotiated legally binding treaties to cope with global problems. The importance of international cooperation becomes particularly evident in the case of environmental problems that affect global public goods (GPGs), namely goods that are non-rival and non-excludable. Such problems raise issues of intragenerational justice, as impacts are felt across borders of national jurisdictions, as well as intergenerational justice, by affecting the life of future generations.

Marine plastic pollution constitutes one of these problems, affecting coastal communities, industrial sectors of tourism, shipping and fishing, as well as fish, birds and marine mammals through entanglement and ingestion on a global scale. An estimated 150 million tonnes of plastics have accumulated in the world's oceans and 4.6 to 12.7 million tonnes entered the oceans in 2010 (Jambeck et al., 2015, p. 770). Plastic particles have been recorded across the globe, even in the Polar regions and the most remote areas (Tekman, Krumpen, & Bergmann, 2017, p. 88). Efforts to prevent marine plastic pollution on local, national, regional and international levels followed as a response. However, until today no adequate solution to effectively manage the problem has emerged.

One way in which states deal with global environmental problems is through the formation of international regimes. Defined as “sets of implicit or explicit principles, norms, rules, and decision-making procedures around which actors’ expectations converge in a given area of international relations” (Krasner, 1982, p. 186), they serve to stir the behaviour of states in a certain direction. Legally binding agreements on the international level seek to manage resources, prohibit or encourage a certain behaviour and set universal rules and regulations. Therefore, one proposed solution for managing the problem of marine plastic pollution is a Global Plastics Treaty – a legally binding mechanism on the global level to eliminate marine plastic pollution (Dauvergne, 2018, p. 5; Simon & Schulte, 2017, p. 44).

Before developing a legally binding mechanism on the global level to manage marine plastic pollution, it is necessary to understand under what conditions international regimes emerge, are maintained and lead to the intended outcomes – namely, under what conditions they are successful. International law has often been criticised for not being effective. States are not subject to any higher authority, which makes international law difficult, if not even

impossible, to enforce. Critics question the purpose of international law in changing state behaviour, considering that actors need to join agreements voluntarily and only commit to internationally binding rules and regulations if it is in their interest to do so (Henkin, 1979, pp. 22-23). International law is often questioned because it cannot be imposed on states and cannot emerge unless a sufficient number of states or certain powerful states participate (Henkin, 1979, p. 23). Yet, international law has a long history and contributes to order and stability in the international system (Henkin, 1979, p. 29).

As states do not engage in international cooperation solely out of altruistic motives (Schiele, 2014, p. 12), this thesis identifies motivations for states to cooperate by reviewing a wide array of literature on the formation of and compliance to international regimes. The hypothesis of this thesis is that treaty design is decisive for the success or failure of international regimes. The thesis examines factors for success and failure in two case studies of international environmental regimes for the protection of GPGs. Two examples of transboundary environmental problems regarding GPGs were chosen, in which cases international regimes were formed to address the problems and in which one regime was successful and the other failed. The depletion of the ozone layer and climate change constitute important issues that have dominated the environmental discourse since the 1980s and reflect the potentials and difficulties of international law-making (Armstrong, Farrell, & Lambert, 2012, p. 280). Thus, the Montreal Protocol - serving as an example of a successful regime - is analysed for success factors and the Kyoto Protocol – serving as an example of an unsuccessful regime – is analysed for factors of failure. The results of the two case studies support an analysis of the potential treaty design of a successful Global Plastics Treaty. Because success factors in one case cannot simply be transferred to another environmental problem, the marine plastic pollution problem needs to be outlined. Existing efforts including legally binding, as well as voluntary measures to address the issue within ocean governance and pollution control frameworks, as well as inputs from experts in the field through interviews will additionally be used to identify treaty elements for a successful Global Plastics Treaty.

The results show that success of the Montreal Protocol can be attributed to an advantageous cost-benefit calculation, leadership, support of non-state actors on the domestic level, and a perceived urgency for action. Treaty design constituted a necessary condition for success by including a) the principle of common but differentiated responsibilities, b) trade restrictions, c) the creation of a financial mechanism for developing countries and d) flexibility to allow for changes. Failure of the Kyoto Protocol was due to a disadvantageous cost-benefit calculation, the fact that developing countries were taken out of responsibility, as well as the

influence of domestic structures and actors on compliance capacity and inadequate targets to address the problem. The treaty design of the Kyoto Protocol constituted a necessary condition for failure of the regime, due to a) one-sided responsibility on part of industrialised countries which led to non-ratification and withdrawal of key actors, b) an inadequate scope to address the problem and mechanisms that allowed for loopholes and complicated monitoring, c) rigidity, incentivising short-term policies and preventing innovation, as well as d) lack of compliance and enforcement mechanisms. The findings from the case studies, the overview of existing efforts in ocean governance and pollution control, as well as expert interviews, form the basis to identify treaty elements for the design of a Plastics Treaty. Treaty elements that are assumed to lead to success of such a regime constitute: a) the principle of common but differentiated responsibilities, b) a scope addressing sea-based and land-based sources, as well as chemical additives and all stages of the life-cycle of plastics, c) issue-linkage to international plastics trade, d) a financial mechanism to facilitate implementation in developing countries, e) effective monitoring procedures, as well as f) flexibility to adapt to new scientific knowledge and g) enforcement through incentivising compliance and deterring non-compliance.

1. Analytical Framework

1.1 International Cooperation for Protecting Global Public Goods (GPGs)

Sovereignty constitutes the basis of the nation state and the core of the Westphalian order[1], with states having control over natural resources and the principle of non-intervention of internal affairs, and yet, global environmental problems require international cooperation (Armstrong et al., 2012, p. 271). Keohane (1984, p. 51) distinguishes cooperation from harmony. Cooperation can occur in a situation of both common and conflicting interests (Axelrod & Keohane, 1985, p. 226). While harmony describes a situation where policies of actors "automatically facilitate the attainment of others' goals", cooperation is needed to align actions of actors with contrasting interests through negotiation (Keohane, 1984, p. 51, emphasis in the original). Because certain global problems can only be solved with international cooperation, states often depend on negotiating international regimes, "even if they had preferred not to" (Young, 1989, p. 355).

1 The Treaty of Westphalia (1648) recognised the system of sovereign states and formed the basis for the current system of international law, outlining the inviolability of borders and non-interference in domestic affairs.

The need for international cooperation in solving environmental problems becomes particularly clear in the case of protecting global public goods (GPGs). GPGs, or global commons, refer to resources that cannot be governed under national sovereignty (Kok, Brons, & Witmer, 2011, p. 13). Therefore, their provision lies outside of national policymaking and requires cooperation on the international stage (Kok et al., 2011, p. 14). To understand public goods, it is helpful to differentiate them from private goods. Private goods are provided by the market and are excludable and rival (Kaul, 1999, p. 3). Private goods can be bought, and their use is limited to one or few users. Public goods, in contrast, can be defined as non-excludable and non-rival (Bova, 2010, p. 259; Kaul, 1999, p. 9; Oberthür, 1997, p. 35). Non-excludability means that the good can be consumed by everyone, non-rivalry indicates that consumption cannot deplete it. Public goods need to be provided by non-market or modified market mechanisms (Bova, 2010, p. 266). Public goods can be sub-divided into two groups: they can have the characteristic of being "pure public goods", meaning that they are both non-excludable and non-rival, or "impure public goods", namely when they only have one of these two characteristics (Griffiths, O'Callaghan, & Roach, 2008, p. 267; Kaul, 1999, p. 5). A public good that is 'global' (also referred to as a global common good or collective good), is a public good on the international scale, namely a good that is used globally in a non-exclusive and non-rival way. Kaul (1999, p. 11) characterises a global public good by its universality of benefitting all countries, people and generations. This definition of global public goods therefore, besides geographical considerations, also includes the sociological and temporal dimension (Kaul, 1999, p. 12). The examples of GPGs that this thesis examines are the protection of the ozone layer, the stabilisation of the global climate and the conservation of the oceans.

By definition, no one can be excluded from consuming GPGs. Therefore, every person in every state is entitled to consume the GPG once it is provided. However, cases of overexploitation or under-provision can threaten the provision of GPGs. This thesis examines such over-exploitation in the case of the use of substances depleting the ozone layer, increasing GHG emissions outbalancing the concentration of GHGs in the atmosphere, and marine plastic pollution damaging the health of the oceans. Depending on the GPG that is to be provided, supply can be guaranteed in different ways. Barrett (2007b, p. 20) classifies GPGs into the following categories: single best effort, weakest link, aggregate effort, mutual restraint, and coordination.[2] The supply of ozone layer protection, climate change mitigation and marine plastic pollution prevention depends on an aggregate effort of all states (Barrett, 2007b, p. 20;

2 See Barrett (2007, p. 20) for an overview of the classifications of global public goods

74). As this thesis focuses on the examples of protecting the ozone layer, stabilising the climate and conserving the oceans, it explicitly regards the aggregate effort category. Treaties are the international institution for the provision of GPGs that require an aggregate effort of all states (Barrett, 2007b, p. 20), therefore this thesis focuses on legally binding treaties to protect such GPGs. An analysis of the treaty designs of both the Montreal Protocol and the Kyoto Protocol will be given, and treaty elements for a potential Plastics Treaty to manage the problem of marine plastic pollution will be outlined.

1.2 Challenges for International Cooperation for Protecting GPGs

A major challenge of international cooperation for the protection of GPGs is the fact that, in the world of sovereign states, international law needs to be agreed on by the "principle of unanimity", meaning that all states that are parties of the agreement need to give their consent (Henkin, 1979, p. 33). States have the right of political self-determination and are legally equal and free to manage their internal affairs (Nordhaus, 2015, p. 1340). International law-making thus depends on the interests of influential states to engage in advocating for it, "common interest" and "the lack of interest or capability of others to resist it" (Henkin, 1979, pp. 33-34). Uncertainty about other states' compliance to the agreed-on commitments and a lack of enforcement mechanisms can result in inaction (E. B. Haas, 1993, p. 171).

As the protection of GPGs is only achieved globally, one state can decide not to contribute to the protection of a certain global public good but will still benefit if it is provided by other states (Bova, 2010, p. 259). In the case of global environmental problems, international cooperation is often difficult to achieve due to the fact that each country only has a marginal effect of aggregate emissions and "is better off letting others do the abatement job" to save costs (Finus, 2001, pp. 1-2). Rationally acting states will try to keep their costs as low as possible, as they cannot be excluded from the benefits once the GPG is provided (Heywood, 2011, p. 402). While actors have a common interest in gaining the collective benefits, preference will be given to others covering the costs (Olson, 1965, p. 21). This challenge to international cooperation can be described as the "free-rider problem". It can have as a consequence that states are unwilling to agree to binding targets or set targets below the level needed to effectively solve the problem (Heywood, 2011, p. 402). Hardin (1968, pp. 1244-1245) describes in his work 'The tragedy of the commons' how self-interested individuals exploit common goods to their advantage and points to the incentive of individuals to "discharge" something into the commons if it turns out to be cheaper than taking action to prevent such pollution. Despite the challenges of international cooperation for the protection of GPGs – namely, the need for unanimous, voluntary agreement, uncertainty about others' intentions, the inability of enforcement and the

free-rider problem – states regularly form international regimes for the protection of global public goods.

1.3 International Regimes for Protecting GPGs

International regimes are a way for states to overcome the challenges of international cooperation in protecting GPGs. International regimes handle problems in diverse areas, including security, human rights, economics and environment, take different forms, such as international agreements, conventions, treaties or international institutions, vary in their formality of institutionalisation and can be bilateral and multilateral, regional as well as global in character (Griffiths et al., 2008, p. 276). International regimes can be separated into spontaneous, negotiated and imposed orders (Young, 1983, pp. 98-100). Subject of this thesis are international regimes to protect GPGs through negotiated international legally binding agreements.

Regimes need to be distinguished from ad hoc agreements which follow "short-run calculations of interest" (Keohane, 1982, p. 3). A common definition of international regimes in the academic literature, which this thesis will be based on, is offered by Krasner (1982, p. 186) who defines them as "sets of implicit or explicit principles, norms, rules, and decision-making procedures around which actors' expectations converge in a given area of international relations". Rules are specified as "specific prescriptions or proscriptions for action" and decision-making procedures as "prevailing practices for making and implementing collective choice" (Krasner, 1982, p. 186), which this thesis focuses on when examining international legally binding agreements. Realism questions the impact of international regimes, as the theory assumes that international regimes will only be formed when it is in the state's interest and that state actions within a regime would have been undertaken regardless (Haggard & Simmons, 1987). However, despite the challenges for international cooperation in protecting GPGs, international agreements have often overcome transboundary problems in the past (Nordhaus, 2015, p. 29). They can shape the behaviour of states, affect outcomes (Keohane, 1982, p. 5) and lead to the emergence of norms (Oberthür, 1997, p. 50). Humans do not always strive for short-term, self-interested goals, but can indeed cooperate to develop long-term, shared benefits (Vollan & Ostrom, 2010, p. 923).

1.4 Conditions for International Regimes

Different schools of thought have diverging arguments to explain the emergence and maintenance of international regimes. Realists assume that states are reluctant to form international regimes, due to the anarchical structure of the international system and the

incentive to free-ride (Griffiths et al., 2008, p. 267). If international regimes are formed, it is explained by power structures in the international state system. Realism does not put significance on actors other than the state (Armstrong et al., 2012, p. 79). This thesis however, recognises the fact that non-state actors are influential in the current system. Hegemonic stability theory argues that a hegemon alone can and will provide public goods to maintain the system (Griffiths et al., 2008, p. 229). However, some problems, such as epidemic diseases which are prevalent in several countries, or transboundary pollution problems that span beyond areas of national jurisdiction, require the action of all countries involved, regardless of their size or power. A hegemon can provide rewards for compliance and punishment for non-compliance but is not necessary for cooperation to occur if a pattern of common or complementary interests exists between the negotiating parties (Keohane, 1984, p. 78). International regimes facilitate global governance and show that states have common interests on certain issues and are willing to cooperate for finding solutions (Griffiths et al., 2008, p. 276). This thesis addresses conditions for the emergence and maintenance of negotiated, legally binding agreements on the global level and is therefore primarily concerned with states' interests in joining and complying to agreements. Influence of non-state actors is not neglected, however, focus is on how they can influence decision makers on the state-level, rather than independently create international regimes. Consequently, the analysis is therefore based on the framework of neoliberal institutionalist theory – the interest-based approach – because it assists to explain motivations of states to form and comply to international regimes based on interests. This theory does not deny self-interested actors but argues that international regimes will be formed through coordination of behaviour for joint gains (Stein, 1993, pp. 6-7; Young & Osherenko, 1993, p. 11). Cooperation in a state-based system is possible, even though it is assumed that actors are rational and egoistic (Keohane, 1984, p. 78). Keohane (1984, p. 27) defines rationality of actors as follows: "Rationality means that they have consistent, ordered preferences, and that they can calculate costs and benefits of alternative courses of action in order to maximize their utility in view of those preferences". Neoliberal institutionalists see international regimes as a solution to the problem of autonomous states pursuing their self-interests (Stein, 2009, p. 208). The theory asserts that regimes are ways for states to avoid collectively suboptimal outcomes by coordinating their behaviour (Hasenclever, Mayer, & Rittberger, 1997, p. 4).

Generally, regimes are easier to maintain than to create (Keohane, 1984, p. 50). If states agree with the principles and rules of the regime overall, they will have incentives to maintain it and it will most likely rather be adjusted than started over (Keohane, 1984, p. 107). However, without an international authority to punish in case of non-compliance, compliance cannot be

enforced. Regimes "almost never have the power to enforce rules" (Axelrod & Keohane, 1985, p. 250). As formal or coercive enforcement is rare, compliance depends on consensus and the actors' interest to do so (Henkin, 1979, pp. 2223). The question hence arises what makes states comply to their commitments if international law cannot be enforced. This chapter will give an overview of the academic literature on conditions for the formation of and compliance to international regimes between states through the lens of a neoliberal institutionalist, interest-based approach.

1.4.1 Economics

As from a neoliberal institutionalist perspective, states cooperate for absolute gains, a cost-benefit analysis is significant for a negotiator's decision whether or not to join an agreement and comply to targets. Environmental treaties often have economic restrictions or financial burdens as a consequence, do not promise short-term benefits and might affect different states to a varying extent (Wehlend, 2012, p. 434). This can lead to the perception of a national disadvantage and therefore result in shallow or no motivation by governments to participate. Actors do not only cooperate for gains, but also to avoid loss (Stein, 1993, p. 4). According to Stein (2008, p. 209), the fact that international cooperation can reduce governance costs constitutes the main motivation for states to engage in international cooperation. Sprinz et al. (1994, pp. 79-80) argue that a state's motivation to form an international regime and commit to targets depends on both its ecological vulnerability and its economic capacity. According to the theory, states which are affected by the problem at hand, have higher incentives to create a regime than states that are only slightly or not at all affected. The higher the abatement costs, the lower the incentive to join and comply to the international regimes for environmental regulations.

In some cases, states join agreements without intending to fulfill the commitments, e.g. under pressure or when violations are unlikely to be detected, but principally, states who join an agreement have the incentive to comply while they also expect others to do so (Henkin, 1979, p. 32). As states will join international agreements calculating costs and benefits, they are likely to comply with the commitments if their "patterns of interests" do not change (Stein, 1990, pp. 50-51). Compliance costs are often not known at the agreement-making stage and therefore, negotiation and compliance need to be looked at separately (Dai, 2005, p. 367). States commonly comply out of "calculated self-interest", that is if compliance is more rewarding than deviance (Puchala & Hopkins, 1982, p. 274). If states do not comply to previously agreed-upon commitments, often this is due to the fact that there is neither a compliance mechanism

incentivising compliance, nor an enforcement mechanism providing sanctions against violation (Henkin, 1979, p. 49).

International cooperation is a result of payoffs, perceptions and calculations (Stein, 1990, p. 174). Oye (1986, pp. 4-9) argues that payoff structures influence the likelihood of cooperation and that by altering them, cooperation can be enhanced. One way to do so is issue-linkage, referring to linking the issue at hand with an unrelated issue to incentivise cooperation (Oye, 1986, p. 17). Issue-linkage serves to trade concessions in one issue for concessions in another issue in order to facilitate mutually beneficial agreements for parties with different interests or in cases where costs and benefits fall disproportionally on the actors (Finus, 2001, p. 2; Koremenos, Lipson, & Snidal, 2004, p. 786). Linkage of an international environmental agreement with trade can – when minimum participation is ensured – enhance the likelihood of support of a large number of states (Finus, 2001, p. 240). Due to the non-excludability of the public good in question, the issue needs to be linked to an excludable good (Finus, 2001, p. 239). Environmental agreements for which industrialised countries push for, are frequently linked to technology and development issues which matter for developing countries (Koremenos et al., 2004, p. 786). Issue-linkage can be beneficial to more than one party and can make agreements work "that might not otherwise be possible" (Axelrod & Keohane, 1985, p. 239). According to Nordhaus (2015, p. 29), the free-rider problem can be overcome with the formation of clubs, namely harmonised action by a few states, while penalising non-participation. In this way, states have incentives to join and comply to the commitments in the agreement, because being part of the "club" is perceived as more beneficial. Taking into consideration cognitive approaches, norms can also alter the payoff structure (Oye, 1986, p. 11). This implies that once norms associated with one regime are accepted by states, consequently formation of the regime will be more likely. Another factor that can change actors' perceptions of their interests is information (Oye, 1986, p. 11). Knowledge plays an important role for regime creation, as it can change interests of states (Stein, 1990, p. 49). Knowledge is necessary to make rational decisions and judge the situation (Oberthür, 1997, p. 31). Scientific consensus on a certain issue can lead to communication and the alteration of a state's perception of the costs and benefits, ultimately resulting in a balance of interests and a compromise in the negotiation process (Oberthür, 1997, p. 52). Knowledge about the other actor's interest is also crucial (Stein, 1990, p. 50). Keohane (1982, pp. 162-163) stresses the importance of knowing the interests of the other negotiating parties, including their resources and formal negotiation positions, as well as their intentions, preferences and expectations.

1.4.2 Leadership

As already elaborated on, states seek absolute gains and incentives are needed for states to join international regimes that will lead to behavioural change. In bargaining for the optimal supply of a collective good, actors can threaten to not participate until their preferences are met and will wait for a better bargain until they achieve optimality (Olson, 1965, p. 176). To avoid this outcome, Olson (1965, p. 177) points to the opportunity of achieving agreement through entrepreneurship, as in some cases, an individual entrepreneur can provide the incentives required for the provision of the collective good. Young (1991, pp. 285-286) also emphasises the importance of leadership in negotiations for regime formation. Leadership can be related to a country, an entrepreneurial individual, non-state actors, or epistemic communities (E. B. Haas, 1993, p. 184). Young et al. (1991, pp. 285-286; 1993, p. 18) differentiate between "structural leaders", which are individuals representing a party (e.g. a state) led by structural power, "entrepreneurial leaders" who persuade in the negotiation process to achieve mutual benefits, and "intellectual leaders", relying on the power of ideas to shape the actors' perceptions of available options. Institutional bargaining[3] is likely to be successful with leadership and will fail in its absence (Young & Osherenko, 1993, p. 18). According to Hasenclever et al. (1997, p. 78), individual leaders constitute a necessary condition for the formation of regimes.

1.4.3 Domestic level

Traditionally, the study of international regimes focused on state entities as the only relevant actors in international relations. Realism emphasises the sole importance of states and their interests for power and security in the international system. This view has been challenged by neoliberal institutionalism and many other schools, putting importance on domestic structures and the different players involved, while not denying national interests. International politics are directly connected to domestic politics (Axelrod & Keohane, 1985, pp. 241-242; Henkin, 1979, p. 68). To understand why agreements succeed or fail, domestic structures and processes need to be taken into account (Mayer, 1992, pp. 793-794). The "two-level game" theory, introduced by Putnam (1988), emphasises the importance of domestic structures and actors in influencing international negotiations. According to Putnam (1988), realist, state-centric approaches cannot fully account for negotiations on the international level, because domestic politics play a crucial role. The theory asserts that decision-makers in international negotiations need to reconcile the best outcome on the international stage while at the same

3 Negotiation among autonomous actors to reach agreement on the terms of institutional arrangements or regimes covering particular issue-areas (Young, 1991, p. 282)

time satisfying domestic pressures (Putnam, 1988, p. 434). Figure 1 illustrates the two levels, as well as the actors that the negotiator needs to take into account when making decisions. Decisions can be rational on one level, but irrational when taking into consideration the other level, and negotiators are expected to satisfy players on both levels, which creates incentives for them to maintain a consistency between the two (Putnam, 1988, p. 434). Influenced by a wide range of domestic actors and domestic structures, the negotiator needs to reach an agreement that is as politically acceptable as possible internationally, as well as domestically (Haffoudhi, 2005, pp. 4-5).

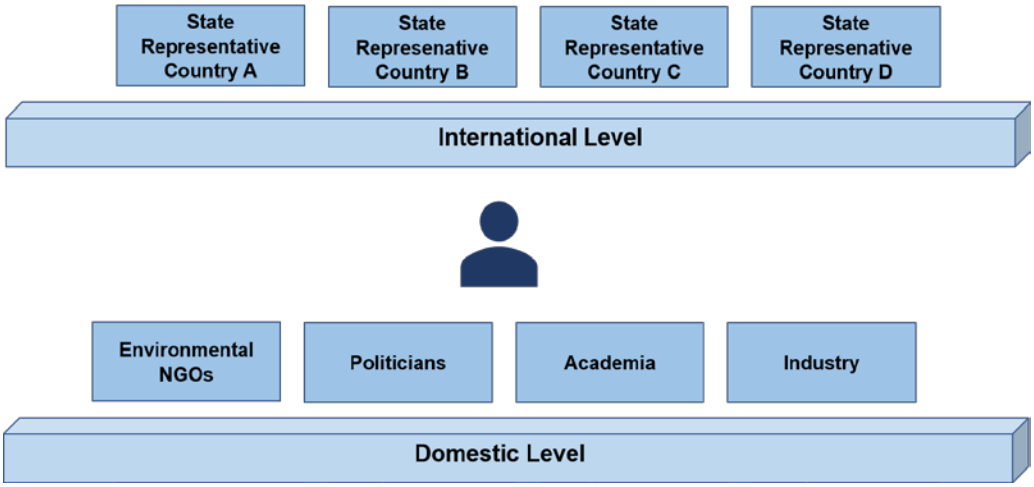

Figure 1: Two-Level Game Theory (Putman 1988)

On the national level, the government needs to be accountable to domestic groups which themselves seek to drive policies in the direction of their interests. Institutions, interest groups and economic sectors at the domestic level significantly shape international policy-making (Kydd & Snidal, 1993, p. 127). A state's positioning in international negotiations is influenced by political advisors, parliamentary figures, spokespersons for domestic agencies, representatives of pressure groups, as well as public opinion and elections (Mayer, 1992, p. 793; Putnam, 1988, p. 432; 434). Assuming self-interested actors seeking the maximisation of their own gains, Stein (1990, p. 46; 50) emphasises the influence of domestic economic sectors on the state's interest. Apart from commercial interest groups, other actors influencing the decision-maker's positioning on international agreements are political parties, NGOs, epistemic communities and scientists (Armstrong et al., 2012, p. 271). International organisations play a role through informing, giving policy recommendations and balancing political differences within parties (E. B. Haas, 1993, pp. 188-189). Industry lobby groups, as well as environmental NGOs influence the behaviour of politicians by providing information and

advocating the problem in society, influencing voters, as well as by directly financing election campaigns (Haffoudhi, 2005, p. 5). Today, non-state actors go further than simply influencing through lobbying – they also increasingly participate in negotiations, even in law-making (Armstrong et al., 2012, p. 271). A number of NGOs have observer status to participate in UN meetings (Beyerlin, Stoll, & Wolfrum, 2007, pp. 9-10). Inter- and nongovernmental organisations have the ability to lead relevant processes of regime formation (Young, 1989, pp. 353-354). Domestic factors will continue to increasingly influence international bargaining (Armstrong et al., 2012, p. 294).

Non-state actors do not only play a crucial role in the formation, but also in the implementation of global public policy (Reinicke, 1998, pp. 219-220). Examples of labour and manufacture groups in the United States (US) that blocked ratification of international agreements show the influence of domestic politics in international law (Diehl, Ku, & Zamora, 2003, p. 61). Non-state actors have the ability to inform, generate knowledge and enhance legitimacy and acceptance for policies (Reinicke, 1998, p. 220). By publishing information, international institutions can support domestic constituencies in monitoring compliance and gather support (Dai, 2005, p. 384). Based on the assumption that the policy makers' preference is to stay in office, policy makers are concerned how voters evaluate their performance and will therefore develop policies that help to keep their position and implement them (Dai, 2005, p. 369). Beyerlin et al. (2007, pp. 4-5) refer to the role of non-state actors and their potential responsibility to assess non-compliance. Domestic players in democracies, such as the opposition, pressure groups, media, and public opinion will serve as "watchdogs" over compliance of commitments (Henkin, 1979, pp. 63-64). NGOs can provide data that the state has failed to provide (Beyerlin et al., 2007, p. 9). Thus, they can publicise breaches of policy commitments and in that way put pressure on governments.

1.4.4 Exogenous Shocks

International regime formation will be more successful in the case of exogenous shocks (Young & Osherenko, 1993, p. 15). Young et al. (1993, p. 15) argue that regime formation will only occur if the problem is high on the policy agenda, to which exogenous shocks can contribute by drawing attention to a particular problem (P. Haas, M., 1993, p. 171). Environmental emergencies can alter goals and interests of actors and can lead to regime formation (Puchala & Hopkins, 1982, p. 275). Major crises or natural disasters can also alter conditions and relationships within existing environmental, socioeconomic and political structures, as well as institutions (Birkmann et al., 2010). The changes in organisational structures and creation of new disaster management agencies and legislations after a Tsunami in Sri Lanka and Indonesia

provide empirical examples (Birkmann et al., 2010, p. 648). The German Federal Ministry for Environment, Nature Conservation and Nuclear Safety (2011, para. 1) stated after the reactor disaster in Fukushima that the ministry "has since [the disaster] been closely involved in developments within Germany which have arisen in direct consequence". Examples of policy changes after significant events suggest that the willingness for action is increased in or after a situation of a crisis.

1.4.5 Reputation

Reneging from commitments is costly for states' reputations (Keohane, 1984, p. 108). Reputational loss is higher when states do not comply to commitments than if they had not joined the regime in the first place (Keohane, 1984, p. 258). Laws are obeyed due to reputation, prestige, influence and leadership, as states prefer to be seen as following a principled behaviour (Henkin, 1979, p. 52). Assuming egoistic behaviour of actors, expected future interaction enhances the decision to cooperate, which is described as the "shadow of the future" (Oye, 1986, p. 12). States comply to international law because they care about "friendly relations" to other states and violation of the agreement could threaten these relations (Henkin, 1979, p. 52). States are more likely to cooperate with a state which has successfully cooperated on a different issue in the past (Axelrod & Keohane, 1985, p. 250). Violation of commitments without justification will most likely have some form of protest as a consequence – which states try to avoid (Henkin, 1979, p. 52). By not complying to commitments, governments risk to lose credibility and might undermine future agreements if they are no longer seen as reliable contract partners (Oberthür, 1997, p. 61). For this reason, governments usually only commit to targets that they are planning to commit to (Chayes & Chayes, 1995, pp. 179-185; Oberthür, 1997, p. 62).

1.4.6 Treaty Design

Treaty design can incentivise participation and compliance, as well as deter non-compliance with an agreement and in that way contribute to success of a regime. Treaty-making allows parties to "weigh the benefits and burdens of commitment and explore, redefine, and sometimes discover their interests" (Chayes & Chayes, 1993, p. 180). National interests are thus not a given, like realists would argue, and can indeed change through interactions with other states. Non-compliance, hence, does not come from "willful disobedience" but rather from the failure of the negotiation process to "incorporate a broad enough range of the parties' interests" (Chayes & Chayes, 1991, p. 7). Institutional options need to be perceived as equitable and fair by the participating actors for an agreement to be formed (Young & Osherenko, 1993, p. 14). Because equity is "an immediate and passionately felt concern", it is difficult to measure (Young & Osherenko, 1993, p. 14). There is the need for all relevant parties of the agreement to

be present and active in the negotiation process (Young & Osherenko, 1993, p. 16). Active participation in drafting the agreement enhances the likelihood that it is perceived as fair.

A treaty has to be designed in a way to "sustain cooperation" in order to be successful (Barrett, 2003, p. 360). A "clear-cut and effective" compliance mechanism facilitates the success of international negotiations (Hasenclever et al., 1997, p. 77). Problems of compliance and enforcement can be expected to be manageable if the treaty is "well-designed", meaning that it is sensible, comprehensible and "with a practical eye to probable patterns of conduct and interaction" (Chayes & Chayes, 1995, p. 7). Moreover, simplicity in solutions and language supports institutional bargaining (Young & Osherenko, 1993, pp. 14-15). Doubts about verification and the fact that enforcement cannot be guaranteed can lead to difficulties in regime formation (Young & Osherenko, 1993, p. 17). Thus, the treaty design has the ability to incentivise participation, reward compliance and deter non-compliance among the parties to the agreement. Building on this background, this thesis is interested in identifying treaty elements that are likely to contribute to success of a regime to manage marine plastic pollution.

2. Research Design and Methods

2.1 Overview

There are a number of successful and unsuccessful examples of international environmental regimes seeking the protection of global public goods. This thesis addresses the question why some international environmental regimes work, while others fail. It then examines the case of an emerging plastics regime and possible treaty elements to manage the global problem of marine plastic pollution that are assumed to lead to success. Figure 2 gives an overview of the research design for this thesis. The hypothesis of the thesis is that treaty design is decisive for the success or failure of an international regime. To test this hypothesis, two case studies of international regimes (successful/unsuccessful) are analysed and conditions for success, as well as the contribution of their respective treaty designs to success and failure are identified. The dependent variable will be a successful regime, the independent variable the treaty design. It then examines the case of an emerging Plastics Treaty and possible treaty elements to manage the global problem of marine plastic pollution that are assumed to lead to success.

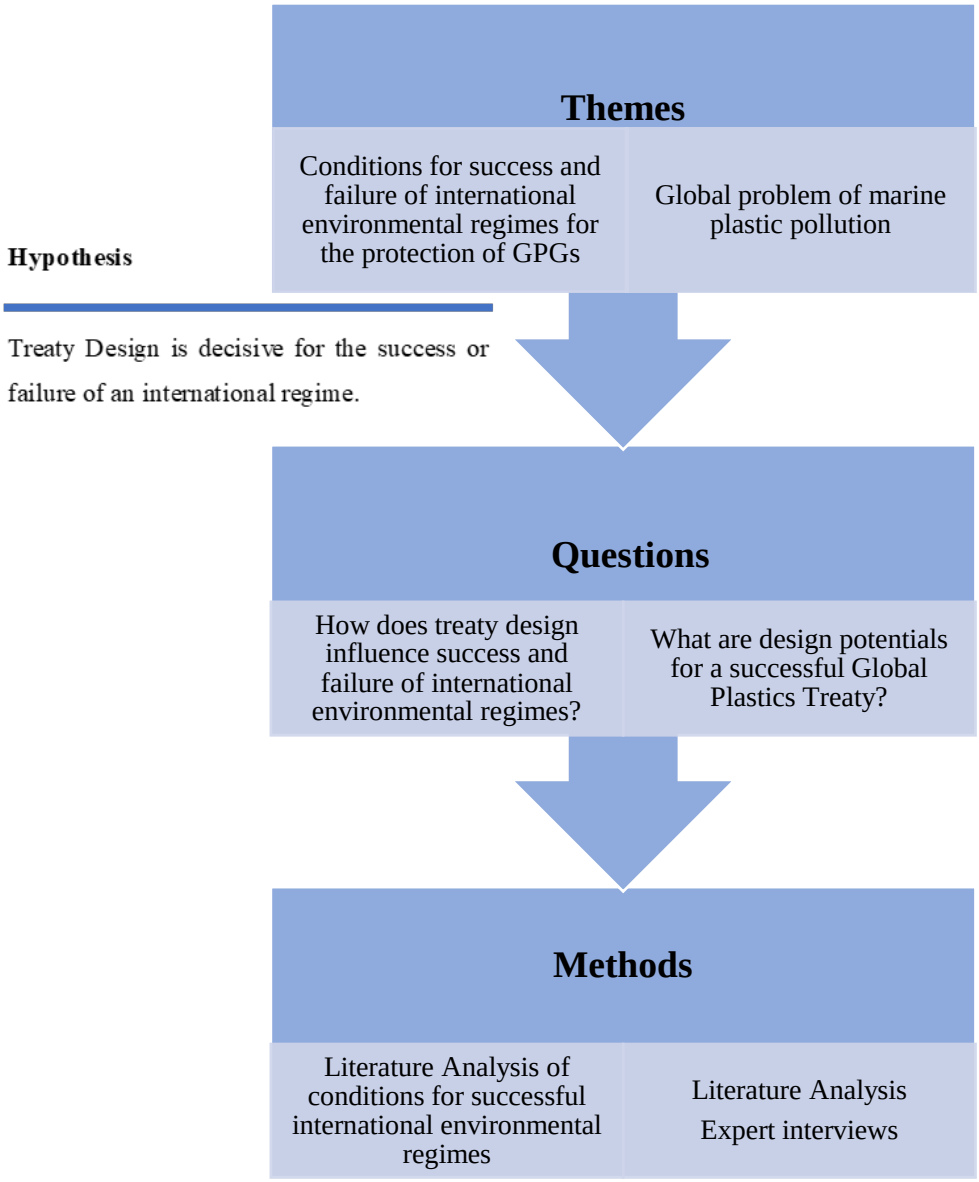

Figure 2: Research Design

2.2 Research Design

Three research questions were developed to guide through the thesis regarding the impact of treaty design on international regimes for the protection of GPGs (Table1).

Table 1: Research Questions

Research Question 1	How did the treaty design of the Montreal Protocol contribute to success of the regime?
Research Question 2	How did the treaty design of the Kyoto Protocol contribute to failure of the regime?
Research Question 3	What design elements would be assumed to contribute to success of a Global Plastics Regime?

2.2.1 The Dependent Variable: Successful Regime

A regime is in this thesis defined as successful if it achieves the intended outcome regarding the problem that led to its emergence. This is if:

a) it changes behaviour of states (participation and compliance) and b) it has the intended impact.

2.2.2 The Independent Variable: Treaty Design

In order to answer how treaty design influences the success of a regime, treaty design elements will be observed and matched with corresponding conditions for success of the regime. Table 2 shows different treaty design elements that can influence success of the regime.

Table 2: Characteristics of the Variables

Conditions for a successful regime (dependent variable)		Treaty Design (independent variable)
Change of State Behaviour	Participation	• Perceived fairness by states • Treaty contents Time frames Emission measurement Issue-linkage
	Compliance	• All of the above • Flexibility (adaptability of measures/ targets) • Feasibility (technical, bureaucratic and financial capability of states to comply) • Verifiability of compliance • Enforcement
Impact		• Adequate scope and targets to address the problem

2.3 Influence of Treaty Design on Success and Failure of International Environmental Regimes

Identifying treaty elements for a successful legally binding treaty to address plastic pollution requires knowledge of factors of success and failure in the cases of past international treaties to solve transboundary pollution problems. This thesis analyses the case of the Montreal Protocol that successfully achieved the protection of the ozone layer, as well as the Kyoto Protocol which failed to stabilise GHG emissions in the atmosphere. Special attention is given to the contribution of their treaty designs to success and failure of the regimes.

2.3.1 The Case of the Montreal Protocol (MP) – the Success

Firstly, the thesis analyses success factors of the Montreal Protocol (MP), which serves as an ideal case of a successful international regime for the protection of GPGs. The MP was created to phase out the use of ozone-depleting substances to protect the ozone layer. The ozone layer provides universal protection from biologically harmful ultraviolet B (UVB) radiation (Barrett, 2007a, p. 76). No or insufficient protection of the ozone layer would result in UVB radiation reaching the Earth, leading to detrimental effects on the ecosystem in form of destruction of phytoplankton in the oceans, decreasing productivity of agricultural and marine activity, as well as increasing human diseases such as skin cancer and cataracts (Barrett, 2003, p. 1; 2007a, p. 76; P. Haas, M., 1993, p. 155; National Academy of Sciences et al., 1979, pp. 74-75; Osherenko & Young, 1993, p. 7).

The depletion of the ozone layer was going to harm every country, but could be stopped with the aggregate effort of all states (Barrett, 2003, p. 1). Former UN Secretary General Kofi Annan described the Montreal Protocol as "perhaps the single most successful international environmental agreement to date" (Annan, 2001, p. 42). It enjoyed nearly universal participation, the parties complied with the targets of the treaty, and scientific research has proven increasing ozone layer recovery, which was the intended outcome. The example of the MP shows the ability of international treaties for the protection of GPGs to succeed even with self-interested actors and their assumed incentives to free-ride (Barrett, 2003, p. 1). The first research question, regarding how the treaty design of the Montreal Protocol contributed to success of the regime, will be answered based on an academic literature review of conditions for the emergence and maintenance of the ozone regime and the identification of treaty elements.

2.3.2 The Case of the Kyoto Protocol (KP) – the Failure

As a case of an unsuccessful international regime for the protection of GPGs, this thesis will look at the Kyoto Protocol (KP). The KP aimed at stabilising the concentration of GHG emissions in the atmosphere to avoid worse consequences of climate change. Stabilisation of the concentration of GHGs is a public good, because air pollution is a transboundary problem and consequences of climate change affect all counties, yet to a different extent.

While in the beginning, many UN member states joined and promised commitment, towards the later phases, major parties to the agreement did not ratify or withdrew from the agreement. Most countries did not hold up to their commitments and only few introduced an implementation plan (Barrett, 1999, p. 6). Furthermore, overall targets were set too low for the intended impact to be achieved. The global community found itself in a world of rising GHG emissions – the opposite of what the treaty was set out to do. While the Kyoto Protocol can be

regarded as having had some impact through introducing new mechanisms how to deal with rising GHG emissions, it still serves as a failed international environmental regime for the protection of GPGs. To answer the second research question, how the treaty design of the KP contributed to failure of the regime, analysis is based on the analytical background regarding conditions for international regimes and provides a literature review of factors for failure of the KP. For the purpose of this thesis, it is helpful to examine the treaty elements that contributed to the failure of the KP to draw conclusions about assumptions for a successful treaty design to manage the problem of marine plastic pollution.

2.3.3 Sources

Sources for the literature review are books and journal articles about conditions for the emergence and maintenance of international environmental regimes, published master and PhD theses, official government and UN documents, as well as UN websites. Sources were found mainly through keyword searches in university library portals[4], as well as by using the academic literature from the reference lists of these sources. Relevant resources which could not be assessed through universities' portals, were obtained by contacting the authors directly. Some sources used were suggestions from experts that were interviewed for this thesis.

2.4 The Case of an Emerging Global Plastics Treaty

The oceans are essential for life on Earth. Plastic pollution has increased significantly throughout the last few decades and led to the problem of plastic litter reaching the oceans, threatening over-exploitation of this GPG (UN Environment, 2017, p. 113). Marine litter consists primarily of plastic items. Some of this plastic pollution originates on the sea, most is land-based. The life-cycle of plastics spans across the globe with the production, manufacture, consumption and disposal of plastics being in different regions and continents. Despite efforts by different stakeholders, no adequate solution has been found which calls for a joint effort of states to solve the problem. Increasingly, stakeholders from academia and non-state actors in the field of ocean governance and pollution control raise their voices for a global legally binding mechanism to manage marine plastic pollution (Dauvergne, 2018, p. 29). The last part of the thesis concerns the case of an emerging Plastics Treaty for solving the problem of marine plastic pollution and identifies possible treaty design elements that are assumed to contribute to a successful plastics regime.

4 Access to the literature was guaranteed through the libraries of the universities Freie University Berlin, Humboldt University Berlin, University of Potsdam and the University of British Columbia.

2.4.1 Sources

The findings from the case studies regarding the contribution of treaty design to success and failure of international regimes, as well as an additional literature analysis concerning the current landscape of ocean governance and pollution control, provide the basis to make assumptions about treaty elements that will contribute to success. Existing legally binding and voluntary efforts for the protection of the global public good "ocean" and pollution control are examined. Sources include academic literature about existing efforts in ocean governance and pollution control, official documents by governments, the UN and the Group of 7 (G7), published master and PhD theses, reports by non-governmental organisations and think tanks, as well as newspaper articles. Expert interviews with representatives of a wide range of relevant stakeholders provide further insights into existing efforts of the different actors, research advancement regarding sources, impacts and solutions to marine plastic pollution.

2.4.2 Expert Interviews

As a Global Plastics Treaty does not exist up to this date and literature on treaty design for the global management of marine plastic pollution is limited, expert interviews provide a valuable addition to the analysis. The experts interviewed were representatives from non-state actors, including industry, NGOs and academia. The professional fields of the representatives covered ocean governance, international cooperation, international law, marine plastic pollution prevention, marine biology and economics.

Table 3: Expert Interview Partners

Field	Organisation	Position	Location	Form
Academia				
University	Australian National Centre for Ocean Resources and Security (ANCORS)	Postdoctoral Research Fellow	Sydney, AU	Skype
Research Institute	ISOE, PlastX Research Group	PhD Candidate	Frankfurt, DE	Skype
University	University of Tasmania	Co-Director Marine, Antarctic and Maritime Research	Hobart, AU	Skype
Non-for profit				
	David Suzuki Foundation	Director General of Ontario & Northern Canada	Toronto, CA	Phone
	Greenpeace Canada	Head of the Oceans and Plastics Campaign with Greenpeace Canada	Vancouver, CA	In Person
	Ocean Wise	Sustainability Manager at Vancouver Aquarium	Vancouver, CA	In Person
	Plastic Oceans Foundation	Treasurer	Vancouver, CA	In Person
	Recycle BC	Various experts	Vancouver, CA	Email
	Sea Smart	Founder	Vancouver, CA	In Person
	Surfrider	Chair	Vancouver, CA	In Person
	Zero Waste Canada	Executive Director	Vancouver, CA	Email
For-Profit				
Chemical Industry	BASF Canada	Manager, Sustainability and Government Relations	Mississauga, CA	Phone
Financial Institution	Vancity	Environmental Sustainability Portfolio Manager Vancity Community Business & Investment	Vancouver, CA	Phone

Experts from academia, non-profit and for-profit organisations were chosen for the interview (Table 4), due to their knowledge and expertise on the problem of marine plastic pollution, international law, multilateral agreements and research on a potential Global

Plastics Treaty. Other interviewees from industry, as well as some representatives of non-profit organisations were chosen due to their position, as well as their ability to reveal information about current initiatives and their contribution to the solution of the problem of marine plastic pollution. The interviews shed light on the stakeholders' contributions to solutions to the problem of marine plastic pollution, their perspectives on the challenges of the issue, whether a discussion about a legally binding mechanism to deal with the problem already came up within the organisation and how they would see their role in creating and implementing a Global Plastics Treaty.

Before the interview

Contact to experts was obtained through previous internships, professional work relationships, topic-related events, environmental fairs and beach cleanups, as well as through recommendation by interview partners. Other experts were found through online searches and contacted via email. The experts were contacted between July and October 2018 to set up interview dates for a time period between August and October. Even though some organisations did not react to the interview request or rejected an interview, the majority of contacted experts were interviewed. In some cases, the interview was conducted with a colleague of the initially contacted representative. However, this did not change the relevance of results because in an expert interview, not the personality of the interviewee, but the knowledge that this person is transferring, is the focus of attention (Westle, 2009, p. 252).

All interviews followed the method of semi-structured interviews. Researchers of semi-structured interviews use an interview guideline, allowing flexibility in the formulation and order of questions (Flick, 2000, p. 351). In order to structure the interview questions, a previous collection of topics is necessary (Westle, 2009, p. 250). Interview topics were chosen to include the perception of the different stakeholders regarding the need for a global legally binding mechanism, their existing efforts concerning the prevention and mitigation of marine plastic pollution, as well as their perception of challenges and solutions to identify adequate treaty elements that could lead to success of a global plastics regime. Semi-structured interview questions can be in form of notes that identify the broad issue-area, or detailed pre-formulated questions in a suggested order, which can be rearranged in chronology and formulation (Westle, 2009, p. 249). The value of the expert interviews of this thesis lies in well thought-through answers to identify the different stakeholder's contributions to solving the problem of marine plastic pollution, as well as their opinion on a Global Plastics Treaty. Therefore, the expert interviews were prepared in detail and pre-formulated questions were given out to the

interviewees. As the interviewees need to be informed about the aims of the interview and what the findings will be used for, as well as give their consent for the use of the content of the interview (Lamnek, 2005, p. 401; Westle, 2009, p. 251), the interviewee received an overview of the research (Annex 1, p.1) prior to the interview and signed a consent form, allowing for the use of the information provided during the interview (Annex 4, p. 56).

During the Interview

In contrast to structured interviews, in which the interviewer asks the interview questions in chronological order, semi-structured interviews offer more flexibility by allowing for changes in the order (Lamnek, 2005, p. 335; 341; Stier, 1999, pp. 188-189). The style was chosen to leave flexibility during the interview and the chance for further questions to elaborate on certain issues that are relevant in the conversation.

The location of the interview should ideally be in the natural environment of the interviewee to guarantee comfort (Lamnek, 2005, p. 396; 401). The interviews were conducted in person, via phone, Skype and through email questionnaire. The form of interview (in person, verbal, written), as well as the language of the interview, were chosen by the interviewee in all cases. In all personal interviews, the interviewee decided on the location or specifically asked the researcher to pick a location. The researcher's stay in Vancouver, Canada, allowed for interviews to be undertaken in person. In the cases of representatives based in Toronto, Mississauga, Sydney, Hobart and Frankfurt, the interview was conducted via Skype or phone call.

The time for the interview was set to one hour, but differed between interviews from 15 min to 1.5 hours, depending on the amount of questions asked by the researcher, as well as the interviewee's availability and willingness to extend on issues.

After the interview

After the interview, a transcript of the content of the interview was undertaken based on recordings or notes and was then summarised into relevant categories. This step is also referred to as "coding". The coding deals with identifying the relevant material of the interview (Lamnek, 2005, p. 403). Interviewees were sent the summary of the interview (Annex 2) for review and were able to make changes. In this way, the researcher largely avoided misunderstandings or misinterpretations of the interview content.

2.5 Limitations

This thesis examines two cases of international regimes that sought to solve transboundary pollution problems threatening GPGs. With a small number of cases, generalisations are difficult. However, the few case studies make a more detailed analysis possible, which is crucial for the identification of states' motivations to form international regimes. Moreover, the lens of neoliberal institutionalism was chosen and therefore neglects several other schools of thought. The theory takes current economic structures and a desire for economic growth in societies as a given.

The interviews focused on non-state actors and representatives of industries were underrepresented in the study. The inclusion of a government representative to speak on the issue of a Global Plastics Treaty would have been a good addition to the analysis. Some attempts to contact governments and further industry representatives were made, however, no interview could be conducted due to lack of response or time constraints of the representatives. Nevertheless, the intended gains from the expert interviews were fully achieved. The range of interviewees included at least one representative from each of the sectors industry, NGOs and academia who gave valuable additional input to the analysis of characteristics for a successful emerging plastics regime.

3. Results and Discussion

This chapter combines the literature reviews on conditions for success and failure of international regimes in the two cases of the Montreal Protocol and the Kyoto Protocol and the contribution of their respective treaty designs to the outcome. Based on these results, as well as findings from the literature review and expert interviews regarding a successful plastics regime, treaty elements for an international legally binding mechanism to manage marine plastic pollution are identified.

3.1 The Montreal Protocol

This section identifies conditions that were crucial for success of the ozone regime, namely the beneficial cost-benefit analysis, leadership, the role of non-state actors on the domestic level supporting the regime, as well as a perception of urgency for action. The second part analyses how the treaty design contributed to success of the regime by making use of the elements of a) common but differentiated responsibilities, b) trade sanctions, c) a financial

mechanism to support developing countries, as well as d) flexibility through adjustments and amendments.

3.1.1 Pathway to Montreal

Concerns about ozone layer damage were first expressed in the 1970s, in relation to aeronautics and space rockets releasing chlorine in the stratosphere and leading to depletion of the ozone layer. However, concerns were not alarming as space rocketry was not going to be an expanding form of transportation and thus did not pose a threat (Benedick, 1998, p. 10). The issue gained attention again when scientists F. Sherwood Rowland and Mario Molina warned about chlorofluorocarbon (CFC) emissions increasing the level of chlorine in the stratosphere (Young & Osherenko, 1993, p. 154). The man-made, ozone-depleting chemicals were used for a wide variety of products at the time, such as air conditioning, refrigeration, cleaning solvents, aerosol propellants and fire extinguishing (P. Haas, M., 1993, p. 154; Osherenko & Young, 1993, p. 7). CFCs were safe in the lower atmosphere and therefore received great attention, as they seemed to be the ideal replacement for the toxic and flammable substances that were previously used (Barrett, 2007a, p. 75). However, when reaching the stratosphere and being broken down by the ultraviolet radiation of the sun, they release chlorine atoms, which have a detrimental effect on the ozone layer (Barrett, 2007a, p. 75). After scientific findings predicted a potential 7% depletion of the ozone layer by CFCs, several countries reduced the production and use of the chemicals (Barrett, 1999, p. 194). Global production and consumption, however, still rose, due to increasing economic activity and the use of CFCs in other products (Barrett, 1999, pp. 194-195). The idea for an international legally binding document for the protection of the ozone layer emerged at the United Nations Environment Programme (UNEP) Conference of the Ozone Layer in 1977 (Barrett, 1999, p. 195).

Negotiations around the ozone regime concentrated on “economics and opportunity costs of regulation” (P. Haas, M., 1993, p. 155). In a purely economic sense, the cost-benefit analysis for the case of the US was highly advantageous in the late 1980s (Sunstein, 2007, p. 15). At least industrialised countries had a strong incentive to join the MP on the basis of an economic cost-benefit analysis (Barrett, 1999, p. 20). While the expected cost of the MP was relatively low (US$ 21 billion), unilateral action would lead to a benefit of US$1.363 trillion and a common agreement would nearly triple benefits (Sunstein, 2007, p. 15). Sunstein (2007, p. 15) argues that in the 1980s no systematic analysis suggested that the MP was not in the US interest and that even unilateral action would bring significant health benefits. Estimations promised a prevention of 245 million cancers, including more than five million cancer deaths, by 2100 if the MP was adopted universally (Sunstein, 2007, p. 15). As new technologies were discovered and

costs lowered, substitution turned out to be easier than expected and states perceived the agreement as more beneficial (Barrett, 2007a, p. 79).

The academic literature emphasises the importance of leadership for the success of the MP. The US played a significant role in advocating the ozone regime, besides key countries, such as Germany and the UK (P. Haas, M., 1993, p. 153). The US, Canada, Sweden, Norway and Belgium had banned the use of CFCs in aerosols before the MP was adopted (Barrett, 2007a, p. 80). Individual leaders within the Austrian and US delegation played crucial roles in leading bargaining sessions and persuading other negotiators (P. Haas, M., 1993, p. 175) and Germany turned around the initial EU position of opposing the treaty (Benedick, 1998, p. 6). To avoid administrative costs, Canada offered to host the Executive Committee and Montreal became the secretariat of the fund (Benedick, 1998, p. 186), which served as the procedural and technical advisory for national governments for implementing measures (Bauer, 2006, p. 36). UNEP took a leading role in discussions for an international agreement to control the use of CFCs (Osherenko & Young, 1993, p. 7). A multilateral institution as such was needed for orchestrating the global issue to gather data and inform the population (Benedick, 1998, p. 6). Mostafa Tolba was an influential individual in UNEP who was taking on an active leadership role[5] (Benedick, 1998, p. 6; P. Haas, M., 1993, p. 174).

International public non-state actors were crucial for the success of the regime (Bauer, 2006, p. 34). Representatives from both non-profit and for-profit organisations were allowed observer status in negotiations and could make statements (Benedick, 1998, p. 7). Environmental NGOs played an important role in informing the public about risks, pressuring the government, as well as promoting research and legislation (Benedick, 1998, p. 7). Benedick (1998, p. 5) emphasises the role of public opinion in mobilising the necessary political support by governments, but also names the weakening defence of industry for the chemicals as a reason for success. In the case of the MP, also industry pushed for an agreement to be reached (Benedick, 1998, p. 7). Private sector organisations which would normally be expected to oppose regulations, were in the case of the MP funding research and pressuring governments to take action (Benedick, 1998, p. 7). The ability of industry to produce CFC substitutes facilitated the reduction in its production and consumption as large companies saw the opportunity to open a new market (Sprinz & Vaahtoranta, 1994, p. 83; Sunstein, 2007, p. 17). The

5 UNEP accepted Tolba's offer to function as a "bank" by receiving and issuing checks at no cost to the international community (Benedick, 1998, p. 186).

beneficial cost-benefit ratio for main producers and consumers of CFCs facilitated entry into force of the MP (Barrett, 2003, p. 374).

The discovery of the ozone hole can be considered an 'exogenous shock' which gathered support for the urgency of action (Broadhead, 2002, p. 122; Young, 1989, p. 372; Young & Osherenko, 1993, p. 15). The ability to display its appearance, evolution and disappearance with satellite pictures contributed significantly to cooperation on the MP (Cracknell & Varotsos, 2009, p. 3861). There was a strong sense of "immediate danger" which facilitated the negotiation and ratification process (Chayes & Chayes, 1995, p. 226). Research on causes and measures was further improved through UNEP workshops on CFC control, symposia on health effects and risk assessment by the Environmental Protection Agency (EPA), an international conference, a NASA stratospheric ozone study, as well as a joint effort of the US and the UK for modeling exercises in 1986 (P. Haas, M., 1993, pp. 157-158). A British report revealing a 40% depletion of the ozone layer between 1977 and 1985, and the NASA ozone study formed the basis of the MP in 1987 (Barrett, 1999, p. 195). According to Litfin (1994, p. 78), without scientific evidence about the impact of CFC emissions on the ozone layer, "the Montreal Protocol would have been inconceivable". Science contributed to the realisation that the problem was more severe than previously expected (Sunstein, 2007, p. 11) and altered states' positions, as they increasingly perceived the agreement as more beneficial (Barrett, 2007a, p. 79). The scientific realities concerned the public and pressured decision-makers for action (Sprinz & Vaahtoranta, 1994, p. 83). With the scientific proof of CFCs ozone-depleting character, also CFC-producing industries accepted international controls of the chemicals (P. Haas, M., 1993, p. 158). Haas (1993, p. 171) argues that this exogenous shock was a necessary condition for the creation of the regime. A report from 1979 stated that "we know that release of CFCs into the atmosphere acts to deplete ozone in the stratosphere, although we can only estimate approximately by how much" (National Academy of Sciences et al., 1979), and yet, even though scientific proof was only prevalent in late 1987 (P. Haas, M., 1993, p. 158), an agreement was successfully reached. In this way, the MP marked a breakthrough in treaty-making in regards to the precautionary principle and common concern (Green, 2009, pp. 257-258).

3.1.2 Treaty Design Elements

The ozone regime has "the most fully developed set of provisions for dealing with non-compliance" (Armstrong et al., 2012, p. 291). To achieve compliance of the MP, focus was set on incentives to comply and on non-confrontational discussions, supplemented by financial penalties for non-compliance (Armstrong et al., 2012, p. 291). The current system we live in prioritises economic over environmental value. Countries will only join and comply to

agreements if benefits outweigh costs (Barrett, 2007a, p. 81). As the problem of ozone depletion was only going to be solved with an aggregate effort of all states, international cooperation was required. Restrictions on CFCs by a small group of countries would not have been enough, as there was the need for a global stop in production and consumption of CFCs (Barrett, 2007a, p. 80). When self-interested actors stop investing into the GPG, then "the collective interests of all countries urge to keep it going" (Barrett, 2007a, p. 81). To prevent a market of CFCs by non-participating countries, the MP needed to ensure the restriction of production and use of CFCs and at the same time, attract a high number of signatories (Barrett, 2007a, p. 80). To do so, incentives needed to be provided (Barrett, 2007a, p. 80), which was successfully done through the design of the treaty. According to Barrett (2007a, p. 83), the treaty succeeded because of the "extra-ordinary benefit-cost ratio", as well as the combination of incentivising compliance and deterring non-compliance. This section examines how the treaty design of the MP contributed to success of the ozone regime, which can serve as an example for effective treaty design of a plastics regime.

Common but Differentiated Responsibilities

The treaty design of the Montreal Protocol incorporated the principle of common but differentiated responsibilities. While every state was required to take action, responsibilities differed in regards to time frames to when the limitations applied, as well as financial resource availability. The protocol allowed developing countries a 10-year grace period, meaning that their reductions were not expected to start until 1996 (Munasinghe & King, 1991, p. 8). The multilateral fund, which was added with the London Amendments, addresses the issues of equity and fairness, by obliging industrialised countries to bear compliance costs for developing countries (Green, 2009, p. 165; 266). Prior to the introduction of the fund, developing countries were concerned about losing access to CFCs and were therefore not actively pushing for the regime (P. Haas, M., 1993, p. 160). Local problems that demanded urgent attention, such as poverty, hunger, disease and rapid population growth, were the priority and a substitution of CFCs constituted an additional financial burden that they were not able to stem (Munasinghe & King, 1991, p. 1). Developing countries emphasised their dependence on products that were made with or containing CFCs to raise their standard of living, such as products for food preservation and air conditioning (Benedick, 1998, p. 124). Delegates from China and India did not accept that developing countries should pay for substitutes to CFCs and pointed to the concern that alternatives might not be available or too costly in the future (Benedick, 1998, p. 124). The multilateral fund was the financial incentive and contributed to the success of the

regime (Wettestad, 2001, p. 337). The fund created an incentive for developing countries to participate, as costs for implementation were covered by developed countries and ozone layer protection constituted an additional benefit to them (Barrett, 2007a, p. 81). The multilateral fund was the major reason for China to ratify the MP, as therefore compliance did not include high costs (Zhao & Ortolano, 2003, p. 714).

Trade Restrictions

The element of linking the agreement to trade successfully incentivised participation and compliance and deterred non-compliance. Export of production allowances from parties to non-parties was not allowed and import of production allowances from non-parties to parties had to decrease continuously (Green, 2009, p. 264). The option to additionally include restrictions of products which used CFCs for production was discussed, however after all not carried out (Barrett, 2007a, p. 82). These measures provided parties to the treaty with a competitive advantage over non-parties (Green, 2009, p. 264).

Trade restrictions served as an enforcement mechanism. The threat of enforcement needs to be credible but not exceptionally harmful (Barrett, 2007a, p. 82). Sanctions to deter free-riding are not common because they impose costs for punishers. In the case of the MP, however, the sanctions were chosen in a way that they were beneficial for the punishers and therefore also credible (Barrett, 1999, pp. 26-27; 2007a, p. 82). Green (2009, p. 264) argues that ensuring the economic and competitive interests of states was critical to the success of the Montreal Protocol, as otherwise economic interests might have outplayed an agreement. Trade sanctions were perceived as credible by all because the prevention of relocation of production to other countries was in the interest of every signatory (Barrett, 1999, p. 32).

Financial Mechanism

The multilateral fund of the Montreal Protocol constituted a strong incentive for developing countries to join which had previously taken an opposing position, but also supported compliance with the commitments. The participating parties were guaranteed financial and technical assistance, assistance for data collection and information transfer and training (Munasinghe & King, 1991, p. 8), which helped to promote compliance of developing countries (Gonzalez, Taddonio, & Sherman, 2015, p. 125; Green, 2009, p. 165). With the multilateral fund, non-compliance due to incapability of meeting the costs or lack of technological advancements for implementation of the measures in developing countries was avoided. Through the financial mechanism, developing countries had nothing to lose by

participating and were guaranteed the means to comply. Technical assistance and trainings to select and use technology to reduce ozone-depleting substances resulted in improved implementation of the MP in China (Zhao & Ortolano, 2003, p. 714). Industrialised countries were willing to provide this financial mechanism because the cost-benefit analysis portrayed the cost of ozone-depletion as greater than the phaseout costs of ozone-depleting substances (Barrett, 1999, p. 32).

Adjustments and Amendments

Flexibility in the design of the MP was needed for the agreement to be successful (Green, 2009, p. 264). The MP can be described as an "evolving treaty". It was designed to be flexible from the beginning and provided a platform to adopt more comprehensive regulations over time through adjustments and amendments (Barrett, 2007a, p. 77; United Nations, 1987, Art. 6; Art. 11.4 [a-c; h; j]). Adjustments of the MP lowered the limits and set a deadline for the date by which the limits had to be met (Barrett, 2007a, p. 77). While adjustments are not associated with many bureaucratic burdens, amendments are more complicated to undergo. Amendments needed to be ideally agreed upon by consensus, or otherwise with a 2/3 majority vote, representing at least 50% of the total consumption of controlled substances of all parties and ratified again by all (Barrett, 2007a, p. 77). In 1990 at the second meeting in London, the protocol was amended by adding substances to the initially agreed upon eight to be controlled substances and instead of a 50% reduction the parties agreed on a complete phase-out (Barrett, 1999, p. 195). Recognising the resource constraints of the developing countries as the reason for rejecting ratification, the multilateral fund was created (Barrett, 1999, p. 195; Munasinghe & King, 1991, pp. 2-3). In 1992, further amendments to the protocol were made in Copenhagen, leading to the adjustment of the phase-out dates – in the case of CFCs from 1999 to 1996 – and an increased number of covered substances (Barrett, 1999, p. 195). The final amendment was made in Montreal, reducing the black-market trade in ozone-depleting substances through the establishment of a licensing system (Barrett, 1999, p. 195).

Table 4: Adjustments and Amendments of the Montreal Protocol[6]

	Targets	Reason
Montreal Protocol	Substances to be controlled: 8 50 % reduction	Science to date
London Adjustment (1991)	Acceleration and tightening of reduction schedules	New scientific findings
London Amendment (1992)	Substances to be controlled: 20 Complete phase-out Multilateral Fund (Financial assistance for developing countries)	New scientific findings To increase participation and compliance of developing countries
Copenhagen Adjustment (1993)	Tightening of earlier controls	New scientific findings
Copenhagen Amendment (1994)	Earlier phase-out date (for CFCs 1996 instead of 1999) Increase of substances covered to 94	New scientific findings
Vienna Adjustment (1996)	Tightening of earlier controls	New scientific findings
Montreal Adjustment (1998)	Tightening of earlier controls	New scientific findings
Montreal Amendment (1999)	Licensing system	To reduce the black-market trade in ozone-depleting substances

As the literature suggests, treaty design was a necessary, although not a sufficient condition for success of the regime. Other factors, such as the economically advantageous situation, leadership of certain actors, support by domestic non-state actors, as well as the perceived urgency for action – brought about by science – played a role. However, the treaty design of the MP was a necessary condition for success of the ozone regime by making use of the elements a) common but differentiated responsibilities, b) trade restrictions, c) a financial mechanism to support developing countries, as well as d) flexibility through adjustments and amendments. The treaty elements facilitated participation and compliance by setting the right incentives and succeeded in overcoming the problem of free-riding.

3.2 The Kyoto Protocol

This section identifies factors that led to the failure of the Kyoto Protocol, namely the disadvantageous cost-benefit calculation, perceived unfairness of the treaty and compliance incapability within domestic structures, as well as inadequate targets to address the problem.

6 See: (Barrett, 2007a, p. 78)

The second part will show how the treaty design of the KP constituted a necessary condition for failure of the climate regime by a) one-sided responsibility, b) an inadequate scope to deal with the problem and mechanisms that allowed for loopholes and complicated monitoring, c) rigidity incentivising short-term policies and preventing innovation, as well as d) lack of compliance and enforcement mechanisms.

3.2.1 Pathway to Kyoto

Increasing fossil fuel-based economic activity, as well as continuing deforestation have been contributing to a rise in global GHG emissions. An increase of the concentration of GHG emissions in the atmosphere strengthens the greenhouse gas effect and fastens the rise in global temperature. The consequences of climate change are felt around the world, in form of increasing droughts and floods, sea-level rise, as well as coral bleaching, temperature change and extreme weather events (Cramer et al., 2014, pp. 982-983). In the 1980s, the need to reduce GHG emissions in atmospheric concentrations started to emerge on the international level, even though first scientific measures of rising global temperature due to human activity of burning fossil fuels had already been expected by Svante Arrhenuis in 1896 (Barrett, 1999, p. 196). In the late 1980s, international leaders first came together to reduce GHG emissions (Massai, 2011, p. 31). In 1988, the Intergovernmental Panel on Climate Change (IPCC) was established with the responsibility to report current scientific trends and to develop solutions to prevent and adapt to the changing environment (Barrett, 1999, p. 196). A report from 1990 showed that a stabilisation of GHG concentration in the atmosphere would require a 60% reduction of GHG emissions (IPCC, 1990, xi). As a result of the Rio Conference in 1992, the United Nations Framework Convention on Climate Change (UNFCCC) was created to stabilise GHG concentrations in the atmosphere at a level that would prevent "dangerous anthropogenic interference with the climate system" (UN General Assembly, 1994, Art. 2). Increasing scientific evidence about human-induced climate change led to further action within the international community in the early 1990s (Massai, 2011, p. 39). The first UNFCCC meeting in 1995 set limits of GHG emissions for industrialised countries which constituted the basis for the negotiations in Kyoto.

A comparison between the cost-benefit calculations of the Montreal and the Kyoto Protocol show a clear disadvantage for the Kyoto Protocol (Barrett, 2003, pp. 376-380). Incentives for unilateral action to reduce emissions were much lower in the case of the KP than in the case of the MP (Barrett, 1999, p. 20). An economic cost-benefit analysis shows an estimated abatement cost of US$ 828 billion. Thereby, costs of different countries are disproportional: The costs to the US – estimated at a value of US$ 517 billion - constitute two-

thirds of the whole costs with Japan carrying US$ 166 billion, Europe US$ 325 billion, and the rest of the world benefitting US$ 180 billion (Nordhaus & Boyer, 1999, p. 118). States were reluctant to paying the costs for reversing climate change, because the importance to act to tackle climate change was not perceived as urgent as it was in the situation of the ozone hole discovery (Young, 1989, p. 372) and would affect different regions to a varying extent, up to the point that some might benefit in the short-term (Barrett, 2007b, pp. 5-6).

The domestic actors and structures influenced the states' ability for compliance. In most cases, states are willing to comply to commitments of international agreements. Non-compliance of multilateral agreements is often due to lack of economic, regulatory, and technical capacity (Brunnée, 2005, p. 48). In the US, international agreements that are not treaties, can be made by the president alone, while for treaties on the other hand, the approval of two-thirds of the Senate is required for ratification (Griffiths et al., 2008, p. 167). A two-thirds majority of the US Senate was hence needed for ratification of the KP (Barrett, 2003, p. 370). In the case of the KP, there were several US departments with diverging interests involved, such as the EPA, the Treasury, as well as the Departments of State for Energy and Interior (Barrett, 2003, p. 139). The domestic bargaining process is followed by international negotiations in which negotiators need to adapt their interests and expectations before renegotiating the issue domestically (Barrett, 2003, p. 140). In the case of the US, domestic approval of the agreement was not possible. US president at the time, George W. Bush, gave as a reason for non-ratification that "the Kyoto Protocol is fundamentally flawed, and is not the correct vehicle with which to produce real environmental solutions" (Durand, 2012, p. 8). According to Grubb (2004, p. 23), however, the reason for non-approval of the US was internally political and rather an act against Clinton, than against the other states or the issue per se. However, the problem was not only the domestic situation in the US, there were also other significant states not holding up to commitments. In 2005, Canada was expecting to be 45% above its target by 2010 and efforts to reduce emissions this drastically in such a short period of time (until 2012), combined with the fact that the US had not ratified the agreement, seemed unreasonable in economic terms (Barrett, 2007a, pp. 92-93). Canada left the regime in 2011 and Japan failed to meet the obligations and did not participate in the second commitment period (Durand, 2012, p. 8; Rosen, 2015, p. 37). In both countries, compliance with the targets would have been unlikely to be politically acceptable due to high implementation costs (van Kooten, 2003, p. 406; 409).

Moreover, the targets in the treaty design were not chosen well. The KP obliged only a small number of countries to reduce emissions, however, for a stabilisation of GHG emissions in the atmosphere, more countries would have been required to undertake emission reductions

(Barrett, 2007a, p. 92). On a global level, GHG emissions did not decrease but increased compared to the 1990 baseline: There was a 59% increase in global GHG emissions between 1990 and 2013 (Rosen, 2015, p. 38). The EU met their targets on paper, however, the burden-sharing agreement and CDM allowed for hiding an increase in individual gross emissions (Rosen, 2015, p. 37). Even with entry into force, the treaty was bound to fail (Barrett, 2003, p. 373; Rosen, 2015, p. 36).

3.2.2 Treaty Design Elements

As Barrett (2003, p. 362) puts it: "International cooperation in this area, as in others, must strategically manipulate the incentives states have to participate in and comply with a treaty". This was not the case with the KP, as it did not provide the incentives needed for behavioural change of states (Barrett, 2003, p. 389). According to Rosen (2015, p. 31), failure of the KP was not due to the states but to its treaty design. Barrett (2003, p. 389) describes the KP as a "a poorly designed treaty". It set low targets, but states still had difficulties to comply (Rosen, 2015, p. 37). Reason of the failure in design is not that it started with low targets, but rather that it failed to provide a structure to encourage further cooperation (Barrett, 2003, p. 374). This chapter examines the treaty design of the Kyoto Protocol and identifies elements that contributed to failure of the regime which need to be taken into consideration when drafting a treaty to manage the problem of marine plastic pollution.

One-Sided Responsibility

The Kyoto Protocol sought to include the principle of "common but differentiated responsibilities", but overall, responsibility was rather "one-sided" on part of industrialised countries. Some elements included different responsibility amongst states, to account for differences in financial resources and technological capacities. For instance, it set different targets depending on the country and economies in transition were allowed to set a different base year (Barrett, 1999, pp. 22-23). Developing countries made clear that industrialised countries should take a lead in reducing GHGs, as their past economic activity is the main reason for the increased GHGs in the atmosphere (McKibbin & Wilcoxen, 2002, p. 76). However, in contrast to the Montreal Protocol, the disadvantage of developing countries was recognised not by giving them more time to meet targets or introducing a financial mechanism to cover additional costs, but rather by taking them out of responsibility altogether. The treaty design set quantitative targets for industrialised countries only (Barrett, 2003, p. 370). Industrialised countries perceived the treaty as unjust, since the design did not include any commitments for developing countries. The protocol was designed in a way that industrialised countries cover

the costs through abatement and purchase of permits, putting the majority of the costs on the US, which is why the US saw itself as the net loser of the agreement (Nordhaus & Boyer, 2000, p. 168). With rising economies in the developing world, industrialised countries felt disadvantaged. Due to concerns over high economic costs for little return and economic competition with emerging developing states, the US decided to never ratify the treaty and Canada withdrew. The cost to the US economy and the fact that developing countries – including China – were exempted from emission reduction commitments were reasons why the US did not ratify the agreement (Bova, 2010, p. 261). Introducing one-sided responsibility in the treaty design, thus, led to the non-ratification and withdrawal of key actors.

Scope

The scope of the treaty design of the Kyoto Protocol was inadequate (Rosen, 2015, p. 32). The problem of climate change has multiple dimensions (Barrett, 2007b, p. 7), which the treaty design needs to account for. The Kyoto Protocol focused solely on mitigating GHG emissions, however, the problem of climate change needs adaptation measures, as well as research and development to provide for the necessary technologies to transition to sustainable energy (Barrett, 2007b, p. 7).

Due to the different mechanisms of the Kyoto Protocol to achieve targets, the parties to the protocol did not need to achieve domestic emission reductions (Grubb, 2004, p. 19). The KP introduced mechanisms to reduce GHG emissions on the global level, namely International Emissions Trading, the Clean Development Mechanism (CDM) and Joint Implementation (JI). Emission trading enabled parties to exchange part of their emission reduction commitment (Grubb, 2004, p. 19). The emissions trading system was a cap and trade system, combining national caps on allowed levels of GHG emissions with market incentives that allowed to sell unused emission credits (Bova, 2010, p. 260). The CDM enabled parties to achieve their targets by supporting developing countries to reduce emissions (Grubb, 2004, p. 19). The CDM gave countries with an emission-reduction or emission-limitation commitment the possibility to implement a project to reduce emissions in developing countries to earn saleable certified emission reduction credits equivalent to one tonne of CO2 (UNFCCC, 2018a, para.1). The problem with the CDM mechanism was, however, the risk for leakage. Emissions were calculated in net emissions rather than gross emissions and emission reductions at home could lead to an emission increase in developing countries (Rosen, 2015, p. 42) which could not be adequately monitored (Barrett, 2003, p. 360). Through the JI, countries with an emission reduction or emission limitation commitment could earn emission reduction units each

equivalent to one tonne of CO2 from an emission-reduction or emission removal project in another Annex B country[7] (UNFCCC, 2018b, para.1). The mechanism of JI enabled Annex I parties[8] to the treaty to undertake emission reductions within the group of Annex I where it was the cheapest (Hirono & Schröder, 2004, p. 50). The generous sink allowances and the supply of unused permits allowed emissions to rise, instead of introducing stringent reduction targets (McKibbin & Wilcoxen, 2002, p. 104).

Rigidity

A treaty needs to be flexible in order to adapt to changes, such as new scientific findings, and to include additional procedures for ensuring implementation, while providing a "firm foundation" (Barrett, 2003, p. 362). Barrett (2003, p. 362) argues that the KP provided a framework but no foundation. Rosen (2015, p. 40) identifies several "design flaws" of the KP: The design limited policy experimentation and incentives for innovation by setting small, binding, non-progressive emission reduction targets, when best practices for GHG reduction were not yet established and the decision to measure emission reductions in net emissions rather than in gross emissions led to leakage. McKibbon et al. (2002, p. 53) point to the emphasis on targets and timetables as being the main reason for failure. Due to uncertainty, it was impossible to analyse if benefits would outweigh costs (McKibbin & Wilcoxen, 2002, p. 52). Having set strict targets that had to be met within a certain timeframe without being able to calculate the costs made the treaty "economically flawed and politically unrealistic" (McKibbin & Wilcoxen, 2002, p. 51).

The short period for action encouraged parties to adopt short-term policies instead of focusing on policies that promised emission reductions in the long-term (Rosen, 2015, p. 40). The focus on short-term results prevented fundamental changes in the economic and energy systems. Switching fossil fuel-based energy systems to renewable energy requires initial investment which states were not willing to provide. Replacing existing infrastructure and developing and commercialising new technologies to reduce GHG emissions takes at least twenty years (Fisher et al., 2004, p. 182). Several countries could "meet their targets" by claiming emissions reductions that were the result of previous policies (France) or the decrease in energy

7 Annex B countries include all countries with a quantified emission limitation or reduction commitment under the Kyoto Protocol (United Nations, 1998, Annex B).

8 Annex I countries are the countries listed in Annex I of the United Nations Framework Convention on Climate Change (and include a few additional states to Annex B) (UN General Assembly, 1994, Annex I).

consumption and industries after the collapse of communism in Eastern Europe (Germany) (Rosen, 2015, p. 39; 41). Moreover, unlike the MP which established a mechanism enabling trade of production allowances instead of consumption allowances to eliminate CFCs permanently (Green, 2009, p. 263), the KP set emission reduction targets for a time frame between 2008 and 2012, meaning that further restrictions would require amendment (Barrett, 1999, p. 25). This further contributed to decision-makers taking on a more short-term vision for complying to targets.

Lack of Compliance and Enforcement Mechanisms

International law needs to include instruments to guarantee compliance and to react to non-compliance (Van der Jagt, 2003, p. 223). While compliance systems ensure the prevention of non-compliance, as well as the facilitation of compliance, enforcement mechanisms ensure response to non-compliance (Van der Jagt, 2003, p. 225). In the case of the MP, the free-rider problem could be overcome because the multilateral fund and trade sanctions incentivised compliance and deterred non-compliance, however, in the case of the KP neither compliance, nor enforcement mechanisms existed (Barrett, 1999, p. 24; 2003, p. 362). According to Barrett (2003, p. 362), negotiators of the KP thought the enforcement mechanism could be added later. Article 18 (United Nations, 1998) encourages states to add enforcement mechanisms by amendment, however, until this was done, non-compliance had no consequence (Barrett, 2007a, p. 93).

Overall, reasons for failure of the climate regime were the disadvantageous cost-benefit calculation, perceived unfairness of the treaty and compliance incapability within domestic structures, as well as inadequate targets to address the problem. The treaty design contributed to the failure by a) excluding developing countries from responsibility, b) incorporating an inadequate scope and mechanisms that created loopholes and prevented adequate monitoring, c) rigid timeframes that incentivised short-term policies and prevented innovation, and d) the lack of compliance and enforcement mechanisms.

3.3 The Case of an Emerging Global Plastics Treaty

This section looks at the problem of marine plastic pollution and the potential of a legally binding mechanism on the global level to adequately address the issue. The first part portrays the problem, as well as existing efforts by different stakeholders to solve it, including legally binding and voluntary measures. The second part analyses possible treaty elements for a Global Plastics Treaty to eliminate marine plastic pollution, namely a) common but

differentiated responsibilities, b) a scope addressing sea-based and land-based sources, as well as chemical additives and all stages of the life-cycle of plastics, c) issue-linkage to international plastics trade, d) a financial mechanism to facilitate implementation in developing countries, e) effective reporting, monitoring and review procedures, as well as f) flexibility to adapt to new scientific knowledge and g) enforcement through incentivising compliance and deterring non-compliance.

3.3.1 Potential for a Plastics Treaty

The oceans cover approximately 70% of the Earth's surface and constitute a GPG. The ecosystem depends on healthy oceans as it gives balance to the climate. Humans have used the oceans as long as history dates back for resources, shipping and natural habitats. Marine litter accumulates in waters beyond areas of national jurisdiction, affects marine species around the world and has unknown impacts on the ecosystem and human health. The problem first emerged in the 1960s and was linked to ingestion of plastic items by birds (Chen, 2015, p. 3). In 2010, an estimated 4.8 to 12.7 million tonnes of plastic reached the oceans from land (Worm et al., 2017, pp. 5-6). The majority of marine litter items are plastics (Pham et al., 2014, p. 3). Global plastic production in 2017 mounted up to 335 million tonnes (Plastics Europe, 2018, p. 16) and is expected to increase. Estimates from 2014 predict a doubling of global plastic production within 20 years (Ellen MacArthur Foundation, 2016, p. 17). Waste management measures cannot cope with the increasing plastic production, resulting in ongoing plastic litter and microplastics entering the oceans (UN Environment, 2017, p. 127).

The majority of marine litter items are packaging, fishing nets and small pieces of unidentifiable plastics or polystyrene (Chen, 2015, p. 31). Some pollution originates on the sea through pollution from ships, the majority is land-based, including general public litter, pollution from industry, harbours, as well as from unprotected landfills and dumps located near the coast or waterways (Galgani, Hanke, & Maes, 2015, p. 31). Sea-based sources are especially relevant when considering lost fishing gear, so called "ghost-nets" (UNEP, 2017, p. 20). Land-based sources of marine plastic pollution constitute the main problem and can be linked to unsustainably managed plastic waste (UNEP, 2017, p. 20). Microplastics are plastic particles smaller than 5 mm and can be categorised into primary microplastics, namely particles in cosmetics or cleaning detergent, and secondary microplastics, namely particles that reach this small size through physical, biological or chemical degradation of plastics (Miklos, Obermaier, & Jekel, 2016, pp. 15-16). Water samples from the coast of British Columbia, Canada, indicate pollution of microplastic particles, of which 80% are textile fibres (Ocean Wise, 2018, p. 30).

As most plastics are age resistant and only minimally degrade biologically (Moore, 2008, pp. 131-132), they stay in the ocean for long periods of time and can travel large distances (STAP, 2011, pp. 6-7). Marine plastic litter breaks up into smaller pieces when exposed to UVB radiation in sunlight, oxidative properties of the atmosphere and hydrolytic properties of seawater (Moore, 2008, p. 132). The longevity of plastics in the marine environment is unknown and estimates range from hundreds to thousands of years depending on the type of polymer (Barnes et al., 2009, p. 9). Considering the slow degradation and increasing production, the amount of plastic waste in the oceans is expected to accumulate further (Simon & Schulte, 2017, p. 15).

Marine plastic pollution has various economic, social and environmental consequences. It affects a variety of industries, such as fisheries, aquaculture, shipping, mining, power stations, desalination plants, harbours and rescue services (Raubenheimer, 2016, p. 72). The problem of lost fishing gear leads to a 10% loss of the target fish population and could risk the economic viability of commercial fishing (Moore, 2008, p. 133). McIlgorm et al. (2011, p. 644) differentiate between direct costs, e.g. costs to the fishing industry due to vessel downtime as a result of damage from marine debris, and indirect costs, e.g. costs to reverse the negative consequences on tourism by cleaning up beaches or on marine sectors by repairing vessels. Global economic losses to fisheries, tourism and beach cleanup costs are estimated at around US$ 13 billion annually (UNEP, 2014, p. 33). Cost estimates to the Asian-Pacific marine industry were valued at US$ 1.26 billion for the year 2008 (McIlgorm et al., 2011, p. 650). Simon & Schulte (2017, p. 15) point to economic benefits when tackling the problem, as 95% of plastic packaging material value, namely US$ 80-120 billion, is lost per year due to first-cycle use only (Ellen MacArthur Foundation, 2016, p. 24). Raubenheimer (2016, p. 72) raises the concern that a cost-benefit analysis alone cannot adequately reflect the true societal and environmental costs of marine debris. Over 260 marine species suffer negative effects of marine plastic pollution through entanglement or ingestion (STAP, 2011, p. 11). Plastic bags are often mistaken for food by sea turtles, as they resemble jellyfish in the water (Werner et al., 2016, p. 17). A number of 557 species are documented with records of entanglement in, and/or ingestion of marine debris (Kühn, Bravo Rebolledo, & van Franeker, 2015, p. 78). Moreover, marine plastic pollution could have negative impacts on human health through microplastic particles in seafood or tap water (World Economic Forum, 2018, p. 13). A study by Desforges et al. (2015, p. 323) shows the presence and extent of microplastics in two species of zooplankton. It is known that zooplankton is consumed by fish and marine mammal species (Desforges et al., 2015, p. 327). Microplastic particles that are ingested by marine species could reach humans over the food

chain (Austrian Environment Agency, 2018, para.7). A pilot study, conducted by the Environment Agency Austria and the Medical University of Vienna, scientifically proved microplastic particles in human stool, mainly PP (Polypropylene) and PET (Polyethylene Terephthalate) (Austrian Environment Agency, 2018, para. 3). Knowledge about the impact of the different particles on humans require further research (Austrian Environment Agency, 2018, para. 4-5). Long-term effects of marine plastic pollution are still largely unknown (Raubenheimer, 2016, p. 70). Thiel et al. (2018, p. 13) call for further research on impact on marine vertebrates, as well as on locations of marine pollution hotspots to identify adequate conservation measures. Further research is needed to grasp the "scale and scope of the problem" (Haward, 2018, p. 2). There is uncertainty about the amount of plastics in the oceans and its impacts, but scientific evidence exists regarding the long-term persistence of plastics in the oceans and its nearly impossible recovery (Raubenheimer, 2016, p. 70). Even though there is need for further research, enough scientific evidence to act on the issue already exists (Gallo et al., 2018, p. 9).

3.3.2 Existing Efforts in Ocean Governance and Pollution Control

The problem of marine plastic pollution is not recent and several efforts on local, national, regional, as well as international levels have been undertaken. There have been legally binding regulations, as well as voluntary commitments by various stakeholders. When considering an international legally binding mechanism to manage marine plastic pollution, it is necessary to give an overview of already existing treaties which deal with similar issues. In some cases, a modification of a treaty might be easier than negotiating a new one, which would overlay regional efforts (David Suzuki Foundation, 2018, p. 3). The United Nations Environment Assembly (UN Environment, 2017, p. 17) describes the current framework to tackle marine plastic litter and microplastics as "fragmented and uncoordinated" and therefore suggests to either put effort into revising and strengthening it, or into developing a new framework.

Legally binding measures

Since the 1960s, international agreements in ocean governance have ensured the establishment of legal zones and jurisdiction over various activities, including fishing, trade, as well as dumping of wastes (Joyner, 2004, p. 94). Examples of international conventions to control the discharge of wastes from sea-based sources include the "Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter (The London Convention of 1972)" and the "International Convention for the Prevention of Pollution from Ships 1973 (MARPOL)" (Raubenheimer, 2016, p. 76; Simon & Schulte, 2017, p. 24), for which

administration international organisations, such as the International Maritime Organisation, have mainly been responsible (Haward, 2018, p. 2). The London Convention constituted the first international agreement on wastes and marine protection and was amended by the London Protocol, addressing marine pollution from dumping (Simon & Schulte, 2017, p. 24). MARPOL sets out rules for waste handling by ships and prohibits the discharge of plastics and several other waste types (GIZ, 2018, p. 30). Further, the 1982 UN Law of the Sea Convention (UNCLOS) and the 1995 UN Fish Stocks Agreement are additional global legally binding agreements relevant to marine environment protection (Raubenheimer, 2016, p. 11). UNCLOS identifies that states shall undertake action "to prevent, reduce and control pollution of the marine environment from any source" (UN General Assembly, 1982, Art.194 [1]).

Article 207 [1] specifies that "states shall adopt laws and regulations to prevent, reduce and control pollution of the marine environment from land-based sources (…)"(UN General Assembly, 1982). Haward (2018, p. 2) suggests taking UNCLOS as an example for a new treaty to prevent marine plastic pollution. However, the framing is rather broad and does not specify any particular measures (Simon & Schulte, 2017, p. 25). Apart from ocean governance, also agreements of pollution control on land need to be considered. The Basel Convention (1989) seeks to reduce the generation and transboundary movement of hazardous and other wastes and to promote source-near disposal (Raubenheimer, 2016, p. 77). The Stockholm Convention, addressing role persistent organic pollutants, was a milestone in international law (Hagen & Walls, 2005, p. 49). The Stockholm Convention and the Basel Convention are existing multilateral environmental agreements that could host the idea of plastics control (David Suzuki Foundation, 2018, p. 3). The Basel Convention includes a legal instrument on transnational plastics trade which can be strengthened to lead to less plastic production and less waste (David Suzuki Foundation, 2018, p. 3).

Regional legally binding efforts also play a significant role, such as the Regional Seas Conventions (David Suzuki Foundation, 2018, p. 3; GIZ, 2018, p. 30). The Abidjan Convention for West Africa and the Nairobi Convention for East Africa are moving into the direction of what gets close to a Marine Litter Protocol (David Suzuki Foundation, 2018, p. 3). In Europe, the Barcelona Convention for the Protection of the Mediterranean is a prominent example, including a Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities (GIZ, 2018, p. 12; 30). Other relevant regional instruments are the EU Port Reception Facility (PRF) Directive, obliging ports to develop and implement Waste Handling Plans, the EU Marine Strategy Framework Directive, requiring member states to define targets and a marine strategy, as well as EU initiatives on land-based waste management, such as the

Packaging and Packaging Waste Directive (Chen, 2015, pp. 404-405). More recently, the EU has announced a ban on single-use cutlery, cotton buds, straws and stirrers from 2021, as well as a reduction of other plastic items which are not included in the ban by at least 25% by 2025 in each member state (European Commission, 2018, para. 1-2).

Furthermore, developing countries provide good examples when it comes to introducing policy, such as in the case of Indonesia, where the realisation of the extent of the pollution led to effective policies to clean up waterways (UTas, 2018, p. 1). Stringent regulations have been adopted in developing countries regarding the consumption of e.g. plastic bags where it was a visible and pressing problem (Knoblauch, Mederake, & Stein, 2018, p. 3).

Bans on single-use items have also been undertaken on the local level. One example provides the City of Vancouver, Canada, where the 'Single-Use Item Reduction Strategy' has recently been introduced. It sets timelines for action, prohibits business license holders the provision of certain single-use items to customers, such as foam cups, containers, or plastic straws, as well as encourages local recycling and extended producer responsibility (EPR)[9] schemes that make producers responsible for appropriate collection and treatment (City of Vancouver, 2018).

Voluntary measures

Besides legally binding agreements, there are also a number of voluntary efforts on local, regional, national and international levels to manage marine plastic pollution. On a global level, the Sustainable Development Goals (SDGs) include targets concerning the treatment of wastewater (SGD 6), waste management in sustainable cities (SDG 11), sustainable production and consumption (SDG 12), and conservation of the oceans, seas and marine resources (SDG 14) (Löhr et al., 2017, p. 91). Various further global instruments to tackle the problem have been introduced, such as guidelines on 'Surveying and Monitoring of Marine Litter' and on the 'Use of Market-Based and Economic Instruments', a report on Abandoned, Lost or Otherwise Discarded Fishing Gear by UNEP and the Food and Agriculture Organisation (FAO), as well as the Honolulu Strategy and the Global Partnership of Marine Litter (GPML) (Chen, 2015, pp. 403-404). The Honolulu Strategy aims at reducing the amount and impact of land-, and sea-based litter and solid waste, as well as of accumulated marine debris on shorelines (Löhr et al., 2017, p. 91). The GPML brings together different stakeholders from government, academia, private sector and civil society to find solutions to address the problem (Löhr et al., 2017, p. 91). The

9 Further explanation in section 4.3.4 d); p.52

FAO 'Code of Conduct for Responsible Fisheries' encourages that "pollution, waste, discards, catch by lost or abandoned gear, (…) are minimized" (FAO, 1995, Art. 7 [2.2]). Under the Canadian presidency in 2018, the G7 established a Plastics Charter, which emphasises the need for action and outlines the next steps in collaboration with industry (G7, 2018, pp. 2-4). The representative of Greenpeace Canada (2018, p. 24) however, criticises that solutions focus on end-of-pipe solutions, rather than on efforts to reduce the production and use of plastics.

The 'Regional Action Plan for Prevention and Management of Marine Litter in the North-East Atlantic' outlines goals and next steps of marine litter governance in the region and is in regular contact to the public and private sectors, academics and non-governmental organisations (OSPAR Commission, p. 1). The 'Regional Plan for the Marine Litter Management in the Mediterranean' encourages states to include marine litter prevention into their national action plans[10], stresses the importance of improved solid waste management, extended producer responsibility (EPR) schemes, as well as economic instruments for reducing plastic consumption and implementing deposit-refund systems (GIZ, 2018, p. 30).

Non-state actors on the local and global level engage in education through exhibitions, recommendations for the daily-life, online platforms (Ocean Wise, 2018, p. 31), as well as movies (Plastic Oceans Foundation, 2018, pp. 34-35) and workshops in schools (Sea Smart, 2018, p. 42; Zero Waste Canada, 2018, p. 53). Beach cleanups inform about which items are mainly found on beaches (Ocean Wise, 2018, p. 31) and have the power to mobilise people, hold politicians accountable and push for solutions (David Suzuki Foundation, 2018, p. 17). NGOs can support EPR schemes by running the residential recycling, undertaking recycling trainings in companies and schools, and introducing facility certification programs (Zero Waste Canada, 2018, pp. 53-54), as well as supporting recyclable packaging design and recycling solutions (Recycle BC, 2018, pp. 39-40). NGOs can also serve as bridges to bring science and industry together and inform solutions (Ocean Wise, 2018, pp. 30-32).

Increasingly, industries and corporations have made statements about getting active on the issue. At the G7 Ministers Meeting, besides NGOs, also representatives from industry attended. Big corporations, such as BASF, signed the charter, acknowledging the global problem and committing to further action on marine plastic pollution (BASF, 2018, p. 15). As a reaction to Greenpeace Canada's campaign of brand auditing, including collecting marine plastic pollution items and connecting them to the producer, they have indicated to introduce

10 Under the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (1995)

changes and provide funding. Still, focus lies on recycling initiatives, improvement of waste infrastructure and funding for beach cleanups, whereas reduction efforts are lacking (Greenpeace Canada, 2018, p. 23). However, industries are already funding research to change their products. The science-based NGO Ocean Wise (Ocean Wise, 2018, p. 30) conducts research for a number of industries on how different textiles change over time when exposed to different elements, e.g. the sun, to identify ways to change design and textiles of their products to prevent pollution. The same NGO is also working on solutions for packagers. The representative highlights that "these companies are looking to see how they can contribute and turn to experts to find solutions". Efforts on different levels by several stakeholders have been implemented and general willingness to tackle the problem of plastic pollution is prevalent throughout the sectors. Hence, the question arises why an adequate solution has so far not emerged.

3.3.3 Challenges in Solving the Problem of Marine Plastic Pollution

One challenge for solving the problem of marine plastic pollution is that a variety of different plastics are used (Chen, 2015, p. 14), and that plastic is present in all sectors of our life (ISOE, 2018, p. 26). The characteristics of plastics, namely their durability, flexibility and affordability have led to a sharp increase in the production of plastics (Dauvergne, 2018, p. 22; Simon & Schulte, 2017, p. 13). Advantages of plastic packaging include the prevention of food waste because food is conserved longer, as well as fuel savings due to its light weight in comparison to other packaging materials (Ellen MacArthur Foundation, 2016, p. 17). For some sectors, such as the health or transportation sector, plastic is necessary (ANCORS, 2018, p. 9). In the case of the MP, functionally equivalent substitutes existed, and CFCs had fewer uses than plastics today (Simon & Schulte, 2017, p. 34).

A majority of stakeholders interviewed for this thesis emphasised the need for a reduction of the production and use of plastics to manage the problem. In the case of the MP, it was not about reduction, but about substitution which resulted in the industries supporting an agreement. In the case of marine plastic pollution, experts do not recommend a mere substitution of plastic items, as this could lead to further ecological problems (ISOE, 2018, pp. 26-27; Simon & Schulte, 2017, p. 23). The representative of the David Suzuki Foundation (2018, p. 18) asserts that the technology to not pollute is already available. However, as it is cheaper to pollute than to manage plastic pollution properly, pollution is chosen over environmental protection. Solving the problem of marine plastic pollution will require changes in the current economic system (David Suzuki Foundation, 2018, p. 18). Plastic pollution is an economic problem, rather than an environmental problem and will need to be solved through "re-inventing economics" (David Suzuki Foundation, 2018, p. 18).

Several experts that were interviewed (ANCORS, 2018, pp. 8-9; David Suzuki Foundation, 2018, p. 20) point to the challenge that the existing frameworks on ocean governance do not include land-based sources. They highlight that a treaty to manage marine plastic pollution would need to affect countries' production cycles and industrial processes, and thus be an ocean treaty and a sustainable production and consumption treaty simultaneously. Such a combination of a treaty does not exist up to date and ocean governance and pollution control are mainly looked at separately. The split in responsibility of the issue between different ministries also leads to a lack of coordination within governments (ANCORS, 2018, p. 8). According to Simon & Schulte (2017, p. 32), modifications of the mentioned treaties are "unlikely to ever successfully prevent plastic pollution of the oceans" and therefore call for a new treaty with a focus on land-based plastic pollution by improving waste management systems within national jurisdictions. Simon & Schulte (2017, p. 14; 45) call for action on plastic pollution that goes further than existing efforts that have been "partnership-based, ocean-focused, and mostly voluntary".

Marine plastic pollution affects different maritime zones under national sovereignty, as well as the open high seas which are beyond national jurisdiction (Raubenheimer, 2016, p. 42; UTas, 2018, p. 1). The problem of marine plastic pollution raises the issue of intragenerational justice because costs have to be covered by regions where the plastic waste gets carried to, as well as intergenerational justice due its longevity (UN Environment, 2017, p. 113; 127). Similar to the problem of ozone depletion and climate change, also marine plastic pollution requires the international community to enact the precautionary principle and collectively act on the issue to avoid worse consequences.

To address these challenges, and considering the fact that existing efforts to solve the problem of marine plastic pollution have so far not been sufficient (Simon & Schulte, 2017, p. 14), the need for international cooperation becomes evident. The improvement of production and use of plastics, closing the loop and a minimisation of the proportion of end-of-life plastic entering the waste stream requires a collective effort (UNEP, 2017, p. 20). There is a gap in international hard law in addressing land-based sources of marine plastic pollution (Vince & Hardesty, 2017, p. 124) and up to this date no international legally binding treaty combining ocean governance and pollution control frameworks exists. As some key regions have not introduced binding regulations to tackle the issue, a global mechanism would ensure liability and compensation (UN Environment, 2017, p. 127). Addressing the problem of marine plastic pollution under the existing frameworks would require extensive coordination regarding targets, implementation, monitoring reporting and compliance measures (UN Environment,

2017, p. 127). A new global architecture would provide long-term legislative security at the national level, as well as guarantee the same regulations for all competitors in industry (UN Environment, 2017, p. 127).

3.3.4 Treaty Design Elements

Treaty design matters in regards to how the institution functions and which outcomes will be achieved (Rosen, 2015, p. 33). States will only comply to international law if they have incentives to do so. The two case studies of the Montreal Protocol and the Kyoto Protocol showed how treaty design contributed to success and failure of international environmental regimes. The key goal when drafting a treaty is to ensure that states have incentives to join and comply to targets while still changing their behaviour in the intended way. Adequately chosen design elements can contribute to the success of a treaty. Beyerlin et al. (2007, p. 2) argue that "sound treaty-making is necessary for ensuring compliance" but will fail when it is aimed at a wide range of environmental issues and does not suit to the situation at hand. This section identifies design elements that need to be included when drafting a Global Plastics Treaty to manage the problem of marine plastic pollution.

Common but Differentiated Responsibilities

The agreement needs to be perceived as fair, the procedure has to be accepted and be equally applied across member states (Chayes & Chayes, 1995, p. 127). Plastics are used in all parts of the world, but production, manufacture, consumption and disposal are not equally distributed across the globe. 80% of plastic leakage into the oceans comes from developing middle-income countries in Asia, where collection and recovery systems are not adequately equipped to handle the amounts of waste (Ellen MacArthur Foundation, 2016, p. 33). However, the negotiation process needs to recognise the high consumption of plastic by industrialised countries, as well as their significant amount of exports to developing countries. Around 50% of the plastic waste generated in Europe is exported where no control over treatment is ensured (European Commission, 2018, p. 16). Figure 3 shows the global distribution of plastic production and mismanaged waste. It indicates that Asia is a hotspot for mismanaged plastic waste. However, major plastic producers are, besides China, the EU and the US.

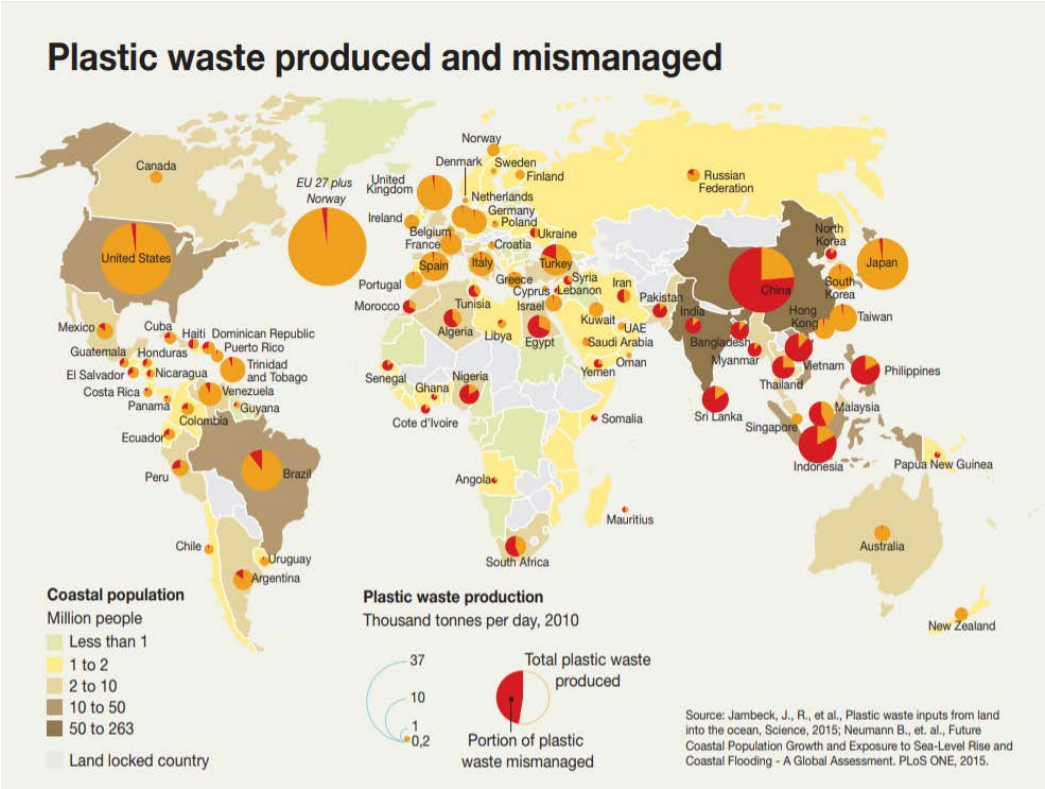

Figure 3: Global Production and Mismanagement of Plastics[11]

Developing countries often do not have the financial means to introduce functioning waste management systems which would be able to sustainably handle waste. Pressing problems of poverty, violence and political instability might even increase the incapability or unwillingness of prioritising the improvement of waste collection and recycling systems. Negotiators need to recognise the interdependence of the international plastics trade and address negative externalities in cooperation. Countries where the plastic waste is disposed of cannot carry full responsibility of its waste management, rather countries of production and consumption also have to get involved. The treaty design needs to respectfully consider history, financial capabilities, as well as local conditions of the different states to achieve participation.

Scope

For the regime to be successful, treaty design needs to guarantee that meeting the targets will achieve the intended outcome, which can be done by addressing the issue within an adequate scope. Achieving the targets of a treaty does not necessarily imply that the problem is therefore solved (Rosen, 2015, p. 39). It is important not to incentivise short-term actions, as this would prevent long-term solutions (Rosen, 2015, p. 39). The overall goal of a Global Plastics Treaty would be impact reduction, as well as prevention and elimination of

11 Source: GRID-Arendal and Maphoto/Riccardo Pravettoni, available at: www.grida.no/resources/6931

marine plastic litter and microplastics (UN Environment, 2017, p. 128). Scientific findings need to be the basis for setting targets. To manage marine plastic pollution, the treaty design needs to address plastics entering the ocean from sea-based and land-based sources, as well as all chemicals and additives used within the lifecycle of plastics (UN Environment, 2017, p. 129). Table 4 gives an overview of main plastic items, originating from sea-, and land-based sources which the treaty design of a potential Plastics Treaty would need to include to adequately address the problem of marine plastic pollution, namely lost fishing gear, hard and soft plastics, as well as microplastics. For each of the categories, mechanisms are suggested, building on the findings from academic literature on existing efforts. It indicates fishing industry regulations, product design innovation and education in the case of sea-based sources and the improvement of waste management systems, the introduction of a circular economy, product design innovation, bans on certain substances or items, economic mechanisms to incentivise reduction of plastics consumption, as well as education about impacts of plastic pollution.

The solution to microplastics needs to take a different approach, due to the different sources and their small size. Bans of microbeads have already been successfully implemented in the US and Canada (Dauvergne, 2018, p. 26; Ocean Wise, 2018, p. 30). Concerning plastic fibres, the Ocean Wise representative (Ocean Wise, 2018, p. 30) explains that there are ways to filter a number of particles in waste water treatment facilities to prevent particles from reaching the oceans, however, emphasises that this technology is not available to many countries. Besides technology advancements, education is key to make industry and the public aware of the impact of products. The last column describes the outcome that is intended for the respective mechanisms.

Table 4: Scope of the Plastics Treaty

Source	Category	Mechanism	Outcome
SEA-BASED	(mainly) Lost & abandoned fishing gear	Fishing industry regulations	Pollution Mitigation
		Product design innovation	Pollution Prevention
		Education	Pollution Mitigation/ Prevention
LAND-BASED	Hard Plastics + Soft Plastics	Improvement of Collection and Recycling Systems	Leakage Prevention
		Circular Economy	Pollution Mitigation/ Prevention
		Product Design Innovation	Pollution Mitigation/ Prevention
		Bans	Pollution Prevention
		Economic Mechanisms	Pollution Mitigation/Prevention
		Education	Pollution Mitigation/ Prevention
	Microplastics	Bans	Pollution Prevention
		Product Design Innovation	Pollution Mitigation/ Prevention
		Technology development	Pollution Prevention
		Education	Pollution Mitigation/ Prevention

Moreover, the different steps of production, manufacture, consumption and disposal have to be considered (ANCORS, 2018, p. 11). The representative from ANCORS (2018, p. 11) highlights the need for an "industry component", namely, the importance of sustainability of plastics in the design, production, in the use of chemicals and as the end-product, which requires transparency of production and treatment, as well as of resins, products, waste products, and chemical components. The representative emphasises that such an industry component would need to be designed with industry (ANCORS, 2018, p. 12). All stakeholders interviewed underline the need to include the different stakeholders from the sectors government, industry, academia and civil society.

While many recommendations exist, the challenge remains how to adapt them to different local contexts (ISOE, 2018, p. 28). Local conditions need to be taken into account and therefore some mechanisms might achieve different outcomes depending on the country and

the region they are implemented in. Interviewees of Simon & Schulte's study (2017, p. 33) predict more feasibility for an overall waste discharge elimination target than specific national measures. Simon & Schulte (2017, p. 33) recommend a binding goal to eliminate plastic pollution through "timebound, quantitative reduction targets and improved waste management" for the treaty design. Simon & Schulte (2017, p. 34) suggest identifying the amount of waste that is not properly collected and setting a goal to increase waste collection rates, as the amount of waste that enters the ocean is much more difficult to measure. Raubenheimer (2016, pp. 196-197) suggests two different approaches: The "Waste Reduction Approach" for a more integrated waste management system, as a short- and medium-term solution, and the "Usage Reduction Approach" for reducing per-capita virgin material use and closing the loop, as a long-term solution. The UNEA-3 assessment outlines the "6R approach" of reducing, redesigning, refusing, reusing, recycling and recovering, which would reduce the amount of plastic consumption (UNEP, 2017, p. 103).

Issue-Linkage

As seen in the example of the Montreal Protocol, negotiations regarding environmental issues do not necessarily need to be dealt with "in isolation" but can be linked to other issues. The Montreal Protocol could provide a model for regulating international trade in non-hazardous plastic waste (Haward, 2018, p. 2; UN Environment, 2017, p. 154; UTas, 2018, p. 49). The representative of ANCORS (2018, p. 11) asserts that the free-rider problem can be overcome by including trade restrictions. Raubenheimer et al. (2017, p. 324) suggest taking the MP as a best practice example to solve the marine plastic pollution problem through regulating the plastics industry on the global level: This could be done by reducing the production of virgin material within the plastics industry, as well as by regulating the polymers and chemical additives as controlled substances globally. A list of common chemical additives and polymer types can assist the control of the chemical components (Raubenheimer & McIlgorm, 2017, p. 325).

In the case of the MP, linkage to trade and the introduction of trade restriction led to success. However, when considering trade restrictions, it is important that these are made credible. In order to lead to behavioural change of the participating states, trade restrictions need to be severe and credible which implies that they should not put more costs on imposing states (Barrett, 2003, p. 388).

Financial Mechanism

The implementation of measures of a Global Plastics Treaty, e.g. the improvement of waste collection and recycling systems, requires financial investment. According to Raubenheimer (2016, p. 29), the most significant constraint on domestic implementation of measures to prevent marine plastic pollution is funding. The treaty design of a Global Plastics Treaty needs a financial mechanism which ensures that developing countries can financially stem the costs for implementation of the measures to manage the problem. Funding could come from a multilateral fund, as it was successful in the case of the Montreal Protocol (Raubenheimer, 2016, p. 26). Responsibility to pay the multilateral fund, however, cannot be measured at the amount of waste generated, but rather at the capacity to implement and contribute (Raubenheimer, 2016, p. 27). Barriers to domestic implementation need to be understood and addressed (Raubenheimer, 2016, p. 7).

Other ideas to finance the measures to eliminate plastic pollution include the principle of extended producer responsibility, which makes producers responsible for costs associated with the recovery and disposal of their products. This concept incentivises producers to change the design of their products according to the collection and recycling systems in place (Kunz, Mayers, & Van Wassenhove, 2018, p. 46). 'Extended Producer Responsibility' or the 'polluter pays principle', thus, involves the packaging, plastics and retail industry in waste management and marine litter prevention by making them responsible for appropriate collection and treatment at the products' end of life (GIZ, 2018, p. 24). This concept is successful in Norway and includes a) the obligation of companies to pay into a fund (depending on their amount of single-use packaging on the market), b) compliance to product design criteria with a percentage of products having to be recycled within the country, and c) annual reports on waste generation and the obligation of reduction (ANCORS, 2018, p. 8). This scheme could be built on by creating concrete guidelines for testing harm, knowing about the origin and recyclability of products, while allowing for innovation and exemptions (e.g. health sector) (ANCORS, 2018, p. 9). Thinking this concept on the global level would incentivise sustainable product design and increase the domestic collection and recycling rate with the result of marine plastic pollution prevention. The 1996 Protocol to the London Dumping Convention was the first international agreement that included the precautionary principle and the polluter pays principle on a global scale (Raubenheimer, 2016, p. 79).

Reporting, Monitoring and Review Procedures

Compliance depends on the regime's compliance systems (Mitchell, 1994, p. 425). Certain elements can be included in the treaty which have implications on whether or not actors comply. Monitoring procedures are crucial for compliance. If progress is not monitored, states cannot be held accountable in case of non-compliance. Having comprehensive monitoring procedures in place incentivises compliance, as states do not want to be held accountable for inaction. Reporting, monitoring and a review mechanism are critical for the success of a Global Plastics Treaty (ANCORS, 2018, p. 12; Simon & Schulte, 2017, p. 37). Examination of the content of implementation plans, as well as evaluation of the extent to which they are implemented and effective is important for identifying progress and learning from past experiences (Simon & Schulte, 2017, p. 33;38).

NGOs and international organisations play a significant role in ensuring an effective review process (Chayes & Chayes, 1995, p. 249). They provide information and data to regimes, report on progress and are often essential for evaluation and assessment of states' performances (Chayes & Chayes, 1995, p. 251). NGOs are valuable in detecting non-compliance and exercise shaming in the public sphere (Chayes & Chayes, 1995, p. 251). NGOs can influence policy makers directly, but more often do so by spreading information, lobbying for certain interests and mobilising voters (Chayes & Chayes, 1995, p. 252). NGOs are already involved in naming and shaming activities towards companies, concerning plastic products that are found at beaches (Greenpeace Canada, 2018, p. 22). NGOs and international organisations can provide the personnel and resources for the management of compliance (Chayes & Chayes, 1995, p. 251). Taiwan's 'Action Plan of Marine Debris Governance' acknowledges the impact of NGOs in the implementation of policies by officially including them in the document to undertake education and outreach activities, as well as monitor marine debris (Environmental Protection Administration & NGO Alliance, 2018, pp. 2-10). To use the resources and impact of NGOs in implementing a Global Plastics Treaty to the full potential, their participation and contribution need to be specifically outlined in the treaty design.

Enforcement

If enforcement cannot be guaranteed, then the targets "only exist on paper" and will not contribute to change (ISOE, 2018, p. 28). Marcoux et al. (2013, p. 164) argue that many treaties are lacking existing enforcement mechanisms with states having to "collectively chosen to disregard non-compliance" and not incorporated enforcement mechanisms in the treaty design. Moreover, if a state does not want to alter its behaviour it might still enter a treaty if it

perceives compliance not to be enforceable (Marcoux & Urpelainen, 2013, p. 165). Coercive approaches for compliance have largely been avoided, taking into consideration the required complex and costly monitoring mechanisms (Armstrong et al., 2012, p. 291). Punishments are costly for the punished, as well as for the punishers (Finus, 2001, p. 2). Because sanctions involve high military, economic or political costs for sanctioning states, "[…] sanctioning authority is rarely granted by treaty, rarely used when granted, and likely to be ineffective when used" (Chayes & Chayes, 1995, pp. 3233). However, the treaty cannot be successful if there is no consequence in the case of non-compliance. As there is no higher authority to guarantee enforcement, the treaty needs to be "self-enforcing" (Finus, 2001, p. 4). Due to the fact that confrontational approach to non-compliance proved unsuccessful, approaches to encourage compliance based on cooperational measures started to emerge, such as the Montreal Protocol (Beyerlin et al., 2007, p. 1). To overcome the free-rider problem, incentives for participation and compliance need to be provided to states. Incentives can be used to avoid defection for immediate gains or of fear of immediate losses (Oye, 1986, pp. 4-11). The compliance mechanism has to be comprehensive enough to make states prefer compliance over non-compliance. In the case of the MP, issue-linkage was the incentive to comply and at the same time prevented states from free-riding, as in this case disadvantages of non-compliance outweighed benefits of free-riding.

On the national level, enforcement mechanisms are much more effective because states can use legal measures of national sovereignty to address non-compliance (David Suzuki Foundation, 2018, p. 19). The problem of marine plastic pollution requires cooperation on the international level, and domestically implemented solutions (Raubenheimer, 2016, p. 7). An international legally binding agreement can force states to implement measures through their domestic policies (UTas, 2018, p. 48), such as national policies to improve waste management and recycling infrastructure, implement changes in product design, as well as introduce bans on certain products and EPR schemes.

Flexibility

The treaty needs to be able to adapt to changing conditions and circumstances (Chayes & Chayes, 1995, p. 15). There are many uncertainties about the impacts of different plastics on marine life, the ecosystem and human health (ISOE, 2018, p. 27; Ocean Wise, 2018, p. 33; UTas, 2018, p. 49). With advancing research, the Plastics Treaty needs to be designed flexibly to adapt to new scientific knowledge and technology. In the case of the Montreal Protocol, the treaty

design allowed for further substances to be added to the protocol and a more radical phase-out time frame with emerging new scientific findings.

Other than the Montreal Protocol, which intended to eliminate certain substances, in the case of marine plastic pollution, it will neither be desired nor necessary to entirely eliminate plastics. Certain substances which cannot be recycled without complications and/or constitute particular environmental harm can be discussed to be banned. However, the focus needs to be on holistic policies to ensure a circular economy where reduction and reuse have priority before recycling (ANCORS, 2018, p. 10). Simon & Schulte (2017, p. 44) suggest a flexible approach in the way that states can choose measures to fulfill targets that are set by the treaty on the national level. An United Nations Environmental Assembly (UNEA) assessment suggests a mix of binding, voluntary and self-regulatory measures to tackle the problem, incorporating international trade of products, components and waste, as well as obliging industry to sustainably produce, consume and dispose of plastics and their chemical additives (UN Environment, 2017, p. 16). This approach has already been used in the Paris Agreement (United Nations, 2015, Art. 13.3), according to which states could set "nationally determined contributions". In this case, the targets would be set to ensure the intended outcome overall but leave it up to the states how to achieve these targets.

Overall, this section acknowledged previous efforts to prevent marine plastic pollution on local, national, regional and international levels. Separately, those efforts are not sufficient to tackle the problem and a comprehensive framework, including ocean governance and pollution control considerations, need to be established. This analysis identified treaty elements that are likely to contribute to a successful plastics regime, namely a) the inclusion of the principle of common but differentiated responsibilities, b) a scope addressing sea-based and land-based sources, as well as chemical additives and all stages of the life-cycle of plastics, c) issue-linkage to international plastics trade, d) a financial mechanism to support the financial and technical implementation of measures where needed, e) effective reporting, monitoring and review procedures, as well as f) flexibility to adapt to new scientific findings, and g) enforcement through incentivising compliance and deterring non-compliance.

4. Conclusion and Outlook

Marine plastic pollution is one key transboundary environmental problem the world faces today. It affects the global ecosystem, coastal communities, marine industrial sectors around the world and consequences on food security and human health remain unknown. As a result, stakeholders on local, national, regional and international levels have undertaken

efforts to prevent marine plastic pollution – but failed to adequately address the issue. International regimes, referring to rules and regulations that govern the behaviour of states, have often been a way for states to solve such global problems and offer potential for solving the problem of marine plastic pollution. Agreement on legally binding regulations on the global level does not come without challenges, because – in the absence of a world government – it is practically impossible to enforce compliance. In solving problems regarding the protection of GPGs, states might be tempted to free-ride, meaning that they will not comply and rely on others to invest in providing the GPG. This thesis examines reasons for states to join and comply to international regimes and identifies that the free-rider problem can be overcome through treaty design. At first glance, without a world government, legally binding global instruments might seem to be insignificant and non-compliance to targets without consequence. However, this thesis demonstrates that this is not the case. If a treaty is well-designed, meaning that it is beneficial for states that are parties to the agreement and disadvantageous or harmful to non-parties, the treaty becomes relevant to all states and will incentivise participation and compliance, as well as deter non-compliance of a large number of states.

This thesis examined two examples of international regimes - one successful and one unsuccessful - to identify factors for success and failure of these international regimes. As a second step, the respective treaty designs were investigated to identify their contribution to success and failure.

Results show that factors for success in the case of the Montreal Protocol were an advantageous cost-benefit analysis, active leaders pushing for an agreement, support by domestic non-state actors, as well as perceived urgency for action. The treaty design constituted a necessary condition for success through: a) the use of the principle of common but differentiated responsibilities, b) trade sanctions, c) a financial mechanism to support developing countries, as well as d) flexibility through adjustments and amendments to adapt to changes, such as new scientific findings. The Kyoto Protocol was analysed for factors of failure which were the disadvantageous cost-benefit analysis, perceived unfairness through the exclusion of developing countries from implementation costs of the agreement, a lack of compliance capacity due to domestic constraints, as well as inadequate targets to address the problem. The treaty elements that contributed to failure of the regime that this thesis indicates are: a) one-sided responsibility, b) an inadequate scope to deal with the problem, as well as mechanisms that allowed for loopholes and complicated monitoring, c) rigidity incentivising short-term policies and preventing innovation, as well as d) lack of compliance and enforcement mechanisms.

Even though ozone depletion, climate change and marine plastic pollution all fall under the category of transboundary environmental problems, harm GPGs and require international cooperation to find a solution, they have distinct characteristics. No treaty design exists that guarantees success in all cases, and different problems require different solutions. However, this thesis demonstrated the ability of treaty design to steer the regime in the direction of success or failure.

The subject of this thesis were international legally binding treaties to shape behaviour of states and their domestic structures within them. This puts attention on hard law, as well as on states as the main actors to initiate change and have the means to protect global public goods. However, there is need to investigate further and from other theoretical points of view, how non-state actors can – even independently from states – create international regimes and protect GPGs. Incentives to change behaviour with legal, economic or technical solutions disregard people's perceptions and their societal relationship with the issues at hand (David Suzuki Foundation, 2018, p. 19). Cognitive approaches, thus, offer a valuable complement to understand how interests change and develop.

Nonetheless, treaties that incentivise participation and compliance, as well as deter non-compliance through cooperational means, have great potential to successfully protect the GPG in question. A treaty can enforce itself by giving parties of the agreement an advantage over non-parties and thus making participation and compliance more beneficial than deviance. This thesis suggests treaty elements suited to the problem of marine plastic pollution which can form the basis for negotiations for a Global Plastics Treaty. Academic literature, the two case studies of successful and unsuccessful regimes and their respective treaty designs, as well as interviews with experts in the field provided the basis for analysis. Overall, the findings suggest the following treaty elements to contribute to a successful plastics regime: a) the inclusion of the principle of common but differentiated responsibilities, b) a scope addressing sea-based and land-based sources, as well as chemical additives and all stages of the life-cycle of plastics, c) issue-linkage to international plastics trade, d) a financial mechanism to facilitate implementation in developing countries, e) effective reporting, monitoring and review procedures, f) flexibility to adapt to new scientific knowledge and g) enforcement through incentivising compliance and deterring non-compliance.

The current momentum has put plastic pollution on top of government agendas and awareness about the issue is rising. Experts (Ocean Wise, 2018, p. 33; UTas, 2018, p. 49) predict that this momentum is an opportunity for change. The literature review indicates that states are likely to form and comply to international regimes when economics promise benefits,

leaders are pushing for an agreement to be reached, domestic actors accept and domestic structures allow for implementation of measures, as well as when the issue is perceived as urgent. Hence, the case of an emerging plastics regime seems promising. Currently, leaders push for action on the international stage within governments, international organisations, as well as civil society. The EU sees itself as "best placed to lead the transition to the plastics of the future" (European Commission, 2018, p. 1). The US and Canada also stepped forward as leaders on marine plastic pollution, banning microbeads in early 2018 (Dauvergne, 2018, p. 26; Ocean Wise, 2018, p. 30; Sea Smart, 2018, p. 43; Surfrider Foundation, 2018, p. 45). The G7 Plastics Charter sent a signal to the world that the world's major economies are currently discussing solutions to the problem of marine plastic pollution.

Solutions to solve the problem are already available (David Suzuki Foundation, 2018, p. 18). The mistake with the Kyoto Protocol was the focus on short-term policies – the lesson that policy makers need to take on a long-term perspective to adequately address the problem. Costs for reversing the negative externalities of marine litter accumulate as plastics continuously enter the ocean and experts in the field call for immediate action (Dauvergne, 2018, p. 29; UTas, 2018, pp. 48-49). Science is already advanced enough to enact the precautionary principle. The emergence of a successful Global Treaty to manage plastic pollution will now depend on the inclusion of different stakeholders, the negotiation process and the design of the treaty.

Because the domestic structures and actors play a critical role in the negotiators' decision to join or reject an agreement, relevant stakeholders need to be involved in the negotiation process, including the private sector, non-profit organisations, as well as academia. As could be seen in the example of the Montreal Protocol, engaging different stakeholders from the beginning helped to understand the different positions and expectations. Informal scientific and economic workshops, which included stakeholders form politics, industry, academia and NGOs, generated ideas for solutions and "laid foundation for international consensus" (Fitzmaurice, 2009, p. 7). Stakeholders from all sectors are willing to cooperate on the issue of marine plastic pollution. However, they are still positioned on different sides of the table, with own expectations, concerns and priorities. Often what hinders the implementation of ideas and innovation are bureaucratic or political issues which can be resolved through dialogue. If the design of a Global Plastics Treaty is perceived as fair and outlines economically and technically feasible measures that are verifiable and adequate to address the issue, states will join and comply to targets and a successful plastics regime will emerge. Overall, the conditions are right for the emergence of a successful international plastic regime – now it depends on the

negotiators of a Global Plastics Treaty to let all stakeholders contribute and choose appropriate treaty elements.

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Appendix

ANNEX 1: Research Project Overview

Research project:

International Cooperation for the Protection of Global Public Goods-

Towards a Global Plastics Treaty

Research investigator:	Ina Tessnow- von Wysocki
Supervisors	Prof. Dr. Kurt Huebner, University of British Columbia
	Dr. Kirsten Jörgensen, Freie Universität Berlin

Overview:

International cooperation is required to solve the global environmental challenges our world faces today. Examples of transboundary environmental problems, such as the depletion of the ozone layer, climate change and marine plastic pollution, show the interdependence of sovereign states and the need for international cooperation for the protection of global public goods. Even though anarchy allows states to enjoy sovereign decision-making, states have often formed international regimes and negotiated legally binding treaties to deal with global problems. Efforts to prevent marine plastic pollution have been made on the national, regional and international level, however, until today no adequate solution to effectively manage the problem has been developed and the international community has not come together to negotiate a legally binding treaty which would manage marine plastic pollution.

As the international debate about solutions to marine plastic pollution includes voices demanding an international legally binding treaty to deal with the problem, this thesis seeks to identify effective treaty mechanisms for a successful “Plastic Regime” to manage the problem of marine plastic pollution. In order to do so, this thesis is concerned with the question why some international regimes are successful, and others fail. Motivations for states to cooperate will be identified by reviewing a wide array of literature on the formation of and compliance to international regimes. The hypothesis of this thesis is that treaty design is decisive for the success or failure of international regimes.

In order to identify treaty elements that can contribute to success of a global plastics regime, the thesis will examine the treaty design of a successful and an unsuccessful international environmental regime for the protection of global public goods. The Montreal Protocol will serve as an example of a successful regime, while the Kyoto Protocol will serve as an example for an unsuccessful regime. Based on these findings and an overview of existing ocean governance and pollution control frameworks under consideration of involved stakeholders, elements for the treaty

design of a potential plastic regime will be identified that are assumed to lead to success of such a regime.

ANNEX 2: Interview Question Guidelines

Academia

Interview Questions Guideline (Academia)

NAME OF RESEARCH INSTITUTE/UNIVERSITY

A) Information about the interview partner

1. Could you please give me a brief overview of your area of research and experience regarding international law/ environmental governance/ marine plastic pollution?

B) Environmental Governance

2. Do you consider legally binding treaties an effective way to protect global public goods?
3. How can the free-rider problem be overcome in creating and implementing legally binding agreements?

C) Marine Plastic Pollution

Actors

4. Who has to take a leading role in solving the problem of marine plastic pollution?
5. Which other actors need to be involved?
6. Are legally binding regulations by governments needed? If so, in which areas?
7. What is the role of industries in tackling the problem of marine plastic pollution?
8. How much influence do consumers have in achieving change in this regard?

Challenges and Potential

9. Where do you see challenges in managing marine plastic pollution?
10. What would need to happen to overcome these challenges?
11. Where do you see potential in solving the problem of marine plastic pollution?

12. Is a reduction of plastic production and use necessary to manage marine plastic pollution or can better waste management and recycling solve the problem?

Scientific Evidence and Uncertainties

13. How advanced is research up to this date on:
    a. Sources of marine plastic pollution
    b. Microplastics
    c. Impact on the ecosystem and human health
    d. Solutions to tackle the problem ?
14. Which area (s) should future research be concentrated on regarding the problem of marine plastic pollution?

D) International Treaty on Plastic Pollution

15. Do you think a global legally binding mechanism to manage marine plastic pollution would be helpful or necessary?
16. What would be the role of academia in contributing to the creation and implementation of such a treaty?
17. Can you think of other legally binding treaties in ocean governance and pollution control that should be amended or serve as models for a new international framework?
18. Is there anything else that you would like to add?

Non-for profit

Interview Questions Guideline

NAME OF ORGANISATION

A) Information about the organisation and the role of the representative

1. Could you please give me an overview of the organisation and your position?
2. Where does funding come from?

B) Projects

3. What projects and initiatives does the organisation engage in regarding the problem of marine plastic pollution?
4. Which target groups is the organisation approaching?
5. What impacts did these projects have?
6. Are there any new projects planned additionally? If so, which ones?

Awareness-raising

7. Which activities of your organisation contribute to awareness raising about the problem of marine plastic pollution?

Pressure on governments/industry

8. Does the NGO put pressure on governments and/or industry to undergo certain action regarding the problem of marine plastic pollution? If so, how?

C) Environmental Governance

9. Do you consider legally binding treaties an effective way to protect global public goods?
10. How can the free-rider problem be overcome in creating and implementing legally binding agreements?

D) Marine Plastic Pollution

Actors

11. Who has to take a leading role in solving the problem of marine plastic pollution? Which other actors need to be involved?
12. Are legally binding regulations by governments needed? If so, in which areas?
13. What is the role of industries in tackling the problem of marine plastic pollution?
14. How much influence do consumers have in achieving change in this regard?

Challenges and Potential

15. Where do you see challenges in managing marine plastic pollution?
16. What would need to happen to overcome these challenges?
17. Where do you see potential in solving the problem of marine plastic pollution?
18. Is a reduction of plastic production and use necessary to manage marine plastic pollution or can better waste management and recycling solve the problem?

E) International Treaty on Plastic Pollution

19. Would you consider a global legally binding mechanism to manage the problem of marine plastic pollution helpful or necessary?
20. What would be the role of NGOs in contributing to the creation and implementation of such a treaty?
21. Can you think of legally binding treaties in ocean governance and pollution control that should be amended or serve as models for a new international framework?
22. Is there anything you would like to add?

For-profit

Interview Questions Guideline (For-Profit)

NAME OF COMPANY

A) Information about the organisation and the role of the representative

19. Could you please give me an overview of the company and your position?

B) Sustainability within the company

20. How is the company involved in environmental sustainability regarding marine plastic pollution? Please name some initiatives/programs/practices/investments involving i.e. sustainable product design, waste management, circular economy, corporate responsibility or any other relevant areas.
21. What are the company's motivations for such initiatives/ programs/ practices/ investments?

C) Impact

22. What is the impact of such initiatives?

D) Marine Plastic Pollution

Actors

23. Can you name one or several actor(s) which need(s) to take a lead on the prevention of marine plastic pollution?
24. Which other actors have to be involved apart from that?

E) International Treaty on Plastic Pollution

25. Do you see the need for a legally binding mechanism to manage the problem of marine plastic pollution?
26. If such a treaty was to be agreed on globally, how do you see the role of the company (or other companies) in its creation and implementation?
27. Is there anything you would like to add?

ANNEX 3: Interview Transcripts

ANCORS

Interview Transcript Summary

Organisation: Australian National Centre for Ocean Resources and Security (ANCORS)

Date: 29th October, 2018, 8 am

Location: Sydney, Australia

Form of Interview: Skype

Overview of Research and Experience of the Representative

In 2017, the representative joined the Australian National Centre for Ocean Resources and Security (ANCORS) at the University of Wollongong, Australia. Her PhD focused on international and regional legal and policy frameworks, looking specifically at preventive measures for marine plastic debris. She looked at two land-based sources, as well as the sea-based sources generating marine debris in form of fishing gear. She analysed UN Regional Seas Conventions and international agreements under those case studies and came up with two models for a new agreement to manage plastic pollution. One of the models was based on the Montreal Protocol with a chapter looking at considerations for a global fund. Last year she worked with UN Environment working on the assessment for the resolution adopted for UNEA-2, identifying the gaps in the framework and ways to move forward. She was part of the Ad Hoc Open-Ended Expert Group on Marine Litter and Microplastics, and with UNEP has developed guidelines for new action plans in other regions. She has worked with the Regional Seas in the Pacific, looking at domestic legislation to manage plastics. Moreover, she has been involved with the economics of marine litter, identifying indicators for calculating the national costs of marine litter in order to incentivise improving marine litter governance.

Actors

Actors for solving the problem have to include economic forums, industry forums, as well as UNEP, UNDP, UNIDO, WTO and WHO.

Legally Binding Mechanisms

Concerning legally binding regulations, the representative would like to see more emphasis on extended producer responsibility. However, not just focusing on a funding scheme for collection and recycling, but rather - how it was initially intended - including product design innovation. The extended producer responsibility scheme in Norway can be named as a best practice example. Norway's EPR scheme includes three components: 1. Companies need to pay money into a fund,

depending on the amount of single-use plastic packaging they are putting into the market; 2. Companies have to comply with some product design criteria that will stimulate change in design; and a percentage of the products need to be recyclable within the market within the country; and 3. companies need to report on their waste generation and this number need to be reduced every year. An EPR scheme, such as the one in Norway, would assist in ensuring countries do not import material that cannot be recycled within the country and set an incentive for companies for product design innovation in accordance with local waste management and recycling infrastructures. Social environmental outcomes of EPR and examples of policy leavers to incentivise end-markets need to be looked at more. While certain bans can be helpful, particularly broader bans that include more single-use plastics instead of only one product. The focus, however, should lie on more holistic types of regulations also concerning sustainable material management, sustainable production and consumption.

Part of the solution is around retailers which give certain criteria to manufactures for their products. Pressure on the retailers by government legislation, as well as by consumers is needed for them to engage in changing the design of their products. In this way, unnecessary plastic components, such as additional packaging, or unrecyclable parts, can be eliminated where possible and the remaining plastic components can be easily identified, dismantled and recycled accordingly.

The representative asserts that Operation Clean Sweep should be binding, rather than voluntary how it is handled currently.

Challenges in Managing Marine Plastic Pollution

One challenge is that usually there is not one single ministry having control over the issue, but many different departments of ministries having responsibility. There is a lack of coordination between the different ministries within governments. Currently, the problem is looked at as a marine litter problem, not including manufacturing and sustainable production and consumption. This challenge can be improved through better coordination between different ministries, as well as coordination between government and industry. Holistic policies need to be created which consider the whole life-cycle of plastics. Governments need to look at policy leavers to incentivise end markets for plastics, e.g. through government procurement policies. Policies need to guarantee that products will be recycled by introducing policies such as landfill taxes or design criteria and create a market for recycled plastics.

Particularly developing countries emphasise social criteria before the environmental aspect, where plastics might offer a resource for other policies, e.g. incorporation of plastics in the construction sector to meet priorities of building homes and infrastructure. In such countries, the

short- to medium-term priority may be to use plastics as a resource in other sectors until we have proper recycling and markets in place.

Talking about the issue in the light of marine plastic pollution limits the discussion to ocean treaties and sea-based sources of pollution, which are only the symptoms of the problem and will limit the upstream options.

The representative points to some of the challenges of managing a policy that requires incorporating recycled content due to the difficulty of measuring the recycled content in a product. Technical difficulties also exist, such as variations in properties of products containing recycled material which might decrease competitiveness in comparison to products containing only virgin material.

The representative highlights the importance of traceability of plastic products but points to the problem of monitoring it. There is no common definition for recycling, as currently, it can include reuse, downcycling, as well as incineration and definitions depend on the country and specific context. Identified recycling rates can also differ depending on the time of measurement (arrival at the facility vs. pellets/ products after recycling). Recycling rates can be decreased by an inadequate sorting process, as well as losses on facilities due to properties of the products (e.g. black color; small size). The representative is in favour of chemical recycling, even though it is still a new technology and very expensive.

Reduction vs. improvement of waste management and recycling systems

We need to categorise between different groups of products. While some plastic products are absolutely necessary, e.g. in the health or transportation sector, there are other products that we may be able to find alternatives for, and others that we do not need or want, e.g. because they might be particularly harmful. While a ban on the “unnecessary” products makes sense, the necessary products will require us to adequately manage plastic waste. The EPR scheme in the case of Norway offers a good example which can be built on. The establishment of guidelines around testing for harm and knowing where products going and how they can get recycled with a mechanism for exemption (e.g. health sector) while allowing for innovation would set the right incentives for change.

Further Research

Waste profiles, as well as brand audits are done to further understand sources of marine plastic pollution, as well as to identify the companies that are putting these products on the markets. Overall, however, scientific evidence on the sources of marine plastic pollution is well advanced. Research on microplastics is progressing, however, we do know enough to start action on the issue. For micro- and macroplastics, even though there is proof of the impact of ingestion by e.g. sea birds,

there is no evidence about the impact of marine plastic debris on species at a population level or effects on food security and human health. Recently, plastic has been found in humans, however, there is uncertainty about what plastic is doing to our overall health, particularly our lungs.

Further research is needed on the market-based instruments, on policy interventions and on policy leavers. There is demand for pilot projects to measure the effectiveness of policies, so that similar countries can consider policy transfer. Norway offers a good best practice example, which, however, not many countries can relate with. Policy and economic research is needed, besides scientific research.

Legally Binding Agreements on the Global Level

The Montreal Protocol can be an example to limit virgin material for feedstock. However, as there is always going to be some raw material needed, we have to slow and shrink the circular economy through adhering to the waste hierarchy. In order to achieve the environmental outcome that we want with plastic in circular economy, reduction and reuse need to have priority before recycling.

Basel Convention

Norway proposed a change to the Basel Convention which would ensure more traceability and control through increased import administration. This may end up constraining the trade of plastic waste, which ultimately may lead to countries better managing their own waste and waste generation (a goal of the Basel Convention). Improved management of the trade in plastic waste may help prevent market shocks such as China's National Sword. Even though we do not know how much of the imported material in developing countries are actually ending up in the ocean due to inadequate handling, this change in the convention may result in less material being sent to countries where infrastructure does not allow for adequate handling. National inventories could identify environmentally certified facilities and their capacity and track that they do not take on more than they can deal with. We need better codes for different plastic wastes traded, as currently we do not have adequate transparency over the types of plastics and their chemicals. The proposed change in the Basel convention will force countries to deal with their waste - or at least sort it - more effectively and remove contaminants before exporting it. A white list needs to be done for chemicals that go into plastics. An amendment to the Basel Convention will put some additional administrative overheads on trade and could make recycling more expensive. This adds to the need national policy to make sure recycling is economically viable by creating markets for it and by designing products that are cheaper to recycle, as well as ensuring the costs of sorting and transport are not prohibitive.

Treaty on Marine biodiversity of Areas beyond National Jurisdiction

The treaty on marine biodiversity of areas beyond national jurisdiction should not include plastics because the greatest source is on land. Adequate conventions already exist for sea-based sources. Instead of including the problem of marine plastic pollution, it makes more sense to refer to the existing conventions and include a duty to comply with these, as we do not want to duplicate efforts.

International Treaty on Plastic Pollution

The representative generally considers legally binding treaties an effective way to protect global public goods, however, asserted that their effectiveness depends on how they are designed. The free-rider problem can usually be overcome by including trade restrictions for countries that are not part of the agreement. Not participating in the agreement will disadvantage countries by making them lose economically. This is sometimes more effective than designing enforcement measures.

While it may be difficult to achieve a binding agreement and administration and compliance can be costly, the representative asserts that a legally international binding agreement is needed and that regional efforts can help implement it. The objective needs to include land- and sea-based sources. Moreover, a global legally binding treaty needs to include an industry component, namely the plastics need to be sustainable in the design, production, use of chemicals and as the end-product. More transparency is needed globally on what is happening around plastic production, consumption and end of life treatment. There should be transparency on how a product is recycled (chemically, primary or secondary) and whether it is incinerated or not. More transparency is also needed when it comes to trade of resins, products, waste products and chemical components. The representative emphasises that such an industry component needs to be designed with industry and allow for innovation but within agreed environmental and human health risk boundaries.

An international legally binding agreement can generate funding from developed to developing countries, whereas this may not be the case in a voluntary agreement. There is currently financial assistance provided in this regard, particularly around waste management, but funding may be required to assist developing countries, for example, to develop holistic strategies to deal with the specificities of their waste profiles. An important question is what are a financial mechanism's outputs. Moreover, it is important that interventions do not affect certain countries in a negative way.

An important element of a potential Plastics Treaty is a reporting and monitoring, as well as a review mechanism. Actual costs, which is make up of the direct and indirect costs, need to be differentiated from the costs of implementing policy interventions, which includes costs to administer the policy, compliance costs and implications for industry (e.g. assistance to convert or improve processes). In the case of industrialised countries, often also additional costs to support developing

countries. This can lead to developed countries speaking up against a binding agreement, while developed countries support it.

Another issue is the question of where to host the secretariat. The representative highlights the importance of UNEP, however, believes input should extend beyond UNEP. Reason for this is, that marine plastic pollution is rather an economic problem, than an environmental problem and will need to include economic and industry forums. UNCLOS as the secretariat would limit the problem to be looked at from a marine perspective and CBD is focused on biodiversity. The representative suggests Norway as a possible host country, as in this way, economic forums can be brought in more easily and the country is seen as neutral and progressive by most countries which would facilitate first approaches to a treaty. Another option that the representative could imagine to be working would be a secretariat for which hosting responsibility moves around, such as it is the case with the G7, G20 and APEC.

How to design the meetings is also important, as meetings need to be designed in the way that experts can contribute and inform the debate. Contribution of academia and NGOs to the creation and implementation of a global legally binding treaty to manage marine plastic pollution includes modeling, coming up with ideas and assisting with assessment for UNEP. Assessments by academia and NGOs and portray the costs included for the different countries and stakeholders and draft ideas what the treaty could look like. They can come forward with a model and different options and can inform discussions.

BASF

Interview Transcript Summary

Organisation: BASF

Date: 24th September, 6.30 am

Location: Mississauga, Canada

Form of Interview: Phone

Information about the company and the representative

BASF is a German chemical company and the largest chemical producer in the world. The BASF Group comprises subsidiaries and joint ventures in more than 80 countries and operates six integrated production sites and 390 other production sites in Europe, Asia, Australia, the Americas and Africa. The representative has been working with BASF Canada for 4 months as the Manager for Sustainability and Government Relations after working as a consultant for the GIZ and working for the UN. Her work focuses on sustainability and government relations.

Sustainability within the company

Sustainability is integrated into the corporate structure of the company, as part of the strategic side, as well as the applied side. Sustainability pillars are: Sourcing and producing responsibly; 2. Producing safely for people and the environment 3. Producing Efficiently 4. Driving Sustainable Solutions 5. Valuing people and treating them with respect. BASF is committed to enhancing sustainability from their suppliers, within the company, and for its customers.

BASF uses and offers sustainability solutions in form of tools and methodology to customers, such as the eco-efficiency analysis and carbon footprint measures. The Triple S (Sustainable Solution Steering) methodology emphasises the goal to achieve a balance between the three dimensions of sustainability, 1. Economy: e.g. potential cost savings for customers through the use of their products; 2. Environment: e.g. ensuring standards are met and developing environmentally sound solutions and 3. Society: e.g. enhancing safety in production, use or end-of-life, stakeholder perception of solutions. The methodology is verified by PwC and characterizes different products into categories of “Accelerator”, “Performer”, “Transitioner” and “Challenged” products, identifying the performance standard of the product at hand. One of BASF’s targets is to increase the Accelerator products by 28% by 2020.

BASF is rolling out solutions for value proposition and to support customers. Not least because of the G7 involvement with the issue of marine plastic pollution, BASF is undertaking circular economy initiatives within its own company. Circular economy is the topic of the year but not a new concept for BASF. The company wants to use resources as long as possible and close the loop. BASF

is a member of the Ellen MacArthur Foundation and the Circular Economy 100 Initiative, which is a sustainability concept within the company, as well as the New Plastic Initiative, to ensure that sustainability and innovation go hand in hand. BASF emphasises innovation of plastic product design, including biodegradable plastics. Being a member of the Canadian Plastics Industry Association, BASF is also part of the Plastics Sustainability Coalition, together with the Chemistry Industry Association of Canada, and the American Chemistry Council, which regularly convene to discuss solutions. Moreover, the company has been actively engaged in the Ocean Clean Sweep[12] initiative. As it is difficult to mechanically recycle multi-layer plastics, currently BASF is developing a concept how to circumvent this challenge.

BASF's involvement with the G7 Environment Ministers Meeting

BASF was invited by the Canadian Minister of Environment and Climate Change, Catherine McKenna, to join the G7 Energy Environment and Oceans meetings in Halifax in September 2018. BASF was part of the G7 Oceans Partnership Summit, as well as a closed environment ministers' meeting. The meeting had a positive outcome and led to a closer relationship between the company and the Canadian government. BASF signed the G7 Plastics Charter which was previously agreed on by the majority of G7 member states. BASF supports the Charter but would like to focus efforts on articles 3 and 4, outlining lifestyles and education, as these are the main points to which BASF can contribute.

Marine Plastic Pollution

The challenge is where the accountability lies. Awareness among consumers can support making sustainable product decisions which is a significant point, e.g. with single-use plastics.

Actors

BASF believes that in order to tackle sustainability challenges, a multitude of stakeholders must collaborate. This includes government, industry, civil society, multilateral organisations, waste management companies and the wider global society, who all have their unique skills to make a valuable contribution to sustainability.

Solutions

BASF emphasizes that all parts of the plastics value chain need to be understood to find a solution. BASF proposes an increased focus on chemical feedstock recycling. Chemical recycling

12 A global campaign working towards achieving zero pellet, flake, and powder loss. (See: https://www.opcleansweep.org/about/value-of-ocs/)

should be part of the solution to manage the problem of marine plastic pollution, as the process is able to break the material down into their original polymers, rather than simply molt the material and therefore offers possibilities to use these polymers as feedstock for new products. Reasoning to use virgin material over recycled feedstock is often that there is no guarantee for waste input, because too much is going to landfill.

Recycling and recovery are solutions, however, additionally, other solutions are necessary, such as a harmonization of partners with industry to support innovation. The key for government is to work with industry, in order to ensure recycling and recovery targets are manageable. Policy measures are important in certain areas, such as ensuring economic viability of targets and ensuring presence of waste management infrastructure. However, ambitious targets require time and R&D investment for implementation and BASF wants to make sure that the set targets are realistic to meet before signing on to them. For this reason, BASF has initially stipulated its support of the Plastics Charter's specific clauses.

BASF supports the concept of extended producer responsibility, while pointing out that it is complex and not without its challenges.

Treaty

BASF would like to further explore the implications of a legally binding mechanism for plastics waste management before stating their position on it.

David Suzuki Foundation

Interview Transcript Summary

Organisation: David Suzuki Foundation

Date: September 7th 2018, 8 am

Location: Toronto, Canada

Form of Interview: Skype

Information about the organisation and the representative

The David Suzuki Foundation is a non-for-profit organisation which was created by David Suzuki in 1990 and is concerned with a range of environmental and social justice issues across Canada. The motivation to create the foundation was to raise awareness of Canadians for environmental issues and turn it into solution-oriented action, which is evidence- and knowledge-based. The representative was working ten years with a UNEP collaborating center on a range a sustainability issues including plastics in the environment. He is currently the Director General in Ontario and Northern Canada and has worked for the foundation for 6 months. Funding comes from the community with 200,000-300,000 individual donors per year. The foundation does not accept government funding.

Projects

The "Queen of Green" is an initiative targeting households through social media, challenges and campaigns to increase sustainability resilience and offer solutions, such as how to avoid single-use plastics in the daily life. Another project is the environmental rights campaign "Blue Dot Project". The Blue Dot is a comprehensive campaign for environmental rights which counts 200,000-300,000 active members and volunteers across the country. Unlike many other countries, Canada's constitution does not imply the right for a clean, healthy environment, and the foundation engages in awareness raising and community engagement to call for it. The foundation has also raised awareness through beach cleanups. Beach cleanups might not be very helpful to reduce the amount of waste in the oceans but will definitely mobilise people to hold leaders accountable and push for solutions. Different actions have to take place while reaching for a broader systemic change. The Montreal office includes work areas such as scientific outreach and technology, as well as alternatives to production systems to build up momentum for developing campaigns regarding circular economy.

Target Group

At the moment, the main target group is the public, as work focuses on raising awareness amongst the population. However, there has been some work with the government to putting single-use plastic in the focus and undertake research regarding the impacts of certain substances.

Challenges of marine plastic pollution

The representative sees pollution and waste as a choice, because technology to not pollute is available. Economics allows us to say that plastic pollution is cheaper than not having plastic pollution. He asserts that marine plastic pollution is rather a failure of economics than an environmental problem. Therefore, we could re-invent it, this however is difficult because our system is designed around this paradigm which is difficult to overcome.

Actors

There is not one actor that is making all the difference, the system is complex. If we don't embrace complexity and recognise that there are multiple actors from different angles, who are needed for changing this complex system, we get stuck with the idea that one law will fix it all. We need to use the technology that was not in place when the current societal system was designed, but which is now available to us, to model, monitor and manage complexity.

Role of industry

There are parts of industry that are highly creative – not necessarily altruistic – and ready with solutions, who see this as a real opportunity. This is the part of industry which offers a great opportunity for new jobs – the part of industry you want to incentivise as a government. On the other side there are the traditional industries which do not want to change unless you force or incentivise them in a way, because they have acted that way in the system for years. The government should help open the way for the new, creative industries and the old ones will then eventually change or otherwise disappear.

Legally binding mechanisms

There are already many environmental laws out there on the local, national and global level, which are not being followed – this implies that something is missing. Before jumping into another law, we first need to figure out why the current ones do not work and what allowed pollution to enter the environment, while technically there are laws that should prevent this. There is no such thing as "legally binding" in a global governance framework because no country can be held accountable at the UN by another country. Shaming and reputation can be used but where legally binding laws really work is at the national level. Once a country decides to adopt a law it has means to enforce the law

nationally through measures of national legal sovereignty, such as fines or jail sentence. If you are trying to tackle this from the angle of international environmental law, somehow you have to include the ability to enforce. A lot of countries have strong environmental law but little ability to actively enforce it. With loopholes people want to do harm and get away with it. The longer-term question is rather about enforcing economic reform. In the current economic system, the environment does not exist. We have to stop seeing climate change and pollution as an environmental thing to regulate but as an economic thing to regulate. Then price signals would change, incentivisation would change and innovation would be enhanced.

Solutions to the problem of marine plastic pollution

There is no single solution to the problem. Reduction of plastic production and consumption, as well as increased recycling and improved waste management systems – all these solutions can be useful. Government actors and investors discouraging production of single and short-term use plastics would be beneficial, as well as the idea of capping total plastics in society. However, the fundamental thing that has to be looked at is our relationship with disposability, including citizens who consume, cities and governments who procure and industries that produce. The societal relationship with convenience, instant gratification and disposability came along in the last few decades. We need to eliminate this or change the relationship.

By looking at legal, economic and technical solutions explicitly, it is often forgotten that it depends on how people perceive things. To a certain extend education can be a solution, yes, but it would need to be education embracing a pro-active way of learning, where citizens are involved in the solution-making process and engaged in conversations so that they realise the problem for themselves and become self-aware of their behaviour. It is important to appeal to their emotional side. Their relationship with things can not changed by introducing a certain technology, as people can decide to ignore that technology or use it in a negative way if they are not taking “heart decisions”.

International Treaty on Plastic Pollution

Discussions about a legally binding global treaty managing marine plastic pollution has not been focused on within the foundation, because the work is domestic, and initiatives are pushing for provincial and national actions. But the representative’s involvement with a potential treaty comes from his previous work with the UN. There are different agendas within the UN and the different secretariats are not all in agreement whether there should be treaty or not. While it is eventually the decision of the member states, the secretariats will make recommendations. One of the things the representative was tasked to do, was to identify existing multilateral environmental agreements that

could host the idea of plastics control. A few exist already, such as the Stockholm Convention and the Basel Convention. The Basel Convention in particular already has mechanisms in its legal instrument about transnational plastic trade which could be strengthened and include different ways that would lead to less production and less waste. Being an already very advanced treaty, it might be easier to modify that one instead of creating a new one. The Regional Seas Conventions also provide good examples: The Abidjan Convention for West Africa and the Nairobi Convention for East Africa are already moving into the path of having some kind of Marine Litter Protocol. Therefore, it is questionable whether another treaty should be created, overarching existing efforts.

The representative is unaware of which direction the discussions regarding a global treaty to manage the problem of plastic pollution is taking currently and if member states are still pushing for it. He asserts that the attention might have calmed down due to the focus on the High Seas with the current international negotiations regarding the treaty on marine biodiversity of areas beyond national jurisdiction, which might already embed some marine litter protocols. The challenge is that the ocean is not the source of marine litter – it's the end. The question is how to create an international treaty that affects countries production cycles and industrial processes, as this would no longer be a marine litter treaty but a sustainable consumption or production treaty. A statement on paper that we need to eliminate marine litter can be good politically but might not be necessary as we already have agreed on actions which we are however not holding up to.

The representative takes the current reality we live in into account and concludes that increasing circularity through incentives and developments is a big step towards mitigating the issue. Solved, however, can this issue be only if we move away from the current "growth-obsessed societal push" where focus lies on a growing GDP. If that mentality cannot be changed then resource efficiency can lead to a better use of plastics and an elimination of single-use plastic, while however, the overall increase in plastic production will not be haltered due to an ever-growing system and population.

Future Research

Future research should be dedicated to the application and implementation of circular economy approaches, taking into consideration technological advances, such as artificial intelligence. However, the longer-term fundamental piece of research is about implementing new economic theory to underpin the global economy. That is difficult because the power structures who gain from this do not want this to be disrupted and do not want to lose. Economics is usually not targeted for innovation, but it should be. Research should be undertaken to transform economics.

Everything exists because of cultural norms, therefore the marine plastic pollution problem needs to start appealing to people's sense of connection. Science is a diagnostic tool, however not a changing tool and people do not change because of science. When we have the science, we should

be asking how people change and why. In western societies we learn how to not rely on our emotions and intuitions, unlike in indigenous societies, which have incredible wisdom and knowledge to impart. Future research should also consider the connection between the environment and the human being.

Greenpeace Canada

Interview Transcript Summary

Organisation: Greenpeace Canada

Date: Sep 15th 2018

Location: Vancouver, Canada

Form of Interview: In Person

About the organisation and the representative

Greenpeace Canada is part of the global organisation Greenpeace, which is a campaigning organisation seeking to hold corporations and governments accountable and to give a voice to the planet and to people who do not otherwise have one. The representative is the Head of the Oceans and Plastics Campaign with Greenpeace Canada and oversees projects related to ocean issues, such as the "Plastic-free Future" campaign. As an independent organisation, funding comes from individual donations, as they do not accept corporate or government funding.

Projects

Projects of Greenpeace Canada focuses on trying to get people to engage on the issue of plastic pollution. The "Toolkit for a Plastic Free Future- Million Acts of Blue" introduces actions that people can take, such as giving a presentation in school, creating a plastic free club, helping to raise awareness or putting pressure on local supermarket chains, restaurants or cafés to eliminate single-use plastics. The toolkit also includes ideas on how to engage with local members of government to push for single use plastic bans.

The brand audit, which the organisation is undertaking connects the plastic pollution problem back to those who are largely responsible for creating it, which are the corporations that are producing the billions of single-use throw away plastics. The brand audit will be published and serves to name and shame brands which produced the plastic items found on beaches. These 5 audits done on September 15th are the first ones in Canada. However, since the one in Manila Bay on Freedom Island, organisations of the "break free from plastic movement", which Greenpeace is a member of, have conducted brand audits in different parts of the world and have drawn attention to big, fast moving consumer good companies, such as Nestle, Pepsi, Unilever, Procter & Gamble, Colgate Palmolive or Coca-Cola which products have been found at beaches, in addition to those of nationally relevant companies. Responses by the corporations to the audit have been mixed. A lot of the big corporations have made great statements what they are going to do to tackle this problem in response to the audit, however, what is missing in those statements is a focus on reduction of throw-away plastics production and use. Focus lies on creating products with more recycling content, support for

clean up initiatives and recycling initiatives, as well as alternatives, such as biodegradables. The representative emphasises that corporations are not doing enough in regards to testing other ways of delivering their products based on reuse and refill models.

The International Executive Director of the organisation met with Canada's Minister of Environment and Climate Change McKenna. Greenpeace also submitted comments and gave their opinion but other than that they have not been engaged directly in the G7 meetings.

Greenpeace also did a polling, which is not yet published, that shows really strong interest by Canadians for banning single use plastics. Canadians are ready to take bolder action. Greenpeace is hoping that the government will hear that and will not be swayed by industry. The plastics industry lobby in Canada is really strong, and impacts have been seen on that in different areas.

Solutions

The representative emphasises that reduction is necessary to solve the problem of marine plastic pollution. Stopping the problem at the source is the only way we can curb the flow of plastics into our oceans and environment. With the current rate of production there is no way that recycling and disposal infrastructure could ever handle it and the rate of production is expected to increase. 90% of the plastic ever produced, has not been recycled, but instead has gone to landfill, was burned, or ended up in the environment. Canada recycles 10-12% of the plastic produced. There is no way to deal with this problem through recycling. Focusing on other disposable or throw-away alternatives is not the answer either. We need a system based on reuse, where we do not have billions and billions of these products in our market every day.

The representative asserts that there is no point of voluntary agreements, and that we need binding, solid legislations. The Canadian government is running a national public consultation on this issue. We need a strong law in Canada that focuses on banning single-use plastic, investment in systems that think based on reuse. we want to create a "refill nation", we want Canada to be a leader on alternative delivery methods.

Actors

Corporations have the main responsibility for cutting their plastic footprint and find other ways to deliver their products. Governments obviously play a key role in holding those corporations accountable – that is what has really been lacking. Government policies today have also largely been focused on trying to improve disposal and to support clean up initiatives, but there have not been a lot of discussions about what are we doing about all these companies that are producing all of these products. There has not been enough focus on reductions. Governments play a key role in helping to

invest in a market system and model that is healthier for communities, where single use plastics are not spilling out in our communities and the environment.

Role of the consumer

Some of the brands and big corporations are vulnerable to public pressure because they rely on consumers to buy their products. If they are seen as a polluting or destructive company then this negatively impacts their brand. The role of consumers is to say:" I don't want this, I want an alternative!". There has to be a better way to do this. People can use their voice. Particularly the retailers in Canada want to hear from their customers, they ultimately are there to serve their customers. Consumers have a very, very strong position in helping to push for change but it its about pushing the corporations, we all do our part but this issue is bigger than individual responsibility. We also have had an overwhelming response of people that have submitted comments through our system to the National Consultation Canada.

Treaty on Plastic Pollution

Certain governments, like the Trudeau government, were championing the G7 plastic charter, however after the "bull talk" the outcome was unfortunately quite disappointing. The Charter – while it has the language around reduction – focuses on end-of-pipe solutions. What we learned from Kyoto is that if agreements are not enforceable; or not legally binding and voluntary, then it doesn't mean anything. We need the Plastics Charter to be robust and countries to put it into actual legislation. Currently, an ocean treaty for the protection of the High Seas is being discussed and ideally plastic is incorporated into an international treaty. There seems to be discussions happening around an international treaty on plastics but it does not seem that there is a concerted effort.

ISOE

Interview Transcript Summary

Organisation: Institute for Social- Ecological Research (ISOE)

Date: September 6th, 7 am

Location: Frankfurt, Germany

Form of Interview: Skype

Information about the institute and the representative

The Institute for Social-Ecological Research (ISOE) is a non-university linked, independent institute which researches the linkages between nature and society. The institute consists of six different research units: Water Resources and Land Use, Water Infrastructure and Risk Analysis, Energy and Climate Protection, Mobility and Urban Spaces, Biodiversity and People, as well as Transdisciplinary Methods and Concepts. The Junior Research Group of which the representative is part of is called PlastX. It takes on a transdisciplinary approach to research plastic in the environment from different perspectives. The group members are two postdocs and four PhD Candidates. The researchers come from different disciplinary backgrounds (geography, chemistry, sociology and ecotoxicology) to research the impact of microplastics in fresh water environments, biodegradable plastics as alternatives, packaging reduction in the food sector and marine litter, as well as policies regarding the actors, regulation and instruments to offer solutions to the problem. The representative is undertaking research on solutions to marine plastic pollution with the regional focus on the island Phu Quoc in Vietnam.

Actors

There is not only one single actor that needs to be active on tackling the problem of marine plastic pollution, but it requires action of the different players/fields. Major players/fields are: politics/politicians, industry, NGOs and the public. Politicians, backed up by civil society, play a really important role as they have the possibility to enforce rules and make regulations. They create the setting and force industry to take part, which is crucial because industries will not change by themselves.

The role of consumers

Consumers do not solely have the responsibility to make the change. The debate is influenced by consumers, therefore society is a key player that pushes research and politicians, however it would

fall short to only expect the consumers to change their every day routines, as this would not adequately address the issue.

Legally-binding mechanisms

There are already different legally-binding mechanisms that exist. However, the question is how to enforce them, how to monitor and how to ensure compliance. Legally binding treaties could be helpful in a way. However, in this case a lot of parties have to agree and the option that everyone agrees on might not be the best that can be done. There is the need to ensure that the agreement is enforced, implemented properly and complied to, otherwise the treaty just exists on paper. Treaties are only as good as their implementation. Not everything can be solved by legally binding instruments, there is also the need to consider voluntary agreements and platforms where stakeholders meet and exchange ideas.

Challenges of marine plastic pollution

The main challenge in solving the problem of plastic pollution is that plastic is integrated in our every day routine. There are also many good characteristics and positive sides of plastics which should not be forgotten. Solutions require major changes in our economic system. A change in food packaging for instance, requires consideration of issues such as transportation, the idea of increasing the time-period of consumption of the product, and a switch to regional products and alternatives. When looking at alternatives, trade-offs need to be accounted for. The paper bag is not necessarily the better option when considering the environmental impact. There is the risk of shifting from one to another ecological problem. It takes many of actors to tackle the problem. While it is quite easy to wrap the problem and understand that resources should not be wasted and the environment should not be polluted, finding the right solutions to the problem is very challenging.

Solutions

Regarding potentials and opportunities, there are already a lot of good recommendations for action on hand, e.g. by UNEP, GESAMP, Ocean Conservancy and GIZ, to name a few. One idea is to enhance waste management systems in areas where the is a lack of a proper waste infrastructure (even though this is end of pipe); to rethink consumption, e.g. to reduce the consumption of single-use packaging (not only plastic, but also other materials), to encourage changes in behaviour and to enable innovation. Reduction of plastic production and use, behaviour change and improvement of waste management systems go hand in hand. As marine pollution results for the most part form land-based sources, solutions need to be linked to waste management. The question is also how to address industry, e.g. cosmetic industry, construction industry, plastic producing industry. Both behavioural

change and ensuring long-term end-of pipe infrastructure are important parts of the solution. According to the representative, the Ocean Cleanup is not a solution.

The representative sees alternative materials critically. Biodegradable plastics can be helpful in some areas, e.g. in agriculture, but are questionable. In the case of bio-based plastics, it is important to look at which resource is used to not create additional problems in other areas (e.g. lead to more littering, resource depletion). The representative is critical about alternative materials because this might lead to simply substituting one material with another, and thus to new/other environmental problems (e.g. deforestation, CO_2 emissions, land degradation).

Legally binding regulations already work for sea-based sources, e.g. they make port facilities available where the waste can be brought to and provide control mechanisms. Behaviour change alone will not change the problem but also end of pipe infrastructure alone, e.g. incineration, would not be sensible. It is important to consider a circular economy, but of course – without saying that plastic is always bad – a reduction of the amount of plastic we consume is necessary.

Future research

There are already some studies that seek to give numbers to marine plastic pollution/ pathways of plastic pollution and research will advance further in the coming years. Identifying the amount and sources of (micro)plastic pollution is difficult and researchers can only work with estimations. Where microplastic is coming from is quite difficult to trace back. There is still uncertainty about the impact of microplastics on the ecosystem and human health. The risk is discussed, but opinion is split on the issue. The additives are problematic rather than the plastic itself, as the polymer itself is not toxic and it is unknown to what extend the additives stay in microplastics. There are still a lot of open questions regarding this issue.

Regarding solutions, what is missing is how to adapt the recommendations to specific local contexts. Many recommendations are available but to apply them in a local context is still very difficult. The question is how to set good incentives to act, which could be a legally binding treaty or economic incentives, or incentives for the municipality. A set of (economic and image) incentives and legal instruments would be helpful in this regard. The problem of marine plastic pollution is now not longer regarded as solely an ecological problem but also an economic and social problem.

Treaty on marine plastic pollution

Regarding legally binding treaties in the field of ocean governance or pollution control which could serve as examples for drafting an international treaty for managing marine plastic pollution, the representative refers to the Adelphi study on this issue. She is not aware of any treaty that really works well, and she underlines that there is always the problem of enforcement, monitoring and compliance.

While there is quite a lot “on paper” no legally binding international treaty is so far really working. She asserts that it could be a good way forward, but she does not know if there will ever be a treaty that works for all.

Ocean Wise

Interview Transcript Summary

Organisation: Ocean Wise

Date: September 13th, 1.30 pm

Location: Vancouver, Canada

Form of Interview: In Person

Information about the organisation and the representative

Ocean Wise is a science-based non-for-profit organisation, based in Vancouver, Canada. The organisation is contributing to the solution of marine plastic pollution in several ways. The organisation is contributing to the science by understanding the situation and how it changes over time, as well as in different areas, affecting different species, with their research projects in British Columbia and the Arctic. The organisation publishes their results in academic journals but also works with corporations and industry to drive change within these industries. The industries are funding their research because they want to be part of the solution, too. As consumer get aware of the problem, they challenge industry to respond. The organisation helps to convert the science into a language that the business community understands so they can inform solutions. The organisation also directly engages the public by bringing science closer to them in the aquarium, and by organising shoreline cleanups across Canada and engaging the public online through initiatives such as the plastic pledge. The aquarium counts around 1.2 million guests per year of which around 25% are international guests. The aquarium displays science in a user-friendly and approachable way and makes recommendations for direct actions in the environment. There are people who interpret the science for the public. The age group coming to the aquarium is mostly between 25 and 39 years old, mostly women, educated and fairly high-income earners and usually 63% come with children. Funding comes from the gate from people coming in from the aquarium, as well as purchases within the aquarium (gift shop, food services). The other part comes from the development team who is doing fundraising, attracting government sponsors, as well as corporate sponsors. The representative is the Ocean Wise sustainability manager, currently in charge of the Plastic Wise Campaign.

Projects

Dr. Peter Ross who has studied ocean pollution for over 25 years has developed a plastics lab, including 15 researchers on the masters and PhD level, who are working on the issue of ocean plastic. The research includes understanding microplastic in the high arctic, through beluga studies, as well as monitoring marine pollution along the BC coast. They also work with metro Vancouver on a laundry study at the waste water treatment facility. The work includes the collection of ocean samples and

stomach content, as well as its examination under microscopes in the lab. Some of the ocean samples that are part of the exhibition in the aquarium show microbeads from toothpaste or body washes and nylon and polyester fibres from clothes. Microbeads are now no longer be allowed in product in Canada.

Textile fibres are a huge part of the ocean pollution issue. Textile fibres make up 80% of what the research group sees off the coast. Research of the organisation found fibres in zooplankton which make up the bottom of food chain. The organisation is conducting research and examines how textiles change over time and in different circumstances when they are disposed to different elements, e.g. the sun. Some waste water treatment facilities can capture particles from clothing. Metro Vancouver Area has an extensive waste water treatment facility which does not capture all, but a number of the particles. In many places around the world there is no treatment at all and waste water goes directly into the ocean.

However, the organisation is not just conducting the science and reporting on the issue but is additionally working on solutions. The organisation works together with industry to inform solutions. Currently, the organisation works with a number of textile industries to inform them about how to change the way they design clothing and what types of textiles can be used. These industries are funding the research and provide the clothing for the lab. Moreover, the organisation informs solutions for packagers. The representative is currently working on a paper with the Packaging Association Canada to inform solution for packagers. There are many industry members who are members of the association, such as Coca-Cola, Lush Cosmetics among others, who are looking for solutions how they can support the issue of managing marine plastic pollution and how they can contribute because there is a lot of consumer awareness now. These companies are looking to see how they can contribute and turn to experts to find solutions. Some may look to biodegradable plastics as being the solution thinking that in the ocean they would break down and dissolve, but studies do not show this. There are not a lot of studies about this, but the reality is that PLE, which is a corn-based plastic does not break down in the ocean, because these materials require specific settings to break down and the ocean is not that setting.

The organisation has been involved with shoreline cleanups for 25 years. Every year the organisation publishes a “dirty dozen” report, about the most common items that are found in the Great Canadian shoreline cleanup. The exhibition shows the 12 plastic items that were found the most on beaches at the shoreline cleanup of which the majority are plastic items. The “dirty dozen” are: 1. Tiny plastics, 2. Cigarette butts, 3. Plastic bottles, 4. Food wrappers, 5. Bottle caps, 6. Paper materials, 7. Plastic bags 8. Miscellaneous packaging, 9. Straws, 10. Foam, 11. Metal beverage cans, 12. Rope.

The “Be Plastic Wise Pledge”, launched in March is targeted internationally to whoever is interested and engages the public in weekly activities and monthly challenges on “Ocean.org”, the organisation is talking about ocean stories and engages with a wider audience. Around over 12,000 people have already signed the pledge, including the Minister of Environment and Climate Change Canada, the Minister of Fisheries, Oceans and the Canadian Coast Guard, the Minister of Transport Canada, as well as industry through e.g. the head of MEC Vancouver. The Canadian government is one of the sponsors of the pledge. A study will be conducted to understand impact of the pledge.

The organisation has worked with conferences this year and engaged very business-focused audiences. The organisation has worked with the International Ornithological Congress to eliminate waste from their conference and to engage their visitors, as there is a connection between shore birds, sea birds and plastic. The organisation was invited by ”Sustainable Brands”, a sustainability conference with major brands, to have an exhibition in the exhibit hall and to talk about the issue of ocean plastic, as is very relevant to everybody now. Government, big business, conferences now all try to get involved and play a role. The music festival “skookum” in Vancouver approached the representative regarding organising a sustainable event.

The Aquarium shows an exhibition of the marine debris collected on a beach cleanup on the West Coast of Vancouver Island, demonstrating the relationship between plastic and animals in the ocean, as well as the change of perception of plastic over the years. The interpretive team in the aquarium supports the guests in understanding the issue. One of the master students in the research lab shows how mussels filter microplastics. The aquarium offers test conditions for this work. The aquarium also shows one exhibition on plastic bags in the ocean and how they never completely dissolve.

The aquarium stopped selling single used water bottles in 2017, does not use plastic bags or straws and no plastic is used in food service. Disposable containers are compostable, and the aquarium controls its waste management to ensure the waste goes to the right place. Within 18 months, the compostable waste breaks down and is used to grow local food. The organisation engages in talking to the guests about the reality of plastics, ensures that items are recycled correctly and if people want to stay involved, they can participate in beach cleanups.

The organisation has an Aquavan, an aquarium on wheels, which went to schools across British Columbia and Alberta in 2017 for Canada’s 150th anniversary, which was funded by the Canadian government.

The organisation has worked with the government of Canada during their G7 presidency. The government is one of the funding sponsors for the plastic wise pledge, because they want to engage people in this issue. The representative asserts that her organisation is part of the solution, too, next

to the government and industry. The organisation held a conference on- site with stakeholders from across the country what the commitments of the G7 could look like. Ocean Wise will also be part of the workshops at the G7 Environment Ministers Meeting in Halifax.

Solutions

The solution is to close the loop so that nothing is lost. The government and industry are trying to close the loop and there is awareness that this needs to happen, but there is no simple solution. We cannot clean up the oceans. It is about fighting the sources, so we can prevent plastic from entering the oceans. There is a lot of awareness now and people want to find solutions. We know that textiles are shedding, so we inform solutions and work together with business. The representative is not aware of current discussions regarding an international treaty for managing marine plastic pollution.

Actors

Everyone has a role to play and the organisation is working across sectors. They engage the individual and offer ways how to live a plastic free life, they work with businesses to e.g. ban straws and move away from traditional plastic, they work together with industry to inform solutions (materials for textile industry, packaging), as well as with government to introduce regulations and support changes. With a collaborative push with all these actors, hopefully this will make a difference. Now is the “perfect storm”, as there are a lot of discussions in media about the issue of plastics in the ocean.

Future research

Impacts are not highly studied and there is not as much understanding about implications of plastics on humans and species. Dr. Peter Ross has published his research on microplastic in zooplankton in the international journal of toxicology “Archives of Environmental Contamination and Toxicology”. We know there are implications and we know that plastics get into animals and that animals get entangled in plastic. However, there needs more research to be done. The organisation has done studies of monitoring and started to understand more about the sources. A report from 2014 revealed that 9,200 suspected microplastic particles in one cubic metre of sea water were found at the BC Coast. Using a fourier-transform infrared spectroscopy (FTIR) machine, different kinds of plastics can be identified. Biodegradable plastics is another area where there is a research gap. There is not much known about biodegradable plastics and what happens to the materials in the oceans.

Plastic Oceans Foundation

Interview Transcript Summary

Organisation: Plastic Oceans Foundation Canada

Date: August 16th 2018, 3pm

Location: Vancouver, Canada

Form of Interview: In Person

Information about the organisation and the representative

Plastic Oceans Foundation Canada is a non-for-profit organisation to raise awareness about the problem of marine plastic pollution. There are only very few ocean organisations with a charitable status in Canada and the Plastic Oceans Foundation is one of them, listed under environmental education. The organisation started with the making of the movie "A Plastic Ocean" in 2016 in Hong Kong and is now active in the US, Canada, Australia, South Africa, Chile and Mexico. The Canada-based Plastic Oceans Foundation is focusing its work on education of the Canadian public in regards to rethinking plastic and inspiring behavioural change by using film and other media. Funding comes from donors, but reaching out for government funding is planned in the future, as the federal government of Canada has promised to provide sizable funding in millions of dollars to fight pollution and protect the oceans. Currently the organisation has 5 directors and no representatives in other provinces other than British Columbia. It is planned to have other Canadian provinces represented and collaborate with other organisations to achieve this. Even though the foundation has the movie as an asset, it cannot lobby on its own. The most active representative is the Treasurer of the organisation a CPA, as well as director and past treasurer of several NGOs. Besides his work with the Plastic Oceans Foundation Canada he managed the volunteers for the environmental section of the Jazz festival for the past 5 years working with recycling organisations and food vendors to reduce waste. As a result of his work, there has been a reduction of more than 60% in general garbage, plastic and non-organic waste since 2015 He is also is closely affiliated with the Vancouver International Film Festival and has his own film society.

Projects

The film "A Plastic Ocean" is the organisation's main asset. The organisation is using the film as a vehicle to educate the public on the dangers of plastic and ways to rethink plastic. The organisation is currently working on bringing the film into a shorter version to use it for educational purposes in schools, including lower and high schools, as well as other institutions. The US branch of the organisation has already developed an education supplement for teachers and another for industry to use with the film. The idea is, to use this as a teaching aid one for both schools and industry.

The work of the organisations is focused on education of the public, especially the next generation. There is a second movie planned A Plastic Ocean version 2, which will focus on possible solutions to tackle the problem of marine plastic pollution rather than simply portraying the problem. By the end of this year a first shortened educational piece of version 2 is planned to be released. Another education piece for the younger generation 5-12 years is already in its final stage.

The Plastic Oceans Foundation was invited by Environment Canada to participate on a study and provide feedback about what should be done. Moreover, the foundation was contacted by the Mexican branch of Plastic Oceans as the Canadian embassy in Mexico, is interested in participating in future projects in Mexico.

Plastic Oceans Foundation raised $5000 for the launch of the movie Plastic Oceans in Canada in January 2017, following the world-wide launch of the film in the UK. More recently the organisation approached the Vancouver International Film Festival, funded by Vancity Savings a Canadian financial institution, to finance a film screening of the film “Albatross” as part of its “Impact” series. Vancity provides funding for movies with an “Impact”, not limited to but including environmental issues. Vancity sponsored the screening which enabled them to offer a free public film screening regarding the impacts of plastic pollution on albatross populations, followed by a panel discussion with panelists from different environmental NGOs active on the issue, such as the David Suzuki Foundation, Sea Smart, Surf Rider and the US branch of Plastic Oceans.

School funding is a problem, as school boards usually do not have money available for obtaining the license for the film. It is planned to run a program to raise private money for education to enable t schools to show the movie for free. The representative stressed the need for compulsory environment classes in schools, as he sees the trend reversing in some provinces.

Plastic Oceans Canada receives many inquiries from the public and deals with answers to questions such as “Where can we bring our plastics?” or “What can we do with the plastic we pick up at the beaches?”. There are groups in Vancouver, such as Ocean Legacy, Upgyres and others dealing with marine plastics which are not in a good state for reproduction or recycling

Besides the importance of engaging in education, the representative emphasised the need to lobby government. The organisation uses social media, such as Twitter Facebook and Blogs to lobby their ideas. The organisation plans to spend more time on lobbying to get certain plastic items removed, e.g. straws, single use bags, etc. There are alternatives available locally in Vancouver in stores such as “Nada” and “The Soap Dispensary”, as well as a store in Kitsilano which sells paper straws. A couple of cities have already banned plastic straws. So far, the organisation is participating in some government studies, and working together with other NGOs to actively pressure governments

to pursue banning unnecessary plastic usage and establishing better plastic production standards and labelling. In other words, “Rethinking Plastic”.

Marine Plastic Pollution

Marine plastic pollution is directly connected to land-based pollution, which calls for the establishment of sorting facilities. The city is connected to the ocean and pollution of the parks and beaches leads to waste ending up in the oceans. The representative mentioned the “Binners Project” of Vancouver, which provides supervisors at the bins at festivals and big events to educate the public about sorting. Vancity Savings frequently funds these projects for certain events. There are also several beach cleanup groups, such as Surf Rider, who are engaging in awareness raising activities. However, beach cleanups are a reaction effect and not tackling the problem.

The representative emphasised that “industry has to be involved if you really want to get to the source”. The big plastic manufacturers are important. Also, the clothing industry is a big factor in regards to microplastics. There are some initiatives already, such as the brand “Lululemon” which focuses on sustainable sportswear. Schools, institutions and banks all want to be socially conscious, and that is why Plastic Oceans has developed educational aids which focus on industry as well as education.

The issue is that over time this problem evolved and at the start people were not thinking about the consequences. The representative emphasised the importance of education, especially for the younger generation.

International Treaty on Plastic Pollution

The issue regarding a potential plastic treaty has not come up in meetings of the Canadian-based Plastic Oceans Foundation. However, if such a treaty was to be discussed on the global level, the representative says the world-wide Plastic Oceans organisations amongst others should be involved.

Recycle BC

Interview Questionnaire

Organisation: Recycle BC

Location: Vancouver, Canada

Form of Interview: Email

Information about the organisation and the role of the representative

1. Could you please give me an overview over the organisation and your position?

Recycle BC is a not-for-profit organization responsible for residential packaging and paper recycling throughout British Columbia, servicing over 1.8 million households or over 98% of BC. We ensure packaging and paper is collected from households and recycling depots, sorted and responsibly recycled. Recycle BC provides recycling services either directly to communities or by working in partnership with local governments, First Nations, private companies, and other not-for-profit organizations. Over 155 communities participate in our recycling collection program and more are serviced by our recycling depots. In 2017 approximately 175,000 tonnes of material was collected from households and depots. Recycle BC was originally launched in 2014 as Multi-Material BC (MMBC).

2. How was the organisation created? What was the motivation for creating the NGO?

Since 2011, the BC Recycling Regulation (part of the Environmental Management Act) requires businesses that supply packaging and paper product to BC residents to assume responsibility for the cost of collecting, sorting and recycling these materials. In 2014, Recycle BC was formed to help businesses meet their recycling obligations.

3. Where does funding come from?

Our program is funded by businesses, such as retailers, manufacturers and restaurants that supply packaging and paper product to BC residents. Each designated packaging and paper product material is assigned a fee rate. These businesses, or stewards, finance the program through the fees paid based on quantity and type of material they supply to BC residents.

Projects

4. What projects and initiatives does the organisation engage in?

We are responsible for BC's residential packaging and paper recycling program. This includes collection, processing and marketing the materials to end-markets. We work with collection and post-collection partners to do this. Within this framework, we also work on other special projects or pilot projects conduct research and development and collect additional materials (collection of other flexible plastic packaging at depots), reach additional communities (First Nations Recycling Initiative),

or work with stewards to support recyclable packaging design and recycling solutions (Nespresso capsule collection pilot, Keurig pod redesign).

5. Which target groups is the organisation approaching?

We have three primary stakeholder groups: 1. Residents (promotion and education on the recycling program and what materials can be included in packaging and paper recycling) 2. Collectors (our collection partners work in partnership with Recycle BC to collect recycling from residents and deliver it to one of our post-collection facilities. Collectors include local governments, First Nations, private companies, and, in some cases, other not-for-profit organizations.) 3. Stewards (stewards are the producers or businesses that finance our program) are responsible for the management of the materials we recycle. Recycle BC is an Extended Producer Responsibility (EPR) program where the responsibility is placed on businesses to pay for and manage efficient systems for the maximum recovery and reuse of the materials and products they put into the marketplace, supporting the goal of zero waste in a circular economy. We also work with BC's Ministry of Environment and Climate Change Strategy very closely.

6. What impacts did these projects have? (rough number of how many people were reached etc.)

In 2017:

Over 174,000 tonnes of Recycle BC's packaging and paper product was collected, amounting to a recovery rate of 75%.

1.39 million BC households in 156 communities had access to Recycle BC curbside or multifamily services.

Over 1.8 million BC households had access to curbside, multi-family or depot services

98% of households had depot access. More information can be found in our 2017 Annual Report.

7. Are there any new projects planned additionally?

We continue to look for opportunities to increase collection and recycling of materials.

Awareness raising: Which activities of your organisation contribute to awareness raising about the problem of marine plastic pollution?

The majority of our promotion and education activities focus on increasing recycling rates and ensuring the correct materials are included for recycling. Some of our initiatives also focus on reduction (e.g. Bring your Bag plastic bag reduction campaign), highlighting the issue of marine plastic and citing relevant statistics on our materials such as the possibility that there will be more plastic in our oceans than the weight of fish by 2050.

Pressure on governments/industry: Does the NGO put pressure on governments and/or industry to undergo certain action regarding the problem of marine plastic pollution? If so, how?

Our focus is to run the residential recycling, however, we do see a role we can play in supporting the reduction of marine plastic pollution, both by achieving high material recovery rates and working in partnership with like-minded organizations or industry partners. Recycle BC has joined other organizations from across the plastics value chain as a participant in the New Plastics Economy which is led by the Ellen MacArthur Foundation. The New Plastics Economy is an ambitious initiative to build momentum towards a plastics system that works. Applying the principles of the circular economy, it brings together key stakeholders to rethink and redesign the future of plastics, starting with packaging. The project aligns with Recycle BC's goal of ensuring more of these materials are recycled to help keep plastic out of our oceans, natural environment and landfills. In addition, we work with our member businesses (stewards) to support their recycling goals related to packaging recover and recyclability.

C) International Treaty on Plastic Pollution

8. ***Has a discussion about an international legally binding treaty on plastic pollution come up in meetings of the organisation? If so, how does the organisation see its role in creation and implementation of such a treaty?***

With the ratification of the Ocean Plastics Charter at the June G7 Summit and the more recent creation of the Circular Economy Leadership Coalition by leading businesses and non-governmental groups, we are very aware of the current global desire to address the issue of plastic pollution and together with Canadian Stewardship Services Alliance, the not-for-profit that supports us, we will be seeking opportunities to do our part to achieve circular economy outcomes for plastics. To the end we recently committed to new plastics recovery targets in our updated program plan, as follows:

- General plastic target of 50% by 2025
- Rigid plastic target of 55% by 2022; and 60% by 2025
- Flexible plastic target of 22% by 2022; and 25% by 2025.

These targets are in keeping with the European Union's Plastics Strategy announced this past January and which calls for:

- All plastic packaging on the EU market to be recyclable by 2030
- Material-specific targets set including:
    - 50% plastics recycled by 2025
    - 55% plastics recycled by 2030.

9. Which other actors would need to be involved?

Organizations from all sides of the plastics supply chain, in addition to regulators and other key stakeholders.

10. Who has to take a leading role in solving the problem of marine plastic pollution?

We encourage a collaborative approach with key stakeholder groups including business, NGOs and government.

Sea Smart

Interview Transcript Summary

Organisation: Sea Smart

Location: Vancouver, Canada

Date: September 15th 2018

Form of Interview: In Person

Information about the organisation

Sea Smart is a non-profit organisation with the mission to inspire and empower youth to love and protect the oceans. The organisation works with kids from Kindergarden up to grade 12 and offers after school programs, summer camps at the beach, as well as school workshops. They organise beach cleanups and other public engagement events, as well as free workshops. The goal is to get people excited about the oceans and foster the connection of love and curiosity with nature. The representative emphasises that it is really important to make that connection, as you only protect what you love. The focus is on youth because they are the hope for the future for the planet but they get increasingly disconnected from nature.

Funding

Parents pay for the after-school-programs and summer camps and the schools pay for school workshops. Currently the organisation is in the progress of applying for grants and corporate sponsorships.

Projects

Sea Smart focuses on education and public engagement. Sea Smart is working together with the organisations Ocean Wise, Students on Ice, Ocean School and WE[13] to launch a nation-wide campaign in ocean plastic pollution and to teach across Canada about how to take action against ocean plastic pollution. The representative is creating change at different levels: through education at grassroots level, engagement with industry as well as government. She was invited to the G7 environment ministers meeting to help develop recommendations for solving the problem of marine plastic pollution. Following the campaign to make McDonalds ban their plastic straws worldwide, initiated by the global advocacy organisation and online community “SumOfUs”, which got almost half a million people to sign the petition and made it into international news, the representative presented the business and environmental case to McDonalds for not serving plastic straws.

13 International charity to educate and empower young people

Marine Plastic Pollution

The consumer has a huge power to contribute to solutions regarding the problem of marine plastic pollution. The representative has several examples how consumers have contributed to environmental wins: In Canada the public has been lobbying the Canadian government for years to ban microbeads and since the beginning of 2018, Canada will not sell any products containing microbeads anymore. Now there are more and more initiatives to ban plastic straws and plastic bags.

Treaty on Plastic Pollution

The representative emphasises the global character of the problem by mentioning that while most of the waste enters the oceans from Asia, it still ends up on the coast of Canada and the US. She asserts that it would be definitely helpful to have a global legally binding mechanism because ocean plastic pollution is something that affects all of us.

Surfrider Foundation

Interview Transcript Summary

Organisation: Surfrider Foundation

(Information about date and location not disclosed)

Form of Interview: In Person

Info about the organisation and the representative

Surfrider is a non-profit organisation which started in California in 1984 and was created by a few surfers who were pushed away from their beach and demanded that any beach should be accessible to everyone. Since then the Foundation has expanded and is now active through several countries and chapters including Australia, Japan, Europe, and Canada. The representative is a volunteer with the Surfrider Foundation in the Vancouver Chapter, which is active in Vancouver and the greater Vancouver area. He has been involved with the chapter for around six years and has been the chair for the last two years.

Funding comes from own fundraising without having one consistent source. The Vancouver chapter gets access to funding through their members and several sponsors, such as companies. Furthermore, the foundation applies for grants to fund specific campaigns.

The representative asserts that he is lucky to live in the city where people understand the issue and want to do good and often inspire him with new projects. However, as a volunteer, there are many other responsibilities, such as work and family life which limit how he can contribute. If the organisation would get funding for another 2-3 people who get paid full-time, or even one person to commit fully to the work of Surfrider, this would be especially helpful when working with government and corporations, as this requires more time and consistency than working with the public.

Projects

One campaign which the Vancouver chapter is working on actively at the moment, is the campaign “Rise above plastics (RAP)”. The campaign is targeted towards serious reduction of single-use plastics in Vancouver. Another campaign is “Hold on to your butt” which is fighting cigarette butts littering and seeks to introduce recycling of cigarette butts. The foundation was previously engaged with a campaign regarding microplastics, specifically microbeads. The campaign started in 2016, then expanded nationally and ended with the introduction of a ban of microbeads in January 2018. The chapter is also involved with the running campaign “straws suck” which is directed towards not using plastic straws. The representative acknowledges the fact that some people need straws and focuses on the fact that they advocate for reusable straws. Currently, the chapter is supporting the petition of

MP Gord Johns (Port Alberni, BC) for creating a budget for cleaning coastlines, as up to this point no funding for picking up marine debris exists.

Beach cleanups are helpful as they remove small litter items from beaches, such as small plastic pieces and cigarette butts that are not easy to be picked up by city services, but which impact birds and other wildlife when ingested. Humans could get affected when fish ingest small plastic items which then travel through the food chain. Moreover, beach cleanups are creating a place for like-minded people to meet new friends and other people to get interested and aware of the issue when passing by. It is also a good way for organisations to connect, as often new initiatives are born during the work at the beach and joint initiatives continue for years.

Target groups

At the moment, the main target group is the public. The representative truly believes that people do not have bad intentions when making decisions that harm the environment and that bringing awareness to the public can really contribute to change. He emphasises that educating the public about the issues and how to deal with them makes a difference, as they will change their habits which in turn will change the habits of people around them. Some other chapters concentrated more on working with corporations and the government, putting together policies dealing with the issue, such as in the case of microbeads.

Global legally binding treaty on plastic pollution

The foundation has worked indirectly (through other organisations) with the G7. The G7 asked for feedback from organisations, like Sea Smart, to come up with a strategy and policies that need to be put in place to deal with plastic pollution. Corporations, people and governments need to work together, and every single government, corporation and person has the responsibility to act on this issue. The representative asserts that legally binding regulations are “absolutely” helpful.

University of Tasmania

Interview Transcript Summary

Organisation: University of Tasmania

Date: September 13th, 4.30 pm

Location: Hobart, Tasmania

Form of Interview: Skype

Information about the organisation and the representative

The representative is a lecturer at the University of Tasmania, Australia, who has worked on Ocean Governance for 15 years. She has focused on ocean policy in Australia, Canada and New Zealand and looked at different approaches to governance before specialising on ocean pollution and plastic. She is interested in how to translate science into policy to stop marine pollution.

Marine Plastic Pollution

The biggest challenge regarding marine plastic pollution is that there is no border. It is a local and global problem, beyond national jurisdictions and it is not possible to blame particular countries or industries. Therefore, holistic approaches, emerging from small local groups to the biggest social movements need to be taken. You can have all the polices and all the regulations in the world, if there is not a cultural change you will not achieve anything. The example of the plastic bans in Australia show this. There has been a plastic bag ban ruled out state by state in Australia. Supermarkets voluntarily stopped giving out plastic bags. When people were charged for plastic bags in New South Wales and Queensland, customers refused to bring their own bags and abused shop assistants. As a result, major supermarkets did a backtrack and gave plastic bags out for free again. In most states, regulations to ban plastic bags were no problem, but this experience led to the fact that the government decided to not follow through with a ban in NSW and QLD, with the reasoning that the population needs more time. Consciousness about plastic use is not universal yet, therefore we need a cultural change.

Laziness, and the habit of having everything instantly and easy, as well as the fact that it requires some effort to make a change and that currently it is quite expensive to go plastic free are reasons why people do not easily change behaviour. Education can definitely change this mindset. Educational programs in the US and Australia have shown great results. The Australian education program “Teach Wild” which was available for all students and took on a citizen science approach was quite effective. Education is extremely important, but we need to start now already in our generation to guarantee the intergenerational justice.

Third world countries should be looked at as good examples, as they have achieved a lot in this regard. Indonesia realised the problem with pollution and has now some of the best policies to clean up their water ways. The government is acting strongly on this.

Actors

The Food and Agriculture Organization (FAO) will take a lead on this. But what we are missing is regional organisations acting on the issue, such as regional fisheries management organisations (RFMOs). We see a lot happening in the European context in the Mediterranean with smaller institutional groups. But in other areas, e.g. in Africa, regional approaches are needed. Regional approaches could make a difference and are lacking at the moment. The UN will act but that is always going to be a slow process.

Industry has great responsibility. They are very important in their actions regarding producer responsibility and life-cycles of their products. Holistic approaches need to be taken, rather than just regulations. Companies are aware of the impact of plastic and most are trying to be responsible. Their corporate environmental responsibility policies are important but there is the problem of green washing. Examples of this would be big corporations, such as McDonalds and Starbucks, where a ban on straws is introduced but the lids and take-away cups with the plastic linen remain. Community and consumers can influence industry through social license, namely by not purchasing certain products (e.g. microbeads, straws). But it is going to take a lot more effort from the part of consumers to make industry change. However, industry slowly realises the marketing benefit.

The community is left out of the governance issue, meaning NGOs, social movements, as well as local communities and the power that they can have in making a change. We tend to focus on industries and governments, but people power is sometimes underestimated. In the case of Bali, it was the local communities that have turned around and said: “We are sick of the rubbish on our beaches and want to do something about it”. It is the young generation that is cleaning up the beaches. Communities can make a difference and are a form of governance themselves.

A lot of interesting people work in the field and international organisations are now increasingly reaching out to academics for supporting their reports. Academics will have greater roles to play as we have to ensure that this information gets out to the wider community.

There is also a role for third party organisations, such as the Marine Stewardship Council (MSC), the Agriculture Stewardship Council or the Forest Stewardship Council, which do not have any regulatory links. And while they are not the perfect form of governance, it would be helpful to have some sort of plastic council, so that consumers understand what they are buying.

Solutions

We need to reduce our use of plastic, think about the use of plastic, and at the same time improve waste management systems. Only 6% of the plastic produce gets recycled across the world. Australia is quite behind when it comes to soft plastic recycling and that fact that China is not taking plastic exports anymore has made a huge impact across the planet. Australia has just recently opened the first soft plastic depot in Tasmania.

Third world countries often do not have the waste management infrastructure and facilities in place. The representative gives Fiji as an example where plastic piles up along the road due to a lack of waste management infrastructure. Therefore, the solution is a combination of reduction of plastic production and use and improvement of waste management systems.

There are already a few examples in Europe of legally-enforced rules for industry for production, which helps but can also create new problems. The problem is that industries tend to go oversees to third world countries for production because Europe has extra regulations. It is important to have the right balance between giving industry the chance to do their self-assessment and policies.

Treaty on plastic pollution

The representative is convinced that legally binding treaty mechanisms are absolutely helpful and can make a difference. While she is aware of the fact that many different schools in International Relations differ on how they perceive the effectiveness of organisations, she asserts that we had such a soft law approach to marine plastics, and are getting to a crisis stage now where we need some sort of legally biding agreement that at least forces nation states to implement measures through their domestic policies. It might not be the most effective way and only part of the solution but certainly a legally binding instrument is needed.

She mentions the Law of the Seas, and the US being one of the countries not having ratified the agreement. There will always be this issue of non-compliance, but there are ways of working on treaties that can make compliance easier. When asked what could serve as an example for a global legally binding treaty on plastic pollution, she mentions the Montreal Protocol but emphasises the fact that plastics are different to CFCs in their impacts and use. The Montreal Protocol can serve as a basis for a legally binding treaty for managing plastic pollution and there are also other suggestions within different papers what should be used to come up with a new agreement. The representative thinks it is time to start from scratch, but if we need to do something quickly it may be worth looking at other legally binding agreements for modifications. In this regard, Raubenheimer's work is particularly important. The representative emphasises the urgency of the issue and that an agreement would need to be made relatively quickly, because (referring to the Law of the Seas Convention) we

do not have three decades to put together an international agreement as at that stage it will be too late.

Future Research

Research is progressing on the sources and impacts of marine plastic pollution. There are several actors working on this and while we are a lot further than we used to be a decade ago, there is still a lot to be done, e.g. regarding the impact of marine plastic pollution on human health. As there is a lot of attention on the issue of marine plastic pollution now, this is the time to act.

Vancity

Interview Transcript Summary

Institution: Vancity

Date: August 17th, 2018, 10.30 am

Location: Vancouver, Canada

Form of Interview: Phone

Information about the organisation and the representative

Vancity is one of Canadas largest credit unions with over 500,000 members, 3,000 staff, and around 18 billion assets. The large financial institution is a competitive credit union, operating in British Columbia. It is a values-based financial institution which sets them apart from most financial institutions. Vancity provides non-convention, non-dilutive, high-risk, character-based financing for start ups to help them with an initial investment to get started.

The representative has been working at Vancity for approximatley15 years. Previously he was working in microfinance and now his work has moved to the energy and environment portfolio. His work supports the organisations to evaluate the landscape, encourages them to increase capacity and create assets, as well as includes advocacy work.

Partners

Funding goes to a variety of organisations, mainly to non-profit organisation and social enterprises, such as the David Suzuki Foundation, Pembina, Nature Conservancy, as well as Ocean Wise. Organisations usually approach Vancity, because the organisations and Vancity are like-minded and share similar values, and Vancity helps to support that good work. Vancity has worked with the City of Vancouver on a number of initiatives. The David Suzuki Foundation has received many funds over the last decade. Funding of the different projects depends on the year, as well as on which department or channel the money has come from and on the partners. Through the “enviroFund”, each year, approximately one million dollars is re-invested back into the community.

Projects

As the portfolio touches on almost everything in the ecological footprint, the representative emphasises parts of the work of the institution in protecting the oceans. Vancity is active in this regard through trying to understand the landscape, as well as through spending time and money in watershed and asset mapping. Vancity supports organisations to understand how much plastic is getting into the water through washing machines. To do so, Vancity is supporting experts in the field, through financial contributions (which can be investments categorised as a grant or loan), as well as

through bringing partners together by using their large network in British Columbia. The representative stresses that there is not just one group trying to solve those problems and that these need to be brought together. Research has been done to address the need, there is a potential solution and it needs a few organisations to come together to solve it. Vancity sees itself as a convenor who brings organisations together.

Vancity also has an initiative, the “Savings Impact Talk”, where movie screenings are financed that have an impact. Partners that are involved with the screening of the movie “Albatross” are the David Suzuki Foundation, the Surfrider Foundation, the Plastic Oceans Foundation, as well as SeaSmart.

When it comes to the motivation to invest in environmental projects, the representative recognises that we are living beyond our Earth’s means and that Vancity sees itself as a leader in global sustainability. While it could be described as a triple bottom line investment, the focus lies on their values. Members in the institution have values and want to see their money being used in an environmentally sustainable manner as this is what the model of Vancity is built on.

Vancity continues to work with organisations and to create space for further marine protection projects. As a financial institution Vancity requires the subject experts to contribute to solutions regarding marine plastic pollution. The representative is convinced that more positive solutions emerge when different organisations who are concerned with the same problems are brought together. The institution’s voice can be heard in different ways, e.g. through other organisation with the same values.

Zero Waste Canada

Interview Questionnaire

Organisation: Zero Waste Canada

Location: Vancouver, Canada

Form of Interview: Email

A) Information about the organisation and the role of the representative

1. Could you please give me an overview over the organisation and your position?

I am the Executive Director of Zero Waste Canada. Zero Waste Canada (ZWC) is a non-profit grassroots organization, dedicated to ending our age of wastefulness through improved industrial design & education for the 21st century. Zero Waste Canada is the Canadian national affiliate of the Zero Waste International Alliance (ZWIA), the governing body for Zero Waste on the global stage. Zero Waste Canada operates nationally to bring forward ZWIA policies amongst individuals, organizations and communities, with the objective of supporting the continuous reuse of resources on the front-end and simultaneously advocating for the elimination of landfills and waste-to-energy (incineration) on the back-end.

We also advocate at all levels of government for responsible resource management and policies, legislation and initiatives that eliminate waste.

Part of Zero Waste Canada's role is to provide the public with clarity over the concept of Zero Waste. We do this by disseminating the ZWIA's Zero Waste Definition (the first peer reviewed and internationally accepted definition of the term) and Zero Waste Hierarchy (the governing logic of any Zero Waste strategy).

Zero Waste Canada provides a Zero Waste Certification program for organizations across all sectors to implement these internationally accepted policies and practices, in so doing providing the public with a clear understanding of what is meant by a Zero Waste policy.

In addition, Zero Waste Canada offers educational outreach programs for Zero Waste including specific guides, technical knowledge and a variety of educational materials.

We are continuing to grow alongside the global Zero Waste community with Zero Waste chapters and membership across the nation.

2. How was the organisation created? What was the motivation for creating the NGO?

Zero Waste Canada was created in 2014 by Barb Hetherington, Buddy Boyd, Jamie Kaminski, Dirk Becker, and Paul Connett. With the growing movement by local government in Metro Vancouver and Durham York who were trying to rebrand Zero Waste as a way to simply manage discards by burning them, Zero Waste Canada was created to protect the Zero Waste Brand in Canada and advocate for solutions that eliminate waste before it is created.

3. Where does funding come from?

Funding comes from individual, organizational, and governmental supporters through memberships, donations, and our zero waste certification program. Where these funds originate does not influence our operations.

B) Projects of the organisation

4. What projects and initiatives is the organisation engaged in?

a) Community Engagement

On the community level, we offer educational presentations for schools. Teachers can reach out and ask us to talk to students of all ages about waste reduction. In the past, we have often joint forces with municipal education programs that focused on recycling to provide students with information about waste reduction after our educational partners had covered the topic of waste management. This school outreach has been well received and questions toward the end of the presentation or workshop have always indicated that students were more interested to hear about waste reduction (zero waste) than waste management (recycling).

A few months after starting its first chapter in Vancouver (BC), Zero Waste Canada also opened a chapter in St. John's (NL). These two chapters are organizing educational events in their communities, staff booths at farmers' markets, and partner with other environmentally focused local organizations to advance education on the topic of waste reduction.

b) Business and Organizational Sector

For businesses and organizations, Zero Waste Canada offers a variety of initiatives: We offer training for Environmental Consultants (Zero Waste Associates) to be able to offer the following services:.

- Inhouse workshops. Businesses and organizations can request presentations and/or workshops to train their employees on waste reduction (zero waste) processes.
- Partnerships to help create waste-free events. When requested, we partner with organizers to help them reduce waste for upcoming events. This is not the same as "waste sorting" or "waste audits" that some entities offer. When we partner with an

organization for an event, we lead them through the process of planning a waste-free event, such as how to request and serve food and beverages package-free, how to ensure that no single-use items will be utilized during the event (e.g. no paper plates, plastic cups, or compostable cutlery), and even how to reduce waste created during sign-up and sign-in procedures.

- Facility Certification. Very recently, Zero Waste Canada has rolled out a Zero Waste Certification Program for facilities that achieve a 90% diversion rate (from landfills AND incinerators) as established by the Zero Waste International Alliance (ZWIA). Achieving this milestone establishes an organization as a leader in waste reduction and discard management, because companies have to follow a rigorous process to achieve silver, gold, or platinum level certification.

c) Government Lobbying

Zero Waste Canada is involved in government lobbying, requesting that municipalities, as well as provincial and federal governments take action to focus efforts on waste reduction, rather than mere waste management.

5. Which target groups is the organisation approaching?

Individuals, businesses, and organizations, as well as organizational partners who are interested, involved in, or leading change towards a zero waste society, as well as environmental organizations that focus on waste reduction, plastics reduction, and environmental stewardship.

6. What impacts did these projects have? (rough number of how many people were reached etc.)

On average, our outreach initiatives and programs reach around 1,000-10,000 individuals across various channels, across Canada.

7. Are there any new projects planned additionally?

These aforementioned programs are currently reaching the capacity of our volunteers. However, we are consistently growing our support network, so there will likely be more campaigns and initiatives rolling out over the coming months.

ANNEX 4: Consent Form

Interview Consent Form

Research project title: International Cooperation for the Protection of Global Public Goods- Towards a Global Plastics Treaty

Research investigator: Ina Tessnow- von Wysocki

Research participant: *NAME OF PARTICIPANT (NAME OF ORGANISATION)*

The research participant agrees that the interview will be audio-recorded. Access to the audio-recording will be limited to the research investigator and supervisors involved in the research project. A summary of the interview content and direct quotations may be used for the research project, while the research participant will stay anonymous. The full research project or parts may be published.

_____

Printed Name

_____ _____

Signature Date

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