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Corporate social responsibility in marine plastic debris governance

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ABSTRACT

This paper explores the governance characteristics of marine plastic debris, some of the factors underpinning its severity, and examines the possibility of harnessing corporate social responsibility (CSR) to manage plastic use within the contextual attitudes of a contemporary global society. It argues that international and domestic law alone are insufficient to resolve the "wicked problem" of marine plastic debris, and investigates the potential of the private sector, through the philosophy of CSR, to assist in reducing the amount and impacts of marine plastic debris. To illustrate how CSR could minimise marine plastic pollution, an industry-targeted code of conduct was developed. Applying CSR would be most effective if implemented in conjunction with facilitating governance frameworks, such as supportive governmental regulation and non-governmental partnerships. This study maintains that management policies must be inclusive of all stakeholders if they are to match the scale and severity of the marine plastic debris issue.

1. Introduction

Marine debris threatens the integrity of the oceans, which are increasingly being described as in 'crisis' (Vince, 2015, Gold et al., 2014). Marine debris is composed of plastic, glass, metal and rubber, but plastic makes up 80% of anthropogenic debris found in the oceans, explaining the particular focus of this paper on marine *plastic* debris (UNEP, p.17, 2014). While 322 million tonnes of plastic was produced in 2015, estimations in the literature of how much goes on to enter the oceans range widely from 6 to 20 million tons, but generally favour the higher estimations; one of many examples of dissensus in published marine plastic literature (World Economic Forum, 2016, UNEP, 2014, Vince and Hardesty, 2016, Gold et al., 2014). Similarly, while the academic consensus rests at 80% of marine plastic debris being terrestrially sourced, estimations vary from 60 to 95% (Gold et al., 2014, UNEP, 2014). This has obvious implications for policies for marine plastic pollution prevention. Within the ocean, plastic has achieved a ubiquitous presence; it can be found on shorelines, in ocean waters, and seafloor sediments worldwide (Gall and Thompson, 2015, Secretariat of the CBD and STAP, 2012, Thompson et al., 2009, OSPAR Commission, 2007). With global plastic production increasing by 5% annually (UNEP, 2014), models agree the amount of marine plastic debris will increase (van Sebille et al., 2015). Indeed, plastic production is expected to double in the next two decades, meaning that by 2050, at current pollution rates, the mass of plastic in the oceans will be greater than the mass of fish (Simon and Schulte, 2017).

Plastics are traditionally petroleum-based, and therefore nondegradable. Nondegradable is currently defined as "*the lack of ability of the material to decompose or mineralize at measurable rates*" (Leslie, 2015). Curiously, this offers some degree of interpretation regarding what constitutes a "measurable rate", providing challenges for consistent classification of plastic types. Additionally, there is no international standard for the degradation of plastic; this causes confusion regarding which plastic types are most persistent, or even what results from the disintegration of the various types of degradability: degradable, biodegradable, oxodegradable, and compostable (Australian Senate, 2016, Gold et al., 2014). Furthermore, there is prolific confusion surrounding the terms "biodegradable" and "degradable", as they are often used interchangeably for plastics (Australian Senate, p.126, 2016). Compostable and biodegradable usually refers to plastics created from plant-based oils or methane, which, along with other plastics made from organic compounds, can fully degrade into environmentally safe particles (Simon and Schulte, 2017, Kuruppalil, 2015). Compostable plastic's title is similarly misleading; it is generally designed to decompose in industrial composting facilities; in the environment it has a similar degradation time to traditional plastic. During this time, it remains equally harmful to wildlife from ingestion or entanglement. As such, the emphasis of innovations to plastics should be directed at improving plastic recyclability and reusability. Petroleum-based plastics also reduce the finite global stock of fossil fuels, with 5–8% of global oil extraction going to plastic manufacturing (Kuruppalil, 2015, UNEP, 2014). Petroleum-based plastics must therefore one day be replaced with renewable materials, particularly as the world begins to move away from fossil fuels.

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Despite the economic costs of marine plastic debris being remarkably unknown (Newman et al., 2015, McIlgorm et al., 2011), studies that attempt to enumerate the costs of marine debris provide compelling evidence that policy development targeting marine plastic debris can be cost effective; globally, plastic debris devalues specifically marine ecosystems by $13 billion per year (UNEP, p.12, 2014). Goods packaging accounts for 26% of annual plastic production, which, due to the current emphasis on single use, almost invariably loses $80–120 billion from the global economy (World Economic Forum, p.6, 2016). Additionally, single use packaging has been estimated to create $40 billion in externalities, which likely exceeds the total profits of the packaging industry. Conversely, recycling accounts for only 14% of plastic packaging, which decreases to approximately 5% after wastage and inefficiencies in the recycling process. In contrast, recycling rates for paper and iron/steel are 58% and 70–90% respectively.

2. Qualifying the marine plastic debris problem

2.1. Marine plastic debris as a wicked problem

The term “wicked problem” was coined by Rittel and Webber (1973), in their seminal paper *Dilemmas in a general theory of planning*, wherein they described some social policy problems as “wicked”. This created a distinction from classical problems that they considered to be “tame”, which otherwise have a clear and objective optimal solution. They outlined ten properties of wicked problems, which are condensed into seven points pertinent to marine plastic pollution:

1. They require management that constantly adapts to changing factors, meaning that the problem may not ever disappear;
2. Management is at best optimal, not “right” or “wrong”, subject to managerial and external limitations;
3. The full effects of a chosen management pathway are only known post implementation, and may serve to irreversibly worsen the problem;
4. Wicked problems do not have an exhaustible set of potential solutions;
5. Every wicked problem is unique, and continues to change into the future;
6. They can be considered the symptoms of other problems; and,
7. Decision makers carry a heavy moral burden, as their decisions are not allowed to be wrong.

In extrapolating these properties to marine plastic debris, it is possible to see that the problem is wicked; understanding the heart of the problem is one of the central difficulties pertaining to wicked problems (Jentoft and Chuenpagdee, 2009). At first glance, it may seem simple to pinpoint the problem of marine plastic debris: “too much plastic is washing into the sea.” Whilst this is wholly true, it needs greater specificity. Yet narrowing the problem from here immediately encounters issues; precisely how much plastic entering the oceans is “too much”? Unavoidable spillages of all forms of marine debris make it utterly unrealistic to have a target of zero plastic entering the oceans. As yet, no robust estimate of acceptable marine plastic pollution has been set, and even if there had been, it would not be free of the uncertainty that characterises wicked problems. Furthermore, does the plastic problem lie in society's entrenched global culture of consumerism, driving the swelling production of petroleum-based plastics? Or is it rather that the dilemma lies in the use of fossil fuels to create plastic, which remain as inorganic molecules for decades, even centuries? Or simply that waste treatment systems need to be upgraded to retain our wastes more effectively? Certainly all of these issues contribute to the scale of marine plastic debris, along with a plethora of others, which serves to demonstrate the interconnectedness of marine plastic debris with other similarly intractable social and environmental issues.

Fisheries management has been qualified as a wicked problem (Jentoft and Chuenpagdee, 2009), and has parallels with marine plastic debris. A prominent likeness is in their spatial characteristics; the migratory nature of open ocean fish stocks, against the pervasive presence of plastic debris. The difficulty in managing fisheries or plastic debris lies in international governance, which has a history of obtaining mixed results when handling international environmental issues; successful international governance is represented in the responses of states in cutting emissions of chlorofluorocarbons – the gas linked to exacerbating the hole in the ozone layer – and in the designation and management of Antarctica as an international scientific haven. Yet for every success story, many failures of international governance exist. A coordinated, comprehensive effort to mitigate the effects of climate change is yet to be enacted, and many migratory fish stocks are harvested as a common pool resource, which has led to their overexploitation via a tragedy of the commons (Hardin, 1968). In extending beyond specifically fish stocks, the oceans are a global common, absorbing anthropogenic wastes like carbon dioxide and plastic debris.

However, poor governance cannot be solely attributed to the current state of the marine plastic debris problem. Finding solutions to the intricately complex issue of marine plastic debris may well be beyond the means of government institutions alone, both national and international. The complexity of the situation lies in a multitude of areas. Firstly, marine plastic debris is a temporally exacting issue, as it is damaging at present, and will continue to be damaging for decades into the future. This will occur even if plastic stops entering the oceans today, meaning that immediate actions have intergenerational consequences. This only serves to add to the moral burden decision makers must bear, as effective management solutions to the problem must be realised as soon as possible.

2.2. Marine plastic debris in the global oceans common

In associating marine plastic debris as a tragedy of the commons, some clarifications must be made. Seeing the ocean as a dumping ground for anthropogenic waste, common to all, can be considered the reverse position of a traditional common, being an openly available resource. Yet looking deeper, striking similarities emerge between traditional commons and the idea of marine plastic debris as a reverse common, as outlined by Hardin, 1968. Absenting a governance system to impose rules for behaviour, the rational individual sees that the shared cost of polluting, shared by the global community, is often smaller than personally paying for the processing of their waste. This is perfectly reciprocal to an extractive common, and can be applied to groups on many organisational levels. Continuing with the idea of acting within a global community, nation states can be seen as individuals. For example, China is estimated to be the greatest contributor of marine plastic debris (Jambeck et al., 2015); to internalise the cost of this pollution, China would have to pay a significantly more than at present, as other members of the region, particularly neighbouring states, currently share in the cost of this pollution (Chow, 2016). These costs are embodied in reduced aesthetic value of recreational spaces, impaired ecosystem services resulting in poorer fisheries and debris entanglement with ship propellers. Additionally, if China were to entirely internalise the cost of its plastic pollution, it would still share in the cost of its neighbours' pollution, creating a double disincentive for states to independently reduce their plastic pollution. Thus the problem of marine plastic pollution can be described as a wicked problem within a common; multiple user groups have multiple objectives for the ocean commons, some of which may be conflicting.

Introducing property rights has been effective in managing some environmental resource problems, but has limitations; it is particularly weak when applied to dynamic settings, and has the disadvantage of increasing pressure on any remaining common resources (Jentoft and Chuenpagdee, 2009). Migratory fish stocks have proven difficult to manage, as their movements between international jurisdictions mean that allocating equitable quotas are challenging to decide upon,