Reduce, Reuse, Recycle and Other Plastic Rhetoric: Examining the Influence of Environmental Rhetoric on Plastic Governance in Canada

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Abstract

As the plastic crisis has emerged as a prominent environmental issue, among others like climate change and biodiversity loss, it has become increasingly important to examine current models of plastic governance. Studying plastic governance provides opportunities to better understand, challenge and hopefully improve upon the landscape of governance within the plastic crisis. For the purposes of this paper, plastic governance is defined as the management and regulation of plastic throughout its life cycle, from production to disposal. The plastic crisis has complex socio-political and ecological dimensions that shape both plastic's problems and potential solutions. Environmental rhetoric surrounding plastic and plastic governance fosters, as well as exemplifies, the dynamic human and ecological dimensions at play in the plastic crisis. For example, the prominence of rhetoric like "Reduce, Reuse and Recycle" and recycling generally demonstrate the creation and reinforcement of waste management and consumer responsibility as the main problems and solutions within plastic governance. Focusing on Canada and the recent announcement of a national ban on single-use plastic, I explore the impacts of environmental rhetoric on the existing and developing governance landscape for plastic. By examining the use of or appeal to environmental rhetoric among state, corporate and civil actors in Canada, I apply concepts from the social science theories of critical political ecology and constructivism in order to gain a deeper understanding of the political and ecological dimensions of the plastic crisis and governance. In particular, I examine the ways in which the coproduction of science and politics informs the characterization of the plastic crisis itself as well as any potential solutions. By studying how rhetoric shapes the problems and solutions we see and emphasize, I will identify and explore norms and gaps within governance throughout plastic's life cycle. As well, I consider rhetoric surrounding the actors within the plastic crisis and examine how identity and perception play a role in plastic governance. This research allows for deeper critique of plastic policies or initiatives in order to provide potential recommendations for advancing environmental sustainability in Canada.

Keywords: Plastic Crisis, Plastic Governance, Canada, Critical Political Ecology, Constructivism

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Introduction

Plastic has transformed the world. Since its invention, humanity's demand for and reliance on plastic has grown significantly; making it nearly impossible to imagine life without it (Hawkins, 2020; Dauvergne, 2018). Plastic pollution also appears to be ubiquitous as plastic debris has been found in some of the Earth's most remote areas (Cho, 2020; Environmental Defense, 2018; Young, 2021; Altman, 2022). The prominence of plastic on Earth, dating from the mid 20th century has led some scientists to go as far as to say that humanity is living in the "Plastic Age" (Heidbreader, Bablok, Drews and Manzel, 2019; Giaimo, 2016). Evidently, plastic's physical and social impacts are extensive.

Within the overall landscape of environmentalism or environmental concern, the plastic crisis, issues relating to plastic production, consumption, and disposal, has sparked significant attention in recent years. Although plastic waste has long been leaking into the Canadian environment and beyond, stark imagery of marine pollution choking wildlife has proliferated and has reignited familiar reminders to "Reduce, Reuse and Recycle". More and more, plastic is being recognized as a significant environmental threat in terms of pollution, especially marine pollution, but also in regard to climate impacts and human health concerns (Bauman, 2019). As the climate crisis intensifies, greater emphasis has been made on the plastic's contribution to greenhouse gas emissions (Centre for International Environmental Law, 2019). Consequently, this rising concern for the plastic crisis puts a new focus on the governance of plastic and the onus of different actors within the plastic crisis.

This demonstrates how the plastic crisis includes a human dimension in terms of political and social drivers and impacts. Specifically, the plastic crisis is complicated by discursive or rhetorical challenges that are co-produced along with physical environmental threats alluded to above. That is to say that rhetoric necessarily frames our perception of the landscape of plastic governance within Canada and globally. For example, the prominence of rhetoric like "Reduce, Reuse and Recycle" subtly maintains the norm of emphasizing waste management solutions within plastic governance (Jaegar, 2018). In fact, the

"3 R's", sometimes reiterated to include four R's or even seven[1], is a heavily entrenched norm that is crucial for almost all sustainability communication (Malone and Bashyal, 2017). Discourses surrounding what actions should be taken or which actors should be responsible, within plastic governance, are interwoven, complex, and contradictory at times, putting into question the prospective solutions and the environmental challenges themselves. According to Nielsen, Hasselbalch, Homberg and Stripple (2019), plastic stands out, in comparison to other environmental problems, because there is no clearly recognized body, scientific or political, that is tasked with addressing plastic. As a result, it is difficult to define the plastic crisis, leading to significant variance in conceptualizing and enacting sustainability pathways and responsibilities (Nielsen et al., 2019).

In Canada, a significant development within plastic governance is the recent announcement of a national ban on single-use plastic under the *Canadian Environmental Protection Act, 1999* (Prime Minister of Canada, 2019; Canadian Environmental Protection Act, 2020). This announcement has been engulfed by various opinions and reactions, which praise, critique, and outright dispute its approach and validity. For instance, the Canadian government's single-use plastic ban is seen as both a step forward and an object of critique, potentially due to the ways in which it reflects some popular ideas in environmental rhetoric while rejecting or hiding others. Specifically, the government's opposition to single-use plastic plays into the dominance of recycling and demands to improve recyclability of plastic materials. On the other hand, it appears to ignore or disguise rhetoric surrounding overconsumption as the cause of environmental problems, like the plastic crisis, by instead promoting smarter or "greener" consumption (Dauvergne, 2018).

Additionally, rhetoric surrounding plastic, in this context and beyond, has long involved some form of narrative shifting. For the purpose of my thesis, narrative shifting refers to the ways in which rhetoric is utilized to frame or re-frame environmental issues to transfer onus or blame from one actor to

[1] Common variations of the "3R's" rhetoric include, but are not limited to, some combination of the following terms: reduce, reuse, recycle, refuse, rethink, recover, repair, repurpose and rot (Malone and Bashyal, 2017; AeromatiCo, 2018).

another. For example, rhetoric that conceptualizes plastic solutions as lifestyle changes or consumer-driven frames the plastic crisis as a private problem and places responsibility on consumers, thereby deflecting a need for governmental action or industry culpability (Liboiron, 2013; Dickinson, 2020). Actors of note involved in the plastic crisis include the Canadian government, industry, and civil society, as they contribute to the formation of the plastic crisis and plastic governance at large. For the purposes of this thesis, the scope of these actors will be narrowed down to Canada's federal government, representatives of the plastic industry, and environmental non-governmental organizations as a representative of civil society's interests and perspectives. Relying on critical political ecology and constructivism, document analysis will examine the impact of environmental rhetoric on plastic governance in Canada.

Within the context of the recent announcement of a national ban on single use plastic, I will examine the impact of environmental rhetoric on the existing and developing landscape of plastic governance in Canada. I will examine the use of or appeal to environmental rhetoric among state, corporate and civil actors in Canada. I will also investigate whether environmental rhetoric impacts the efficacy of plastic solutions. Guiding this thesis are three research questions: (1) what influence do environmental rhetoric and narrative shifting have on plastic solutions proposed or undertaken by state, corporate and civil actors within environmental governance in Canada? And (2) do these shifts or tensions among environmental rhetoric result in governance gaps or blind spots that may worsen physical environmental impacts? Finally, an ancillary question I would like to touch upon in my thesis is (3) how does plastic governance distribute blame as well as physical environmental harms in Canada and globally? That being said, due to the constraints of my project, I do not intend to rigorously answer (3), but rather explore it within the context of my thesis. In other words, (3) is an exploratory question which I seek to consider (3) in order to highlight this as an issue for further exploration and to emphasize the social justice considerations within my selected theoretical lens: critical political ecology.

The significance of this research is that it will improve our understanding of the problematic ways in which environmental governance reflects and reinforces uneven power dynamics through a reliance on dominant ideas, assumptions, or environmental explanations relating to plastic. As a result, I meaningfully build upon existing examinations of the complex landscape of environmental governance within the plastic crisis. This research will enable me to explore the problems discussed above by allowing me to identify relevant environmental rhetoric and assess associated plastic initiatives by state, corporate and civil actors. By examining the content of environmental rhetoric and narrative shifting, I will explore how rhetoric is strategically deployed and how it can be utilized to promote efficacy in plastic solutions. Additionally, research, conducted in the form of document analysis, will allow me to apply concepts from critical political ecology and constructivism to expand understanding of the political and ecological dimensions of the plastic crisis and governance. In particular, plastic governance has various gaps (Simons and Schulte, 2017) including an apparent overemphasis on waste management over reforms to production. Through my thesis, I seek to somewhat counteract this overemphasis by providing rationale behind the dominance of waste management solutions and highlighting plastic's full life cycle. By examining the ways in which rhetoric shapes the problems we see and emphasize, I will be able to explore gaps in governance throughout plastic's life cycle. Practically, this research will allow for deeper critique of plastic policies or initiatives to contribute to the development of best practices or recommendations for advancing environmental sustainability in Canada.

Background

As plastic has arisen as a prominent environmental concern of today, this thesis seeks to consider and examine Canada's contribution to the plastic crisis and the landscape of plastic governance. This section provides an overview of key points, issues, and challenges within Canada's plastic governance as an introductory backdrop to the kinds of points and issues this thesis seeks to address. This section also presents the necessary context to illustrate the significance of environmental rhetoric in the plastic crisis and plastic governance. While Canada's single-use plastic ban is the focus of this thesis, it is important to

situate Canada's interests in plastic and plastic governance more broadly. This section will first provide a brief description of the global plastic crisis before entering into a discussion about specific implications in Canada. Then, it will outline Canada's involvement in the landscape of plastic governance leading up to the federal single-use plastic ban. Next, it will outline the ban itself and explain the significance of this action in relation to environmental rhetoric. From that point, this section will further discuss plastic's environmental and governance challenges with respect to the role of environmental rhetoric, specifically in relation to the dominance of pollution and recycling ideas.

Globally, plastic production and consumption have grown exponentially since the 1950s, when plastic initially entered the markets. This trend of growth is expected to continue, considering the ways in which plastic has become ubiquitous in every sector including agriculture, construction, building and packaging (Palm and Svensson Myrin, 2018). Annually, it is estimated that over 335 million tons of plastic are produced around the world (Palm and Svensson Myrin, 2018), and production is expected to double in the next 20 years (Nielsen et al., 2019). Since 1950, 8.3 billion tonnes of plastic have been produced and of that plastic, it is estimated that 60% has either been landfilled or entered into the natural environment as pollution whereas only 24% is still in use, 9% has been incinerated and 7% has been recycled (Environmental Defense, 2018). As plastic is a highly durable material, its lifespan is estimated to be anywhere from hundreds to thousands of years (House of Commons Canada, 2019), meaning that when it enters the environment, it never truly goes away. For instance, most of the plastic that has ever polluted the oceans is still there (Beyond Plastics, 2021). As a result, plastic pollution accumulated significantly worldwide, and marine plastic pollution has garnered notable concern.

Interestingly, since the 1970s, plastic has been reported as a threat to marine environments, however, it has only recently gained global attention (Xanthos and Walker, 2017). According to Dauvergne (2018), 60 to 90% of pollution in marine ecosystems presently is comprised of plastic. As well, marine plastic pollution is expected to rise from 9 million metric tonnes to 16 million metric tonnes between 2015 and 2025 (Dauvergne, 2018). In recent years, marine plastic pollution has erupted as an

environmental problem of concern in part due to media coverage of plastic's risk to marine life. In particular, as commonly depicted in media, roughly 5 million to 13 million tonnes of plastic in the oceans are accidentally ingested by marine animals who confused the plastic for food. If the animals are able to consume the plastic, it enters the food chain, but in other cases, animals die as a result of ingesting plastic debris or by being trapped by marine plastic pollution (Laville and Taylor, 2017; Bauman, 2019). As a result, while plastic contributes to other environmental risks like climate change, which will be explored later in this thesis, plastic waste has been identified as the key issue of the global plastic crisis.

In Canada, plastic is a considerable concern due to the ways in which Canadians heavily rely on plastic and how plastic specifically impacts the Canadian environment and beyond. Canada is a contributor to the growth of plastic production and consumption as Canadians account for 1.4% of all plastic produced whilst comprising only 0.5% of the global population (Young, 2021). Although five Asian nations – China, Vietnam, Thailand, the Philippines, and Indonesia – have been identified as the leading sources of marine plastic pollution (Dauvergne, 2018), plastic waste from Canada and from elsewhere still impacts Canada's natural environment (House of Commons Canada, 2019). In fact, a study by the International Energy Agency found that Canada had one of the largest demands for plastic per capita, at 99.6 kilograms per person in 2015 (House of Commons Canada, 2019). As well, the annual production of plastic waste in Canada is estimated to be roughly 3.3 million tonnes, and of that waste, 2.8 million tonnes of plastic is landfilled each year (Young, 2021). Although plastic recycling dates back to the 1970s (Hopewell, Dvorak and Kosior, 2009), only about 9% of plastic is recycled in Canada (Government of Canada, 2022b; Young, 2021). As a result, the Canadian environment has been significantly impacted by plastic waste.

In fact, it is estimated that, each year, 10 000 metric tonnes of plastic pollute the Great Lakes (Environmental Defense, 2018). According to Dr. Rochman of the University of Toronto, "every fish in the Great Lakes has plastic in it" (Beyond Plastics, 2021). Moreover, as Canada proudly boasts having the largest coastline in the world (Government of Canada, 2022b), the fact that plastic litter is found in

abundance in most coastlines globally (Heidbreader et al., 2019) signals cause for concern. Another significant plastic issue in Canada is plastic waste trade. In fact, between 1988 and 2016, Canada exported 3.89 million tonnes of plastic waste (Wuennenberg and Tan, 2019). According to Young (2021), Canada ships about 12% of its plastic waste to other countries, which has often resulted in the pollution of said countries. Regarding the common practice of trading waste, easily sorted and recyclable materials are treated at domestic recycling facilities whereas the remaining plastic is shipped elsewhere, commonly in Asia and nations in the global south (Dickinson, 2020). Unfortunately, the influx of foreign plastic waste overwhelms already insufficient waste management programs, thereby perpetuating plastic pollution (Dauvergne, 2018). For example, waste trade between Canada and the Philippines stirred conflict recently, as the Filipino government and environmental activist spoke out against being utilized as a dump site by developed nations (Bautista, 2019). Evidently, the plastic crisis in Canada is significant and multifaceted, which points to the importance of measures undertaken to resolve issues surrounding plastic.

According to the Government of Canada (2022), the fact that Canada has the largest coastline as well as 25% of the world's freshwater presents a unique responsibility and opportunity for the country to take action to tackle plastic waste. It is important to note that plastic governance in Canada, specifically in reference to waste management, has been described as a 'shared responsibility' among various actors and stakeholders, including different levels of government, industry, non-governmental organizations, and the general public (House of Commons Canada, 2019). In accordance with the division of powers set out in the *Constitution Act, 1982* as well as the general or residual power for peace, order, and good government of Canada, the federal government's authority within waste management is largely concerned with transboundary movement of hazardous waste and the prevention of toxic substances entering natural environments (House of Commons Canada, 2019; Benidickson, 2019). A significant tool for the federal government is the *Canadian Environmental Protection Act, 1999* [CEPA 1999], legislation which, justified under the federal government's criminal law power, emphasizes the issue toxic substances in

Canada and prioritizes pollution prevention of toxic substances. When a substance has been deemed toxic, addition to the Toxic Substances List allows the federal government to pursue various management options, including regulation, under CEPA 1999 (Benidickson, 2019).

Furthermore, waste management is also a major responsibility of provinces and territories. In regard to plastic waste, they are largely responsible for landfill sites and recycling facilities (House of Commons Canada, 2019). In Canada, the provinces delegate authority to municipalities to enact bylaws so long as they do not exceed the scope or contract corresponding provincial legislation (Benidickson, 2019). As a result, municipalities create by-laws regarding litter and manage household recycling programs. Local governments, therefore, are also responsible for educating the public on said by-laws and waste management programs (House of Commons Canada, 2019). Along with responsibility to adhere to regulations set out by governments, industry plays a role in plastic waste management through voluntary commitments to reducing plastic waste or improving recycling through producer responsibility programs (House of Commons Canada, 2019). In addition, non-governmental organizations, particularly environmental groups, provide leadership on plastic waste through civil campaigns, protests or initiatives which promote or highlight the public interest and certain policy measures (House of Commons, 2019). Finally, the general public contributes to the shared responsibility over plastic waste through their consumption behaviour, compliance with waste management measures as well as participation in initiatives to curb individual plastic waste or promote policy change (House of Commons, 2019). Evidently, various actors participate in addressing plastic waste in Canada, however, viewpoints and approaches vary among stakeholders, thereby highlighting the significance and complexity that plastic presents to the environment and to governance in Canada.

Leading up to the recent announcement of the federal single-use plastic ban, Canada has demonstrated its interest in plastic governance in notable ways. For instance, since 2007, several Canadian cities have imposed bans and levies on plastic bags in order to reduce plastic consumption (Xanthos and Walker, 2017). As well, in 2009, Canadian provinces and territories committed to the

Canada-wide Action Plan which promoted the implementation of Extended Producer Responsibility (EPR) nation-wide (Arnold, 2019). EPR is an important instrument for waste management which makes producers fiscally and/or physically responsible, entirely or in part, for the waste created by their products. In Canada, a common example of shared EPR, wherein the fiscal and physical responsibilities over waste is divided between governments and producers, is municipal blue box program for recyclables which are operated by municipalities but are financed, at least in part, by producers (Arnold, 2019). Notably, the Canada-wide Action Plan was agreed upon to launch a harmonized approach to EPR programs across Canada, however, in effect, most provinces have established unique programs with limited consideration for interprovincial standardization or systemic integration therefore resulting in an uneven implementation across the country (Arnold, 2019).

Furthermore, following Ontario's 2015 legislation to ban the manufacturing of microbeads (Xanthos and Walker, 2017), the federal government added microbeads to the Toxic Substances List and later imposed a ban on the sale, import and production of rinse-off microbeads, effective in 2018 (Dauvergne, 2018). This ban has been credited to the urging of the provinces, which pointed to the prevalence of microbeads in the Great lakes, as well as growing scientific concern and public demand (Dauvergne, 2018). While widely considered successful, it is important to note that microbeads were not an essential ingredient for the targeted rinse-off products. As well, although industry representatives from both the plastic industry and personal hygiene industry lobbied against the ban on microbeads, many switched tactics and phased out the non-essential microbeads prior to the legal requirements (Dauvergne, 2018). For instance, prior to the ban and public outcry, prominent manufacturers and retailers like Johnson & Johnson and Unilever, were already taking steps to phase out microbeads in favour of natural abrasives and cleaners which were affordable and readily available (Dauvergne, 2018). As a result, the success of the microbead ban in Canada is a unique case due to the advantage of the substance in question, microbeads, being non-essential and alternatives being readily available.

Another notable moment in Canada's plastic governance is the development of G7 Oceans Plastics Charter, which was championed by Canada during service as President (House of Commons Canada, 2019). The Oceans Plastics Charter is a non-binding international agreement which promoted targets to improve the recycling, reuse and recovery of plastic to reduce marine plastic pollution (House of Commons Canada, 2019). Similarly, in November of 2018, Canada demonstrated its involvement in plastic governance through the approval, in principle, of the Canada-wide strategy on zero plastic waste by the Canadian Council of Ministers of the Environment in 2018. In doing so, Ministers of the Environment cemented the common goal of waste reduction, however this did not lay out waste reduction goals by jurisdiction nor did it impose particular policies or programs to prevent or divert waste (House of Commons Canada, 2019; Canadian Council of Ministers, 2022). Following these actions and international actions on plastic, Prime Minister Justin Trudeau announced in 2019 that the federal government would ban harmful single-use plastic items as early as 2021 (Prime Minister of Canada, 2019).

The single-use plastic ban initially announced in June of 2019 is a significant action for Canada's plastic governance which has intriguingly been seen as both a step forward and an object of critique or even opposition. In October of 2020, the single-use plastic ban was reintroduced and reemphasized as a crucial component of the government's plan to achieve zero plastic waste by 2030 (Government of Canada, 2020). The proposed banned items included plastic checkout bags, straws, stir sticks, six-pack rings, cutlery, and food ware made from hard-to-recycle plastic (Government of Canada, 2020). These plastic items were identified as being prominent in the environment and as having readily available alternatives (Government of Canada, 2020). Shortly afterwards, it was published in Canada Gazette that an order to add "plastic manufactured items" to the List of Toxic Substances under *CEPA 1999* was recommended by the Minister of the Environment and Minister of Health, (Canadian Environmental Protection Act, 2020), and that order was officially published in May of 2021 (Government of Canada, 2021). This granted the federal government regulation-making power under *CEPA 1999.* Draft regulations were released in December of 2021 (Government of Canada, 2021), and the final regulations

to prohibit single-use plastic was announced in June of 2022 (Government of Canada, 2022a). The regulation banned the manufacture and import of the aforementioned six single-use plastic items, with exceptions, and is set to come into effect in December of 2022 (Government of Canada, 2022a). This recent finalization may point to added interest in the assessment of the single-use plastic ban or plastic governance at large, especially in terms of analyzing the efficacy of Canada's action in the face of the plastic crisis. Since its announcement and throughout the regulation-making process, the single-use plastic ban has been met with varied reactions that appeal to and reject prominent environmental rhetoric or norms, which calls for greater examination.

The persistence of the environmental threat of plastic and limited or insufficient management measures calls to question whether Canada's actions to address plastic are meaningful. The ways in which these actions have been promoted and applauded suggest an important interaction and disconnect between environmental rhetoric and environmental reality. For instance, the environmental challenges of plastic are vast but rhetoric around plastic, including that within the ban and reactions to the ban, is dominated by waste, pollution, and recycling. As already mentioned, marine plastic pollution has been well-captured by media and imagery, so it is easily disseminated into civil society, thereby engraining the concept of plastic pollution (Stafford and Jones, 2019). Similarly, recycling has been long promoted as an obvious solution (Tierney, 2015), despite inefficiency relating to costs, energy consumption and limited application (Skene, 2018; Franklin-Wallis, 2019). Furthermore, considering the urgent threat of climate change, plastic's climate impact is being neglected. According to Nielsen et al. (2019), 99% of plastic is derived from fossil fuels and plastic commands roughly 8 to 9% of global oil and gas production. As well, because most plastic is made of fossil fuels, throughout its life cycle, plastic is carbon intensive and contributes to greenhouse gas emissions (Shen et al., 2020). Although more emphasis is being placed on plastic's greenhouse gas contributions, the severity of plastic's link to climate change is underappreciated in comparison to the diffusion of norms and ideas surrounding plastic pollution.

As well, as so many actors are involved in the plastic crisis, the governance landscape is complex. For instance, discourse surrounding what actions should be taken or which actors should be responsible, within plastic governance, are interwoven, complex, and contradictory at times, putting into question the prospective solutions and the environmental challenges themselves. According to Nielsen et al. (2019), plastic stands out, in comparison to other environmental problems, because there is no clearly recognized body, scientific or political, that is tasked with addressing plastic. As a result, it is difficult to define the plastic crisis, leading to significant variance in conceptualizing and enacting sustainability pathways and responsibilities (Nielsen et al., 2019). As a result, it is evident that environmental rhetoric is a significant aspect of the plastic crisis and plastic governance. As the recent federal single-use action ban has been posited as significant measure to address plastic in Canada, it is worth considering the potential influence environmental rhetoric has had within this context. Therefore, this thesis will explore how environmental rhetoric contributes to understanding and response to physical environmental threats, such as the plastic crisis in Canada within the context of the single-use plastic ban.

Theory

This section breaks down the guiding theory behind this project and explains significant concepts which will later inform analysis. My thesis primarily utilizes critical political ecology and constructivism as theoretical or conceptual lenses to inform analysis. As well, I rely on and build upon existing understandings of organized irresponsibility and the value-action gap.

Critical Political Ecology

Political ecology is a theory which deals with the political dynamics at play within material and discursive conflict involving the environment (Bryant, 1998). In essence, political ecology assumes that politics and the environment are constantly and thoroughly interconnected (Bryant, 1998). As a result, political ecologists concern themselves with the notion of a ‘politicized environment’ wherein politics and ecology interplay. A central component of study within political ecology is the appreciation of how “the

environment is constituted through struggles over material practices and struggles over meaning" (Bryant, 1998, p.84). According to Benjaminsen and Svarstad (2020), political ecology is used to analyze the ways in which environmental policies determine and reinforce power in society, especially in regard to land and resources. A central theme within political ecology, therefore, is that the politicized environment is characterized by unequal power relations (Bryant and Bailey, 1997; Bryant, 1998). Power relations are a considerable aspect of this theory because they help to uncover and explain the political sources, factors and consequences surrounding environmental change (Bryant and Bailey, 1997). Neimark et al. (2019) also suggest that a critical approach, within political ecology, underscores hegemonic forces. Specifically, they explain that power shapes knowledge, social relations and practices within environmental science and environmental policy (Neimark et al., 2019). As well, critical political ecology assesses the political construction of ecology or the environment, understanding that social and political ideas and understandings are built into supposedly neutral scientific understandings of the environment. Thus, a key challenge of the critical school of thought within political ecology is to achieve "the successful integration of political analysis with the formation and dissemination of understandings of ecological reality" (Forsyth, 2003, p. 20).

It is important to note that my thesis is strongly inspired by Forsyth's 2003 book: *Critical Political Ecology.* To analyze the influence of environmental rhetoric, I will rely on Forsyth's critical political ecology to examine the interplay between environmental rhetoric and the landscape of plastic governance in Canada. In particular, this theory will be used to examine how social and political factors frame environmental science, especially as environmental science is used as the basis for environmental policy (Forsyth, 2003). As well, I will explore how environmental science can also impact politics, especially as it pertains to the creation and justification of environmental policy (Forsyth, 2003). In particular, critical political ecology challenges the separation of science and politics and seeks to adopt and advance scientific understandings which are more politically aware. In doing so, this allows for the exploration of how environmental explanations come to be and how they are seen as relevant (Forsyth,

2003). Forsyth (2003) explains that environmental science and politics are coproduced, rather than separate. That is to say that the acceptance of specific environmental explanations in science and society is influenced by dominant understandings and political framing. Failure to acknowledge how environmental science is affected by socio-political factors inhibits the ability to properly address environmental threats (Forsyth, 2003). For instance, dominant or taken-for-granted understandings of environmental problems and environmental explanations are often used as the basis for environmental policies or solutions (Forsyth, 2003). Forsyth (2003) describes these dominant beliefs or assumptions as 'environmental orthodoxies' which assign narrow and simplified definitions of environmental degradation and are often relied upon to prescribe particular environmental solutions. The issue with environmental orthodoxies is that these generalized statements regarding causes of environmental change or damage are accepted as fact in spite of emerging research to suggest alternative or more pressing causes (Forsyth, 2003).

As environmental orthodoxies are narrowly prescriptive of prospective solutions, when used as a basis for policy, it runs the risk of being both biophysically inaccurate and causing undue harm to people living in affected areas (Forsyth, 2003). This is not to say that environmental orthodoxies are blatant falsehoods, but instead to suggest that the application of these common definitions of environmental degradation is not universally applicable. Furthermore, the continued use of environmental orthodoxies is a product of political influences (Forsyth, 2003). In the case of plastic, the dominance of ideas of pollution and recycling shapes the landscape of plastic governance. The reliance on longstanding ideas about pollution may overlook other environmental threats linked to plastic, like climate change, and can result in solutions that fail to address the holistic problem of today's plastic crisis. Similarly, assumptions about cultures of waste neglect socio-political strategies and decisions which facilitated consumption and waste (Liboiron, 2013). For instance, Liboiron (2013) explains that after the Great Depression and World War II, in pursuit of economic growth and profit, industry created and entrenched a culture of disposability through the proliferation of things like planned obsolescence, single-use items, and

overconsumption. As a result, the concept of humanity's inherent wastefulness was born and became a taken-for-granted truism and its political and strategic origin was overlooked or neglected (Liboiron, 2013). Thus, concepts from critical political ecology will be particularly useful in assessing the politicized components of the plastic crisis, including sources of waste, plastic toxicity and recycling efficiency.

Additionally, critical political ecology will allow for the examination and critique of power dynamics among state, business and civil actors that shape existing discourse of environmental threats (Forsyth, 2003). Under this theory, rhetoric and discourse are particularly important because language profoundly shapes society's world views and realities (Hajer and Versteeg, 2005). Moreover, it is important to recognize that actors may be confined by structures created by environmental discourse and rhetoric (Forsyth, 2003). That is to say that environmental discourse creates boundaries of accepted and non-accepted behaviour, within which state, business and civil actors operate (Hajer and Versteeg, 2005). Notably, critical political ecology examines the individual behaviours of these actors as well as their interactions between each other. These interactions serve to reinforce or challenge existing discourses of environmental problems, highlighting the political basis of environmental concerns themselves (Forsyth, 2003). Building upon this understanding, I am careful to demonstrate the broader socio-political forces underlying the positions and actions of government actors, businesses, and civil society. As well, I make note to conceptualize these actors in relation to each other as to encompass the complex interrelationship between power dynamics and agency within environmental problems and environmental explanations (Forsyth, 2003).

Moreover, my research will reflect critical political ecology's deconstruction of commonly held notions about the environment along with its realist understanding of science. This will be done in order to uncover accurate depictions of the environment and environmental risks (Benjaminsen and Svarstad, 2020). By challenging assumed notions of risks and drivers of environmental degradation, critical political ecology also draws attention to transparency, legitimacy, and participation in environmental science (Forsyth, 2003). It is my hope that by exposing and examining underlying political factors, my

research will encourage greater critical engagement with environmental science and policy. Furthermore, critical political ecology ultimately pursues environmental explanation from the perspective of achieving social justice. That is political ecologists, especially within the critical tradition, are motivated to act and collaborate beyond academia to translate new knowledge and understandings of environmental problems into eco-political action (Neimark et al, 2019). As a result, my research takes into account the relationship between environmental rhetoric and social justice. One way my research will do this is by considering and questioning the distribution of physical environmental harms, relating to plastic, in Canada and the Global South.

Constructivism

Similarly, concepts from constructivism will produce a deeper understanding of decision-making and actions at the state, private and civil levels through an assessment of socially constructed ideas, norms, and identities (Spiegel et al., 2015). Constructivists suggest that actors' behaviour and interactions with one another are strategically determined to suit particular beliefs, identities, and interests (Spiegel et al., 2015). Constructivism, therefore, explains that the landscape of plastic governance necessarily reflects these actors' internal beliefs as well as their interpretations of each other, environmental problems and the scope of accepted environmental actions. For instance, the idea of plastic pollution, especially as a threat to the marine environment, is an accepted social fact about plastic. Its imagery, media presence, and general awareness in public opinion has established marine plastic pollution as a phenomenon of interests with which actors must engage (Stafford and Jones, 2019). The norm or idea of plastic threatening the marine environment, therefore, promotes certain actions or initiatives by the state, corporate and public actors to reflect shared beliefs and norms. For instance, plastic pollution has been linked to individual action and calls for individual to engage in actions like recycling or replacing disposable items with reusable alternatives, like travel mugs (Stafford and Jones, 2019). This shared belief about the source of plastic pollution relating to individual action and the accepted behaviours surrounding reusable plastic and recycling, demonstrate constructivist motivations behind environmental action. As a result,

constructivism will assist in my thesis research's deconstruction of recycling and waste managements' dominance within the plastic crisis in Canada, which has already been linked to preconceived notions of environmentalism and social acceptance (Viscusi, Huber and Bell, 2011). According to Jaegar (2018), the act of recycling provides institutional and individual ethical relief for state, private and civil actors as it is a clear and widely accepted component of addressing plastic pollution. That is to say that actors who engage in recycling, in practice and discursively, are perceived more favourably by others and themselves, regardless of the efficacy of recycling behaviour.

In addition to explaining the dominance of certain environmental actions and rhetoric, constructivism allows for the assessment of dynamic norms and beliefs. According to Saurugger (2013), norms and beliefs can be manipulated or reinforced as means to achieve preferred perceptions. That is, appealing to certain rhetoric or engaging in environmental actions, like recycling, is a strategy to create or maintain a particular identity within the plastic crisis. For instance, the ideas surrounding environmental actions may be more symbolically significant than the physical consequences or effects. As already discussed, actors may rely on the perceived benefit from recycling initiatives to gain public support, despite significant inefficiencies within the recycling process (Jaegar, 2018). Similarly, switching to or creating alternative plastic like bio-plastic provides the perception of stewardship or green innovation, but in reality, many bio-plastic present the same issues as convention plastic. For instance, bio-plastic is still resource intensive, may rely on fossil-fuels for production and are unable to properly biodegrade outside of specific conditions (Young, 2021). Actors who engage with bio-plastic in this case are able to claim the identity of an environmental leader or steward, and they can, therefore, yield associated benefits like public support or profitability. This may also act as a tool to avoid culpability or scrutiny, by promoting a positive identity within plastic governance. In like manner, plastic's link to fossil fuels is sometimes neglected in favour of initiatives which reinforce emphasis on waste management, product design and consumer behaviour (Palm and Svensson Myrin, 2018). This reinforces norms and ideas about plastic's

problems and solutions, especially involving consumer waste, and distracts from concepts like greenhouse gas contributions which may project a negative reputation onto certain actors, like the plastic industry.

Furthermore, actors are motivated to avoid blame for unpopular actions or devastating events in order to maintain their power and image within organizational fields, including the plastic market (Cherrier and Türe, 2022). Focusing on politicians, Weaver (2008) explains that there is a negativity bias wherein people are more sensitive to what has been done to them rather than what is done for them. As a result, actors are motivated to avoid the perception of blameworthiness and will employ tactics to minimize blame as well as assign blame onto others (Weaver, 2008). According to Béland (2005), blame avoidance involves various strategies which actors, especially political actors, employed to address instances of or events relating to economic, social or environmental insecurity. Some examples of blame avoidance strategies include agenda limitation and passing the buck. These strategies involve avoiding controversial, radical or potentially unpopular actions and forcing other actors to take on responsibility or takeover difficult decision-making respectively (Béland, 2005). This explains as major motivation for actors adhere to longstanding waste management solutions or norms in the face of the plastic crisis. As well, this describes incentives to assign or pass on responsibility to other actors within plastic governance.

Likewise, Cherrier and Türe (2022) observe that "dynamics of blame unfold as groups of actors select specific plastic problems to work on and try to shift responsibility for other, often broader problems to actors outside their group" (p.1210). For instance, Cherrier and Türe (2022) note that plastic regulators avoid blame by framing plastic problems predominantly in relation to consumer-facing items, like single-use plastic. Similarly, the plastic industry is able to distract attention from broader plastic issues like plastic dependency and recycling inefficiency by providing and promoting alternative packaging or alternatives to single-use items (Cherrier and Türe, 2022). Notably, consumers, the least powerful actors within the plastic market, are likely to be targeted as scapegoats in order to maintain the status quo of the plastic market and broader society (Cherrier and Türe, 2022). This is achieved by blame avoidance and the perpetuation of ideas or norms which target consumers so effectively that consumers succumb to these

tactics and accept responsibility (Cherrier and Türe, 2022). Evidently, certain norms or ideas are manipulated in order to protect or create positive perceptions about and between actors in the plastic crisis. To further explore this, I use concepts from constructivism to examine narrative shifting within plastic governance. By highlighting the role of norms, beliefs, and identities, I explore why and how rhetoric is used to frame or re-frame plastic threats and responsibilities and how this can be done effectively. Moreover, through my research, I hope to better identify instances of narrative shifting and critically examine its use. By being able to identify and critique narrative shifting, I attempt to disentangle plastic governance from offloading blame, especially in terms of the emphasis on consumer behaviour. Instead, I will examine these norms and identities in order to uncover and refocus on assessing the efficacy and development of plastic solutions. In doing so, I will also work to decouple environmental rhetoric from the physical environmental harms of Canada's plastic crisis.

Other Concepts

Organized Irresponsibility

Furthermore, I utilize the concept of organized irresponsibility to examine the make-up and challenges of Canada's plastic governance landscape. Organized irresponsibility is a concept which refers to a phenomenon wherein individual actors avoid taking responsibility for cumulated risks to which they contributed (Curran, 2018). In other words, organized irresponsibility refers to a relationship between actors, like states, businesses, or individuals, in which their behaviour collectively generates risks or damages for others, but distinct actors are able to minimize or avoid culpability due to the difficultly in tracing damage to specific actions from any of the actors (Béland, 2005; Curran, 2018). This concept or principle is evident in cases involving environmental degradation because environmental regulations may be unable to appropriately assign culpability, thereby allowing actors to avoid penalties or responsibility (Curran, 2018). This concept, therefore, enables me to assess the landscape of plastic governance and the offloading of blame among various actors. Notably, within this system, actors who contribute to environmental hazards, like private firms and governments, tend to be better protected than average

citizens who face the brunt of environmental damage like pollution and ecological disasters (Béland, 2005). Thus, this concept helps me explore my third research question, relating to the distribution of blame and plastic's environmental harms in Canada and the Global South. Moreover, according to Béland (2005), societal blame for these environmental risks is essentially arbitrarily assigned, often to visible elected officials, despite lack of direct control over environmental risks. In the case of plastic, many actors are involved in the production, use and disposal of plastic materials, and the impacts of plastic transcend borders, thereby making it possible to avoid or offload blame. In the case of corporations, for example, Wu (2014) explains that it is more likely for private firms to act in a socially responsible manner if that behaviour is ensured by an organized system, typically created due to internal and external pressure to adhere to social norms. Thus, without a system of social norms or the ability to accurately assign blame, there is no compelling influence to ensure environmentally responsible behaviour (Wu, 2014). This concept highlights how rhetoric and framing outline accepted environmental behaviour and assign blame, even when it is difficult to pinpoint origins of environmental harm. Consequently, this concept is useful to assess and discern the influence of framing and environmental rhetoric on plastic governance.

Value-Action Gap

Finally, I draw from research on the value-action gap to assess the connection, or lack thereof, between environmental rhetoric and environmental action within Canada's plastic crisis. The value-action gap, also known as attitude behaviour inconsistency, refers to a common phenomenon wherein stated concerns are contradicted by behaviour responses (Barr, 2004; Flynn, Bellaby and Ricci, 2010). This theory largely pertains to individuals and small groups, but it points to a necessary distinction between values or beliefs and actions which relates to my thesis' objectives. This gap is significant in environmental issues because although public support for environmental protection has grown significantly, there remain significant barriers to developing and implementing progressive environmental initiatives or policies. Environmental behaviour research has identified some reasons for the nature of environmental action in different contexts. For example, one barrier to environmental action is the

mistrust or skepticism of political forces implementing environmental policy (Barr, 2004). Other drivers of environmental action include a relatability or localization to environmental problems as well as the perceived efficacy of contributions (Barr, 2004). According to Flynn et al. (2010), norms, personal and household routines, and infrastructural constraints determine one's predisposition to pro-environmental action and their overall decision-making. In other words, the attitude-behaviour relationship is determined by the nature of personal attitudes, and external or situational constraints (Blake, 1999). In my thesis research, I utilize this concept to evaluate attitudes, evident in rhetoric, and consider prominent constraints to environmental actions within the context of plastic governance in Canada.

Similarly, Blake (1999) explains that, in order to overcome the value-action gap, it is necessary to redefine or reframe roles and functions of private and public institutions in order to convert public support into new, but widely accepted, sustainable action. Barr (2004) suggests that the value-action gap reflects the lack of power that behaviour intention has over action. While intention may serve as a predictor of action, a more significant driver is rhetoric as it defines accepted behaviour. That is to say that attitude may be a strong predictor of behaviour when these attitudes align with other held beliefs and social norms (Blake, 1999). For instance, some environmental actions, like recycling, are more easily committed because they are well-accepted, thereby increasing its convenience and compelling environmental behaviour (Barr, 2004). Consequently, referring to this, my research considers the increasing importance of how rhetoric and framing is formed and utilized on a large scale, rather than individualizing participation in environmental behaviour within the value-action gap theory or concept.

Methodology

As the plastic crisis has become a prominent environmental issue of today, measures undertaken to address the plastic ought to be critically examined in order to discern their efficacy, or lack thereof, and opportunities for future actions. In particular, plastic has been surrounded by longstanding environmental rhetoric or norms relating to pollution and recycling, it therefore necessary to consider the impact

environmental rhetoric has on the way in which plastic is understood as an environmental threat as well as pathways to address it. In particular, guiding this thesis are three research questions relating to (1) the influence of environmental rhetoric on prospective plastic solutions undertaken in Canada, (2) the potential for environmental rhetoric to create governance gaps or blind spots which exacerbate environmental damage and (3) the distribution of blame and physical environmental harms within the plastic crisis in Canada and globally. Focusing on Canada and the recent announcement of a national ban on single-use plastic, the objective of this thesis is to explore the impacts of environmental rhetoric on the existing and developing governance landscape over plastic. Environmental rhetoric surrounding plastic was identified and the use of or appeal to environmental rhetoric among different actors – state, corporate and civil society – was examined to gain deeper understanding of the political and ecological dimensions of the plastic crisis and governance. This study allows for constructive critique of Canada's present action on plastic, especially the single-use plastic ban, as well as contributes to considerations for advancing environmental sustainability in Canada.

This thesis research identified and examined environmental rhetoric among different actors through the document analysis of various reports, discussion papers, press releases and statements, website pages and newspaper articles from the perspectives of state actors, corporate actors, and civil society. In this case, reflecting the scope of this thesis, the perspectives of the state, corporate actors and civil society will be represented by Canada's federal government, the plastic industry, and environmental non-governmental organizations. These actors were chosen as, evident in the background section above, they possess a vested interest in plastic governance in Canada and have specified stakes or responses to the federal single-use plastic ban. As well, the scope of analysis was restricted to these actors in order to provide clarity and specificity to the information yielded by the study. That is to say that while there are heterogenous opinions within these actor groups and not all voices are represented by the scope of the documents, prominent opinions of note were considered in order to allow for adequate analysis and deeper understanding of the state of plastic governance in Canada. For example, while provincial

governments also play a role in plastic governance and have interest in the single-use plastic ban, the federal government is a primary actor within the introduction, defense, and implementation of said ban and in the grander scheme of the global plastic crisis. As a result, the state perspective which takes priority, in terms of analysis for this research, is that of the federal government. As well, whilst beyond the scope of my research, I actively recognize that the findings uncovered through this work would benefit from further study and continued analysis of different stakeholders.

Document analysis was selected as the appropriate tool for study as it allows for a systematic analysis of the perspectives of the different actors of interests. According to Bowen (2009), document analysis allows for the systematic review or evaluation of documents in order to examine and interpret data to create meaning, advance understanding and develop knowledge. As well, an inductive analysis approach was undertaken as to allow findings to emerge from the themes inherent in data rather than trying to test a specific hypothesis or theory like in deductive analysis (Thomas, 2006). The inductive approach to document analysis provided opportunity for a systematic procedure to the detailed reading of raw data from which concepts and themes were derived through interpretation (Thomas, 2006). In using an inductive analysis approach, I established links between my thesis' research objectives and summary findings derived from various documents (Thomas, 2006). This was an especially important decision in order to avoid unintentionally or uncritically reiterating assumptions that are reflected the dominance of certain environmental rhetoric or ecological norms within environment problems, a problem which this research has taken into consideration. As well, the inductive approach was especially important because significant variables and themes within Canada's plastic governance may not yet be known (Belotto, 2018). This methodological approach was selected to the discovery of rhetoric each actor appeals to and utilizes. Being able to identify the rhetoric from the various actors enabled comparison among the actors and the assessment of the relationship between environmental rhetoric and plastic action.

A major component of document analysis in this study was thematic coding, which was used to highlight rhetoric applied to contextualize the plastic problem, in terms of its significance and sources, as

well as code rhetoric that pointed to or critiqued plastic actions. I also took note of rhetoric which described or characterized the actors within the plastic crisis. This coding process allowed me to develop new interpretations of the documents through summary, characterization, and thematic grouping (Belotto, 2018). Upon familiarization with the data, I proceeded to highlight areas in the documents wherein the problems of plastic are characterized or described and wherein potential solutions are either suggested or critiqued. Doing so essentially mapped the data in the document in relation to the research interests and research questions outlined above (Elliot, 2018). After generating short-hand or codes to symbolize a summative attribute to the data, these codes were translated into various themes or categories (Elliot, 2018). At this stage, the relevance of codes was assessed, and attention was paid to whether distinct rhetoric is appropriately grouped, being careful to condense the data in a meaningful way rather than creating an exhaustive list of unusable codes (Elliot, 2018).

As well, throughout the coding process, it was essential to ensure that coding was consistent in order to provide validity and reliability (Williams and Moser, 2019). As an individual researcher on this project, checking reliability, especially within the coding process was a priority. Therefore, to ensure consistency, significant effort was made to ensure coding consistency over time, which entailed freshly coding documents multiple times before comparing (Elliot, 2018). The coding process was extensive and took place over several months, so checking coding procedure and recoding was a thorough process. Furthermore, noting the frequency of codes or counting, while a useful tool for comparison, will not be the sole consideration in assigning significance (Elliot, 2018). Relying too heavily on counting may overlook interesting or significant findings within the data, as unique or less mentioned codes can be just as important for analysis (Elliot, 2018). In a similar manner, attention was paid to that which is not discussed within coding or ideas or concepts that appear to be overlooked, either at large or by particular actors. As a result, within coding, unique codes and even lack of mention played roles in analysis.

As this research focused on Canadian plastic governance, especially in regard to the government's recent announcement of a ban on single-use plastic, documents were screened for relevance

to Canada and publication no earlier than 2019, when a plastic ban was initially proposed. To find appropriate documents, I relied primarily on the Google search engine, Factiva, for newspaper articles and press releases, and Omni, the University of Ottawa Library's main search tool. Following initial searches, document collection was also deepened by researching prominent actors or groups, to examine their web content, reports, and related or recommended news articles. For example, reference made in initial research to recyclers, Canadian Manufacturers and Exporters, as well as the Responsible Use Coalition prompted addition research into content specific to their perspectives. As well, document selection was also subject to a temporal threshold of cut-off starting from January 1st, 2019. Anything after December 31, 2021, would not be considered for the purposes of this research, as the project was moving onto analysis after this point in time. Another threshold consideration was saturation, a methodological principle within qualitative research that generally indicates that further data collection would be unnecessary on the basis of that which has already been collected or analyzed (Saunders et al, 2018). The decision to stop collecting new documents for analysis was therefore, in part, done to avoid 'informational redundancy' or new data not presenting anything new or being redundant of data already collected (Saunders et al, 2018). While expanding the sample of documents analyzed could yield more information, it also contributed to the risk of saturation. As well, ambition to thoroughly analyze so many documents by broadening search criteria or including more perspectives could lead to overextending the workload beyond that which is feasible for an individual researcher to accomplish within a Master's thesis.

To collect the appropriate documents, key words and search strings included:

- Plastic* governance in Canada;
- Plastic* ban or regulation and Canada;
- Plastic* and toxic designation or plastic ban and Canada
- Plastic* crisis or plastic pollution and Canada;
- Plastic* recycling or recyclers and Canada;
- Plastic* ban and Canada and response and plastic* industry or plastic* producers; and
- Plastic* industry coalition or group and plastic* ban and Canada.

From this search, 21 documents were considered for analysis from the perspectives of the federal government, industry representatives, and environmental non-governmental organizations, representing the interests of civil society. First, three documents from the government's perspective were examined. This included Environment and Climate Change Canada's 2019 discussion paper: A proposed integrated management approach to plastic products to prevent waste and pollution, a 2019 study report which was overseen, funded and coordinated by Environment and Climate Change Canada: Economic Study of the Canadian Plastic Industry, Markets and Waste, and an Environment and Climate Change Canada 2021 news release: Government of Canada moving forward with banning harmful single-use plastics. All are relevant documents which outlined the various plastic-related interests, issues, and commitments the federal government held and presented outwardly.

Second, 12 documents from a corporate or industry perspective were analyzed. One document included the Ellen MacArthur Foundation's 2021 statement and position paper: Extended Producer Responsibility: a necessary part of the solution to packaging waste and pollution, which was endorsed by more than 100 leading businesses. Another document analyzed was the Plastics Industry Association's Notice of Objection to the Minister of the Environment, a document written in December of 2021, in response to the government's order to add "plastic manufactured items" to the list of toxic substances under the CEPA. Notably, while the Plastic Industry Association (PLASTICS) is an American organization, PLASTICS is a significant industry actor in Canada, due to its Canadian members, Canadian operations, and the robust plastic trade between Canada and the United States. Additionally, a 2020 statement entitled Canadian Manufacturers & Exporters Statement in Response to Federal Government's Plan to Ban Single-Use Plastic by Dennis Darby, the President and CEO of Canadian Manufacturers and Exporters, was examined. Other documents included newspaper articles such as Canadian Plastics' 2020 piece: Industry groups push back against Canada's new single-use plastic bans, Baumgarten's pieces: Canada plastic ban 'a step backward' and Plastics, chemical firms to sue Canada over plastics 'toxic' tag, written in 2020 and 2021 respectively, and Blaze Baum & Graney 2020 and

2021 articles: Canada's petrochemical industry warns Ottawa against single-use plastics ban and Plastics manufacturers seek to quash toxic designation in court. The remaining documents that were examined from the industry perspective were four separate webpages or website sections from of the Responsible Use Coalition and the Canadian Association of Recycling Industries. Within the industry perspective, it is important to note that the documents from the Canadian Manufacturers and Exporters, Canadian Plastics and CARI were included in mid-January of 2022, partway through the coding process. This was done to account for an apparent lack of representation of recyclers and manufacturers within the initial document selection process, and to balance the text or material available from the industry perspective in relation to the other actor groups. As the industry perspective does not have a clear singular representative nor does it necessarily have a substantial documentation of its plastic-related interests or stances, several documents of varying forms and from sources were used to piece together the use and appeal to environmental rhetoric by industry actors.

Third, six documents were analyzed by the perspective of civil society, represented by environmental non-governmental organizations. This included Greenpeace's 2020 report: Plastics Recycling: That's Not A Thing. How the federal government's proposed approach leaves the public holding the bag on industry pollution, and Oceana Canada's 2020 report: Drowning in Plastic: Ending Canada's contribution to the global plastic disaster. Another document analyzed was the ENGO submission to the federal government re plastics, a 2020 document addressed to Environment and Climate Change Canada in response to the single-use plastic ban. The remaining documents analyzed were newspaper articles or news releases such as Environmental Defense's 2021 piece: Environmental groups calling on Big Plastic to drop its lawsuit against federal government this Plastic-Free July, Oceana Canada's 2021 article: Oceana Canada calls out Big Plastic for deflecting blame onto consumers for plastic pollution, prescribes strong national single-use plastic ban, and Oceana report press release: Drowning in Plastic: New Report Shows Canada Contributes Disproportionately to the Global Plastic

Disaster. These documents represented the viewpoints of significant environmental non-governmental organizations which worked to represent and inform the interests of civil society.

Finally, after document analysis, this study relied on the theoretical lenses of critical political ecology and constructivism to address my aforementioned research questions. In particular, the application of these theories allowed for the assessment and challenge of the use of environmental rhetoric and the efficacy of actors' respective plastic solutions. Application also consisted of reference to and consideration of additional resources including academic articles, reports, and newspaper articles which provided additional context to environmental rhetoric and responses to the documents being primarily analyzed.

Final considerations to note, in regard to methodology, pertain to unavoidable timing of events which may need to be clarified or explained. For instance, as the timeline for documents analyzed ranges from 2019 to 2021, some documents were written without the context of the COVID-19 pandemic. Understandably, the COVID-19 pandemic has now become a prominent concern for many stakeholders, but this may not be reflected in the documents analyzed. That is to say that coding of documents prior to the COVID-19 pandemic are unlikely to reflect the reality that COVID-19 and COVID-19 recovery are important issues and interests in relation to plastic governance in Canada. In order to address this, concerted effort has been made within the findings and discussion sections to point out areas where an emphasis on COVID-19 is appliable or non-applicable, due to the documents' publication dates. As well, frequency of reference rhetoric relating COVID-19 or lack thereof will be discussed and analyzed with consideration for documents' publication dates, as means to avoid overstating or discounting its significance for the various actors. Similarly, as the regulations to prohibit single-use plastic was finalized in June of 2022, none of the documents analyzed will have the context of the finalized regulations. However, as the substantive content of the regulations is largely similar, this should not have a significant impact on environmental rhetoric surrounding the ban. These considerations and other items are minor

and will be addressed, when necessary, therefore, the potential limitations posed within the methodology should not discount important insights or recommendations advanced by this study.

Literature Review

Studies of plastic and plastic governance are becoming more prevalent. In this section, I provide an overview of the academic backdrop to my thesis as well as discuss areas in the literature that have influenced my thesis. Moving forward, I will use document analysis to explore the plastic crisis in Canada and apply concepts from Critical Political Ecology and Constructivism to identify and explain the strengths, limitations, and failures in plastic governance.

Plastic

Definition of Plastic

Plastic is a highly versatile material that is present in nearly every manufactured good. Plastic has become an essential material because it is highly versatile, durable, light-weight and low-cost (Nielsen et al., 2019). Plastic has a broad range of applications and is present in every sector and industry in the world, including electronics, agriculture, packaging and transportation and construction (Palm and Svensson Myrin, 2018). Conventionally, plastic refers to material made of synthetic organic polymers derived from fossil fuels, coal, crude oil and natural gas (Shen et al, 2020). At the molecular level, plastic is a type of organic polymer which "has molecules containing long carbon chains as their backbones with repeating units" (Li, Mahat and Park, 2009, p. 10). In principle, although 99% of plastic made today is made up of fossil fuels (Nielsen et al., 2019), plastic can be made from any source of hydrogen and carbon (Palm and Svensson Myrin, 2018). Commercially, plastic is typically divided into two types: thermoplastic, which can be reheated in order to mold it into different shapes, and thermosets, which are hardened and cannot be reshaped by reheating. Nearly all consumer-facing plastic items are thermoplastic (Palm and Svensson Myrin, 2018). Notably, early plastic was actually bio-based but it was outcompeted

by the low cost and abundance of fossil resources (Palm and Svensson Myrin, 2018). Today, bio-based and biodegradable plastic makes up roughly 1% of the total production of plastic (Nielsen et al., 2019).

Prevalence of Plastic

The first synthetic plastic, known as Bakelite, was invented in 1907, and its creation marked the birth of the plastic industry (Palm and Svensson Myrin, 2018). However, the mass production of plastic did not occur until the mid-20th century. In 1950, about 2 million tonnes of plastic was produced globally, but that figure has raised 200-fold to roughly 381 million tonnes as of 2015 (Ritchie and Roser, 2018). Interestingly, more than half of the plastic present on earth was created after the turn of the century (Dickinson, 2020) thereby demonstrating the recent and exponential growth of plastic. As already mentioned, the demand for and production of plastic, especially virgin plastic, which is made up of raw materials, is expected to grow. In particular, the current global production is estimated to be more than 335 million tonnes every year, and by 2040, this rate is expected to double (Nielsen et al., 2019; Palm and Svensson Myrin, 2018). This rise in production is largely attributed to the fact that plastic has become ubiquitous in society as a result of its advantageous characteristics: namely its durability, versatility and low-cost (Heidbreader et al., 2019; Nielsen et al., 2019). For instance, transportation and food industries have been transformed by plastic as the cost-effective and light-weight material boosts resource effeciency in comparsion to other materials (Palm and Svensson Myrin, 2018). According to Li et al. (2018), without plastic, packaging would require roughly four times more material, by weight, thereby increasing the amount of fuel required for transportation of products. Similarly, Palm and Svensson Myrin (2018) observe that plastic has contributed to energy efficiency as a result of plastic packaging decreasing food waste. Evident in these examples, plastic has been a highly useful material that has impacts in every sector in modern society.

Notably, the prevalence of plastic is not solely defined by its abundance in terms of its production and use; it is also evident in the political and economic power that the plastic industry, and related industries, hold. As a product of fossil fuels, the prevalence of plastic is linked to broader fossil fuel

dependency, although the connection between plastic and petrochemical industries is often neglected (Li et al., 2009). Dickinson (2020) uses the term “Big Plastic” to describe a conglomerate of power and interests made up of the plastic industry, petrochemical firms, soda and beverage companies as well as the tobacco industry. According to Dickinson (2020), Big Plastic is a corporate supergroup of industries that rely on or support the mass consumption of plastic and necessarily combine forces for lobbying and public relations. For example, in 2016, amid rising concerns about plastic pollution, the American Chemistry Council, a trade organization which represents prominent oil and petrochemical companies that are plastic producers, paid for a study to demonstrate plastic’s unique and essential qualities that could not be easily replaced (Dickinson, 2020). In particular, the study emphasized the resource efficiency of plastic for transportation in comparison to glass, a much heavier material, to justify reliance on plastic and to indicate that plastic could not be easily substituted (Dickinson, 2020).

Moreover, Big Plastic, especially due to its link to the chemical or petrochemical industry, has significant political and economic influence due to its immense size. In fact, Big Plastic provides millions of jobs worldwide and spans many prominent industries (Lim, 2021). As a result, Jan-Justus, of Bellona Europa, a Norweigian environmental organization, claimed that the power of the chemical sector, which includes plastic, has made the industry untouchable to policymakers (Lim, 2021). Additionally, the prevalence of plastic is supported by the industry’s ability to establish themselves as leaders within the fight against plastic pollution and gain social acceptance (Dickinson, 2020). As Big Plastic espouses various commitments to achieving sustainable plastic use, including ideas like circular economy, improved recycling and innovations, they have been able to convince consumers and regulators to allow them to continue to grow (Dickinson, 2020). Evidently, plastic has become highly prevalent, both in terms of its abundance as well as the industry’s power. My research considers this prevalence and the likelihood of continued prevalence in relation to the role of environmental rhetoric on plastic governance in Canada.

Plastic's Life Cycle and Fate of Plastic

As the lifespan of plastic has been estimated to range between hundreds and thousands of years (House of Commons Canada, 2019; Xanthos and Walker, 2017), consideration for the life cycle of plastic and fate of plastic is significant to any research involving plastic, especially plastic governance. Plastic impacts the environment at all points throughout its life cycle, beginning with the extraction of fossil fuels from which plastic is derived and to beyond the point of disposal (Royer, Ferrón, Wilson, Karl, 2018). This section outlines the general life cycle and fate of plastic, and the specific effects and implications of plastic will be explored in later sections. The Centre for International Environmental Law (2019) loosely describes the stages of plastic's life cycle as including extraction, transport, refinement and manufacturing, use, and waste management and disposal.

As 99% of all plastic is based on fossil fuels, the life cycle of plastic begins with the extraction of oil and gas (Centre for International Environmental Law, 2019). Then the components of plastic are transported to facilities where they can be refined and manufactured into plastic products (Centre for Environmental Law, 2019). Once created, plastic enters its use-phase, which is notably short in comparison to its lifespan. For instance, plastic packaging, which made up roughly 40% of primary plastic produced in 2015, has an "in-use" lifetime of six months or less (Ritchie and Roser, 2018). Similarly, the Standing Committee on Environment and Sustainable Development noted that single-use plastic item are typically used for less than a day (House of Commons, 2019). In contrast, plastic used in building and construction is in use for an average of 35 years (Ritchie and Roser, 2018). Once plastic items fulfill their use purposes, it enters into the next stage of waste management and disposal (Centre for Environmental Law, 2019). As previously mentioned, Environmental Defense (2018) reports that of the 8.3 billion tonnes of plastic produced since 1950, 7% has been recycled, about 9% was incinerated, roughly 60% has been landfilled or polluted and the remaining amount is still in use. Notably, of the cumulative 9% of plastic recycled, only 10% has been recycled multiple times (Environmental Defense,

2018). In Canada, the recycling rate of plastic is a meagre 9% (Government of Canada, 2022b; Young, 2021). Evidently, the vast majority of plastic is landfilled or polluted into the natural environment.

In 2010, Ritchie and Roser (2018) note that global plastic waste was roughly 275 million tonnes, and an estimated 31.9 million tonnes entered the natural environment, due to improper or inadequate waste management. In Canada, it is estimated that, in 2016, roughly 1% of plastic waste ended up in the natural environment, which is the equivalent of 29 000 tonnes. Notably, the COVID-19 pandemic increased the volume of litter found on Canada's shoreline as the proportion of single-use food and beverage litter during shoreline cleanups increased from 15% in 2019 to 27% in 2020 (Caton, 2021). Moreover, as noted above, marine plastic pollution is a significant concern in regard to plastic waste. Specifically, Dauvergne (2018) explains that anywhere between 60% to 90% of marine litter is made up of plastic. Likewise, Alabi et al. (2019) estimates that 80% of marine pollution is plastic. As well, over 10 years, marine plastic pollution is expected to rise from 9 million metric tonnes in 2015 to 16 million metric tonnes (Dauvergne, 2018). Following these trends, researchers at the Ellen MacArthur Foundation have predicted that the amount of plastic in the ocean will outweigh the amount of fish by 2050 (Ellen MacArthur Foundation, 2016; Dauvergne, 2018; Environmental Defense, 2018; Lewis, 2016).

As well, although plastic has a long lifespan, it does breakdown into smaller pieces, especially when exposed to heat and light (Environment and Climate Change Canada and Health Canada, 2020). When plastic is smaller than 5mm, it is categorized as microplastics, and microplastics are either formed by design, evident in the use of microbeads for cosmetics, or they form as pieces of plastic break down (Shen et al, 2020; Alabi et al, 2019; Dauvergne, 2018). Microplastics are highly abundant, having been found all around the world, having been found in the deepest parts of the ocean and even in Artic air (Bauman, 2019; Carrington, 2019). In fact, microplastics make up 92% of plastic waste floating in marine environments (Eriksen et al, 2014). This plastic pollution has economic impacts insofar as it has been observed that marine litter has reduced tourism revenue, negatively affected recreational activities, and damaged marine vessels (Xanthos and Walker, 2017).

Notably, of the plastic in the ocean, 80% was originated from land-based sources (Young, 2021). As well, regionally, Asia appears to be the biggest contributor to marine plastic pollution (Dauvergne, 2018). In fact, the Philippines accounts for more than 36% of plastic waste in the Ocean (Ritchie and Roser, 2018). This is important to note because of the potential contribution Canadian waste may have played as a result of trading waste with Asian nations, including the Philippines and China (Bautista, 2019; Ritchie and Roser, 2018). In fact, prior to China's ban on nonindustrial plastic waste in 2017, the nation imported about 9 million tonnes of plastic waste annually and Canada was among the top 10 exporters of waste to China (Ritchie and Roser, 2018).

Interestingly, Stafford and Jones (2019) acknowledge and problematize the recent focus and highlighting of marine plastic pollution. They argue that the hypervisibility of plastic pollution, especially marine plastic pollution and the perception of simple solutions like lifestyle changes and technological advances, is distraction from addressing overconsumption, which they identify as the root cause of pollution and other environmental threats like climate change (Stafford and Jones, 2019). Despite evidence suggesting that plastic almost inevitably becomes waste that is ultimately landfilled or polluted, production and consumption trends for plastic are expected to rise (Palm and Svensson Myrin, 2018). The problems outlined by the plastic's life cycle and the likelihood of plastic turning into pollution emphasize the signficance of plastic waste. However, existing literature suggests that emphasis is paid to end-of-life plastic problems, which may neglect opportunities to assess the full life-cycle and implement plastic intiatives targetting different stages, like production. My research considers the importance of plastic waste whilst also challenging dominant perceptions about plastic waste and plastic waste sollutions through the evaulation of environmental rhetoric's influence on Canada's plastic governance.

Plastic and Other Environmental Problems

Plastic has contributed to prominent environmental problems which extend beyond the persistent focus on plastic waste and pollution, noted above. Environmental problems relating to plastic exist throughout its lifecycle, including but not limited to its end-of-life stage. In particular, the chemical

composition of plastic and its durability pose threats to ecosystems and wildlife. Plastic is made up of fossil fuels, but additional chemicals and additives are used to treat plastic to make it more colourful, increase durability or make it impermeable, for example (Cho, 2020). As plastic breaks down, especially in the environment, these chemicals and additives can leach out of the plastic products, which is a significant concern due to the vast abundance of plastic throughout the earth (Cho, 2020). For instance, plastic in the environment can leach toxins or concentrate existing toxins in the environment (Centre for Environmental Law, 2019). This has significant food chain impacts as, "toxic chemicals can bind to microplastics and create poison pills that aquatic animals eat" (Bauman, 2019). According to Ritchie and Roser (2018), growing evidence on individual adult organisms suggests that the ingestion of microplastic can negatively impact prey consumption, growth, and fertility in animals. Ingestion can occur directly, as marine life mistake plastic for food, or indirectly though the consumption of prey that has consumed plastic (Rochman qtd Ritchie and Roser, 2018). Other pathways by which wildlife is affected by plastic includes entanglement and interaction (Rochman qtd Ritchie and Roser, 2018). Entanglement refers to wildlife being trapped in plastic, commonly ropes or nets used for fishing but entanglement in plastic packaging pollution has also been documented. As well, interaction includes scenarios where plastic has lead to obstructions, collisions or abrasions. For example, plastic debris may interfere with ecosystems structures or functions by obstruction of light (Rochman qtd Ritchie and Roser, 2018).

Moreover, plastic throughout its lifecycle contributes to climate change, one of the most pressing environmental issues of our time. Notably, the Intergovernmental Panel of Climate Change has stressed the need to take urgent action to keep global warming from rising above 2°C by 2100, with a goal to keep warming within 1.5°C (Stafford and Jones, 2019). The global community has committed to this goal, but the current state of the plastic's greenhouse gas contributions throughout its lifecycle threatens the ability to address climate change (Shen et al., 2020; Centre for International Environmental Law, 2019). Palm and Svensson Myrin (2018) explain that the link between plastic and crude oil, a major contributor to climate change, has often been neglected. Nevertheless, this connection between plastic and climate

change is undeniable as feedstocks for plastic accounts for 4% of the world's use of fossil oil and gas and an additional 4% provides the energy needed for plastic manufacturing (Palm and Svensson Myrin, 2018). As well, the production and incineration of plastic emitted 850 million metric tons of greenhouse gas in 2019 (Centre for International Environmental Law, 2019). Shen et al, (2020) also estimates that the greenhouse gas emissions from plastic throughout its lifecycle is expected to reach 1.34 gigatons annually by 2030, thereby hindering commitments to limit global warming. In Canada, the waste accounted for roughly 2.6% of national greenhouse gas emissions in 2016 (Wuennenberg and Tan, 2019).

Importantly, from extraction to disposal, plastic contributes to the release of methane gas, a highly potent greenhouse gas that has 84 times the climate impact of carbon dioxide in the short term (Beyond Plastics, 2021). Royer et al. (2018) highlight the emission of methane and ethylene by commonly used plastic items to suggest that plastic is a significant source of climate-related gases in the atmosphere. Royer et al. (2018) also note that the ongoing rate of plastic production, consumption and accumulation in the environment is likely to increase climate-related emissions. Moreover, there is growing concern that marine plastic pollution is negatively affecting the ocean's ability to absorb and sequester carbon (Centre for International Environmental Law, 2019). In particular, microplastic is contaminating plankton, which act as carbon pumps that transport carbon into the deep oceans and prevent it from being re-released into the atmosphere. This is concerning because laboratory studies have found that plastic pollution can hinder phytoplankton's ability to fix carbon by photosynthesis (Centre for International Environmental Law, 2019). Evidently, plastic contributes to various environmental problems beyond pollution, but this connection is not emphasized nearly as much as plastic pollution, especially marine plastic pollution. By examining the environmental rhetoric's impact on plastic governance in Canada, my research tries to better understand how and why these impacts have gone overlooked.

Plastic and Human Health

The chemical make-up of plastic and the various points of human exposure alluded to above may suggest concern for the relationship between plastic and health, however, existing research is limited. One area of concern is the potential atmospheric release of harmful chemicals through plastic incineration (Alabi et al., 2019). The burning of waste presents a significant exposure point for potentially harmful pollutants, especially for people who live and work near incineration sites (Bauman, 2019). Bauman (2019) also notes incineration facilities have disproportionately been built in areas which predominantly house low-income populations and racialized communities. As a result, these groups of people may be put at increased risk of potential health concerns associated with plastic incineration.

Although little is known about the health implications of ingesting plastic, the Centre for International Environmental Law (2019) warns, "[o]ver 170 fracking chemicals that are used to produce the main feedstocks for plastic have known human health impacts, including cancer, neurological, reproductive, and developmental toxicity, impairment of the immune system, and more (p.3). It has been reported that some associations exist between high levels of microplastic exposure and negative health effects in humans and laboratory animals, but the association cannot be generalized to exposure in the general population (Environment and Climate Change Canada and Health Canada, 2020). However, there is significant evidence to suggest that humans are exposed to microplastic through food, bottled water, tap water and air (Environment and Climate Change Canada and Health Canada, 2020). Thus, Sicotte (2020) advocates for greater emphasis and research about plastic exposure and potential human health impacts in order to justify restrictions on plastic production and consumption.

That being said, the apparent necessity of plastic products is due, in part, to its prevalence in medical devices and supplies. Interestingly, in light of the COVID-19 pandemic, the positive health impacts of single-use plastic items have been relied upon and emphasized, resulting in the delay or reversal of initiatives to reduce single-use plastic (Molloy et al., 2022). Cherrier and Türe (2022) note that the COVID-19 pandemic has, to some extent, reignited the legitimacy of plastic by promoting disposable

plastic items as means to advance social wellbeing and self-protection. The persistent impression of plastic in many industries, especially healthcare, is that plastic is an efficient and crucial material to uphold societal goods like hygiene and sanitation (Cherrier and Türe, 2022). Thus, research suggests that plastic has a complex relationship with human health concerns, as being both seen as a factor threatening health as well as promoting health. Existing science has not yet definitively connected plastic and health concerns, but literature suggests that more research needs to be done and that policy ought to take a proactive and precautionary approach. Why has science not yet been pushed in this direction? One potential reason, which my research seeks to assess and challenge is the dominance of perceptions of plastic which is upheld by environmental rhetoric and the way environmental rhetoric is utilized and reinforced by actors within plastic governance.

Single-Use Plastic

Single-use plastic has become a major focus within the plastic crisis due to its abundance and quick turnaround rate, in terms of disposal (Umeozor et al., 2021). In Canada, plastic litter found in freshwater environments and along Canada's shorelines has been primarily comprised of single-use plastic items (Environment and Climate Change Canada and Health Canada, 2020). These commonly littered items include plastic bags, plastic bottles, straws and cigarette butts (Environment and Climate Change Canada and Health Canada, 2020). Moreover, packaging is a significant single-use plastic item as it has been identified as the leading contributor to plastic waste in Canada (Lee-Anderson, 2020). Globally, it is estimated that approximately 40% of plastic is used for packaging (Dauvergne, 2018) and the production of plastic packaging is expected to grow and maybe even double by 2030 (Alabi et al., 2019). This dominance of single-use plastic is related to its extensive uses, but it has also been attributed to the way in which large plastic manufacturers have sold the narratives of single-use items' necessity and convenience (Young, 2021). For instance, Liboiron (2013) explains that the norm of disposability was pushed by single-use items and throw-away packaging in order to promote opportunities for economic growth and profit generation. Similarly, Nielsen et al. (2019) point out that while research has criticized

the rates of consumption for single-use items, analysis of underlying norms and power relationships that sustain conspicuous plastic consumption is underdeveloped. Instead, in relation to the dominance of single-use plastic, study and policy have tended to focus on improving product design, promoting alternatives to single-use plastic products, regulating litter and reducing consumption of specific products (Nielsen et al., 2019).

Furthermore, growing research problematizes unsustainable consumptions rather than the innate unsustainability of single-use plastic products. For instance, Herberz, Barlow and Finkbeiner (2020) found little distinction, in terms of sustainability, between single-use plastic and other single-use items. They conclude that, "it is the application of a material that can make it sustainable – no material is sustainable itself" (Herberz et al., 2020, p.14). Therefore, it is recommended that emphasis be paid to the reduction of consumption of single-use items more generally, rather than focusing exclusively on single-use plastic (Herberz et al., 2020). Additionally, Cherrier and Türe (2022) suggest that a focus on single-use plastic can overlook the consumption of other plastic products that pose environmental and societal threat. As well, an emphasis on single-use plastic targets a few items which are predominantly consumer-facing whilst ignoring the plastic relied upon by powerful industries like construction, agriculture, transportation and healthcare (Cherrier and Türe, 2022). In like manner, literature suggests that alternatives to single-use plastic may not be effective solutions and may even yield unintended consequences. For example, bio-based plastic or biodegradable plastic can unintentionally encourage littering, are resource-intensive, and require special conditions to biodegrade that are not met in nature and present challenges to existing waste management systems (Palm and Svensson Myrin, 2018; Young, 2021). As well, if alternatives to single-use plastic are not sufficiently reused, it ultimately contributes to waste and pollution (Herberz et al., 2020). Consequently, whilst single-use plastic makes up a significant proportion of plastic consumption and plastic waste, existing literature suggests that plastic crisis necessitates considerations beyond single-use plastic. Therefore, focusing on the federal government's single-use plastic ban and the broader Canadian context, my thesis research seeks to understand and

analyze the dominance of single-use plastic through the analysis of environmental rhetoric's influence on plastic governance in Canada.

Plastic Governance

The plastic crisis is driven by a deeply entrenched dependency on and prevalence of plastic within the economy and everyday life (Ellen MacArthur Foundation, 2016), therefore governance is necessary. Existing literature primarily focuses on the global governance of plastic, emphasizing challenges of plastic pollution. According to Dauvergne (2018), plastic governance globally has grown, evident in the rising popularity of curbside recycling programs, community clean-ups and corporate initiatives to reduce waste in landfills. Plastic research and activism have also grown with considerable achievements like the banning of plastic grocery bags and microbeads in consumer products (Dauvergne, 2018). However, as discussed in the background section, the success of Canada's ban on microbeads had specific advantages which not all sources of plastic pollution have. Specifically, microbeads in rinse-off products were non-essential components and there existed readily available alternatives (Dauvergne, 2018). Consequently, although Dauvergne (2018) points to some considerable improvements in plastic governance, he suggests that rising dependency on plastic and inadequate governance continue to threaten the world's oceans. For instance, despite improvements, existing plastic governance is still lacking demonstrated by the fact that marine plastic pollution is still on track to double from 2010 to 2025 (Dauvergne, 2018).

As well, Xanthos and Walker (2017) illustrate that although many countries have taken on interventions to reduce single-use plastic, these measures lack consistency in terms of scope and implementation across jurisdictions. Moreover, some governance measures fail to adequately address the sources of the problems they are intended to resolve or may even neglect related issues due to limited scope. For example, Nils and Schulte (2017) explain that the 1973 International Convention for the Prevention of Pollution from Ships (MARPOL) functioned as the main international convention to protect against marine-based pollution, but this only addressed a small part of the problem as it did not tackle

land-based sources, which accounts for 80% of marine plastic pollution (Young, 2021). Nils and Schulte (2017) also suggest that a major shortcoming of efforts to address plastic pollution is the prominent emphasis on marine litter because it distracts from land-based sources and fails to acknowledge overproduction. Similarly, as already mentioned, Palm and Svensson Myrin (2018) critique the limited scope of plastic initiatives as many efforts to address the plastic crisis have narrowly focused on waste management and have failed to acknowledge plastic's link to fossil fuels. Furthermore, challenges within plastic governance are vast, including the continued acceleration of plastic production, globalized consumption, and diverse pollution sources. Plastic is particularly difficult to manage due to its "longevity, toxicity, malleability, and propensity to disintegrate into microplastics [plastic less than 5mm in diameter]" (Duavergne, 2018). As well, there is a lack of coordination within plastic governance as responsibilities are fragmented across jurisdictions, industries, and products (Dauvergne, 2018).

Similarly, Simon and Schulte (2017) emphasize significant gaps in the governance landscape that contribute to plastic waste causing considerable damage on land and in the ocean. They argue that a key driver of governance insufficiency is the overreliance on voluntary measures, suggesting that a binding agreement be crafted to address marine and land-based plastic issues on a global scale (Simon and Schulte, 2017). For instance, Simon and Schulte (2017) express concern that plastic governance has failed to manage environmental risks relating to fossil-fuel intensive production and pollution, which thereby contribute to marine biodiversity loss, climate change and economic threats, especially to tourism, fisheries and shipping. Although there have been a number of binding and voluntary frameworks set up to address plastic pollution, none have the mandate or means to act as the main forum to govern plastic pollution. Some of these agreements include the Convention on the Prevention of Marine Pollution by Dumping of Waste and other Matter, the International Convention for Prevention of Pollution from Ships, and the Basel Convention (Simon and Schulte, 2017). These agreements have limited application and have the tendency to focus on principle, rather than binding regulations. For example, Simon and Schulte

(2017) critique the possibility for voluntary measures, like the G7 Action Plan to Combat Marine Litter, to yield measurable reductions in plastic pollution.

Likewise, Dauvergne (2018) critiques the way in which interstate policy coordination has amounted to little more than dialogue forums, and national or subnational policies are uneven with unreliable implementation. Another issue identified within voluntary measures is skepticism of industry's voluntary measures to address plastic waste. Dickinson (2020) points out that industry's voluntary initiatives are motivated by environmental protection as well as protecting profits from strict regulation. As a result, it is unlikely that voluntary regulation will produce radical enough changes to meet the needs of the plastic crisis. For instance, Environmental Defense (2018) argues that although some Canadian producers are taking action without regulations, voluntary actions are insufficient and that a strong and clear legal framework is necessary nation-wide. Due to the transnational nature of global plastic pollution, Simon and Schulte (2017) suggest that a binding international treaty is needed to pursue the goal of eliminating the introduction of plastic waste into the natural environment. They suggest that a necessary component of this agreement ought to include limiting the production of plastic (Simon and Schulte, 2017).

Evidently, the existing study on plastic governance points to limited implementation and scope, critiques of voluntary measures and a call for large scale binding agreements. It also highlights a need for proportionality within governance. That is to say that the gains or successes achieved through initiatives to reduce plastic pollution, for instance, ought to match the scale at which plastic is devastating the environment. An important question is, therefore, whether the perception of plastic governance appropriately reflects the outcome of interventions or initiatives promoted. Earlier the example of MARPOL demonstrates that leading conventions can have gaps that significantly reduce their ability to address the problem at hand (Nils and Schulte, 2017). Similarly, Dauvergne (2018) notes that, within plastic governance, the efficiency of industry's voluntary action is necessarily exaggerated in rhetoric because industry stakeholders rely on these actions or initiatives to continue to grow and pursue profit.

Notably, in my research, identifying and understanding how the problems of plastic and potential solutions are presented through rhetoric surrounding the single-use plastic ban and plastic governance in Canada is my primary objective. As well, in a similar way, my research problematizes a reliance on voluntary measures and virtue signalling. In assessing links between environmental rhetoric and plastic governance in Canada, my thesis will build upon and consider the critiques outlined above. Therefore, my thesis research considers the limitations and potential solutions outlined above, while working to develop a deeper understanding of the landscape of Canada's plastic governance.

Science and Policy

It has been well established that the formation of environmental policy ought to include consideration of science and existing scientific evidence. However, existing literature suggests that the reliance on science may overstate the capacity for science to be objective as well as the preferability of scientific rationality in environmental decision-making (Cortner, 2000). Pouyat (1999) points to the landmark book, *Silent Spring*, for promoting an increased reliance on natural sciences ability to identify and solve environmental problems. As today's environmental problems become more complex and subtle, the standard for scientific research upon which to base environmental policy has been raised (Pouyat, 1999). A common perception of science is that it serves as a logical process which produces clear and correct answers, and on that basis, scientists can simply apply scientific tools to derive solutions to practical issues, like environmental problems (Ascher, 2004). As a result, methods to improving the development of environmental policy often involves considerations for how to make science more central to the policymaking process. For instance, Likens (2010) argues that scientists need to employ tactics to get politicians to listen to them which primarily involves better communication of scientific data.

Similarly, Pouyat (1999) urges biologists to better cooperate in order to facilitate the effective transfer of knowledge into policy. Whilst scientific evidence plays a significant role, the impression that science is fully objective is a problematic myth (Cortner, 2000). Carolan (2008) explains that perceiving science as only discerning and disseminating absolute truths, objectivity and precisions allows powerful

interests to exploit this characterization in order to manufacture uncertainty as to justify the status quo under the guise of science. Furthermore, in the case of environmental science especially, "science requires the making of political, which is to say normative, decisions" (Carolan, 2008, p. 450). As well, science necessarily involves value-judgements evident in subjective interpretations of findings, the process of defining problems and framing hypotheses, the selection of methodological designs as well as the reliance on making mythological assumptions (Cortner, 2000). Cortner (2000) also argues that science exists as an institution with cultural and political power which requires critique rather than total belief in its objectivity.

Furthermore, policymaking involves greater considerations that what science is able to discern about the state of environmental problems. For instance, the utility of the precautionary principle demonstrates that full scientific understanding cannot and should not be the only basis for environmental actions. In particular, the precautionary principle states: "[w]here there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measure to prevent environmental degradation" (Benidickson, 2019, p.24). The Government of Canada acknowledges the precautionary approach as a legitimate decision-making tool in relation to risk management (Benidickson, 2019). Importantly, this conflicts with the assumption that science must exclusively deal with certainties and objective truths (Carolan, 2008). Additionally, it is important to note that decision-making that is reliant on conventional science processes, which often fails to include or consider traditional and local knowledge, can result in environmental interventions that are incompatible with local realities (Forsyth, 2004). Likewise, Cortner (2000) advocates for the significance of civic science which pursues knowledge collaboratively, with emphasis on expert cultures. As well, an overemphasis on scientific rational ignores the usefulness of political rationality to consider and deal with non-science factors like normative considerations such as conflict resolution, equity and community (Cortner, 2000). Therefore, existing literature points to a complex relationship between science and policy wherein the importance of science in decision-making is acknowledged but an uncritical reliance is

problematized. My research builds off of this understanding by assessing environmental rhetoric that involves understandings of science in the plastic crisis. As well, I consider the coproduction of science and politics through the application of concepts in critical political ecology and constructivism.

Environmental Rhetoric and Framing

A large component of work in environmental issues, like the plastic crisis, include the challenges of conveying their importance to non-specialists (Millner and Ollivier, 2016). Although common people may lack expertise, their opinions and views of environmental issues are influenced by exposure to media, societal norms and values, and public commentators or other authority figures (Millner and Ollivier, 2016). Notably, these beliefs or interests over environmental issues are heterogenous and unstable over time (Millner and Ollivier, 2016). As a result, rhetoric and framing are significant concepts within environmental politics and environmental governance. The search for solutions requires engagement with common ideas and framings of the issues themselves. “Solutions to public problems – scientific or otherwise – cannot be understood apart from the struggle over ideas and perceptions that frame the defining and redefining issues, their expansion to broader audiences, and the shaping and reshaping of alternatives (Stone quoted in Cortner, 2004). For example, governing marine plastic is complicated by the fact that this issue is more easily envisioned as a problem relating to plastic bottles and bags, but in reality, 92% of plastic pollution is microplastic, which is less familiar (Liboiron, 2016). The impact of this is that actors necessarily define solutions in response to how problems are understood or defined. As a result, the perception of an environmental problem can prescribe as well as foreclose certain solutions or actions (Liboiron, 2016).

As well, rhetoric is generally understood as an art of persuasion, typically having an impressive impact on its audience to disseminate a shared understanding. Similarly, discourse can be broadly defined as a shared meaning of a phenomenon (Adger, Benjaminsen, Brown and Svarstad, 2001). Research in political communication and political psychology demonstrate that the framing of information impacts individual attitudes (Anspach and Draguljic, 2019). Furthermore, rhetoric and discourse regarding the

environment can become dominant in institutions and policies in a manner that creates a particular blueprint for environmental action (Adger et al., 2001). This is especially significant as environmental policies are designed and implemented within the landscape of rhetoric. This may reflect or have a significant impact on voter or consumer beliefs. Especially in elections, signalling or framing are used to espouse certain information or rhetoric to gain power and support or reduce opposition (Millner and Ollivier, 2016).

Another example of environmental rhetoric at play in the plastic crisis is evident in the way sources of pollution are described. For instance, Nielsen et al. (2019) note how the term 'leakage' has been used to describe points of plastic pollution within existing waste management systems. This phrasing presents plastic pollution as an unintentional and even unavoidable inefficiency in waste management systems. This is significant because the phrasing makes plastic pollution a passive action, rather than assigning a fault or suggesting a failure (Nielsen et al., 2019). In contrast, 'littering' implies a moral failing that assigns blame to individual consumers (Nielsen et al., 2019). This demonstrates the ways in which different rhetoric is employed and how they impact the ways in sources of plastic pollution are understood, either as accidents, inefficiencies, or personal failings. An additional example of the relevance and impact of environmental rhetoric is evident in the popularity of sustainability and sustainable development since the 1980s, upon the publication of *Our Common Future*, the final report of the World Commission on the Environment and Development (1987) (Haller, 2017). By joining sustainability and development, *Our Common Future* linguistically and rhetorically combined two goals, environmental protection and economic development, which were previously understood to be incompatible. In doing so, this allowed different actors with various, and even conflicting, interests to simultaneous utilize the terms sustainability and sustainable development (Haller, 2017). As a result, Haller (2017) discusses the rhetorical power of the term and warns that sustainability can act as a confused notion by possessing several ambiguous meanings whilst designating moral worth or values.

In this way, appeal to sustainability can generate rhetorical arguments in order to dictate the preferability of environmental actions (Haller, 2017). For instance, Corporate Social Responsibility (CSR), the voluntary commitment to promoting profitability as well as environmental and social goods, is an example of sustainability acting as a confused notion. In other words, CSR refers to situations where private or corporate actors partake in actions that appear to promote some social good, which is not mandated by law and extends beyond the private interests (Wu, 2014). Sustainable initiatives under CSR can help promote scientific innovation and product development with positive environmental impacts, but its application is not standardized, nor does it guarantee meaningful solutions to environmental problems (Banerjee, 2008). Dauvergne (2018) critiques the true efficacy of industry's use of and commitments to smart packaging, the design of packaging that uses less material or alternative materials, and recycling programs. Specifically, Dauvergne (2018) explains that the impact of CSR does not meaningfully produce global solutions to the plastic crisis. Nevertheless, CSR enables the perception of morally acceptable and just behaviour by utilizing rhetoric relating to sustainability.

Moreover, as already discussed, plastic poses severe environmental issues including a lack of coordination over authority to act and responsibility to act (Nielsen et al.,2019). Government and corporate actors can capitalize on this in order to advance themselves as green actors and green leaders within the plastic crisis (Nielsen et al., 2019). Stafford and Jones (2019) highlight the issue of corporate greenwashing, a practice by which corporate actors utilize communication to promote their environmental initiatives or benefits to gain public and political favour without meaningfully addressing continued engagement in unsustainable practices. For instance, plastic packaging companies readily adopt sustainability rhetoric within their marketing and communications. These companies are eager to persuade customers and other stakeholders that they are actively engaged in sustainable development and that their practices are part of the solution to environmental degradation (Malone and Bashyal, 2017). In like manner, Cherrier and Türe (2022) explain that plastic regulators and industries focus on rhetoric and framing of plastic problems in a manner that highlights the role of end-users and consumer choice as

means to avoid blame and offload responsibility. In this way, plastic itself is increasingly politicized with much back and forth over its necessity and environmental impacts. Much of the debate and analysis is concentrated on pollution and end-of-life disposal, which can distract from or neglect production concerns or patterns of overconsumption (Nielsen et al., 2019).

Stafford and Jones (2019) additionally argue that although plastic poses significant risks, an overemphasis on plastic itself is a distraction from meaningful action on climate change and biodiversity. This point is echoed by Nielsen et al. (2019), who also suggest that overfishing is an ocean problem overlooked by the emphasis on plastic pollution. Therefore, it is evident that environmental rhetoric and framing are thoroughly utilized within environmental problems, including the plastic crisis. They are utilized by a variety of actors and, at times, this results in the same issue being understood and consequently addressed in different ways. This was demonstrated in the ways rhetoric has been used to popularize waste management and end-of-life plastic emphasis rather than targeting patterns of overconsumption, for example (Nielsen et al., 2019). My thesis seeks to provide a better understanding of the remarkable and vast uses of environmental rhetoric, shown in existing literature, within the plastic crisis in Canada. In particular, I identify the ways in which different rhetoric, used by various actors, characterizes plastic's problems and potential solutions in order to understand the influence environmental rhetoric has on the landscape of plastic governance in Canada.

Recycling

Within the plastic crisis, recycling remains a dominant component of sustainability pathways. Recently, the notion of the circular economy, a closed loop wherein materials are constantly reused and recycled, has gained prominence among the plastic industry, policymakers, and broader society (Nielsen et al., 2019). A result of this has been increased emphasis on design for recyclability and recycling itself. However, research suggests that the current process of recycling is highly inefficient. In comparison to other materials like paper, glass or metals, the rate of reusing and recycling end-of-life plastic is low (Neilson et al., 2019). Along with low recycling rates previous discussed, because the downcycling rate of

plastic is worse than that of other materials, like aluminium, continuous recycling of plastic is highly unlikely (Dickinson, 2020; Li et al., 2009). Downcycling refers to the reduction of quality of material overtime which results in the quality of the recycled product being inferior to that of the original (Li et al., 2009). As a result, as mentioned above, plastic is rarely recycled more than once (Geyer, Jambeck and Law, 2017)**.**

As well, in its current state, recycling only delays finals disposal as a significant reduction of waste generation can only be achieved if recycled materials displace primary plastic production (Geyer et al., 2017). An important barrier to the displacement of primary plastic production is lacking financial incentive due to the cheap cost of virgin plastic. For instance, in Canada, the resin value of virgin feedstocks for most consumed plastic items is 40% less than the recycled feedstock (Umeozor et al., 2021). Another challenge of recycling efficiency in plastic is that contamination, use of additives and mixing of polymers restricts the uses and economic value of recycled, or secondary, plastic (Geyer et al., 2017). Furthermore, recycling has considerable financial costs and consumes significant amounts of energy and water (Skene, 2018; Franklin-Wallis, 2019). Liboiron (2013) explains that recycling is an industrial process which often requires virgin materials, uses energy, and produces waste. For instance, the carbon-reduction by plastic recycling is unclear when the additional resources and emissions required for collection, such as transport, washing and melting, are taken into account (Geyer qtd in Franklin-Wallis, 2019).

It appears that recycling has arisen as the dominant solution to the plastic crisis because it has grown to be a widely accepted social practice. According to Barr (2004), recycling is perceived has highly accessible and convenient. In addition, recycling is a necessarily visible behaviour, which allows for individuals, institutions, and corporations to signal morally acceptable actions through recycling (Barr, 2004). Malone and Bashyal (2017) observe that “3 R’s” has become an essential component of sustainability communication because it is a deeply entrenched norm. For instance, beverage, packaging, and waste industries played an essential role in promoting recycling and communicating individualized

framings or solutions through recycling (Jaeger, 2018). As a result, such companies are able to present themselves as contributors to the solution while simultaneously offloading responsibility over plastic waste to consumers (Jaeger, 2018).

Similarly, Liboiron (2013) explains that recycling benefits industry more than it does the environment insofar as the practice of recycling continues the extension of profit. This is because industry is able to champion ideas of recycling without necessarily internalizing the cost of waste or recycling associated with their products (Liboiron, 2013). In a similar manner, Cherrier and Türe (2022) explain that regulations which redefine the plastic crisis as issues pertaining to single-use plastic and recycling delegate responsibility to industry and consumers to conform to recycling and avoid single-use plastic items. The process of offloading responsibility is done through strategic use of and appeal to environmental rhetoric, which upholds certain framings of environmental science, values, and identities. The apparent dominance of recycling, therefore, highlights underlying power dynamics and the maintenance and appeal to ideas and norms. As a result, building off existing literature about the physical impacts as well as social science understandings of recycling, my research seeks to analyze how and why recycling, along with other potential solutions, become prevalent within the plastic crisis in Canada. My thesis also considers what implications this prevalence may have on the framework and effectiveness of Canada's plastic governance.

Findings

In this section, I detail the results or findings of my document analysis across the 21 documents representing the perspectives of government, industry, and civil society. The themes/codes identified are divided among three frames: problems, solutions, and actors' identities/perceptions. 83 distinct themes or codes were organized into these frames to illustrate the rhetoric employed or utilized by the different actors involved. In total, the frequency of these codes is 781, split among the actors: government (n=219), industry (n=164) and civil society (n=398) as shown in Table 1 below. Of the themes noted with

government documents, 34% (n=75) were organized in the problems frame, 57% (n=125) was sorted into the solutions frame, and 19% (n=19) was in the actors' identities/perceptions frame. For industry sources, 31% (n=51) fit the problems frame, 55% (n=90) was organized in the solutions frame, and 14% (n=23) was in the actors' identities/perceptions frame. As well, of the themes from civil society documents, 52% (n=208) was in the problems frame, 31% (n=122) was organized into the solutions frame, and 17% (n=68) was sorted into the actors' identities/perceptions frame.

Table 1: Theme/Code Frequency by Actor within Each Frame

Frame	**Frequency by Actor**			
	Government	**Industry**	**Civil Society**	**Total**
Problems	75	51	208	334
Solutions	125	90	122	337
Actors' Identities/Perceptions	19	23	68	110
Total	219	164	398	781

Problems

First the problems frame refers to the ways in which government, corporate, and civil society actors discussed or characterized problems relating to plastic or the plastic crisis amid the backdrop of the federal government's single-use plastic ban. This frame consists of five topics, within which 34 themes or codes were organized. The total frequency of these codes or themes was 334. Within the frame, the government contributed to about 22% (n=75) of the frequency of the themes and codes, whereas industry actors contributed about 15% (n=51) and civil society actors accounted for about 62% (n=208). As a result, in the documents analyzed, civil society actors contributed the most to rhetoric which discussed or characterized problems relating to the plastic crisis and plastic governance in Canada.

The first topic is plastic, referring to rhetoric which specifically discussed or characterized plastic itself. Under this topic, the following eight themes were organized: 1) is not a problem itself; 2) is essential; 3) is an important industry; 4) is the best technology available; 5) is not toxic; 6) promotes health and safety; 7) is not more necessary due to COVID-19; and 8) is too abundant. The most frequent

theme or code was ‘is not toxic’ (n=10), however, only industry actors within the document analysis contributed to this rhetoric. Industry or corporate actors contributed the most to, in terms of frequency, to rhetoric which characterized plastic itself (n=24), followed by government actors (n=12) and then civil society actors (n=8). Table 2 illustrates the frequency of theme/codes by the different actors.

Table 2: Theme/Code Frequency by Actor for Topic: Plastic

Theme/Code	Frequency by Actor			
	Government	Industry	Civil Society	Total
Is not a problem itself	-	2	-	2
Is essential	6	3	-	9
Is an important industry	3	3	-	6
Is the best technology available	-	6	-	6
Is not toxic	-	10	-	10
Promotes health and safety	3	-	-	3
Is not more necessary due to COVID-19	-	-	3	3
Is too abundant	-	-	5	5

The second topic is ‘issue at hand with plastic’, and it consisted of rhetoric which described which issues were pertinent with the plastic crisis. In this topic, the following eight themes were organized: 1) plastic waste and pollution; 2) economic loss; 3) climate change; 4) animal health and biodiversity; 5) human health; 6) indigenous rights; 7) waste trade; and 8) added plastic waste due to COVID-19. The most frequent theme or code was ‘plastic waste and pollution’ (n=30), and all actors were observed to utilize this rhetoric. Civil society actors contributed the most to, in terms of frequency, to rhetoric which highlighted important issues relating to plastic (n=62) and demonstrated the most diversity of themes/codes. Government actors contributed the second most (n=23) and industry actors followed (n=7). Table 3 displays the frequency of theme/codes by the different actors.

Table 3: Theme/Code Frequency by Actor for Topic: Issue at Hand with Plastic

Theme/Code	Frequency by Actor			
	Government	**Industry**	**Civil Society**	**Total**
Plastic waste and pollution	14	5	11	30
Economic loss	5	2	1	8
Climate change	1	0	7	8
Animal health and biodiversity	-	-	4	4
Human health	2	-	11	13
Indigenous rights	-	-	13	13
Waste trade	-	-	9	9
Added plastic waste due to COVID-19	1	-	6	7

The third topic is main focus, and it includes rhetoric which specifies the issue that is the priority in relation to plastic in Canada. Under this topic, the following eight themes were organized: 1) COVID-19 response and recovery; 2) post-consumer plastic; 3) packaging; 4) single-use plastic; 5) beverage and bottle caps; 6) big and growing market for virgin plastic; 7) linear economy; and 8) plastic production. The most frequent theme or code was ‘packaging’ (n=20), which was fairly evenly utilized by government actors (n=5), industry actors (n=7), and civil society actors (n=8). Civil society actors contributed the most, in terms of frequency, to rhetoric in this topic (n=48), followed by government (n=20), and industry actors (n=16). Table 4 shows the frequency of theme/codes by the different actors.

Table 4: Theme/Code Frequency by Actor for Topic: Main Focus

Theme/Code	Frequency by Actor			
	Government	**Industry**	**Civil Society**	**Total**
COVID-19 response and recovery	-	4	-	4
Post-consumer plastic	-	5	-	5
Packaging	5	7	8	20
Single-use plastic	10	-	5	15
Beverage bottles and caps	-	-	3	3
Big and growing market for virgin plastic	-	-	8	8
Linear economy	5	-	6	11
Plastic production	-	-	18	18

The fourth topic is recycling, and it includes rhetoric which characterizes problems relating to plastic recycling in Canada. In this topic, the following five themes were organized: 1) not yet efficient; 2) lacks economic incentive 3) limited capacity in Canada; 4) inefficient; and 5) does not work. The most frequent theme or code was ‘inefficient’ (n=20); however, only civil society actors utilized this rhetoric within the documents analyzed. Under this topic, civil society actors contributed the most to, in terms of frequency, (n=37), followed by government (n=14), and industry actors (n=1). Table 5 illustrates the frequency of theme/codes by the different actors.

Table 5: Theme/Code Frequency by Actor for Topic: Recycling

Theme/Code	Frequency by Actor			
	Government	**Industry**	**Civil Society**	**Total**
Not yet efficient	7	1	-	8
Lacks economic incentive	6	-	3	9
Limited capacity in Canada	1	-	-	1
Inefficient	-	-	19	19
Does not work	-	-	15	15

The final topic is who or what is affected, and it consists of rhetoric which describes the impact of plastic in relation to certain groups, effects, and geographies. Under this topic, the following five themes were organized: 1) global issue; 2) marine ecosystems and marine life 3) general environmental harm; 4) Canadian issue; and 5) offloading waste internationally. The most frequent theme or code was 'marine ecosystems and marine life' (n=18). In this topic, civil society actors contributed the most to, in terms of frequency, (n=53) and demonstrated the most variety of rhetoric use. Government actors followed (n-6) and industry had the least frequent rhetoric use in this topic (n = 3). Table 6 illustrates the frequency of theme/codes by the different actors.

Table 6: Theme/Code Frequency by Actor for Topic: Who and What is Affected

Theme/Code	**Frequency by Actor**			
	Government	**Industry**	**Civil Society**	**Total**
Global issue	1	3	3	7
Marine ecosystems and marine life	1	-	17	18
General environmental harm	4	-	4	8
Canadian issue	-	-	16	16
Offloading waste internationally	-	-	13	13

Solutions

Second, the solutions frame refers to how government, corporate, and civil society actors discussed or characterized solutions within plastic crisis, in relation to the federal government's single-use plastic ban. This frame also consists of five topics, within which 33 themes or codes were organized. The total frequency of these codes or themes was 337. Within the frame, the government contributed to about 37% (n=125) of the frequency of the themes and codes, industry actors accounted for about 26% (n=90) and civil society actors contributed about 36% (n=122). As a result, in the documents analyzed, although

government actors contributed the most, the distribution of rhetoric use relating to solutions was fairly even.

The first topic is the federal government's approach/regulations, and it includes rhetoric which describes the government's proposed solutions to the plastic crisis in Canada, especially the single-use plastic ban and use of *CEPA 1999*. Under this topic, the following nine themes were organized: 1) success in and of themselves; 2) will be effective 3) are necessary; 4) are based on science; 5) need more to be effective; 6) are not necessary; 7) are not based on science; 8) will hurt industry; and 9) will make things worse. The most frequent theme or code was 'need more to be effective' (n=20); however, civil society actors were the only ones observed to utilize this rhetoric. Within this topic, the greatest contribution, in terms of frequency, was equal among industry actors and civil society actors (n=29). Government actors' contribution was least frequent (n=18). Table 7 illustrates the frequency of theme/codes by the different actors.

Table 7: Theme/Code Frequency by Actor for Topic: Government's Approach/Regulations

Theme/Code	**Frequency by Actor**			
	Government	**Industry**	**Civil Society**	**Total**
Success in and of themselves	2	-	-	2
Will be effective	5	-	-	5
Are necessary	6	-	4	10
Are based on science	5	-	1	6
Need more to be effective	-	-	23	23
Are not necessary	-	2	-	2
Are not based on science	-	8	1	9
Will hurt industry	-	9	-	9
Will make things worse	-	10	-	10

The second topic is collaboration, and it consists of rhetoric that describes solutions involving collaboration or interaction between multiple actors. Within this topic, the following six themes were

organized: 1) global solution/responding to global action; 2) responding to Canadians; 3) working with Canadians; 4) working with industry; 5) working with Indigenous Peoples; and 6) working with different levels of government. The most frequent theme or code was 'working with different levels of government' (n=20); however, only government actors utilized this rhetoric in the documents analyzed. Under this topic, industry actors did not contribute observed rhetoric use, in terms of frequency, (n=0). Government actors had the greatest contribution (n=35) and civil society actors followed (n=3). Table 8 illustrates the frequency of theme/codes by the different actors.

Table 8: Theme/Code Frequency by Actor for Topic: Collaboration

Theme/Code	**Frequency by Actor**			
	Government	**Industry**	**Civil Society**	**Total**
Global solution/ responding to global action	3	-	2	5
Responding to Canadians	2	-	-	2
Working with Canadians	7	-	-	7
Working with industry	9	-	-	9
Working with Indigenous Peoples	3	-	1	4
Working with different levels of government	11	-	-	11

The third topic is obstacles, and it includes rhetoric that characterizes obstacles or barriers to solutions within the plastic crisis in Canada. Under this topic, the following five themes were organized: 1) costly to manage waste; 2) lack of economic incentive for recycled plastic/plastic recycling; 3) funding issues/investment needed; 4) scaling issues; and 5) limited or lacking alternatives to plastic. The most frequent theme or code was 'funding issues' (n=11). Within this topic, the most contribution, in terms of frequency, was tied between government actors and industry actors (n=14). Civil society actors'

contribution was least frequent (n=9). Table 9 illustrates the frequency of theme/codes by the different actors.

Table 9: Theme/Code Frequency by Actor for Topic: Obstacles

Theme/Code	Frequency by Actor			
	Government	**Industry**	**Civil Society**	**Total**
Costly to manage waste	1	2	4	7
Lack of economic incentive for recycled plastic/plastic recycling	4	3	3	10
Funding issues /investment needed	3	7	1	11
Scaling issues	4	2	1	7
Limited or lacking alternatives to plastic	2	-	-	2

The fourth topic is recycling and waste management systems, and it consists of rhetoric that discusses the feasibility and preferability of recycling and waste management solutions to address the plastic crisis in Canada. Within this topic, the following four themes were organized: 1) not yet efficient/effective; 2) is an economic/sustainable development opportunity; 3) limited or lacking infrastructure capacity in Canada; and 4) recycling is not the solution. The most frequent theme or code was ‘recycling is not the solution’ (n=23); however, the use of the rhetoric was exclusive to civil society actors. In this topic, civil society actors had the greatest contribution, in terms of frequency, (n=38). Government actors followed (n=9), and industry actors’ contribution was least frequent (n=4). Table 10 illustrates the frequency of theme/codes by the different actors.

Table 10: Theme/Code Frequency by Actor for Topic: Recycling and Waste Management Systems

Theme/Code	Frequency by Actor			
	Government	**Industry**	**Civil Society**	**Total**
Not yet efficient/ effective	7	1	-	8
Is an economic/ sustainable development opportunity	1	3	-	4
Limited or lacking infrastructure or capacity in Canada	1	-	15	16
Recycling is not the solution	-	-	23	23

The final topic is solutions to focus on/pursue, and it includes rhetoric that highlights priority for possible solutions to the plastic crisis in Canada. Under this topic, the following eight themes were organized: 1) circular economy; 2) improved recycling and waste management systems; 3) innovation; 4) consumer behavioural change; 5) market-driven solutions; 6) reduction-based solutions; 7) cultural change; and 8) EPR. Two themes or codes were equally the most frequent: ‘circular economy’ and ‘improved recycling and waste management systems’ (n=26). In this topic, the distribution of rhetoric use is fairly distributed. Government actors had the largest contribution, in terms of frequency, (n=49) and industry actors and civil society actors tied (n=43). Table 11 illustrates the frequency of theme/codes by the different actors.

Table 11: Theme/Code Frequency by Actor for Topic: Solutions to Focus on/Pursue

Theme/Code	Frequency by Actor			
	Government	**Industry**	**Civil Society**	**Total**
Circular economy	7	9	10	26
Improved recycling and waste management systems	18	7	1	26
Innovation	14	8	-	22
Consumer behavioural change	3	2	-	5
Market-driven solutions	4	1	-	5
Reduction-based solutions	-	-	24	24
Cultural change	-	-	7	7
EPR	3	16	1	20

Actors' Identities/Perceptions

Finally, the actors' identities/perceptions frame refers to the ways in which government, corporate, and civil society actors shape the identities and perceptions of themselves and others. This is evident in the discussion and characterization of actors in relation to the plastic crisis and in reference to the federal government's single-use plastic ban. This frame consists of three topics, within which 16 themes or codes were organized. The total frequency of these codes or themes was 110. Under this frame, the government contributed to about 17% (n=19) of the frequency of the themes and codes, whereas industry actors contributed about 21% (n=23) and civil society actors accounted for about 62% (n=68). As a result, in the documents analyzed, it was observed that civil society actors contributed the most to rhetoric that shaped or informed actors' identities/perceptions within the plastic crisis in Canada.

The first topic is government, and it includes rhetoric from the government or the other actors that describes or informs the identity perception of the government in the plastic crisis and in regard to the single-use plastic ban. Within this topic, the following eight themes were organized: 1) leader; 2) doing

their part; 3) favours industry; 4) disappointing; 5) needs to be held accountable; 6) obligation to act; 7) overstepping; and 8) hurting industry reputation. Under this topic, the theme or code 'needs to be held accountable' was the most frequent (n=11); however, only civil society actors were observed to have utilized this rhetoric in the documents analyzed. The greatest contributor, in terms of frequency, was civil society actors (n=33), followed by industry actors (n=12) and government actors (n=7). Table 12 shows the frequency of theme/codes by the different actors.

Table 12: Theme/Code Frequency by Actor for Topic: Government

Theme/Code	Frequency by Actor			
	Government	**Industry**	**Civil Society**	**Total**
Leader	5	-	1	6
Doing their part	2	-	-	2
Favours industry	-	-	9	9
Disappointing	-	1	6	7
Needs to be held accountable	-	-	11	11
Obligation to act	-	-	6	6
Overstepping	-	9	-	9
Hurting industry reputation	-	2	-	2

The second topic is industry, and, similarly, it includes rhetoric by the actors that describes or informs the identity perception of industry actors within the plastic crisis and plastic governance in Canada. Within this topic, the following five themes were organized: 1) leader; 2) needs to be kept in check; 3) preventing action; 4) blames others; and 5) self-serving/exploitative. Within this topic, the theme or code 'leader' was the most frequent (n=10). Civil society actors contributed the most, in terms of frequency, (n=16), followed by industry actors (n=9) and government actors (n=8). Table 13 displays the frequency of theme/codes by the different actors.

Table 13: Theme/Code Frequency by Actor for Topic: Industry

Theme/Code	Frequency by Actor			
	Government	**Industry**	**Civil Society**	**Total**
Leader	1	9	-	10
Needs to be kept in check	7	-	-	7
Preventing action	-	-	4	4
Blames others	-	-	4	4
Self-serving/exploitative	-	-	8	8

The last topic is civil society, and, similarly, it consists of rhetoric by the actors that describes or informs the identity perception of civil society or the general public in Canada within the plastic crisis, governance, and in regard to the single-use plastic ban. Within this topic, the following three themes were organized: 1) demanding/supporting action; 2) not deserving of blame; and 3) consumer responsibility needed. Under this topic, the themes or codes ‘demanding/supporting action’ and ‘not deserving of blame’ were equally the most frequent (n=10). The largest contributor, in terms of frequency, was civil society actors (n=19), followed by government actors (n=4) and industry actors (n=2). Table 14 illustrates the frequency of theme/codes by the different actors.

Table 14: Theme/Code Frequency by Actor for Topic: Civil Society

Theme/Code	Frequency by Actor			
	Government	**Industry**	**Civil Society**	**Total**
Demanding/ supporting action	1	-	9	10
Not deserving of blame	-	-	10	10
Consumer responsibility needed	3	2	-	5

Discussion

Environmental Rhetoric, Narrative Shifting and the Plastic Solutions Undertaken

My thesis' findings demonstrate the ways in which dominant conceptions of plastic problems are pushed through environmental rhetoric in order to advance plastic solutions that serve the interests of dominant actors, especially government and industry. To illustrate, I will first detail and compare how plastic problems have been characterized rhetorically in the documents I analyzed. I will explain which themes or ideas have gained dominance and the consequences of these impacts from perspectives of critical political ecology and constructivism. Then, I will discuss dominant solutions observed within the document analysis and explain how these solutions have been prescribed by mainstream understandings of problems and the implementation of rhetoric that reinforces said understandings. Afterwards, I will discuss and problematize the use of rhetoric relating to the circular economy in order to demonstrate how this theme has likely acted as a confused notion within the documents analyzed. Finally, drawing from concepts of constructivism, the value-action gap and organized irresponsibility, I outline apparent uses and consequences of narrative shifting and the shaping of actor identities evident in my document analysis. Through this discussion, it will become evident that environmental rhetoric has reflected and reinforced dynamics of power in a way that advances solutions that favour dominant interests and perceptions at the expense of the plastic crisis.

Government actors, industry actors and civil society actors, analyzed within my document analysis, utilized environmental rhetoric to characterize the problems of plastic in similar and contrasting ways. This observation highlights the dominance of ideas within environmental problems and points to varied strategies of rhetoric employment. For instance, my document analysis noted the ways by which actors utilized rhetoric to shape understanding of problems by characterizing plastic itself, illustrated by Table 2. Government and industry actors both utilize rhetoric which emphasizes plastic as an essential material in society, within this rhetorical use, the actors highlight plastic's many uses, and ways Canadians rely on plastic products. This rhetoric is consistent with evidence in the background and

literature review which has demonstrated how plastic is commonly understood as a ubiquitous component of everyday life (Heidbreader et al., 2019).

As well, this rhetoric is important as it affirms a distinction between the problematization of plastic pollution, a widely agreed upon environmental threat (Forsyth, 2003) and plastic itself, a material that promotes the commercial activity that corresponds to increased income and power for government actors and industry actors alike within society (Bryant and Bailey, 1997). In my sample of documents, civil society actors have pushed back against characterizing plastic as essential, in part, by invoking rhetoric to suggest that plastic is not more necessary due to COVID-19. This rhetoric is significant amidst evidence to suggest that plastic use and pollution has increased since the beginning of the COVID-19 pandemic (Caton, 2021). Drawing from constructivism's insights about the significance of ideas and norms, this rhetoric use by civil society appears to be done in an attempt to shift common understandings of plastic itself as means to influence behaviour.

In a similar way, industry actors have been active in refuting the association between plastic and toxicity in relation to the designation of plastic in the *List of Toxic Substances* under *CEPA 1999*, as part of federal government's single-use plastic ban. In Table 2, the theme 'is not toxic' is the most frequent rhetoric used by industry in relation to the characterization of plastic itself. This is likely done in order to reject negative ideas or norms, relating to toxicity, being assigned to plastic materials as this understanding could hurt the identity, and related profitability, of industry actors (Spiegel et al., 2015; Haller, 2017). In fact, industry actors specifically suggest that designating plastic as toxic and the single-use plastic ban are ways by which the government is hurting industry reputation, as shown in Table 12. As well, also illustrated in Table 12, industry actors attempt to discredit the authority of the federal government by specifically employing rhetoric to suggest that the government is overstepping with its approach to plastic governance in Canada. This is done in an attempt to shift the perception of the government as an actor and leverage the malleability of ideas and identities to garner support for the oppositional position of the industry actors against regulations (Saurugger, 2013).

Furthermore, the different actors employ rhetoric to inform the issues at hand within the plastic crisis, shown in Table 3. That is to say that rhetoric defines what is and is not a related problem to or consequence of the plastic crisis. According to Forsyth (2003), environmental orthodoxies, taken-for-granted and simplified understandings of environmental problems, have the capacity to narrowly prescribe solutions to address environmental threats. I argue that this is what is occurring as actors advance understanding of plastic problems through the use of rhetoric. For instance, plastic waste and plastic pollution are highly visible understandings of the plastic crisis (Stafford and Jones, 2019) and this focus is reinforced by the implementation of environmental rhetoric by the different actors. In Table 3, rhetoric which presents plastic waste and pollution as the issue at hand within the plastic crisis is the most frequent and is promoted by all three actor groups. This suggests that the plastic waste and pollution is a dominant understanding that is consistently reinforced by government actors, industry actors and civil society. Additionally, shown in Table 4, packaging and single-use plastic are identified as priorities as these are types of plastic which are understood to be commonly polluted.

I argue that a consequence of this mainstream understanding is that it frames the plastic crisis as a waste management issue. That is, it directs focus to the end of plastic's life cycle and thereby prescribes solutions to delay or prevent disposal. In this way, the waste and pollution frame acts as environmental orthodoxy as explained by Forsyth (2003). Although civil society actors also present plastic problems in relation to plastic *production* through rhetoric, they too strengthen the dominant conception that centers on plastic *waste* and *pollution*. As a result of the actions of all three actors and the longstanding dominance of pollution ideas, alternative problematizations like a focus on plastic production have not yet overcome mainstream understandings of this environmental threat. I argue that the dominance of plastic waste and pollution is due in part to its visibility and tangibility. The ideas of waste and pollution are easily understood, whereas less tangible issues like climate change impacts or growing production demands are less able to garner engagement (Anspach and Draguljic, 2019). Solutions within the plastic crisis, therefore, highlight waste management or disposal-based improvements or initiatives. For example,

even the federal government's single-use plastic ban employs rhetoric that identifies harmful single-use plastic as being major sources of pollution (Environment and Climate Change Canada, 2021). As a result, and due to the limited scope, this intervention highlights improving recyclability and recycling rather than promoting ambitious reduction-based solutions. In Table 11, it is evident that rhetoric which promotes improved recycling and waste management solutions as options on which to focus or pursue are the most frequent, along with discussion of circular economy, which will be discussed later in this section.

Emphasis on recycling and waste management persists in spite of noted concerns about inefficiency in recycling, remarked upon in the literature review section and shown in Table 5 and Table 10. This persistence can be explained by the coproduction of science with critical political ecology. In particular, Forsyth (2003) illustrates that underlying dynamics of power uphold particular environmental understandings which remain relevant in spite of growing evidence to suggest that they are inaccurate or less accurate than thought to be. As well, Viscusi et al. (2011) note that the dominance of recycling and waste management solutions are related to preconceived ideas about pro-environmental actions and social acceptance. The familiarity and favourability of these ideas, thus, contribute to the dominance of recycling and waste management solutions within the plastic crisis (Jaegar, 2018). Furthermore, rhetoric is employed to suggest that inefficiencies or obstacles to these recycling and waste management solutions can be overcome. For instance, Table 9 illustrates that a frequent obstacle referenced to by all the actor groups observed in my document analysis is funding issues, which is not highlighted as an innate barrier. As well, government and industry actors' promotion of innovation solutions and EPR contribute to the belief that prescribed waste management measures can become effective.

Moreover, rhetoric has been used to promote a popular and well-perceived notion of a circular economy, as evident in Table 11; however, the different ways actor groups have utilized and characterized circular economy suggest that the concept is serving as a confused notion in my sample documents. That is to say that, within the documents of this study, the concept of a circular economy has been displayed or described in differing and ambiguous ways, but they ultimately dispensing moral worth

or value (Haller, 2017). Although conceptualizations differ and, at times, conflict, the use of rhetoric involving the circular economy idea ultimately provides a positive or progressive impression of the actors or prospective solutions presented. For instance, civil society actors have promoted the concept as a solution whilst starkly proclaiming that a circular economy for plastic is impossible (Greenpeace, 2020). At the same time, both government and industry actors demonstrate support for creating or promoting circular economy solutions in their own ways. Specifically, the federal government has framed the single-use plastic ban as a component of developing a circular economy for plastic alongside promoting increased design for reuse and recycling and setting targets to increase recycling (Environment and Climate Change Canada, 2019a). Contrastingly, the Responsible Plastic Use Coalition (2021a), an industry source, demonstrates support for implementing a circular economy system but opposes the single-use plastic ban as a policy method to achieve it. Drawing from constructivism, actors situating themselves along with the preferable concept of circular economy is a mechanism by which to promote a positive identity and garner support (Saurugger, 2013). Despite the different approaches and understandings of circular economy present within my document analysis, it is evident that the perception of support for circular economy as a concept is a constructivist tool. Whether this translates into meaningful action towards addressing the plastic crisis, however, is unclear, especially as issues like plastic downcycling demonstrate significant obstacles.

Finally, within my document analysis, I observed notable strategies of narrative shifting that have transferred responsibility and blame for plastic problems and governance from one actor to another. In particular, within the frame of actors' identities/perceptions, various themes have been employed to deflect culpability within the plastic crisis, especially appeals to leadership evident in Table 12 and Table 13. Government sources within my document analysis build an identity of being a leader within plastic governance by promoting rhetoric that reinforces this perception onto themselves but also onto industry. I argue that this rhetoric use is employed to frame government actions positively as means to deter criticism as well as direct attention to the shared influence of industry (Saurugger, 2013). This may be a subtle

example of passing the buck by suggesting that industry actors also have important decision-making responsibilities (Béland, 2005).

Similarly, the topic of collaboration, shown in Table 8, demonstrates more overt strategies to redistribute blame whilst reaffirming that the federal government is acting positively. For instance, the federal government remarks efforts to collaborate with various actor groups, most frequently, other levels of government. In doing so, the government reaffirms their intentions to support measures to address plastic pollution whilst simultaneously passing the buck or directing authority to other levels of government to enforce or create their own strategies to manage waste, for example (Béland, 2005). In this way, rhetoric use reflects blame avoidance within constructivism as well as reflecting understanding from the value-action gap wherein stated intention does not necessarily translate to specific environmental behaviours nor does the social or external conditions in this case motivate further action from the federal government (Barr, 2004; Flynn et al., 2010). Similarly, industry also engages in narrative shifting particularly through the shaping or building of their own identity as well as other actors' identities, shown in Table 12, Table 13 and Table 14. In my document analysis, I found that industry actors also use rhetoric to assert themselves as environmental leaders in order to promote a positive identity, assume credibility for their actions (Saurugger, 2013) as well as disincentivize blame (Cherrier and Türe, 2022). Additionally, industry has employed rhetoric to assign blame onto civil society or consumers, evident in calls to increase consumer responsibility, shown in Table 14, and highlighting post-consumer plastic as means to frame plastic waste in relation to consumer behaviour, shown in Table 4 and Table 11. This rhetoric reinforces existing understandings of the significance of individual action and consumer choice within the plastic crisis (Stafford and Jones, 2019). This type of rhetoric creates the norms of behaviour that inform widely accepted environmental behaviours, like recycling (Barr, 2004), and promotes social acceptance for industry actors.

My document analysis also demonstrates efforts by civil society actors to engage in blame assignment through narrative shifting. This is evident as civil society actors, in my document analysis,

utilized rhetoric to characterize the identity of government and industry actors, primarily done in a way to suggest that they have or should have more responsibility within plastic governance. This is shown in Table 12 and Table 13. This spread of responsibility as well as blame avoidance can be explained as the application of organized irresponsibility wherein individual actors avoid taking responsibility over the risks, including environmental risk, to which they have contributed (Curran, 2018). Evidently, actors have engaged in rhetoric that has culminated in a mixed assignment of responsibility over plastic that makes it difficult to pinpoint and control sources of environmental damage, relating to plastic in Canada (Béland, 2005; Curran, 2018). Under this system, it is difficult to hold actors accountable, and actors are able to manipulate norms and ideas to perpetuate a positive impression or identity as means to continue to avoid culpability. In addition, as shown in Table 14, civil society actors attempt to refute culpability they identify as being wrongfully imposed upon them. However, as Cherrier and Türe (2022) explain, the scapegoating of consumers or assignment of consumer responsibility is difficult to overcome, especially as norms which individualize environmental behaviours are heavily entrenched. This also reflects uneven power relations, as it appears that government and industry actors have greater capacity to influence meaning or understanding of environmental problems and responsibilities (Bryant, 1998). This also reflects the natural alliance between government and business actors as both seek to maintain their financial and legal-political authority, often through shared interest in stimulating commercial activity like the plastic market (Bryant and Bailey, 1997). As a result, it is evident that rhetoric has been employed to characterize problems, solution and actors in ways that explain the persistence of waste management solutions over alternative approaches like addressing and reducing plastic production.

In summary, my research findings suggest that the dominant ways in which plastic problems are defined rhetorically, and the perceptions of responsibility promote, or even prescribe, specific plastic solutions over others. In particular, the understanding of plastic itself, plastic waste and pollution, and the emphasis on packaging, single-use plastic, and marine plastic pollution facilitate and reinforce solutions aimed at delaying or preventing disposal, rather than addressing production. Notably, these themes

demonstrated greater convergence among the actors analyzed, especially government and industry, thereby suggesting dominance of these types of rhetoric or framings within the plastic crisis and plastic governance in Canada. Bryant and Bailey (1997) explain that this alignment among these actors occurs due to a natural alliance that exists due to shared interest in maintaining power in relation to other actors through commercial activity. In these cases, reference to science or scientific findings were made to substantiate importance of these themes, but the coproduction of science and politics was not appropriately acknowledged or addressed, even in instances where scientific data was criticized. As a result, underlying power dynamics were overlooked under the guise of scientific objectivity, and environmental orthodoxies involving plastic prevailed uncritically. As well, although rhetoric targeting plastic production and reduction-based solutions are advanced by civil society actors, in the documents analyzed, these themes are not found to be meaningfully engaged with by the other actors examined. As a result, the influence of this rhetoric was not as present in mainstream understandings of plastic problems or possible solutions. That being said, civil society actors were more likely to engage with and, at times, reinforce rhetoric relied upon by government actors and industry actors. Therefore, even in cases where engagement was conflictual, this engagement ultimately strengthened the relevance of these themes.

Moreover, actors demonstrated concern for their perception and identities and made effort to shape their own image. This was done, in part, by promoting or highlighting salient and favourable concepts, like the circular economy, to their own benefit. As the circular economy has been presented differently by all three actors, it appears that it may be acting as a confused notion (Haller, 2017). As the circular economy has gained prevalence within the plastic crisis, different actors have effectively advanced their own interpretations to garner acceptance for their approaches to and stances on plastic governance. Furthermore, narrative shifting, and the shaping of actor identities and perceptions contributed to fostering organized irresponsibility in the plastic crisis. Consequently, the responsibility of actors and the landscape of plastic governance remains unclear. The dominant voices of government and industry are thereby able to claim their own leadership within the plastic crisis whilst simultaneously

relying on other stakeholders to act or deflecting blame elsewhere. Thus, without critical examination, environmental rhetoric can be utilized in order to promote and reinforce dynamics of power which prescribe solutions to the plastic crisis that discreetly serve dominant interests.

Governance Gaps and Blind Spots

My research indicates that the narrative shifting and tensions between environmental rhetoric observed in my document analysis likely fosters governance gaps or blind spots that may result in worsened physical environmental effects relating to plastic. To demonstrate, I will explain how the prevalence of plastic waste and pollution within rhetoric creates a narrow conception of problems and solutions within the plastic crisis, drawing from critical political ecology. In particular, I engage with and apply considerations of the coproduction of science. I will then discuss how conditions for organized irresponsibility within the plastic crisis have been facilitated by environmental rhetoric found in my document analysis. Within this discussion, I will illustrate how ideas, norms, and identities, from a constructivist analysis, have been strategically manipulated by actors to avoid blame and responsibility within plastic governance. As well, I will describe how the framework of governance reflects dominant ideas and norms, including the favourability of recycling measures. Finally, I will contrast the dominant emphases and governance initiatives presented in the document analysis against the recommendations and findings of my literature review to demonstrate the likelihood of noted governance gaps to exacerbate physical environmental effects. In this discussion, it will become clear that narrative shifting and tensions within environmental rhetoric contribute to the formation and maintenance of governance gaps or blind spots which may worsen the physical environmental harm of plastic.

First, the prevalence of plastic waste and pollution observed in my document analysis, shown in Table 3, illustrates how dominant environmental understandings narrowly prescribe solutions or actions to address the plastic crisis. According to Forsyth (2003), the interconnected relationship between science and politics has the ability to shape the relevance of environmental problems as well as define how they ought to be managed. In particular, when policy is derived from a presumption of environmental facts

without acknowledgement of the underlying social and political factors which have made these facts relevant, the ability for policy to be affected is undermined (Forsyth, 2003). In this case, I argue that the strong social and political framings of plastic waste and pollution have narrowly focused on sources of pollution as the entrance point into the environment, thereby negating consideration of production issues themselves or patterns of overconsumption (Nielsen et al., 2019; Stafford and Jones, 2019). As already discussed, this framing of plastic waste and pollution thereby necessitates solutions that are based on persistent and widely accepted recycling and waste management practices. As a result, a clear regulatory gap is formed by a lack of emphasis on production and systems of overconsumption which only feed the growth of plastic dependency (Nielsen et. al qtd in Cherrier and Türe, 2020) that worsens environmental degradation. That being said, this production emphasis and reduction-based solutions are promoted by civil society actors examined in my document analysis; however, as they are the sole contributors to this rhetoric, these ideas have not infiltrated dominant environmental understanding in a manner that effectively informs solutions.

Moreover, rhetoric which emphasizes single-use plastic as a priority, evident in Table 4, problematizes specific and limited plastic products and the resulting solutions do not account for consumption or unintended consequences of alternatives to plastic. For example, Cherrier and Türe (2022) explain how a focus on single-use plastic overlooks other potentially harmful plastic products. As well, solutions provided, either by government or industry, to support alternatives to single-use plastic hinder momentum to address broader plastic issues like inefficient recycling, plastic dependency, or plastic's material make-up (Nielsen et. al qtd in Cherrier and Türe, 2020). Alternatives to plastic also have their own environmental threats. In fact, as previously discussed, Herberz et al. (2020) note that single-use plastic items and other single-use materials do not differ considerably, in terms of sustainability, as the lack of reuse and quick disposability present similar problems. Another issue to consider is the unintended consequences of alternative plastic, like bio-plastic or biodegradable plastic, which are presented as more sustainable alternatives to single-use plastic. For instance, without special conditions,

biodegradable plastic does not break down properly in nature and has been found to encourage littering (Palm and Svensson Myrin, 2018). As well, as the culture of conspicuous consumption persists (Liboiron, 2013), upheld by profit motivations of elite economic and political actors (Bryant and Bailey, 1997), I argue it is likely the overconsumption of alternatives will replace the consumption of single-use plastic. As a result, the dominance of plastic waste and pollution within the plastic crisis has contributed to narrowly defined solutions that fail to holistically address plastic's environmental harms. Through this example, it is evident that it is necessary to challenge environmental statements and understandings built upon a presumption of scientific truth that justifies particular solutions or policies whilst neglecting others (Forsyth, 2003).

The use of environmental rhetoric, found in my document analysis, contributes to the facilitation of organized irresponsibility within the plastic crisis. Within this, drawing from a constructivist analysis, ideas, norms and identities have been manipulated to avoid blame and responsibility within plastic governance which has ultimately contributed to reliance on recycling and waste management solutions. Evident in the problems frame and actors' identities and perceptions frame, sources of plastic pollution are focused on types of plastic, as discussed above, and responsibility for pollution varies from the perspectives of government, industry, and civil society, represented in my sample of documents. For instance, shown in Table 4, Table 11 and Table 14, industry actors have notably specified post-consumer plastic as a priority and have linked solutions to be consumer-facing, based on behaviour and consumer responsibility. As Stafford and Jones (2019) explain, individualized action has been a norm within solutions to address the plastic crisis. Evidently, industry is working to continue this norm and disperse responsibility onto civil society.

As well, evident from the government perspective, rhetoric has been utilized to further disseminate responsibility among different levels of government, industry and Canadians broadly, evident in the topic collaboration, illustrated in Table 8. Many actors are attributed varying degrees of blame and responsibility within the management of the plastic crisis, which necessarily contributes to conditions of

organized irresponsibility in plastic governance. As already mentioned, because the risk, in this case environmental risks associated with plastic, cannot be clearly attributed to a particular actor, it is difficult to make anyone accountable (Béland, 2005; Curran, 2018). This lack of traceability is one measure by which actors escape culpability and rhetoric is utilized to strengthen blame avoidance. One method by which this has been pursued, observed in my document analysis, is appeal to a leader identity as means to assign blame elsewhere or promote the idea that certain actors have this issue in hand and do not require scrutiny over their actions. For instance, industry actors have claimed a leader identity to suggest that they are capable of managing plastic in their own ways and to discredit actions which seek to restrict them, shown in Table 12 and Table 13. As well, the appeal to EPR, a waste management strategy that is prominent and is generally understood in a positive light, is one way industry utilizes rhetoric to support their interest and avoid blame. By associating with the positive idea of EPR and specifically denoting industry leadership within EPR formation, industry is able to maintain a positive identity and gain social acceptance (Saurugger, 2013). This impression also reinforces organized irresponsibility as industry contributions are less likely to be traced back to them when they are regarded favourably, and as sources of pollution are widely distributed (Curran, 2018).

That being said, there is a difference between perceived leadership and positive environmental contribution and the actual effect. For instance, civil society actors, in my document analysis, have demonstrated support for EPR solutions but have also warned against the overstatement of EPR success (Greenpeace, 2020). Hesitancy to rely on the EPR solutions boasted by industry is further supported by the lackluster implementation of EPR in Canada. As noted in the background section, although provinces and territories have committed to nation-wide implementation of EPR, the existing framework is fragmented and unevenly implemented throughout the country (Arnold, 2019). Along with EPR, rhetoric which promotes recycling and waste management solutions, shown in Table 11, illustrate a continued popularity of these interventions (Jaegar, 2018). As a result, rhetoric which has promoted certain narrow solutions and has effectively contributed to blame avoidance has contributed to the formation or

continuation of governance blind spots which may worsen environmental degradation within the plastic crisis.

My document analysis has shown that rhetoric which focuses on pollution and informs recycling and waste management solutions is prominent, likely reflecting the influence and entrenchment of these ideas within the landscape of governance and interaction between actors (Spiegel et al., 2015). This understanding suggests that the governance failures and gaps identified within the literature review are likely to continue, in spite of new measures relating to the federal government's single-use plastic ban. As already discussed, preference for the framing of pollution and the focus on recycling is demonstrative of uneven dynamics of power as these interests allow political and economic actors, like the government and plastic industry, to continue to gain and maintain power (Bryant and Bailey, 1997). Within the plastic crisis, I suggest that this maintenance of power is linked to economic benefits relating to plastic production. Part of the reason the favourability of recycling emphasis persists is evident in understanding of the value-action gap. In particular, recycling has the benefit of being a highly visible and well-accepted environmental practice, thus it is a noticeable and convenient way by which to indicate participation in environmental action (Barr, 2004). Similarly, innovation is a strategy which is promoted through rhetoric, primary by government and industry actors in my document analysis, shown in Table 11. The positive norms or ideas of innovation have the capacity to allow government and industry to reinforce recycling and waste management solutions as well as promote their own identities within plastic governance (Saurugger, 2013).

That being said, innovation, particularly in the form of creating alternatives to single-use plastic, overlook production impacts and overconsumption which have been stressed as essential components of effective governance (Dauvergne, 2018; Nils and Schulte, 2017). Although civil society actors have made efforts to differently shape understanding of plastic problems and related solutions, the dominant rhetoric evident in my document analysis has not been shown to advance the landscape of governance to overcome existing weaknesses. For instance, Simon and Schulte (2017) argue that plastic governance has

to overcome reliance on voluntary commitments and transition into binding international agreements that include the limitation of plastic production. My research findings do not suggest that rhetoric is pushing Canada's plastic governance landscape in accordance with the recommendations outlined within literature review. Consequently, the dominance of rhetoric which presents the plastic crisis as plastic waste and pollution continues an overreliance on lacking recycling and waste management solutions. As these solutions continue to neglect less common ideas like production, overconsumption and climate change impacts, they ultimately contribute to governance gaps that will likely exacerbate environmental damage.

To summarize, my research suggests that narrative shifts and tensions within the environmental rhetoric analyzed promotes governance gaps or blind spots which may worsen the physical environmental impacts of plastic as the distribution of responsibility remains unclear and the scope of policy and interventions are hyper-focused on delaying or preventing plastic disposal and pollution. For instance, an understanding which strictly focuses on eliminating single-use plastic consumption may overlook the issue of overconsumption. As a result, unintentional consequence like the overconsumption or littering of alternative plastic or other single-use products will continue to perpetuate the plastic crisis. While plastic waste and pollution are undeniably important environmental issues, the prevalence of these themes in rhetoric, evident in my document analysis, narrowly presents addressing the plastic crisis as a mission to target waste and sources of pollution. As well, under this conception, as the sources of pollution are diverse with overlapping jurisdiction, the conditions of organized irresponsibility are created or reinforced. Strategies to escape culpability are employed, illustrated in examples of narrative shifting and identity shaping. Consequently, the strong and binding governance framework advocated for within plastic governance literature is unlikely to be achieved.

Also, the persistence of understandings of the plastic crisis centering on plastic waste and pollution can be understood as an environmental orthodoxy. Taken-for-granted assumptions about plastic waste and pollution narrowly define the problem at hand as well as the solutions. Obvious sources of waste, like packaging and certain single-use plastic items, which have been visible in the environment, are

targeted issues, but less visible issues, like climate change impacts, are neglected. Additionally, because recycling has emerged as a dominant and widely accepted environmental action, it remains the prescribed solution to plastic waste, in spite of noted inefficiencies. Government and industry actors can present initiatives or interventions which align with recycling behaviour or improved recyclability to inform environmental leadership and dissuade criticism or culpability. The perception of action, in this case, is greater than the physical environmental impact, as demonstrated by the failures of recycling discussed in the literature review and emphasized within criticism from civil society actors. In addition, the problematization of production and the life cycle of plastic, highlighted within civil society documents and the literature review, and corresponding calls to reduce plastic production broadly are largely overlooked. Consequently, as plastic production is anticipated to grow (Nielsen et al., 2019) and recycling measures have been shown to be ineffective (Skene, 2018; Franklin-Wallis, 2019), physical environmental harms like greenhouse gas emissions and pollution are likely to continue. As well, because plastic is abundant and highly durable, the increasing production of plastic will have cumulative effects. Evidently, my research points to the creation or persistence of governance gaps and blind spots which will likely worsen the physical environmental impacts of the plastic crisis.

Distribution of Blame and Environmental Harm in Canada and Globally

My research illustrates, to some degree, an overemphasis on plastic waste and pollution that targets consumer-facing products and consumer disposal, thereby offloading blame onto consumers in Canada. As well, civil society documents highlight environmental justice issues like offloading waste to the Global South and the exploitative relationship between plastic production and Indigenous Peoples in Canada. As the government and industry actors, observed in my sample, do not engage with either of these themes or issues, it may be interpreted that there is some degree of complacency of these harms within existing plastic governance structures in Canada. It is important to note that my document analysis serves more as a jumping off point from which to discuss these issues, as document analysis did not strongly present unequal distribution of blame and negative environmental impacts pertaining to waste

trade and Indigenous communities in Canada. However, in my document analysis, it became clear that these issues were significant. To explain, I will first outline the emphasis of consumer-facing products and post-consumer disposal evident in my document analysis. Then, I will problematize this focus on consumer products to outline how this overtly and implicitly places blame on civil society or consumers generally. Afterwards, I will highlight how this emphasis can exacerbate social inequalities through the example of plastic beverage bottles and the issue of lack of safe drinking water for Indigenous communities in Canada. Next, I will explain how the trading of plastic waste contributes to disproportionate environmental harm in the Global South, particularly in Asian nations, and how Canada effectively eludes responsibility. Finally, I will discuss the persistence of harm to Indigenous communities as a result of plastic production and explain how this link could be neglected as a result of dominant ideas and underlying power dynamics. Within this discussion, I consider how the coproduction of science and exclusion of diverse knowledge bases within science may contribute to the neglect of these impacts in environmental rhetoric. Throughout, I will rely on ideas from critical political ecology and constructivism to demonstrate how this blame is created and fostered.

In my document analysis, it was evident that all actors utilized rhetoric which effectively highlighted the consumer-facing plastic products as major contributors to the plastic crisis. Much of the rhetoric within the problem frame centered around the themes of plastic waste and pollution, packaging, and single-use plastic. Government, industry, and civil society actors all contributed to rhetoric use which promoted packaging as the main focus within plastic problems. Similarly, government and civil society actors highlighted single-use plastic as a priority. Along with emphasis on plastic waste and pollution, the impact of this rhetoric was considerable focus on consumer-facing plastic products which are made up of single-use plastic or are contained in packaging. This aligns with and reinforces norms and ideas about individual action and moral or acceptable lifestyle changes being solutions to plastic pollution (Stafford and Jones, 2019). As a result, consumption of single-use plastic products and the consumers themselves are subtly assigned blame for the issue of plastic waste and pollution. At the same time, the federal

government is able to achieve a positive perception or identity by taking action that aligns with significant norms (Saurugger, 2013). These norms and assignment of blame is further substantiated by an appeal to science. For instance, to justify the approach to ban single-use plastic that applies to six consumer goods, the federal government makes note to appeal to scientific necessity. Forsyth (2003) explains how the perceived objectivity of science has often been used to justify environmental policy. Shown in Table 7, the federal government suggests that the single-use plastic ban is ‘based in science'. However, I argue that this perception of objective scientific justification lacks consideration for the coproduction of science and policy (Forsyth, 2003). In particular, I argue that underlying dynamics of power have contributed to how consumer-facing plastic products have been presented as more relevant environmental threats than other plastic items or plastic production generally.

As well, because there are heavily entrenched ideas surrounding human wastefulness, littering and consumer responsibility surrounding pollution, similar to environmental orthodoxies (Forsyth, 2003), this rhetoric use and framing prescribes actions that reflect unequal power relations between government, industry, and consumers (Bryant and Bailey, 1997; Bryant 1998). This is evident as consumers, who have the least amount of agency or power in the plastic crisis (Cherrier and Türe, 2022), are impacted more than other actors or sources of pollution. In fact, Béland (2005) also explains that withing a system of organized irresponsibility, which I argue is present within plastic governance, government and industry actors who are contributing to the environmental hazards are better protected than civil society as the public is more vulnerable to the impacts of environmental threats. Likewise, industry actors examined in my document analysis undertook more overt rhetoric strategies to assign blame to consumers. In particular, shown in Table 4, industry actors uniquely make a distinction to identify post-consumer plastic as a priority issue. As well, evident in Table 11, both government and industry actors promote consumer behavioural change as a solution to pursue within plastic governance in Canada. This explicit centering on consumers serves to assign blame by appealing to and reinforcing prominent ideas and norms about individual-focused environmental behaviour. Notably, this framing does not point to the role or

responsibility of government or industry actors in facilitating or fostering systems of overconsumption in society. This idea of consumer responsibility is so heavily entrenched that civil society actors, within my document analysis, are shown to assert that Canadians or consumers generally are not deserving of this perceived blame or responsibility within the plastic crisis, evident in Table 14. In opposition to the idea of consumer choice in the plastic crisis, one civil society document points to the ways in which plastic producers have made single-use plastic so unavoidable that it practically eliminates choice (Oceana Canada, 2021). This example highlights the uneven power that has facilitated environmental harm within the plastic crisis (Bryant and Bailey, 1997).

Moreover, as environmental discourse and rhetoric shapes boundaries of behaviour and worldviews within which government, industry and civil society actors operate (Hajer and Versteeg, 2005), it is significant that convergence in rhetoric between actors reinforces existing understandings of environmental problems. These actors are also bound by structures and worldviews created by environmental discourse and rhetoric (Forsyth, 2003) which complicates the capacity to challenge norms, ideas and environmental orthodoxies. That is to say that all actors contribute to the perpetuating of uneven dynamics of power, especially through an uncritical reliance on environmental orthodoxies. For example, shown in Table 4, civil society actors make reference to beverage bottles and caps as a priority issue within the plastic crisis. This reference is done in critique of the national single-use plastic ban's limited scope of items and to recommend further action to address beverage bottles by demonstrating that scientific data recognizes the prevalence of beverage bottles as a major contributor to pollution (Gray, Burns, Smith and Gue, 2020). While I do not negate or oppose the impact beverage bottles have in regard to plastic pollution, in this example, I argue that civil society actors similarly target a consumer-facing product in a manner that could facilitate blame assignment and undue consequences onto vulnerable communities. For instance, when the single-use plastic ban was initially announced, First Nations communities facing long-term drinking water advisories were concerned about how their water source, bottled water, could be affected (Johnson, 2019). Reliance on bottled water in these communities is

therefore an unavoidable necessity, especially as drinking water advisories continue to be an issue in Canada. In fact, although the federal government had committed to ending all long-term drinking water advisories by March of 2021, this goal was not met and a new target date was not established (Stefanovich and Jones, 2021). Reflecting the value-action gap, wherein pro-environmental decisions are motivated by personal attitudes but are importantly constrained by external and situational factors (Blake, 1999), the ability to minimize household plastic waste is restricted by a reliance on bottled water (Johnson, 2019). Rhetoric which emphasizes the problem of plastic bottles and prescribes consumer-facing solutions targeting these plastic bottles risk assigning blame and responsibility onto these vulnerable communities.

Furthermore, waste trade and offloading waste internationally are themes within my document analysis which were interestingly utilized exclusively by civil society actors and demonstrated a disproportionate distribution of environmental harm in the Global South. Although Canada's relationship with waste was detailed in the background section and is a known contributor to plastic pollution, neither government or industry actors, in the sample of documents assessed, noted this issue as relevant to Canada's plastic crisis and approaches to plastic governance. Building from critical political ecology and constructivism, I argue that the lack of rhetorical engagement with matters relating to waste trade reflect reluctance from government and industry actors to acknowledge plastic issues beyond the dominant explanations or environmental orthodoxies within the plastic crisis which are more favourable to their interests and perceptions of self, particularly in terms of environmental leadership shown in Table 12 and Table 13 (Forsyth, 2003; Spiegel et al., 2015). As it would be preferable to avoid culpability and maintain a positive identity with plastic governance, government and industry actors are not motivated to popularize ideas which challenge their positive identities (Spiegel et al., 2015). Instead, it is preferable to rely upon and strengthen dominant environmental explanations and understandings within science and environmental policy that maintain their powerful positions (Neimark et al., 2019; Bryant, 1998). That being said, evident in the background section, Canada's waste trade has been a significant feature of

waste management as much of the plastic waste that is easily recycled domestically has been commonly shipped to nations in the Global South, especially Asian countries (Dickinson, 2020). As well, this demonstrates an uneven distribution of environmental harm as foreign waste, including Canadian plastic waste, overwhelms the already lacking waste management systems of receiving nations in waste trade and thereby exacerbates plastic pollution in those areas (Dauvergne, 2018).

Finally, another theme which was exclusively or dominantly reported by civil society actors was rhetoric which presented plastic problems as an issue of Indigenous rights and human health, shown in Table 3. In particular, Greenpeace's report, includes a first-hand account of petrochemical facilities, linked to plastic production and oil generally, in Ontario's Chemical Valley contributing to adverse health impacts for Indigenous communities nearby. For similar reasons explained above, I argue that the government and industry actors' lack of engagement with this topic occurs because it would not be conducive to the maintenance of power and identities as understood within critical political ecology and constructivism. As already discussed, the fact that plastic is derived from fossil fuels is a neglected within the plastic crisis (Palm and Svensson Myrin, 2018). This neglect is likely due to the favourability of taken-for-granted environmental understandings (Forsyth, 2003), especially those which do not challenge the ability of government and industry to benefit from plastic production and promote positive identities, such as recycling focuses (Jaegar, 2018). As environmental discourse and environmental rhetoric shapes accepted and non-accepted behaviour for actors (Hajer and Versteeg, 2005), a dominant understanding that links plastic production to negative health effects would likely restrict actors' production interests. As well, building off of critical political ecology, I argue that the exclusivity of science has likely undervalued the knowledge and experiences of Indigenous communities that link plastic production and negative health outcomes.

As the institution of science and standard of scientific proof has been strictly established (Pouyat, 1999), community-based or traditional knowledge is not given the same weight. Although government actors within my document analysis have also pointed to the potential health issues related to plastic,

shown in Table 3, no negative health relationships have been concretely proven from the government's perspective. That being said, an overreliance on orthodox science and a failure to recognize the socio-political dynamics of science, especially in regard to the framing of issues and relevance, can undermine our ability to address environmental threats (Forsyth, 2003), including this consideration of plastic's impact on health. Perhaps a more politically-aware and democratized understanding of science would allow for greater significance to be placed on the first-hand and local perspective which has linked plastic production and Indigenous rights or health issues (Forsyth, 2003). This example of Indigenous communities being exposed to greater health threats in relation to petrochemical activities which are linked to plastic production demonstrates another area in which vulnerable communities are experiencing worsened environmental harms.

In summary, my research demonstrates that to some extent environmental rhetoric which shapes definitions of plastic problems can promote narrow solutions and consequently assign blame. In particular, rhetoric which strictly defines the plastic crisis in terms of waste and pollution and emphasizes consumer-facing products promotes assigning blame on consumers. This narrative shifting or blame assignment can be done directly, evident in industry actors' use of rhetoric which highlights post-consumer waste and solutions that promote consumer behaviour changes. This is also evident in civil society actors' explicit rhetoric to refute or reject blame or responsibility within the plastic crisis. Additionally, emphasis on consumer-facing products has been shown to be worrisome through the example of beverage bottles and boil water advisories in Indigenous communities in Canada. As well, my thesis research considers complacence to the uneven distribution of physical environmental hardships, evident in the examples of trading waste and the experiences of Indigenous communities in Canada. Importantly, environmental rhetoric and the persistence of environmental orthodoxies and manipulation of ideas trivializes these consequences or neglects them entirely.

Recommendations

Building off my research, this section presents five recommendations to promote meaningful action towards sustainability through promoting critique within the plastic crisis, advocating for systemic changes in society and science, and suggesting areas for continued study.

First, considering the ways in which my research has illustrated the prescriptive influence of the rhetoric of plastic waste and pollution, I recommend that everyone, especially those with decision-making power, challenge assumptions that focus the plastic crisis on waste. As demonstrated in my thesis, this emphasis on waste draws attention to the end of plastic's life cycle and highlights limited sources of waste or items prevalent in waste. As a result, solutions, especially recycling and recyclability, are designed to delay or prevent disposal, but these solutions have been shown to be inefficient and ultimately fail to address more holistic drivers of the plastic crisis: production and overconsumption. Instead of fixating the plastic crisis on waste and pollution, consider earlier stages of the plastic life cycle and reimagine the link between production and pollution. Doing so allows for the situation of the plastic crisis within the important environmental crises, like climate change, which may motivate effective governance measures. This framing also illustrates the ways in which production generally drives pollution and problematizes the accumulation of plastic overall. As a result, production broadly, rather than limited to specific plastic items, can be recognized in a way that necessitates ambitious reduction-based practices at the beginning of plastic's life cycle.

Second, as my thesis highlights underlying dynamics of power within society and even in science, I recommend thorough consideration of the systems and cultures which facilitate environmental problems at hand, especially the plastic crisis. For instance, as previously mentioned, Liboiron (2013) challenged the assumption of humanity's wastefulness and suggested that this culture of waste was imposed by power, particularly by the power of industry. In a similar manner, in order to challenge dynamics of power, it is essential that we recognize them. Within the plastic crisis, overconsumption is a systemic or cultural factor which is significantly shaped by dynamics of power as consumption drives profit.

Therefore, even if single-use plastic or packaging that has been commonly polluted is replaced with alternative plastic or reusable plastic, the underlying system of overconsumption has not been addressed (Stafford and Jones, 2019). As a result, issues that could be expected, as previously discussed, are increased littering of alternatives to plastic as well as the overconsumption of alternatives (Cherrier and Türe, 2022; Heidbreader et al., 2019). As well, overconsumption maintains power dynamics by allowing the discreet dispersion of responsibility in a way that shields government and industry actors from accountability. Specifically, overconsumption can be framed as an issue of consumer behaviour or choices, instead of recognizing the power industry has in shaping consumption. Considering the systems and cultures which foster environmental threats and the dynamics of power at play, we challenge scapegoating or the offloading of blame onto less powerful actors and hopefully promote meaningful accountability in its place.

Third, building off the risk of exacerbating social inequalities in narrative shifting, I recommend that attributions of blame for environmental problems essentialize consideration of relative power. That is to say that blame and responsibility for environmental ills, including the plastic crisis, should not be targeted at those with the least agency to affect change. For example, Cherrier and Türe (2022) discuss how, within the plastic crisis, civil society or consumers have been scapegoats for government and industry actors. This has been illustrated in my research findings, especially as the civil society documents assessed have stressed how this blame and society has not been deserved within the frame of actors' identities/perceptions. As well, my research demonstrates the risk of highlighting beverage bottles as drivers of pollution as it may lead to the blaming of vulnerable groups who rely on plastic water bottles, such as First Nations communities living with drinking water advisories in Canada. An additional risk is the exacerbation of inequalities evident in the way the initial announcement of the national ban on single-use plastic sparked concern for how safe drinking water could be provided without plastic water bottles to communities without access (Johnson, 2019). Another consideration touched upon is the issue of trading plastic waste, wherein waste from wealthier nations, including Canada, have overwhelmed

waste management systems in the Global South (Wuennenberg and Tan, 2019; Dauvergne, 2018). Consequently, this has exacerbated pollution and Asian nations in the Global South have been identified as significant sources of marine plastic pollution (Dauvergne, 2018). Without proper consideration of dynamics of power, there is a risk that these nations could be blamed for issues of plastic pollution that were contributed to by waste trade. Therefore, it is necessary that responsibility and blame consider the paradigms of power in order to place responsibility onto actors with greater agency to affect change as well as protect vulnerable communities.

Fourth, as my thesis's application of critical political ecology demonstrates the underlying dynamics of power within science and its impacts, I recommend that the realm of science be challenged and democratized as to uncover and address dominance in environmental science and relating environmental solutions. Evident in the discussion and application of the concept of environmental orthodoxies, taken-for-granted ideas within science are problematic and prescriptive. Assumptions of scientific objectivity and truth, especially in regard to environmental orthodoxies, runs the risk of not properly understanding environmental problems and failing to implement useful interventions (Forsyth, 2003). As well, the realm of science has been exclusionary to diverse sources of knowledge. Forsyth (2003) advocates for the democratization of science to consider different environmental realities from than that which has been imposed by predefined explanations of environmental problems through orthodox science. The goal of democratization is to include a diversity of knowledge in order to advance understanding of environmental degradation as well as promote solutions that better align with local experience or traditional knowledge of the environment (Forsyth, 2003). Similarly, Cortner (2000) advocates for the promotion of civic science to include community understanding and to ensure that science and its applications are not separated. Understanding that science and politics are intrinsically linked, I also suggest that more be done to recognize and challenge underlying power in scientific understanding in order to critically engage with justification of governance measures as well as allow other forms of knowledge to contribute to environmental explanations and solutions. This

recommendation is not to undermine or reject science but rather to better inform the use of science in decision-making and balance social and political factors.

Last, as my research has fortified the significance of environmental rhetoric's influence on the landscape of plastic governance, I recommend that continue study seek to identify strategies to implement the rhetoric as a challenge to dominant conceptions of the plastic crisis and corresponding solutions. My research has observed the ways in which different actors have utilized rhetoric to promote and justify actions within governance. Notably, civil society actors examined in my document analysis utilized environmental rhetoric to alternatively present the problems of the plastic crisis, including a focus on production. However, this rhetoric did not appear to effectively overcome dominant understandings relating to pollution, which was reinforced by all the actors in my document analysis. From this point, it would be interesting to consider how alternative rhetoric within the plastic crisis could be more influential as to challenge or overcome the dominant rhetoric. Similarly, as rhetoric has been linked to the solutions pursued within plastic governance, another important study would be an analysis of intervention feasibility and preferability. If rhetoric about plastic production could challenge the dominance of plastic waste and pollution, what specific solutions would be best to pursue and how can rhetoric play a role in promotion of solutions? Thus, I recommend that research build upon my findings and continue to push towards understanding that can inform meaningful advances in sustainability in Canada.

Conclusion

In conclusion, within the context of the recent announcement of a national ban on single-use plastic and the general landscape of plastic governance in Canada, my thesis demonstrates that environmental rhetoric has been shown to shape prominent understanding of problems in the plastic crisis in a manner that necessarily prescribes or informs solutions that reflect and reinforce underlying dynamics of power. In particular, the narrow emphasis on plastic waste and pollution in environmental rhetoric prescribes longstanding and prevalent solutions that rely on recycling. Importantly, rhetoric is not a

passive agent; it is employed by different actors: government actors, industry actors and civil society actors. Reflecting their significant power in society, government and industry actors have greater control over mainstream environmental rhetoric. Although civil society challenges and utilizes alternative environmental rhetoric, these actors too buy into and reinforce dominant understandings of environmental problems and solutions, especially in regard to highlighting plastic waste and pollution. As well, ideas and norms are manipulated into order to promote perceptions or identities of actors as means to gain acceptance and deflect responsibility, or blame. Furthermore, my research suggests that narrative shifts and tensions within the environmental rhetoric analyzed promotes governance gaps or blind spots which may worsen the physical environmental impacts of plastic as it promotes conditions of organized irresponsibility and narrows the scope of environmental interventions to the delay or prevention of waste disposal and pollution. The impact of this is lack of consideration for the compounding impact of growing plastic production as well as a failure to recognize or address overconsumption as a driver of production and pollution. Finally, my research indicates that to some degree, environmental rhetoric contributes to the uneven distribution of blame and environmental harm onto vulnerable communities in Canada and in the Global South. Specifically, rhetoric shapes problems and prescribes solutions in a manner that assigns blame to consumers and perpetuates environmental harm onto Indigenous communities in Canada through continued plastic production and onto communities in the Global South via waste trade. These findings and arguments are rooted in the application of concepts mainly derived from critical political ecology and constructivism.

The significance of this research is that it builds upon existing examinations of the complex landscape of environmental governance. I was able to consider how organized irresponsibility was facilitated through the use of environmental rhetoric, shaping of identity and norms, and offloading of responsibility. As well, I was able to draw a link between the prevalence of recycling solutions and prescriptive rhetoric of plastic waste and pollution. By examining the content of environmental rhetoric and narrative shifting, I explored how rhetoric is strategically deployed to maintain the dominance of

ideas and of actors, especially government and industry. This also highlighted how preceptive achievement and leadership differed from the likelihood of advancing effective plastic solutions. Additionally, this document analysis research allowed me to apply concepts from critical political ecology and constructivism to expand understanding of the political and ecological dimensions of the plastic crisis and governance in Canada. In particular, the significance of the coproduction of science and policy as well as the influential power of ideas and identities are advanced by my thesis research. Through my thesis, I challenge the prevalent emphasis on plastic waste and recycling measures to highlight the significance of plastic production's varied and increasing environmental harms. By examining the ways in which rhetoric shapes the problems we see and emphasize, I identified and explored gaps in governance that overlooks the severity of growing plastic production and plastic's contribution to climate change. Additionally, I suggest that these gaps are likely to undermine Canada's ability to address the plastic crisis and associated environmental threats, like climate change. Practically, this research highlighted areas of critique within the national single-use plastic ban as well as plastic interventions more broadly. As well, the research promotes more critical engagement with science and the democratization of scientific knowledge to advance environmental justice and recognize and overcome harmful environmental orthodoxies. Promoting deeper critique, through this research and continued research on the impact and uses of environmental rhetoric, facilitates opportunities to challenge dominant but ineffectual environmental solutions and meaningfully advance environmental sustainability in Canada. It is time to move beyond the longstanding 3R rhetoric and be cautious of the influence of environmental rhetoric at large. Evidently, plastic has transformed the world. However, acknowledging the influence of environmental rhetoric presents the opportunity to transform how we see and resolve the problems of plastic.

Appendix A: References for Document Analysis

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