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Industry Self-Regulation and Government: A Study of a Hybrid Regulatory Model to Realize the Circular Economy

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Abstract

Government often imposes social and environmental regulation on business to protect public interests. Alternatively, firms may collectively and voluntarily take on social and environmental responsibilities, which is frequently known as "industry self-regulation (ISR)." However, in the context of this qualitative study, neither of these two alternatives proved efficient.

I study the management of the Municipal Hazardous or Special Waste (MHSW) programs in Ontario, in which post-consumer household materials such as residual paint and dry cell batteries were collected and managed. According to the concept of the circular economy, preventing and/or re-entering waste into the product stream is key to solving global resource unsustainability, and this aim requires innovative business solutions. As my historical study of the period from 1981 to 2018 demonstrates, after business failed to voluntarily and consistently self-regulate to address used products, the government mandated waste management with a stringent regulation. Rather than spurring innovation, this prescriptive regime provoked escalating stakeholder conflicts. Ultimately, however, a hybrid regime evolved that married government regulation with ISR and kickstarted business proactivity and innovation. I study this regime to answer the central question: *How can business and government coordinate their actions to realize a circular economy?*

Based on this analysis, I propose a specific hybrid model in which business and government coordinate their actions by iteratively interacting to set rules and enforce them through five core practices. I compare this model with the pure models of ISR and government regulation to understand how it can address their respective shortcomings, such as business avoidance and underperformance, and how it can spur proactivity. Further, grounded theorizing enables me to identify four salient tensions that characterize this model: *decoupling versus integration*, *control over means versus ends*, *harmonization versus distinctiveness*, and as the outcome of the model, *compliance versus proactivity*. To secure proactivity and innovation, these tensions must be aptly

balanced. The model can be useful in similar contexts that present urgent socio-environmental problems but little chance for the formation of collective actions with innovative outcomes—a common situation in many circular economy initiatives.

Keywords

Hybrid Regulation, Collective Action, Industry Self-Regulation, Circular Economy, Resource Loops, Tensions, Post-Consumer Waste

Summary for Lay Audience

Business is increasingly deemed responsible for its social and environmental impacts. To address these impacts, government often imposes regulation on firms to protect public interests. Alternatively, firms may collectively and voluntarily take on social and environmental responsibilities and "self-regulate."

One of the emerging responsibilities of business is to manage the impact of post-consumer materials on the natural environment, usually known as waste. New approaches, such as the circular economy, put emphasis on the importance of finding innovative solutions to return used materials to production and consumption lines, rather than merely disposing of them. However, because managing waste is costly, firms may not voluntarily take this responsibility. Further, to collect and manage used consumer products, firms may need to work collectively, but collaboration is uncertain. As a result, government intervention is required. Nonetheless, in such new areas, it is unknown how government regulation can foster collaboration across firms to yield innovative solutions.

I study the management of the Municipal Hazardous or Special Waste (MHSW) programs in Ontario, in which post-consumer household materials such as residual paint and dry cell batteries were collected and managed. My historical study of the period from 1981 to 2018 demonstrates that both of the above alternatives (i.e., government regulation and self-regulation) failed to provide the expected results, especially the needed innovation to realize a circular economy. Ultimately, however, a hybrid regime evolved that married government regulation with self-regulation and kickstarted business proactivity and innovation.

Based on this analysis, I propose a specific hybrid model in which business and government coordinate their actions to make sure the intended outcomes are achieved. This model can be useful when firms are expected to cooperate to address a new business responsibility, but they are not motivated to do so. The model can also resolve many shortcomings of conventional government regulation and voluntary self-regulation.

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Glossary of Terms and Acronyms

Authority	Resource Productivity and Recovery Authority (RPRA); an organization introduced by the *Resource Recovery and Circular Economy Act, 2016* to uphold the monitoring and enforcement of the Act upon the termination of Waste Diversion Ontario (see below).
Industry Funding Organization (IFO)	A corporation that is designated for a waste diversion program (*Resource Recovery and Circular Economy Act, 2016*). An IFOs is funded by industry to fulfil the expected responsibilities on behalf of its members.
Industry Stewardship Plan	A plan for the management of a designated waste operated by, or for the benefit of, one or more stewards who are designated in respect of that waste (*Waste Diversion Transition Act, 2016*).
Municipal Hazardous or Special Waste (MHSW)	waste that consists of municipal hazardous waste or municipal special waste, or any combination of them, whether or not the waste is owned, controlled or managed by a municipality, as defined in *Ontario Regulation 387/16*.
Recycling	Refers to any operation by which materials are reprocessed into products, materials or substances, whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and reprocessing into materials that are to be used as fuels.
Steward	A person designated in respect of municipal hazardous or special waste under the *Waste Diversion Transition Act, 2016*, and its relevant regulations and rules. This term often refers to individual firms and may include but is not limited to brand owners, first importers, and manufacturers.
Waste Diversion Ontario (WDO)	A non-Crown corporation established under *Waste Diversion Act, 2002*, to "develop, implement and operate waste diversion programs for designated wastes in accordance with this Act and monitor the effectiveness and efficiency of those programs."

Chapter 1

1 Introduction

> *More than any other segment of our society in Ontario, the activities of private industry have focused public attention on the dangers of imperfect waste management practices. […] Corporate enterprise is faced with—and must confront—the sometimes conflicting considerations of profit maximization and the public welfare. […] [A]s a generator of waste, industry must be held accountable for the handling and treatment and/or disposal of that waste. (Ministry of the Environment, 1983: 5)*

In 1983, when the above statement was made in a proposal known as *Blueprint for Waste Management in Ontario*, regulators hoped that it would persuade business to voluntarily take an active role in managing post-consumer materials and develop innovative solutions to reduce, reuse, recover, and recycle waste. Nevertheless, in the context of this study, it took about three decades until signs of the expected proactive business responses appeared, and even then these business actions were not purely voluntary. Indeed, neither government persuasion (1980s and 1990s) nor its coercion through imposing regulation (2000s) caused the expected proactivity and innovation. However, in the early 2010s, a regulatory regime evolved that included elements of both government regulation and voluntary self-regulation by firms, which started to yield proactive outcomes.

This research aims to study a group of consumer waste management programs in Ontario to gain insight into this hybrid model and how it works. In this way, the current study will advance our understanding of how business and government can coordinate their actions to generate proactive business solutions when both voluntary self-regulation by business and government regulation are unlikely to produce the innovative solutions needed for social and environmental problems.

In this chapter, I prepare the ground for this exploratory journey. In doing so, I first outline how business has historically been preoccupied with mere acquisition and

transformation of natural resources, and how disregarding consumed (and limited) resources impacts the natural environment and society. I then explain how, to solve this problem, new approaches such as the circular economy call for innovative solutions to address the entire material loops (e.g., by re-entering waste into business operations). However, these approaches require active involvement from collectives of firms, and business might have little or no incentive to voluntarily adopt such costly practices. Therefore, the classical solutions, such as conventional forms of industry self-regulation (ISR), may not generate the needed proactivity. Similarly, formal government regulation may also fail to spur costly proactivity by firms who are typically preoccupied with profit maximization. Accordingly, after describing this research gap, I explain how I studied a hybrid model that can fill this gap to help realize a circular economy.

1.1 Business and Material Resources: A Broad Perspective

Society is becoming increasingly sensitive to the negative impacts of business on the natural environment. Business is recognized as one of the major actors that can help or hinder sustainable development—that is, development that meets "the needs of the present generation without compromising the ability of future generations to meet their own needs" (WCED, 1987: 43).[1] A core practice by which business influences sustainable development is material resource acquisition and transformation, until the final product or service is delivered to consumers. Nonetheless, what is perceived by firms as a "final" product is not the final state of material resources in the broader ecological and social systems. The material phases before and after resource acquisition and transformation have been largely neglected by most firms, leading to environmental harm and resource overconsumption. As a result, the products and services that we currently produce and consume require the regenerative capacity of 1.6 Earths (WWF, 2016). Clearly, this situation is far from sustainable. Moreover, it hinders "intergenerational equity," which is a tenet of sustainable development.

[1] I use the word "sustainability" as a general term to refer to the state in which sustainable development is practiced. I may also use "business sustainability" when the emphasis is particularly on the role of business in sustainable development.

Both business practice and theory have historically developed based on this limited view of entire material cycles. Management theory, for example, is mainly built upon the assumption of unlimited natural resources. Even those management scholars who have addressed resource constraints did not tackle the limits of material resources in the macro perspective. For instance, based on industrial economics literature, lack of access to a resource may create barriers to entry for new entrants not because of the planet's limited regenerative capacity, but because of proprietary access of industry incumbents to a specific resource (Porter, 1980). Similarly, the resource-based view of the firm argues that firms can achieve sustained competitive advantage by utilizing resources that are valuable, rare, inimitable, and organized (Barney, 1991); yet even these rare resources are usually non-material assets that are exclusive to the firm. In contrast, assets such as common raw materials are abundant and accessible to all rivals. Firms consume these seemingly limitless resources to create and capture value and the boundary of a firm has been conventionally limited to the provision of products and services, not what occurs before and after it (Davis, 2017).

The limited attention of business to material cycles is arguably due to the fact that business and society operate on different levels. However, the cross-interaction of these levels is now under more serious scrutiny by various actors (Geels, 2011). As such, growing attention is being directed to business's role in the overconsumption of resources and the post-consumption phase of materials. In the dominant "take, make, waste" model of doing business, used resources return to nature as "waste" (i.e., undesirable materials that should be jettisoned, and are often left to the care of society-level actors such as local governments).

Emerging models challenge this linear approach to resources. For example, the industrial symbiosis approach suggests that separate industries can exchange materials, energy, by-products, and waste materials, as a firm's waste can be another firm's input. This synergistic approach can create competitive advantage when industries collectively utilize geographic proximity (e.g., in eco-industrial parks) and design their business models based on cooperative interactions to exchange input and output (Bansal & McKnight, 2009; Chertow, 2000; Paquin & Howard-Grenville, 2012). Extended producer

responsibility and product stewardship are two other approaches that expand the responsibility of firms to include the post-consumer phase of products, deeming business accountable for appropriate management of used materials (Kunz, Mayers, & Van Wassenhove, 2018; OECD, 2016). Cradle-to-Cradle is another such methodology, providing tools to consider entire material cycles in the design and manufacturing of products (McDonough & Braungart, 2002). More recently, the circular economy has been introduced as an exhaustive concept that synthesizes various pre-existing approaches and tools, including those mentioned above, to close resource loops (European Environment Agency, 2016).

1.2 The Imperative of the Circular Economy

The circular economy approach suggests that it is necessary to decouple economic growth from environmental degradation and resource depletion, and that in doing so, we must close resource loops and transition to a circular society (Lieder & Rashid, 2016; Murray, Skene, & Haynes, 2017). This approach is associated with a variety of distinct pre-existing concepts and proposes an aggregation of several strategies to extend resource life cycles (Merli, Preziosi, & Acampora, 2018). Those who develop these strategies, such as the Ellen MacArthur Foundation, highlight the capacities of existing tools and knowledge in prolonging resource cycles.

The concept and models of the circular economy aim to keep biological and technical materials, components, and products at their highest utility and value in their most extended life cycle (Bocken, Olivetti, Cullen, Potting, & Lifset, 2017; Geissdoerfer, Savaget, Bocken, & Hultink, 2017). In contrast to the “take, make, waste” approach, a circular economy aims to close the loop, namely by designing out waste and pollution and converting waste into food for other processes (Ellen MacArthur Foundation, 2013). The sharing economy, remanufacturing, reverse logistics, and recycling are among the most common approaches in the utilization of the concept.

As the idea of the circular economy has evolved, it has attracted different stakeholders, especially government and business, each with their own agenda and interpretations (Lieder & Rashid, 2016). The concept is being used increasingly to draw attention to the

critical problem of resource scarcity and the imperative of closing resource loops. The core message of this concept is arguably the most important issue of this century and could help humankind cement sustainable development.

Thus, realizing the circular economy is imperative—but exactly how to achieve that realization remains an ongoing question. Indeed, most research on material loops is practical and applied, concerned with technical issues that require deploying engineering and operational tools, such as life cycle analysis or material flows (Blomsma & Brennan, 2017; Merli et al., 2018; Reike, Vermeulen, & Witjes, 2018).[2] Many scholars have drawn attention to the need for studying the diverse social, political, legal, cultural, cognitive, and ethical aspects of closing resource loops (Blomsma & Brennan, 2017; Boons & Howard-Grenville, 2009) at different macro, meso, and micro levels, using both quantitative and qualitative methods (Hoffman, 2003). Some theoretical aspects of the circular economy have received limited scholarly attention, such as socio-cultural dimensions and institutions (Fischer & Pascucci, 2017; Moreau, Sahakian, van Griethuysen, & Vuille, 2017), or the role of stakeholders (Kunz et al., 2018). Still, as Walls and Paquin's (2015) review of research on industrial symbiosis reveals, organizational perspectives on material loops remain fragmented and many questions are still unanswered.

This thesis aims to tackle one of these gaps in management theory. Before explaining this gap, I first offer some background information regarding the empirical context of my research, which will help to better frame the knowledge gap and the exact research problem that this research addresses.

1.3 The Context, Motivation, and Study

In Canada, the need for business's involvement in managing consumed materials came to the attention of the public and regulators as early as the 1980s. For instance, in 1983, in

[2] An exception might be the research on sustainable business model innovation, which includes studies that deal with resource loops; yet, this area still remains largely unexplored. For a review, see Bocken, Short, Rana, and Evans (2014) and Urbinati, Chiaroni, and Chiesa (2017).

the Ontario, the Ministry of the Environment published a proposal, known as *Blueprint for Waste Management in Ontario*, that called for cooperation between the government, municipalities, industry, and public in this regard. Later, in the mid-1990s, the Canadian Paint and Coatings Industry, persuaded by the provincial government of British Columbia, instigated programs to collect and manage residual coating material from consumers. Through events like these, waste management was gradually deemed a responsibility not only of the government, but of business too.

The response from business, however, varied—and continues to vary—significantly across different jurisdictions. In some provinces and industries, such as in the above-mentioned industry in British Columbia, the member firms shaped collective actions by establishing ISR regimes (Barnett & King, 2008; King, Prado, & Rivera, 2012; Lee, 2009) and coordinating their actions to manage post-consumer materials. In contrast, most industries in Ontario avoided actively and consistently taking on such responsibility, except for a few industries that established short-lived programs for consumable containers and packaging materials (e.g., single-use soda cans).

Motivating businesses to manage post-consumer materials is difficult for several reasons. On the one hand, such programs add the weight of further operations onto firms. The costs of these operations can impact firms' financial competitiveness, especially when firms are not harmoniously involved in such initiatives across geographical regions. Moreover, most firms cannot collect their used products individually—historically, such operations have been done by aggregating all similar consumer waste, regardless of their producers. Thus, transferring the responsibility of managing everyday post-consumer materials to producers would often require them to act collectively. This characteristic makes waste management distinct from the many firm-level environmental responsibilities of business, and helps to explain why a collective action was not voluntarily undertaken by most industries in Ontario. In the absence of a shared will and readiness for cooperation to adopt a collective action to collect and manage waste, such an initiative is unlikely to be embraced by average individual firms.

Business's avoidance of voluntary self-regulation ultimately led to the imposition of a regulatory regime by the Ontario government. Nonetheless, the collective nature of waste management that called for aggregation of materials resulted in new problems, as translating it into individual firm-level mandates was difficult. As a result, the regulatory regime that the government designed proved inefficient. Far from exhibiting the proactivity and innovation needed to solve the bigger problem of used materials, firms merely focused on minimal compliance with the costly regulation.

This research is motivated by the observation that both voluntary and mandatory regimes (i.e., ISR and government regulation) were tested and failed in yielding the desirable outcome of transferring the responsibility of used products to business in Ontario in a way that results in innovative solutions to close material loops. Voluntary solutions by business failed because in the absence of a common will to collaborate with other firms, the needed collective action was not fulfilled, except in a few isolated cases. Government regulation also failed because, in that complex multi-stakeholder context, it could not define firm-level actions that were both efficient and led to innovative solutions for the extensive consumer waste in different industries. Hence, the problem of business solutions for waste remained unsolved for more than three decades.

Further motivating this study was the fact that after several years of contradiction among business, government, and other stakeholders, the regime evolved in a way that instances of proactive business actions were noticeable. This proactivity was a harbinger of innovative solutions that have started to return various types of waste to resource loops, rather than disposing of them. For instance, a few firms sought new solutions to upcycle used tires to more valuable playground mats, or to develop new products from low-quality residual paint. My investigation in the field demonstrated that the resultant regime blended some elements of government and self-regulation. This research aims to study this regime.

To this end, I have studied the so-called Municipal Hazardous or Special Waste (MHSW) program in Ontario, including nine broad material groups that fall under the same regulatory regime and constitute materials such as coatings, solvents, and pressurized

containers. This group is important for two reasons: (1) some of the first representations of proactive business involvement emerged from this program, and (2) the group includes various programs for different materials, and this helps me to explore the repetitive patterns based on which the evolved model operates and develop theory. By focusing on this phenomenon, I was able to define an inductive qualitative study and collect extensive data from interviews with different key members in all stakeholder groups, as well as observations, available public data, and some internal documents. I initially studied the history of the consumer waste management programs in Ontario (1981 to 2018) to better understand the nature of the evolved regime, and as the ultimate goal of the research, investigated the patterns and characteristics of the regime that can result in proactive business actions.

The study makes several practical contributions, as it can help businesses and regulators to make informed decisions and manage the transition to a circular economy more effectively. As an illustration, since the inception of the MHSW program,[3] about 10,000 tonnes of residual materials have been collected each year in Ontario in the paint and coatings material group alone, which has had a significant environment and financial impact. Indeed, most of resources we consume are converted to different forms of waste. Hence, given the limits of material resources, any solution for the transition to a circular economy is a driver of sustainable development (Millar, Mclaughlin, & Börger, 2019).

1.4 The Theoretical Positioning and Knowledge Gap

Based on the motivations and goals outlined above, this research is positioned squarely in the field of ISR. In self-regulatory regimes, as a form of collective action by business, a group of firms (generally referred to as "industry") set rules to coordinate their actions to meet a collective responsibility, such as environmental protection (Baron, 2016; Gupta & Lad, 1983; King et al., 2012). ISR can take various forms (for a taxonomy see King et al.,

[3] The MHSW program is one overarching program that covers a number of smaller subprograms for different MHSW materials. Therefore, in this thesis, I will use "the MHSW program" to refer to the whole regime and "MHSW programs" to refer to diverse embedded cases within the overarching program.

2012). The field of ISR has benefited from many outstanding studies, ranging from the collective actions studied by institutional, behavioural, and political economists (most importantly, Elinor Ostrom), studies in policy and law, and a number of works in business and strategy. Yet, unexplored gaps and grey areas remain. Those gaps that pertain to this research are outlined below.

First, ISR is often known as a proactive strategy for firms that aspire to higher goals than compliance with formal requirements. Rather than avoiding and resisting regulations, such firms respond to social expectations even before government regulation commands the same (Gupta & Lad, 1983; Rivera, Oetzel, Deleon, & Starik, 2009). Nevertheless, scholars have noticed that ISR can become a self-serving measure by business to forestall regulation and protect business from stakeholders like regulators and environmental activists by adopting minimal actions (Barnett & King, 2008; King & Lenox, 2000). In a broader sense, many studies on voluntary actions for environmental protection have failed to find evidence that participating firms demonstrate better environmental performance than non-participants (Borck & Coglianese, 2009; Darnall & Sides, 2008; Rivera & de Leon, 2004). Therefore, given that the circular economy (like the studied waste management programs) calls for proactive involvement of business to explore innovative solutions, it remains unknown what type of self-regulation can secure proactivity and innovation. This question is of critical importance, because the alternative to self-regulation—that is, government regulation—is even less likely to lead to proactivity, as firms frequently respond to such regulation with minimal compliance-based actions and "pinhole seeking".

Second, ISR and government regulation are often viewed as substitutable alternatives—one would obviate the need for the other. Further, some scholars have warned policy makers that intervention in voluntary collective actions can crowd out participation and harm the outcomes (Frey, 1994; Ostrom, 2000a). Yet, both management and policy literature have long acknowledged the influence of government on self-regulation in one way or another (Gunningham & Rees, 1997; King et al., 2012; Reeson & Tisdell, 2008). Still, the blurry boundary between the two alternatives has remained underexplored in the self-regulation literature. In contrast, many policy scholars have emphasized the

advantages offered by innovative combinations of the two alternatives (Rubenstein, 2011; Sinclair, 1997). Arguably, such combinations are particularly important when firms resist voluntary self-regulation, as is the case in this study, and demands that we explore how government regulation can drive self-regulation that results in innovative solutions towards a circular economy.

My collected data from the MHSW program revealed that both of these gaps can be addressed via the studied phenomenon: not only were self- and government regulation ultimately blended and their actions coordinated towards the same goals, but also, after several decades of avoidance and contradiction among the actors (business, provincial government, municipalities, service providers, etc.), instances of proactive business actions began to emerge. This thesis aims to investigate this phenomenon and answer the broad question: *How can business and government coordinate their actions to realize a circular economy?*

1.5 Findings and Contributions

By exploring the patterns among different practices in the MHSW programs, I propose a model which I call "hybrid regulation," that involves both government and business in both rule setting and enforcement—the two stages of a regulatory regime. This hybrid model can resolve the problems of either alternative, such as business avoidance of self-regulation, free riding, information asymmetry, underperformance, and minimal compliance with rules rather than developing innovative solutions. Due to these common problems, which are widely recognized in the literature, aiming more of either of government regulation or self-regulation can hardly trigger a circular economy. Instead, the solution can be found in innovative mixes of the two, such as the proposed model.

Further, to understand the characteristics of this model, I use a grounded theorizing approach (Strauss & Corbin, 2008), which reveals that the marriage of two alternatives is characterized by four tensions. At the outcome level, an ongoing tension between *compliance* and *proactivity* is salient. Three other tensions also shape the characteristics of the model: *decoupling versus integration*, *control over means versus ends*, and *harmonization versus distinctiveness*. I have identified the underlying mechanisms that

sustain these tensions, which will be explained in detail. I argue that these tensions are constructive, and that the hybrid model requires the tensions to be managed in balance.

This research is important for several reasons. Theoretically, it represents a case which is currently deemed extreme (Hällgren, Rouleau, & de Rond, 2018) but seems to be an emerging and growing model. This model extends the field of self-regulation. Conventional forms of ISR and government regulation have shortcomings, especially with respect to producing truly proactive outcomes when doing so is costly. However, the heightening magnitude, urgency, and complexity of environmental issues demand urgent solutions. As such, efficient coordination mechanisms to respond to a taxing collective responsibility of business, such as closing the resource loops, remain underexplored. On the one hand, voluntary self-regulation is costly and might not be shaped organically; and even if business takes action, it might not lead to the innovative results expected. On the other hand, government regulation in such a new field may hinder innovation by establishing command-and-control regimes and setting compliance-based requirements on individual firms. The proposed model can prevent such problems.

Moreover, studies on group efforts for sustainability often assume that participants, such as firms and government, are cooperative. This study, however, investigates a context with minimal collaboration among firms, governments, and stakeholders, where firms do not shape a self-regulatory regime, nor do different actors collaborate to help the consequent government regulation succeed. My findings suggest that achieving a circular economy is possible in the absence of organically shaped cooperative relationships; in fact, a confrontational relationship that is defined aptly and managed continuously can also generate the expected outcomes. This finding is particularly important for sustainability challenges which require urgent measures to be taken by business. Formation of collaborative relationships may take many years, and our present environmental situation does not afford the luxury of long-term norm-based institution formation processes that engender such collaboration. When firms are unlikely to take proactive and timely self-regulatory regimes, a hybrid model can deliver better outcomes.

This thesis is organized as follows. In Chapter 2, I review the literature to frame the research question. In Chapter 3, I explain the specific context for my research (i.e., the MHSW programs in Ontario) and the research process. In Chapter 4, I develop the case narrative that reflects how the programs evolved over nearly four decades, which is relevant for comparing the hybrid model with the two conventional alternatives (ISR and government regulation). Chapter 5 explores the dualities and ongoing tensions that characterize the hybrid model. In Chapter 6, I explain the hybrid model and discuss the pertinent theory. Chapter 7 explains how this research contributes to our knowledge about collective actions that can facilitate the circular economy and other collective responsibilities of firms in general, its contributions to practice, the limitations of this case study, the proposed future research, and conclusions.

Chapter 2

2 Theoretical Overview

In Chapter 1, we noticed how firms have historically been preoccupied with mere acquisition and transformation of raw materials, disregarding the higher-level resource cycles in the natural environment, and how society's expectation of business with respect to closing resource loops has surged in recent years. When a new set of expectations emerge in society, business may adopt different actions to align with these expectations. In a conceptual endeavour, Rivera et al. (2009) categorize these strategies in six groups. At the highest level of cooperation, business responds to societal-level expectations by adopting independent self-regulation and taking leadership in environmental protection proactively; such a response is *beyond compliance* as there is no policy to comply with yet, and the action is taken on a voluntary basis. In contrast, the other five business strategies are business responses when regulation is already imposed, or at least impending. These five strategies include *acquiescence*, *compromise*, *avoidance*, *defiance*, and finally, *manipulation* as the most resistant strategy, where business aggressively challenges the environmental policy (Rivera et al., 2009). Put differently, business can either voluntarily and proactively respond to emerging societal-level expectations, even before government policy mechanisms are activated, or it can play with government regulation in one way or another. Each of these approaches might be taken by an individual firm or by a group of them (i.e., an industry).[4]

When a collective of firms responds to emerging expectations, members need to coordinate their efforts among themselves. In this chapter, I review the literature on how business coordinates and responds to societal and environmental expectations. Research has explored such collective responses in the form of voluntary collective actions and industry self-regulation (ISR), analyzing how the collective efforts are shaped and how the incumbents coordinate among themselves. Furthermore, although these strategies are

[4] Following the tradition of the literature, the term "industry" is used here to refer to a collective of firms that shares specific interests and commonalities in the context of discourse. I may also use "the industry" to refer to a particular group in the context of this study.

generally built on the explicit or implicit assumption of proactivity (i.e., the voluntariness of the self-regulatory regimes), the literature has also acknowledged that exogenous actors may intervene in these actions in various ways and at various stages. I review the literature on such interventions as the starting point of this phenomenon-driven research.

2.1 Conventional Collective Actions to Protect the Commons

Those entities, such as individuals or groups, that share an interest may choose to pool their resources, set rules, and take actions collectively to serve their collective interest (Olson, 1965). Collective actions arise when the efforts of two or more actors are required to accomplish an outcome (Sandler, 2015). Collective action may also preserve the collective good: one which, if provided to one group member, cannot be withheld from any of the other members (Oliver, 1993; Olson, 1965). If one entity's use of a collective good precludes the others' use, the collective good is known as "rivalrous." Such goods are generally known as "common goods" or "commons," and include goods like fisheries or public parking lots. These common goods might be regulated by governments, but they can also be managed by people negotiating rules through traditions, norms, and practices (Ostrom, Gardner, & Walker, 1994). If collective goods are not rivalrous, they are typically labelled as "public goods," a category which include items such as roads, educational systems, and legal systems (Apesteguia & Maier-Rigaud, 2006; Helfrich, 2012).

Collective actions control common goods, as short-term self-interests generally fail to satisfy collective interests. Using common resources will benefit the single entity at the costs to the collective, resulting in "the tragedy of the commons," one type of market failure (Hardin, 1968, 1994). Collective actions can prevent these failures and thus, have been long studied by researchers. As Oliver (1993) discusses, many formal models of collective action seek to build on independent actions that ultimately change the broader landscape in an evolutionary process. Those studies of collective action that address common goods deal with concepts such as reciprocity, achieving benefits, and free riding (Ostrom, 1990, 2000b, 2010a; Ostrom et al., 1994).

Collective action is a broad concept that has been studied in a variety of fields. Collective actions can be used by collective protestors to achieve social change in the form of social movements (e.g. Schneiberg, King, & Smith, 2008; Sine & Lee, 2009), by entrepreneurs to gain socio-political legitimacy or shape a favourable regulated environment (Gurses & Ozcan, 2015; Lawrence, Hardy, & Phillips, 2002), or by industry associations to promote and protect members' agendas (David, Sine, & Haveman, 2013; Greenwood, Suddaby, & Hinings, 2002). Among these broad areas in the literature, the focus of this research is on those actions taken by industry members—that is, members of a group of firms that share an interest, even if they do not belong to one formally established "industry" or do not include all members that share the same interest. This specific type of collective action is known as ISR (Marques, 2017)F.

2.2 Industry Self-Regulation

ISR is a coordinated effort to set the rules of business by firms in an industry (Berchicci & King, 2007; King et al., 2012), typically done by an industry-level (as opposed to governmental or firm-level) organization (Gunningham & Rees, 1997), such as an industry association (Héritier & Eckert, 2009). Self-regulation is an institutional complement to existing government regulatory processes (Gupta & Lad, 1983). As a subset of collective actions, ISR is still a somewhat broad concept. With respect to what is being regulated, industry can regulate market entry (e.g., professional licences mandated and coordinated by industry-level organizations, such as medical councils), establish standards for uniform operations (e.g., safety standards), or, in specific contexts, set rates (e.g., harmonized prices) (Gunningham & Rees, 1997; Gupta & Lad, 1983). In recent years, with increasing social and environmental concerns, self-regulatory regimes mostly revolve around such concerns (Baron, 2016).

This research focuses on those actions that are taken in response to a collective responsibility (King et al., 2012). Collective responsibilities exist when business imposes externalities on other stakeholders by inefficiently using communal resources without paying for them. Often, the rights of these common goods are not clearly defined and protected (Helfrich, 2012); therefore, firms exploiting them can breach the rights of other stakeholders or pose a harm to society. The response of business to these collective

responsibilities should be inclusive across the industry, because all firms share them. In practice, however, not all self-regulations are inclusive. For instance, in one form of self-regulation known as "certification programs," some firms opt to participate to signal their superior performance and enjoy specific benefits almost individually (e.g. Blackman & Rivera, 2011).

Self-regulation can be a preventative strategy: in response to the externalities created by business, stakeholders may attempt to impose the costs on firms, which may lead to stakeholder sanctions such as campaigns led by environmental NGOs. By shaping an action collectively, firms can take the lead and coordinate to avoid such costly sanctions. Research has demonstrated that self-regulated firms are less likely to be targeted by confrontational activists, as these firms are harder targets if a campaign is launched (Baron, 2012; Gupta & Innes, 2014).

Self-regulation is also a strategy to forestall or impact potential government regulatory regimes when new expectations are emerging. As noted, scholars have identified various strategies that firms may employ to take the lead, collaborate with policy makers, or resist the public policy or its formation process (see Hillman, Keim, & Schuler, 2004 for a review). Self-regulation is basically known as a cooperative tactic that proactively surpasses the expected compliance level (Rivera et al., 2009). Nevertheless, this "proactive" tactic might be utilized to pre-empt or weaken stringent government regulation (Darnall & Sides, 2008; Johnston, 2006; King et al., 2012) or be influential in forging future regulations (Delmas & Terlaak, 2001; Lee, 2009).

A well-identified trigger of ISR is catastrophic past events. For example, in the context of the chemical industry, the Responsible Care program was formed after a tragic accident in a Union Carbide facility killed approximately 10,000 people in Bhopal, India (Fauchart & Cowan, 2014; Rees, 1997). Industry, as a whole, receives considerable benefits by establishing voluntary programs. The positive outcomes often spill over to all of the firms in a given industry, even if some have not participated in the program (Lenox, 2006). Conversely, a negative event for one firm in the industry can result in less harm for the others, such as less reduction in stock prices of other firms (Barnett & King, 2008).

Upon introduction of a self-regulatory regime, individual firms may opt to participate for various reasons. Participation demonstrates member firms' responsiveness to stakeholder wants, which helps reputation-sensitive firms protect their social licence to operate (Gunningham, Thornton, & Kagan, 2005). Participating in some of these programs can secure access to technical assistance for individual firms (Khanna, 2001), reduce the cost of compliance, or create producer benefit (Blackman & Rivera, 2011; Maxwell & Decker, 2006). Voluntary actions may even create competitive advantage for firms when public awareness about environmental protection is noticeable (Arora & Cason, 1995).

2.3 The Outcomes and Effectiveness of Self-Regulation

Business argues that, compared to imposed government regulations, voluntary initiatives are not only more efficient and less costly, but can also foster innovation and go beyond the baseline requirements (King et al., 2012). Yet, empirical works do not always support this thesis. For example, in a study on the Responsible Care program, King and Lenox (2000) demonstrate that in the absence of an "iron fist" for sanctioning, participants did not improve their environmental performance faster than other industry members did. Howard, Nash, and Ehrenfeld (2000) assert that self-reporting by the firms participating in Responsible Care merely reflected those firms' internal standards, which may not conform with expected standard practices and institutional norms (see also Howard-Grenville, Nash, & Coglianese, 2008). Similarly, in the context of ski recreation facilities, Rivera and de Leon (2004) observe that participants of a sustainability voluntary program, despite acquiescing to respond to institutional pressures, were more likely to achieve lower ratings in third-party environmental assessments compared to non-participants.

Overall, although voluntary environmental initiatives are diverse, empirical works have found that those actions that are not monitored by third parties and lack performance standards have not enhanced firms' social and environmental performance (Borck & Coglianese, 2009; Darnall & Sides, 2008; King & Lenox, 2000). Barnett and King (2008) suggest that the ultimate purpose of such programs (e.g., environmental performance) might have been misunderstood and replaced with disclosure of information about the environmental performance of firms, but stakeholders may deem the information *per se* a

benefit of the program. The advantage of collective initiatives to society improves upon imposing tighter requirements and control mechanisms, such as third-party monitoring and verification, public disclosure of the results, and sanctioning non-compliers by expelling them from the program (King & Lenox, 2000; Lenox & Nash, 2003). Still, enforcement is the Achilles' heel of conventional ISR (Héritier & Eckert, 2009).

2.4 The Many Shades of Voluntariness

The literature on collective action and ISR generally assumes that such actions are shaped voluntarily. For instance, in the so-called "green clubs," as one type of self-regulation, upon formation of the initiative by a firm (or group of firms), other impacted individual firms, based on their heterogeneous motivations and incentives, follow independent cost and benefit assessments and decide whether or not to join the club (Blackman & Rivera, 2011; Potoski & Prakash, 2013; Prakash & Potoski, 2007).

Furthermore, scholars studying collective action have warned policy makers about the disadvantages of intervening in voluntary initiatives (Ostrom, 2000a). Evidence suggests that when normative mechanisms shape and manage a collective action, external regulation can "crowd out" the participation of actors. Such exogenous interventions can impact intrinsic motivations and consequently harm the outcomes of the action (Beretti, Figuières, & Grolleau, 2013; Frey, 1994; Montgomery & Bean, 1999; Ostrom, 2000a; Reeson & Tisdell, 2008).

Nevertheless, purely voluntary actions by firms may not be as ubiquitous as expected. In many cases, even if a collective action to protect the commons has been shaped voluntarily, participation of individual firms is due to some form of external forces, such as peer pressure. In collective actions with higher external forces, provisions might be in place to resolve information asymmetry and identify free riders, followed by a type of penalization mechanism for non-compliant actors. For these reasons, collective actions are sometimes identified as "quasi-voluntary" (Ostrom, 2000a). External pressures generally increase the costs of neglect.

The same mechanisms apply to ISR. At the collective level, the literature has long identified the role of costs, demonstrating that industries regulate themselves when the cost of adopting a self-regulation program would be less than the externally imposed costs from not undertaking self-regulation (Gupta & Lad, 1983: 421). At the individual level, the same cost-benefit mechanism applies to a firm's decision of whether or not to join the existing self-regulatory program. External pressures, such as activists' boycotts and government regulation, are serious threats that urge or coerce firms to adopt ISR (Baron, 2016; Egorov & Harstad, 2017; Maxwell, Lyon, & Hackett, 2000).

Arguably, when the costs of non-participation exceed a certain level, posing high risks to firms, the nature of the program will become far from voluntary. Under such pressures, some reluctant firms may resort to ceremonial adoption, adopting practices that are decoupled from the firm's core operations in a way that does not generate the ultimate expected outcomes (Bromley & Powell, 2012). One example is the ceremonial adoption of ISO 14000 standards (Boiral, 2007), where firms meet official requirements without realizing the expected superior environmental performance (Arimura, Darnall, Ganguli, & Katayama, 2016; Blackman & Rivera, 2011; Gamper-Rabindran & Finger, 2013). In this way, ISR can become merely a low-cost response to exogenous pressures—a response that decouples either self-imposed policy from practices, or practices from the intended outcome (Bromley & Powell, 2012).

2.5 Government Intervention in Self-Regulation

Scholars have long noticed the ubiquity of exogenous intervention in self-regulatory regimes, especially by governments (Gunningham & Rees, 1997; Huyse & Parmentier, 1990; King et al., 2012). In general, every regulatory regime constitutes two main activities: (1) rule setting and (2) enforcement (i.e., deciding how compliance with the rules will be monitored, controlled, and sanctioned, if necessary). Government may influence or intervene in either of these stages in different ways.

Very few studies have delved into self-regulation in the government's shadow (Egorov & Harstad, 2017). In an early attempt to explore these interventions, Rees (1988) identified three types of self-regulation based on government intervention. In *voluntary self-*

regulation, government has no direct intervention. In *mandated full self-regulation*, government sanctions and monitors the regulation from a distance, but completely outsources both rule setting and enforcement to industry. Finally, in *mandated partial self-regulation*, industry partially regulates itself; in other words, government relinquishes *either* rule setting *or* enforcement to industry, but not both (Rees, 1988).

As such, "self-regulation" can be a deceptive concept (Gunningham & Rees, 1997). Whereas this term conveys endogenous coordination (as opposed to direct government regulation), it is sometimes created, evolved, or enforced by actors that are exogenous to the industry, such as regulators (King et al., 2012; Rees, 1988). The involvement of strong exogenous actors, including regulators, blurs the boundaries of a case of self-regulation.

Scholars of policy have not only acknowledged this interaction, but also found it potentially useful. Huyse and Parmentier (1990) discuss that, beyond the pure models of government regulation and self-regulation, there is an overlooked grey area that is run by "sponsored regulation," where the state encourages the formation of norms by various private parties. Although their arguments mainly revolve around norm formation and codes of conduct, these scholars also reiterate the need for further work on this grey area. Another attempt, albeit in the context of law and policy making, was made by Priest (1997), who proposed five models of self-regulation with different degrees of power delegation from government to industry.

Table 1 summarizes the characteristics of the various alternative institutional solutions to address market failure. Two of the solutions are pure models: voluntary action by industry and government regulation. The two other solutions are derivatives of self-regulation in which elements of government regulation are used to secure the formation or implementation of the required action to protect the environment. Figure 1 graphically demonstrates the pure and mixed models considering the role of business and government in rule setting and enforcement stages.

Table 1. Pure and Rees's (1988) Mixed Regulatory Regimes

Type of Action		Process of Regulation		Instances of Representative Literature
		Rule Setting	**Enforcement (Control and Sanctioning)**	
Pure Forms	*Conventional Collective Action and Voluntary ISR*	By business	Ranging from no enforcement to internal monitoring or third-party voluntary certification	(King & Lenox, 2000; Ostrom, 1990; Ostrom et al., 1994)
	Government Regulation	By government	By judicial power and governmental coercion	Brewer & DeLeon, 1983; Sabatier, 1975
Main Mixed Forms	*Mandated Full Self-Regulation*	By business	By business, but monitored by government to ensure effectiveness	Rees, 1988; see also Huyse & Parmentier, 1990
	Mandated Partial Self-Regulation	By business	By government	
		By government	By business	

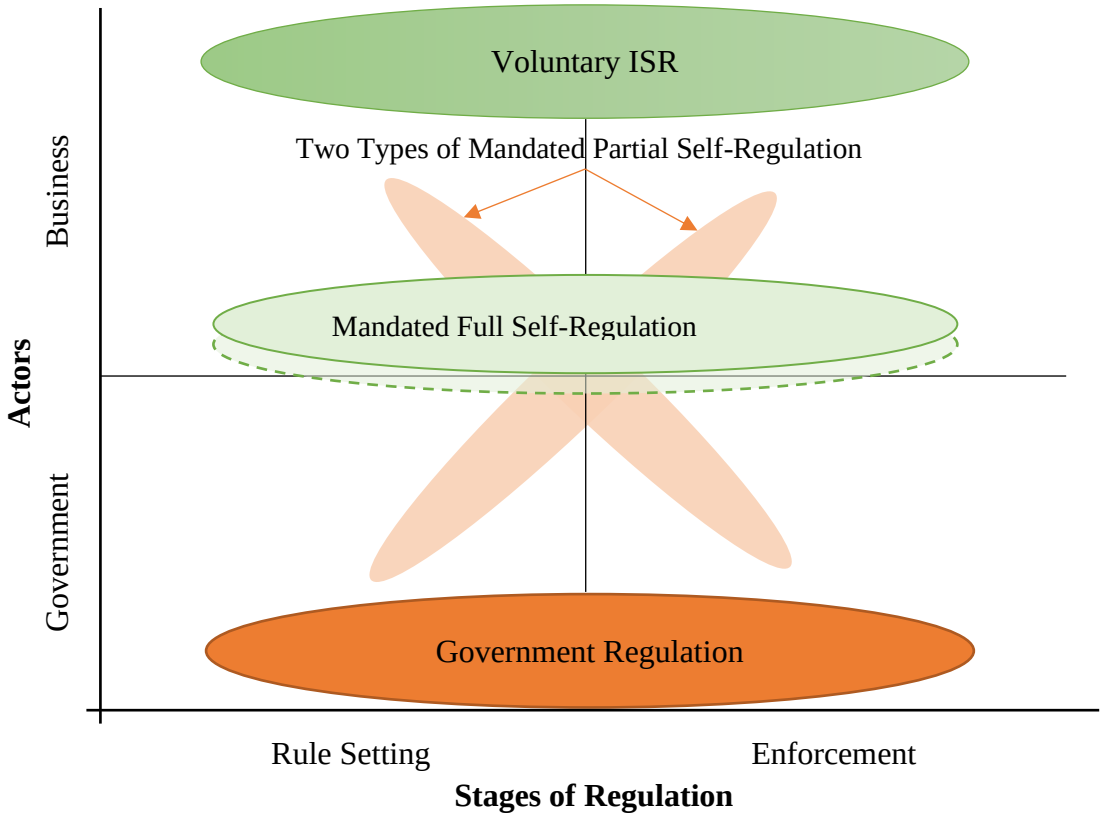

Figure 1. Representation of Pure Regulatory Forms and Rees's (1988) Mixed Forms

Each of the regulatory models has its own shortcomings. ISR has been criticized for industry avoidance and delay in self-regulation, a lack of transparency (as it is run by the private sector), free riding and inadequate incentives to ensure wide-scale participation, and weak outcomes due to ineffective endogenous compliance and enforcement mechanisms, among other reasons (Egorov & Harstad, 2017; King et al., 2012; Rubenstein, 2011). Yet, government regulation involves common drawbacks as well: it is a costly and lengthy process to establish such regulation, it may not be designed with effective industry practices and efficiency in mind, and government may lack the resources to monitor and closely enforce the implemented regulation. Most importantly, government regulation often results in compliance, as designing a regulatory instrument to generate innovation is difficult; in fact, studies on the relationship between government regulation and innovative results have given no consistent results (Blind, 2012; Blind, Petersen, & Riillo, 2017).

Mixed alternatives can solve many of these drawbacks, if not all of them. Free riding may be reduced when government manages the enforcement of a self-regulatory regime, and the outcomes may improve to different degrees, dependent on how closely government is involved. With respect to rule setting, again, the result may improve with government intervention as governments may set higher standards than industries would if let to their own discretion. Although the proposed mixed models in the past literature may not solve all of the common problems completely, new combinations of the two can be extremely useful. The grey area between the two pure forms of regulation can provide a fertile area for further innovative combinations (Rubenstein, 2011; Sinclair, 1997).

Therefore, rather than adopting a dichotomous view that separates government regulation and ISR, scholars of policy have noticed the advantages of innovative combinations of the two alternatives (Rubenstein, 2011; Sinclair, 1997). With increasing pressures on firms to protect the natural environment—and with the understanding that external pressure can enhance firms' environmental and social performance (Tashman & Rivera, 2016)—scholars are recognizing the complex nature of exogenous pressures in self-regulatory practices which are conventionally deemed voluntary, such as the role of regulatory settings (Arimura et al., 2016).

2.6 The Need for New Models of Self-Regulation for the Circular Economy

The shortcomings of the existing models of government regulation and self-regulatory regimes are particularly noticeable in the area of environmental sustainability. As described in Chapter 1, the concept of the circular economy suggests new approaches to change the dominant models of doing business and close material loops with the aim of improving sustainability. To meet this ambitious goal, the circular economy primarily calls for business to utilize its innovation capabilities. Changing business models, eco-design of products, and sustainability-oriented innovation are among the key drivers of this change (European Environment Agency, 2016). Implementing these solutions on a grand scale, however, is extremely challenging. On the one hand, such innovative transformations require costly changes in design, supply, and operations—and some industries will carry higher costs than others. For instance, many businesses would need to replace their raw materials with resources that are more environmentally friendly, but less available and harder to use. On the other hand, the circular economy and relevant concepts such as extended producer responsibility imply that business should accept the responsibility of downstream waste and manage it innovatively and sustainably; this often means expanded operations and increased costs.

The economic ramifications of closing resource loops have meaningful implications for those aiming to foster a circular economy, such as policy makers and managers. As Moreau et al. (2017) discuss, the circular economy exemplifies the essential role of institutions in distributing costs among economic agents. As these costs have historically been covered by governments via tax systems, shifting them to business requires new institutional regimes. Yet, existing regulations may safeguard private interests, which could hinder the evolution of institutions to shift the responsibility for externalities (Moreau et al., 2017; Vatn, 2009). Hence, the question remains: Under what social, economic, or political conditions are the proposed strategies for a circular economy likely to succeed (Bocken et al., 2017)? More relevant to this research, we need to understand which regulatory regimes can facilitate the costly transition to a circular economy.

The shortcomings of the aforesaid regulatory alternatives curb their potential in pursuing a circular economy. In addition, these alternatives are problematic in transferring the responsibility of post-consumption materials to business, for two major reasons. First, managing post-consumer materials poses significant operational costs for firms; therefore, large-scale voluntary business-driven solutions may hardly take form. Second, given business's reluctance to take voluntary action, governments may instead impose regulation, which creates a secondary challenge. Government regulation tends to translate society- and collective-level issues into individual-level mandates. For instance, cap-and-trade systems to manage greenhouse gas emissions adopt methodologies that convert the overall carbon cap to a firm's mandate in managing its externalities. However, based on the existing socially evolved means to manage post-consumption materials, consumer waste is collected and managed in an aggregated system in which consumers dispose of all waste in one or a few categories, regardless of subcategories and manufacturers. Therefore, requiring individual firms to collect and manage their used products from consumers will create new challenges for which easy and optimal solutions may not exist. In summary, the type of regulatory regimes to realize such a large transformation towards a circular economy are of critical importance but are not readily available.

More importantly, when firms avoid taking voluntary action and government imposes regulation, an even more critical difficulty may unfold in the long term. In essence, the circular economy calls for innovation at all levels, especially in developing new business models as well as the needed technology to close material loops. If firms resist taking on this responsibility, government regulators could be urged to set the mechanisms needed to coordinate individual firms' actions towards post-consumer material management. The more business avoids this responsibility, the more likely it is that government regulators will establish further structures. Nevertheless, organizing with too much structure discourages the proactivity and innovation of the system (Mintzberg, 1979; Sandhu & Kulik, 2018). In other words, when an official regulation is imposed, firms often seek compliance to avoid penalties of non-compliance. Yet, compliance-driven responses are far from the proactivity that the circular economy needs. Hence, it is hard to imagine how waste-driven regulation can spur the high level of industry proactivity required to propel a circular economy.

The need for new regulatory models should also be sought in the philosophical distinction between the two concepts of collective and shared responsibility. The ISR literature often touches on collective responsibility, where action is taken "to respond to a shared threat and protect members from stakeholders" (King et al., 2012: 106). In responding to a collective responsibility, all firms, regardless of their individual performances, are made accountable for the collective performance (Fauchart & Cowan, 2014). An illustrative example is reputation commons, where a member's action may have a spillover effect on the collectivity, regardless of how other members act, because the stakeholders are unable or unwilling to distinguish among the members (Barnett, 2006; Fauchart & Cowan, 2014; King, Lenox, & Barnett, 2002).

Across the ISR literature, the concept of collective responsibility is sometimes used interchangeably with that of shared responsibility; however, policy and ethics scholars have highlighted differences between the two. Whereas a collective responsibility rests on the collective in its entirety, a shared responsibility is distributable to a multiplicity of actors that contribute to a harmful outcome (Nollkaemper, 2018). Following Erskine, I refer to shared responsibility as "responsibility that is necessarily distributive among the individual members of a collectivity for outcomes that can only be achieved when they act in concert" (Erskine, 2014: 134).

This distributivity constitutes a key difference between the two concepts. Collective responsibility has been criticized for not only diluting the responsibility of each individual, but precluding the observers (e.g., stakeholders or enforcers) from determining the true source of any harm, since the ultimate bearer of responsibility is basically individuals, not the collective (Narveson, 2002). With respect to this potential problem, Erskine (2014), discussing shared responsibility, suggests that individual constituents of a group action may bear even greater responsibility than they would bear for individual actions; this observation reflects the complex nature of shared responsibility. Shared responsibility is not the simple aggregation of individual responsibilities, because the actors are not usually isolated. They interact and their interconnection influences the outcome, and thus, the scope of the others actors' responsibility (Nollkaemper, 2018). Interestingly, waste management has been widely

viewed as a shared responsibility of all involved actors, both by researchers (de Lorena Diniz Chaves, dos Santos Jr, Rocha, & Mara Santana Rocha, 2014) and by policy makers (Association of Municipalities of Ontario, 2005). Arguably, a model that draws on collective industry actions to realize a circular economy should make it possible to trace the responsibility to the individual firm responses too.

These gaps in the research demand new models which propose innovative mixes of regulatory regimes. Given their explained limitations, none of the existing models can propel the circular economy, and pursuing more of them does not resolve these constraints. Most significantly, the circular economy needs immediate innovative solutions for various types of material resources; yet none of the aforementioned models can secure this outcome. Hence, instead of pursuing more of each alternative, we must develop novel combinations that may drive the transition in different contexts.

As I explain in the next chapter, the context of this research is the evidence of the shortcomings of previous models and how the need for new ones, in an environment with non-cooperative actors, gave birth to a hybrid regulatory regime through an evolutionary process. The level to which, in this context, government regulation and self-regulation are amalgamated towards a circular economy is unprecedented, to the best of my knowledge. We need to better understand the complexities of the interactions between government regulation and self-regulation (Mills, 2016) and how they can coordinate effectively. Coordination is generally viewed as organizing human and physical assets within some interdependent system to efficiently produce a value (Camerer & Knez, 1996; Lawrence & Lorsch, 1967; March & Simon, 1958; Thompson, 1967). However, not every set of purposeful and interdependent actions to generate a value is coordinated. That is, organizations may choose to act together, whether voluntarily or under external coercion, without establishing solid mechanisms for deliberate coordination. Further, different forms of coordination may generate different levels of efficiency.

In the context of this research, coordination materializes through the process of regulation, which involves both rule setting and enforcement. An effective and efficient regulatory regime could pave the path to a circular economy. To this end, I aim to answer

the question: *How can business and government coordinate their actions to realize a circular economy?*

Chapter 3

3 Research Context, Data, and Methodology

To address the research question, I conducted an inductive embedded single case study using a combination of longitudinal and grounded theorizing approaches. In the context of my research, various firms from different industries were interacting with regulators in managing post-consumer waste. Across nearly four decades, the interactions took different forms, from minimal voluntary involvement of business to a stringent regulatory regime to a hybrid model of co-regulation in which both parties were involved in rule setting and enforcement. This latter stage is the primary focus of the research, as it directly addresses the research question. However, what happened prior to the formation of the hybrid model is of crucial importance in understanding the hybrid model, its essential elements, and its advantages over the two pure regulatory models. Thus, the study embraces both a longitudinal investigation of the history of the phenomenon and a deep analysis of the hybrid model. In this chapter, I detail the study's context, data, and methodology.

3.1 Household Hazardous Waste Management in Ontario

This study investigates past programs that have been developed to handle a group of post-consumer materials, officially and collectively known in the regulation as the Municipal Hazardous or Special Waste (MHSW) program in Ontario, Canada. MHSW is a category of the broader post-consumer waste management system, as defined by *Ontario Regulation 387/16*. In practice, MHSW includes nine main groups of materials, namely paint and coatings and their containers, pressurized containers (refillable and non-refillable), single-use dry cell batteries, antifreeze, fertilizers, oil containers, oil filters, pesticides, and solvents. In general, Ontario's non-hazardous post-consumer waste management programs (e.g., its paper and packaging materials collection and recycling programs) were systematically launched in the early 1980s, and the MHSW program followed a few years later, inheriting legacies from non-hazardous materials programs. Yet, MHSW faced different challenges and evolved on a separate path over the subsequent decades.

Both from a financial perspective and with respect to the leadership in transforming the programs, paint and coatings constitutes the main material group of MHSW. To illustrate, in 2014, 9,422 tonnes of paint and coating materials were collected—equal to one-third of all MHSW materials. Eighty-two per cent of the collected paint was recycled. Budget-wise, the highest revenue collected from the MHSW program came from paint and coating companies. Further, waste paint has a significant environmental impact. It is estimated that about 10 per cent of paint purchased by consumers remains unused. With the establishment of the waste paint program, consumers can return their residual paint to drop-off facilities at municipalities or some retail stores.

With the gradual introduction of waste policies in different provinces across Canada, a separate sector has evolved in the paint and coatings industry to acts as the industry's "compliance vehicle." Waste programs keep hazardous materials, such as alkyd (or oil-based) paint, away from the natural environment, and return the usable materials to the consumption cycle. Based on type and quality, most of the collected coating materials are used to manufacture recycled products with smaller environmental footprints compared to virgin coatings, incinerated to generate energy, or disposed of safely. Other MHSW materials also follow similar processes of recycling, recovery, or safe disposal. The costs of managing these waste materials are often higher than the incomes; therefore, all involved firms, known as "stewards," pay a share of the costs of waste management operations. These costs are generally added to the price of the products, either by adding a visible handling fee to the consumer's bill or by burying the fee in the price.

These programs are managed by collectives that are funded by stewards. The collectives run the operations required for collecting the materials and consequently recycling, recovering, or disposing of them. Waste collection is usually done at established facilities, mainly run by municipalities or inside some retail stores. Hauling and other operations are mostly done by service providers, such as transportation companies and "recyclers." Collectives often run the financial processes, internal monitoring, strategy development, communication and promotion, and reporting to the government bodies.

The formation of such collective actions has followed different routes in different Canadian jurisdictions. In Quebec, for instance, a high school teacher with social entrepreneurial characteristics sparked a rudimentary paint recycling program and urged the government and business to support it. In some provinces, such as British Columbia, most initiatives have been shaped after the government encouraged business to take actions before being forced by regulation. In contrast to such classical forms of collective action formation, and among all Canadian jurisdictions, Ontario's MHSW program appear to be unique, as they were never instigated on a consistent basis before regulation finally mandated the stewards to collectively take responsibility under an unprecedented structure that was stringently constrained by government regulation. The imposed regulation created various conflicts among different stakeholders, such as stewardship collectives and the municipalities who were being paid by the stewards for their collection services according to the provincial regulation but were strongly criticized by the stewards, who viewed them as inefficient. As conflicts continued to soar among the provincial government and its representative bodies, the stewards (represented by their collectives), the municipal governments, NGOs, the public, and the media, the stewards increasingly strived to take more active roles by self-regulation. These dynamics ultimately led to new approaches by the regulators and adoption of a substitute industry-led collective action under provincial regulation (as outlined in later chapters).

Ontario's MHSW program is unique, because in contrast to other provinces' programs, government's attempts to encourage business to participate failed for a long time; it was realized only after government's coercion and went through a particular transition. Accordingly, this case is important for several reasons. Theoretically, it represents an emerging type of mixed regulatory regime that extends the field of collective action into a context where business is not cooperative, and for a purpose that is urgent and collective, but costly. Practically, such initiatives have strong environment impacts and can facilitate the circular economy, while involving significant financial transactions. Due to its novelty, the case of Ontario is closely monitored by many other jurisdictions, both within and outside Canada, which are developing their post-consumer material systems towards a circular economy.

3.2 Data Collection

In order to conduct an inductive study, I collected extensive data from various sources. The data were collected from May 2016 to the end of 2018, and include the history of the phenomenon. The data collection process started broadly and unconstrainedly. As data collection and analysis proceeded, questions and data sources became more specific towards the research question until I reached data saturation (Langley, 1999; Langley & Tsoukas, 2016; Strauss & Corbin, 2008), as described in the next sections.

Collecting data from such a multi-stakeholder context with a history of conflict and lack of trust among actors (i.e., business, government, and other stakeholders) was challenging. Initial steps were facilitated by a group of stewards, but I continued the collection process independently. Given the conflict of interests among the actors, this independence prevented the potential bias in the data. Not surprisingly, some informants were not readily willing to participate and, in some cases, the informants did not consent to contribute. In other cases, participation was realized after I explained the ethical protocols of this research, including the anonymity of participants, the participants' withdrawal rights, and how the confidential data were protected. Different measures were taken to protect the data. For instance, in interviews, participants could choose not to be audio recorded at all or to partially speak off the record when they intended to provide sensitive information.

The data include a variety of samples from all key actors involved in the phenomenon. These data were collected through multiple channels, summarized in Table 2 and discussed below. More details are provided in Appendices.

Table 2. Data Sources

Source of Data	Quantity of Data	Description	Application
Public Documents	Voluminous (enormous body of data from the involved organizations and other sources)	Different reports, policies, government regulations, board meeting minutes, video-recorded events such as annual general meetings or past conferences, media materials, success stories, etc.	Facts about the process and events, used both to develop the narrative and to triangulate the data from other sources
Interviews	54 interviews, average time 92 minutes each, 32 organizations	Semi-structured, with various key experts from all main actor groups	Understanding perspectives, tensions, and interpretations, making better sense of history and process
Internal Documents	Different records from an industry, a few documents from two other organizations	Board meeting minutes, correspondence, member-specific reports, internal newsletters	Facts about events, actions, and salient issues at different times from the perspective of the focal organization
Observations	35 events over 75 hours in total	Including site visits, industry conventions, practitioner conferences, and regulatory and consultation webinars	Understanding the context, critical issues from the perspective of different actors, current and future trends, and dynamics among the actors
Supplementary Sources	Numerous informal chats and correspondence	Informal interviews, hallway conversations, follow-up emails or phone calls to inquire about a previously discussed issue, informal chats with consumers, storekeepers, or other involved people	Better understanding the context, filling the emerging gaps, finding alternative sources of data, and verifying the data or findings

3.2.1 Public Documents

Many of the involved organizations from all stakeholder groups, such as collectives of stewards, governmental bodies involved in regulation and enforcement, NGOs, and municipalities have published an enormous body of public data in different forms. These documents include, but are not limited to, comprehensive reports (e.g., annual reports by the collectives who run the programs); bodies of policies, legislations, regulations, and guidelines released by the government or its representative organizations; publicly available board meeting minutes; video recorded events (e.g., annual general meetings of government bodies or public sessions to introduce policies); news clips; educational and

promotional materials that explain the programs to consumers; and numerous websites and webpages. Many of these sources are created due to the legal mandate of the stewardship companies. Public data were a main source of factual data to understand the events during the studied period, including the earlier years of program formation.

3.2.2 Interviews

I conducted 54 formal interviews with informed people from all groups of actors involved in the field, including stewards and industry leaders (e.g., manufacturing companies, retailers, importers, collective organizations, etc.), service providers (especially recyclers and consultants), the Ontario provincial government and its relevant bodies (i.e., regulatory and enforcement bodies), municipal/regional governments in Ontario, and NGOs involved in the programs. The interviewees were typically among the most informed people in the field. Many informants had experience in different stakeholder groups, which had given them broader perspectives. The interviewees were affiliated with 32 different organizations.

The interviews were semi-structured and in-depth, with an average time of 92 minutes each. Forty-one interviews were conducted in person (mostly in the informants' work setting), eight were conducted by phone, and three by video-conferencing media. The two other interviews, as requested by the informants, were written[5]. Most interviews were completely audio recorded, except for seven interviewees who did not allow recording the discussions; in these instances, notes were taken instead. Similarly, some parts of other interviews, as per request, were conducted off the record. Given the sensitivity of the data, six of the interviewees did not consent to the use of their data in the form of direct quotations or consented conditionally upon approval by them. Some excerpts of the interviews will be directly quoted in next chapters as representative data. To protect the confidentiality of the participants' identities, each interviewee was identified by a code, consisting of a letter and a number (e.g., B17). The letter represents four broad actor

[5] In calculations, I considered an approximate time for the two written interviews.

groups: B for Business including firms and stewardship collectives, G for provincial government and its pertinent organizations, M for municipalities and local governments as well as their related associations, and S for service providers such as recyclers and consultants. In addition to the interviewees' codes, I may also broadly mention their roles and expertise.

The interview data were a major source of information to help understand the interpretation of different actors and conflicts among the interests and views of the complex phenomenon in hand. These data were the main input to the analysis of the identified dualities and tensions, as described in later chapters.

3.2.3 Internal Documents

Select documents pertaining to the stewardship programs of one of the involved industries were another valuable source of data. Documents included selected board meeting minutes, correspondence, internal reports, industry annual reports or reports about a specific subject, member-specific industry documents, and internal bulletins/newsletters for members of an industry. Although the provided documents were not as extensive as the public data, they were extremely valuable as they were mostly confidential or not provided to outsiders, and embodied retrospective but relatively reliable data about the events, actions taken by the industry, and positions held at different points in time. These documents reflect how the salience of the issues from the perspective of the industry had changed over time, and how new challenges, tensions, and perspectives have evolved, especially over the last decade. In addition, a few other organizations also shared a number of their documents on specific subjects.

3.2.4 Non-Participant Observations

I visited different pertinent sites (e.g., recycling plants and waste collection depots), attended industry and recycling events (e.g., board meetings and conferences held by an industry or a research-practice institute), and participated in different online webinars (e.g., those held by governmental bodies to introduce regulation or by service providers to promote their services). The purpose of these observations was twofold: to understand

the context and technical aspects of waste management, and to better capture the underlying dynamics and unnoticed data that might otherwise have been missed.

My observations were complemented by note taking and informal conversations. In many cases, observation fed into other data collection methods, such as interviews. Overall, 75 hours were spent on 35 observation opportunities.

3.2.5 Supplementary Sources

Data were also complemented with follow-up emails, phone calls, hallway conversations, and informal and unrecorded short interviews, both with people involved in providing other sources of data or with new people, such as consumers, store representatives, or site staff. These data had various planned or unplanned applications. They were collected to provide a broader and multi-faceted perspective of the phenomenon. They were also used to fill the emerging gaps through the research process, including ambiguities and any questions that evolved during the analysis. In some cases, interim findings were also discussed in these friendly conversations, which provided opportunities for collecting further data or confirmation of the findings.

The above five sources of data were complementary, but they also allowed me to triangulate the data (Yin, 2016). For instance, I tested the precision of data supplied by different informants by tracking the interview data in reliable documents, or fact checking with informants from other stakeholder groups. The same process was used to control for potential social desirability, which is likely in such contexts. Triangulation was especially critical in understanding events and actions at different times. For example, a claim on the proactivity and voluntariness of an action by business was controlled by comparing the data from two conflicting stakeholders and from documents that may reject the claim. However, where the data involved interpretation rather than facts, triangulation was not required to provide evidence for the data's "correctness." Analysis of the data began almost simultaneously with its collection. Therefore, the focus of data collection gradually shifted from understanding the general trends and events to the actions during the later stages in which the two alternatives were mixed, how actors perceive the issues, and the contradictions between their perceptions.

3.3 Analysis

The analysis followed an emergent approach. I first adopted a general longitudinal approach (Langley, 1999; Langley, Smallman, Tsoukas, & Vane Ven, 2013; Langley & Tsoukas, 2016) to understand the evolution of regulatory regimes. Yet, as the analysis advanced and I explored the formation of a hybrid regime, I shifted the focus from the process to the hybrid model in an attempt to explore its structure and characteristics. At this step of the analysis, I used the classical grounded theorizing method (Strauss & Corbin, 2008). Ultimately, I compared the characteristics of the hybrid model with those of the previous stages of the process. Overall, the analysis followed a four-step process. I used Atlas.ti qualitative software (version 8.1), complemented with spreadsheets and other means.

3.3.1 Step 1: Developing the Narrative Based on Historical Data

The first step of my analysis aimed to explore and ascertain the "truth" and "facts" concerning the events (Gephart, 2004), such as the imposition of a regulation at a certain time or the formal initiation of a program. By reviewing a variety of data sources, I identified all of the events and actions that could influence the phenomenon. I soon realized that I needed to understand hazardous waste management within the entirety of general waste management in Ontario, as the MHSW program is a subset of the general consumer waste system there. The formation of waste management discourse in Ontario dates back to the 1950s, but the first major event pertinent to the existing programs was launched in 1981, which I set as the start point of my temporal analysis. To organize the data, I created a log file and the data were triangulated to resolve potential conflicts, not least those past events that were not adequately documented.

While working with these types of verifiable data, I was simultaneously collecting descriptive data (i.e., data that reflect the rationale behind the actions and perspectives of different actors). The goal was to ensure that in addition to the events, I identify the underlying reasons of the actions as well as the reactions and consequences; these would be required for the next steps of my theory development.

The data provided a thorough representation of the formation and transformation of the MHSW management. On that basis, I wrote a rich chronological case narrative on managing waste in Ontario (Jarzabkowski, Lê, & Balogun, 2018; Langley, 1999). The data demonstrated that although the MHSW program was a subset of the general waste management system, it faced different challenges and followed a different path. The output of this step is summarized in a narrative and a temporal map, reflecting three stages: *unfulfilled self-regulation*, *government regulation*, and *hybridization* (presented in further detail in Chapter 4). Through this process, an initial collective-oriented regulation was shaped by the government, faced various conflicts, and ultimately evolved into a hybrid model of action that is co-regulated by business and government. The data also demonstrated the extensive conflicts among the stakeholders and how the transformation occurred as the actors interacted through the process.

3.3.2 Step 2: Understanding the Structure of the Hybrid Model

During step 1, continual reference to the existing literature revealed that the first two identified stages (i.e., *unfulfilled self-regulation* and *government regulation*) are almost consistent with the existing knowledge, but the *hybridization* stage has unique characteristics that appear to be unprecedented. Thus, in step 2, I focused on investigating the hybrid model. By temporal bracketing (Langley, 1999) of the hybridization process, I studied the patterns of actions by different actors throughout this process. The results showed how during this stage, business and government were both involved in co-regulating (i.e., setting the rules and enforcing them). This step allowed me to simplify the recurring patterns and propose a model for hybrid regulation.

3.3.3 Step 3: Characterizing the Hybrid Model

During the previous steps, I noticed that the hybrid regulation is characterized by contradicting issues that form constructive tensions throughout the process. Tension, in this sense, is defined as the state of "two phenomena in a dynamic relationship that involve both competition and complementarity" (English, 2001; Epstein, Buhovac, & Yuthas, 2015). To capture the characteristics of the hybrid model, I bracketed the hybridization stage and followed grounded theorizing. I started by "tagging"—an open

coding process (Glaser & Strauss, 1967), labelled in accordance with Jay (2013). Tagging helps to compartmentalize data into building blocks of concepts. The specific goal was to create grounded codes that could represent the dynamics of the collective action. I began by asking of the data: What issues emerged throughout the process, and what created contradictions (such as disagreements or concerns) among the actors? This dual question aimed to generate the tags on underlying tensions and dualities and categorize the data into building blocks of tensions.

After some progress in tagging, I started "theming." Themes are higher-level codes that reflect recurring factors or mechanisms in more abstract bundles of the identified tags (Jay, 2013). Theming was performed based on the guidelines for axial coding (Glaser & Strauss, 1967; Miles & Huberman, 1984). I expected the themes to reflect recurring factors or mechanisms that created tensions in more abstract bundles. I repeatedly asked: Why should this tag be categorized under this theme and not the others? Further, why should this theme be distinct from the other themes? Tagging and theming involved iterative analysis of the data and several shifts between them.

Theming was followed by theorizing—a more high-level conceptual effort to group themes into abstract aggregations. I noticed that the emerging themes were referring to contradictory concepts; for instance, two notions of compliance with regulation and going beyond regulation were noticeably shaping a "duality." In fact, the themes represented the mechanisms that engender the tensions within the dualities. Theorizing involved working with the data and referring to existing knowledge, such as how the ISR literature has approached proactivity. By working deliberately with themes that still have unclear boundaries and need further clarification, I repeatedly consolidated, disambiguated, or deleted the previously generated codes, including tags and themes. In some cases, theorizing also revealed the need for further data collection in order to address the conceptual gaps.

My theorization generated four aggregated dualities that provide the ground for tensions: *compliance versus proactivity*; *decoupling versus integration, control over means versus ends*; and *harmonization versus distinctiveness*. Certain aspects of some of these tensions

have been noted in the extant body of research on collective actions, ISR, or the circular economy, but others are new. Figure 2 presents the grounded theorizing and how it generated the mechanisms that create four salient tensions.

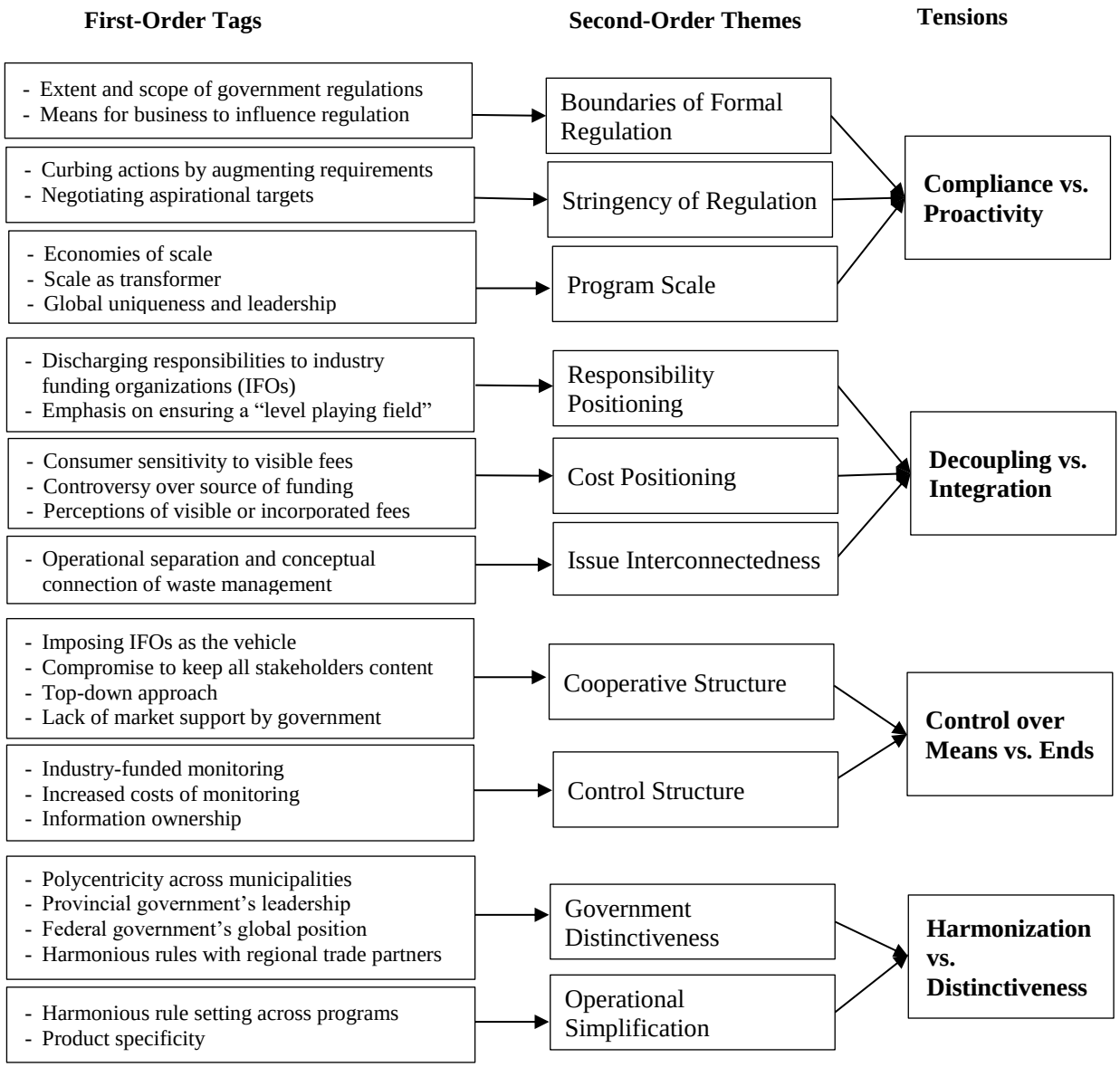

Figure 2. Coding for Tensions in the Hybrid Approach to Regulation

3.3.4 Step 4: Developing the Comparative Framework

My higher-level approach to theorizing enhanced the extant understanding of the model and led to a comparative framework. First, I noticed that the tension between proactivity

and compliance is the outcome of the model and the three other tensions feed into this tension. Second, upon identification of the four tensions that characterize the hybridization, I traced all of the tensions back to investigate whether they had been salient in the previous stages. Coding the data for previous temporal brackets revealed that during the government regulation (stage 2 of the process), although confrontation of actors was a noticeable characteristic of the regime, the constructive tensions were absent. In fact, in this stage, only one pole of each of the dualities was salient. This compelling finding helped me to theorize further on how a hybrid model is characterized by constructive tensions that are beyond the banal confrontations among stakeholders. These tensions distinguish the hybrid regulation from the existing models, allowing me to explore how managing them can influence the outcomes, which are discussed in Chapters 6 and 7. The result was a comparative analysis of how the proposed hybrid model is distinct from the two pure alternatives, and how it can resolve their respective shortcomings.

Chapter 4

4 The Evolution and Transformation of the MHSW Program

This chapter outlines the case narrative of the formation and evolution of MHSW programs in Ontario (i.e., the outcome of the first step of the research, as explained in Chapter 3). The narrative covers the temporal scope from 1981, when the first critical event relevant to this research occurred, until the end of the data collection period in December 2018. It has been shaped according to the many data sources collected from various actor groups. The foundation of the narrative is based on the historical data, but I also touch on the inconsistent or even conflicting stances and perceptions of different actors, such as how business and government may interpret a certain event differently). Whereas the historical data has provided facts that help me to discover the pattern of the hybrid model, the stances and interpretation of different actors allows me to uncover the tensions that emerged through the studied process, reflecting the complexity of the generated model. Based on critical events and turning points, the narrative demonstrates three distinct stages that pertain to business-government coordination.

Figure 3 represents the critical events in the three identified stages of formation and transformation of waste management programs in Ontario. In the next sections, I explain the three stages and in the following chapters, I focus on the hybridization stage, which directly responds to the research question. In Chapters 6 and 7, I use the data from the first two stages to compare the three regulatory models.

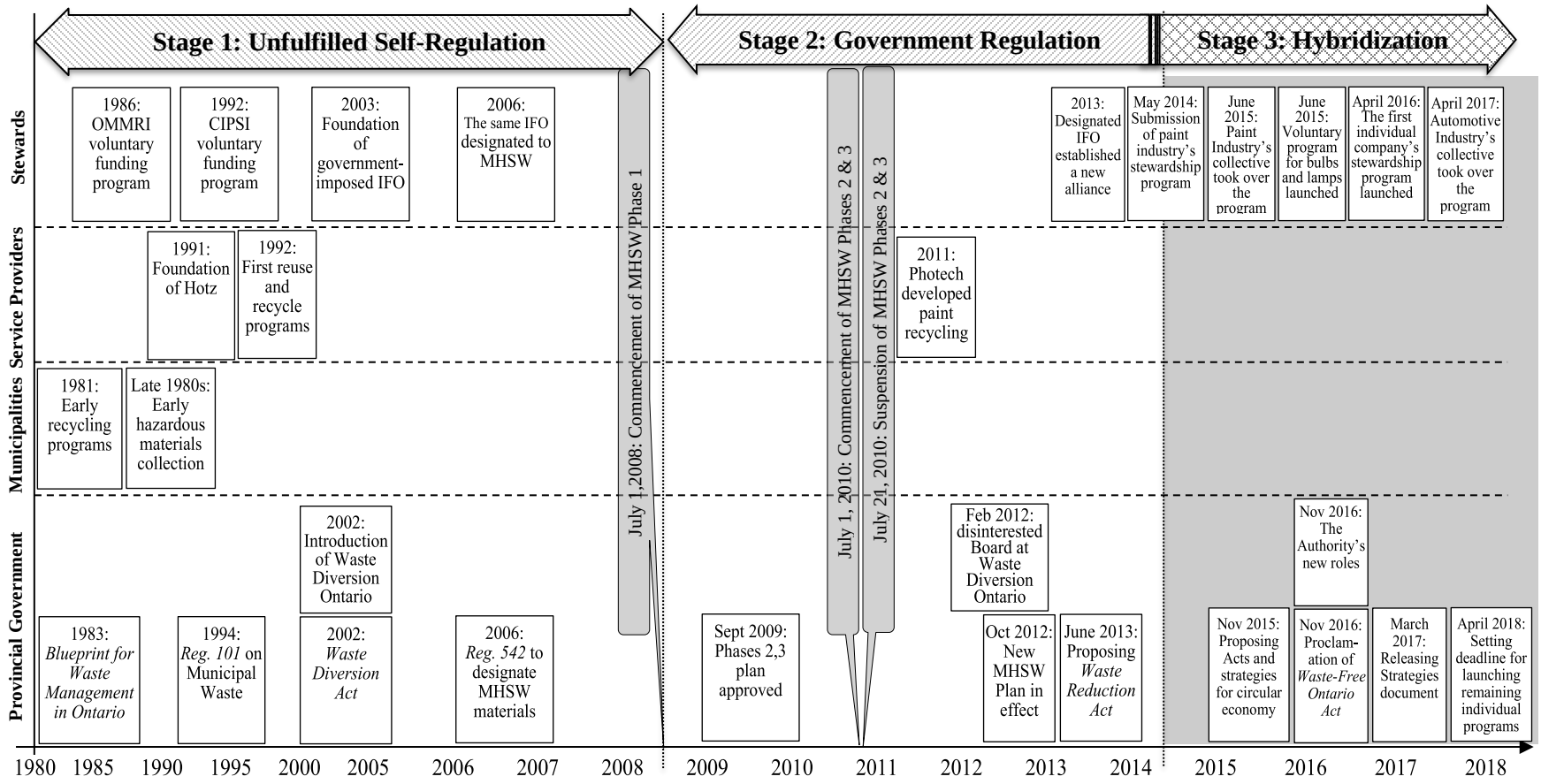

Figure 3. Mapping Critical Events in the Formation and Transformation of Ontario MHSW Program

4.1 Stage 1: Unfulfilled Self-Regulation (1981–July 2008)

Systematic attention to waste management in Ontario imperceptibly increased alongside government and public concerns about air and water pollution in the 1950s and 1960s. The first waste management Act was introduced in 1970. Over the next decade, the gradual development of this rudimentary Act was reflected in growing provincial regulations, such as *Regulation 309* (1980) which, under the *Environmental Protection Act*, put more emphasis on the issue of waste and its classification and management. An early watershed was the separation of some recyclables, such as bottles, paper, and packaging materials, in a regular curbside collection program in leading municipalities in 1981. This program was gradually diffused across the province and relabelled "the Blue Box Program" in 1986. In addition, in 1983, Ontario's Ministry of the Environment (referred to hereafter as "the Ministry") published its *Blueprint for Waste Management in Ontario*, a voluminous proposal that called for cooperation between the provincial government, municipalities, industry, and the public, and introduced many advanced ideas at that time to address waste.

Against this background, a number of municipalities and regions began to take the lead in treating hazardous waste as a distinct type of waste. This was deemed part of their mandate for provision of health and safety for citizens and environmental protection, as disposing of hazardous materials with other types of waste could harm the environment and create safety risks. As such, some municipalities used their resources to run occasional programs to collect hazardous materials from households separately. The scope of such materials was broad, including pesticides, pharmaceuticals, cleaners, flammable liquids, aerosols, paints, stains, and virtually all household products that carried a sign of potential danger on their labels.

As the idea of sustainable waste management continued to spread in the 1980s, both existing businesses and newly formed companies found the opportunity to provide such services to municipalities. The operations of these firms initially included collecting household hazardous materials through scheduled local events. In 1991, Hotz Environmental Services (Envirosystems, Inc. since 2010), one of the first firms that

specifically proposed to handle hazardous waste, was founded in Hamilton-Wentworth (now known as the City of Hamilton), expanding to Brantford, Toronto, Waterloo, and other areas in the Golden Horseshow within a year. Hotz "Mobile Collection Units" could be found at pre-announced locations (e.g., parking lots) over certain weekends, collecting hazardous waste in neighbourhoods. The similar materials were usually aggregated and repacked by the service provider, before being sent in bulk for safe disposal. Running this model, Hotz could handle up to 1,800 incoming citizens in one day with the help of more than 50 employees. From a very early point, safety was a key consideration in all operations. Hotz received a "Generic Licence" from the Ministry to run this model, with considerations such as prevention of spills in collection sites. Figure 4 demonstrates a newspaper advertisement and a photograph of a collection event in the early 1990s.

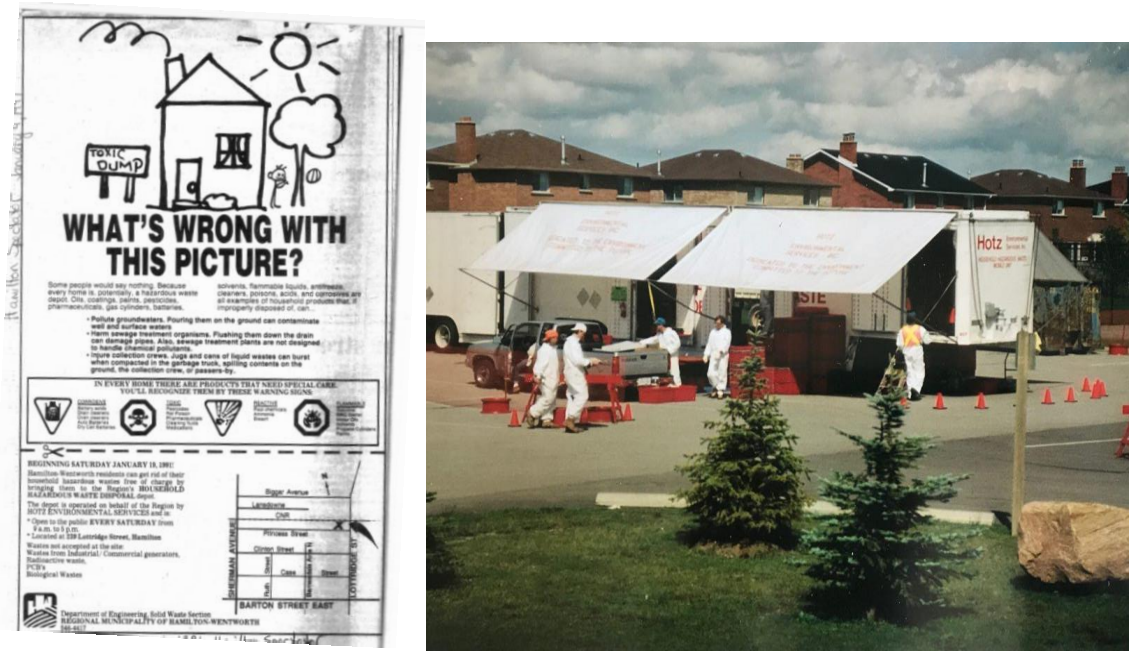

Figure 4. Left: A Municipal Advertisement to Announce a Collection Event in Hamilton, Ontario. Right: A Hotz Environmental Services "Mobile Collection Unit" event in York, Ontario (early 1990s) (courtesy of Envirosystems, Inc.)

Soon the people involved in operations noticed that a significant portion of the collected residuals were quality materials, and the idea of "reuse" was shaped as a viable

alternative to disposal. Citizens who came to a collection event could take the half-used materials brought by other citizens, albeit at their own risk. Given the potentially hazardous nature of the materials and the fact that the materials were not always returned in their original containers, safety became a key concern that curbed the reuse option.

Hotz soon realized that paint constitutes about half of the collected hazardous waste and began experimenting with paint recycling in 1992.[6] However, paint posed a difficulty as it came in various types and shapes. Initially, Hotz started by separating paints into water- and solvent-based types, as well as dark and light colours, and mixing all of the incoming paint in each of these broad groups. This simple separation process yielded just two shades: a beige and a greyish brown. The company recognized that the volume of the collected paint would be far more than what it could use or send to municipalities for use. Managing this volume of paint required knowledge, expertise, and technology to produce more attractive shades and find new applications. Interviewee S7, a paint recycling expert, described the process:

> *How many different colours [could be produced]? Initially we didn't know. Blue can be [about] 10 different shades: navy blue, dark blue, light blue, whatever it is. How do we know which colours should go together?*

To address these technical issues, Hotz sought advice from a local and a large coating manufacturer. Under their guidance, a few more shades were soon developed. Yet, with increasing volume, the large manufacturer stopped providing technical advice as it noticed that the recycled paint could become a marketable product, potentially competing with its own virgin paint. Still, despite the relatively acceptable quality of the early recycled paint for spaces such as storage rooms and workshops, nobody was willing to use it—not even to be used in municipality facilities.

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[6] Albeit, before Hotz, leftover paint was recycled in isolated projects in other regions, such as Quebec and certain areas in the United States.

Feeling this strong resistance from the paint industry and the market, Hotz managed to market its affordable recycled paint in Cuba and later, in other international markets. To economize on the costs of shipping and labour, the paint was aggregated in a limited number of shades; after pre-filtering, the bulk was shipped to target countries, where it could be fine-tuned and repackaged in smaller containers at the buyer's discretion. Over time, Hotz chose to keep its products simple and affordable: it did not add virgin materials, such as costly pigments, to the recycled paint; therefore, its colour deck included fairly limited shades. Clients, however, could make some changes in their own final products.

With the growing volume of used or residual household hazardous materials returned by consumers, some local governments gradually established their own permanent depots in municipalities. These drop-off facilities were generally established in areas with a considerable population that needed such services beyond occasional events. The number of these facilities grew rapidly in the 1990s. Many of them still have limited reuse programs to this day. Yet, in dispersed or smaller municipalities with limited turnover of hazardous materials, occasional collection events are sufficient.

This hazardous waste management program continued to run parallel with (and was influenced by) the large and broader waste programs at the municipal level. Under *Ontario Regulation 101, Recycling and Composting of Municipal Waste*, 1994, municipalities were regulated to manage the Blue Box Program, which collected and handled materials such as paper, aluminum cans, and glass. Over the years, this curbside recycling program has encountered many complications. Most relevant to the case of hazardous materials is the fact that since the 1980s, various industries were trying to eliminate the deposit-refund system on refillable containers and introduce single-use containers instead. Circulation of refillable containers, supported by environmental advocates and mandated partially since 1976, was an operational and financial burden for business; thus, industries advocated recycling as a viable alternative to the deposit system.

During the decades of debate over the merits of recycling versus the deposit system, at some periods, the relevant industries financially contributed to recycling programs voluntarily to relax the regulation. For example, in 1986, a group of soft drink businesses formed an industry funding organization that is widely known as “OMMRI” (Ontario Multi-Material Recycling Inc.) to co-fund the Blue Box Program through a depreciative funding model, ultimately leaving the full costs on municipalities. Another important event occurred in 1992, when grocery product manufacturers introduced the so-called “CIPSI” (Canadian Industry Packaging Stewardship Initiative). This initiative was later supported by some other industries as well as the provincial government, but was challenged by other industries and finally ended in 1995 after a few years of controversy (for a short narrative of the program see Chang, Macdonald, & Wolfson, 1998).

The Blue Box Program was supported by many citizens and was generally deemed a success for Ontario. In the late 1980s, this public-private partnership was recognized by the United Nations, which presented its first ever Environmental Award jointly to OMMRI, the Recycling Council of Ontario, and the Association of Municipalities of Ontario. Nonetheless, business’s contribution to these programs was inconsistent as different industries and firms held different positions with little motivation for cooperation; hence, the isolated “voluntary” programs were short-lived and largely due to the pressures imposed by different governments.

Towards the late 1990s, waste costs became a significant concern for municipal governments, government funding for the Blue Box Program ran out, and the cooperative effort between industry, the province, and municipal groups was jeopardized, leaving it unclear whether the Blue Box Program would be able to continue. Finally, on June 23, 2002, the Ontario government released the province’s first product stewardship legislation, the *Waste Diversion Act*. Its purpose was “to promote the reduction, reuse, and recycling of waste and to provide for the development, implementation, and operation of waste diversion programs.” The Act mainly aimed to secure the operation of the Blue Box Program through regulated industry funding, as previous invitations for voluntary cooperation had failed in securing steady contributions by industry. As

interviewee G6, an expert with both provincial and municipal government experience, stated,

> *I don't call them extended producer responsibility programs per se, because they were primarily financial stewardship programs, but nevertheless, it started on that path [to secure industry funding].*

In this way, financial challenges were critical to the evolution of the programs; yet, in regulation, they were framed under state-of-the-art environmental ideas such as extended producer responsibility. The focus of the *Waste Diversion Act* was mainly on handling and management of the "designated waste" managed through the Blue Box Program, but it was open to the introduction of new waste groups, such as hazardous materials.

The *Waste Diversion Act* instated a unique governance structure to ensure that business will continuously participate in waste management. It introduced a non-Crown organization at arm's length from the government, namely Waste Diversion Ontario (WDO), which became responsible for putting the Act into practice by establishing waste diversion programs, with a board of directors composed of various stakeholders. WDO was also responsible for establishing the organizations known as industry funding organizations (IFOs). These IFOs had to provide for payments equal to 50 per cent of the total net costs incurred by municipalities to run the Blue Box Program. Programs run by IFOs had to be approved by the Minister of the Environment (hereafter referred to as "the Minister") in advance. Each IFO was required to determine and collect the fees to be paid by the stewards, as well as any necessary information, and to establish internal rules for such operations. Figure 5 demonstrates the general governance structure and relationships established by the *Waste Diversion Act*.

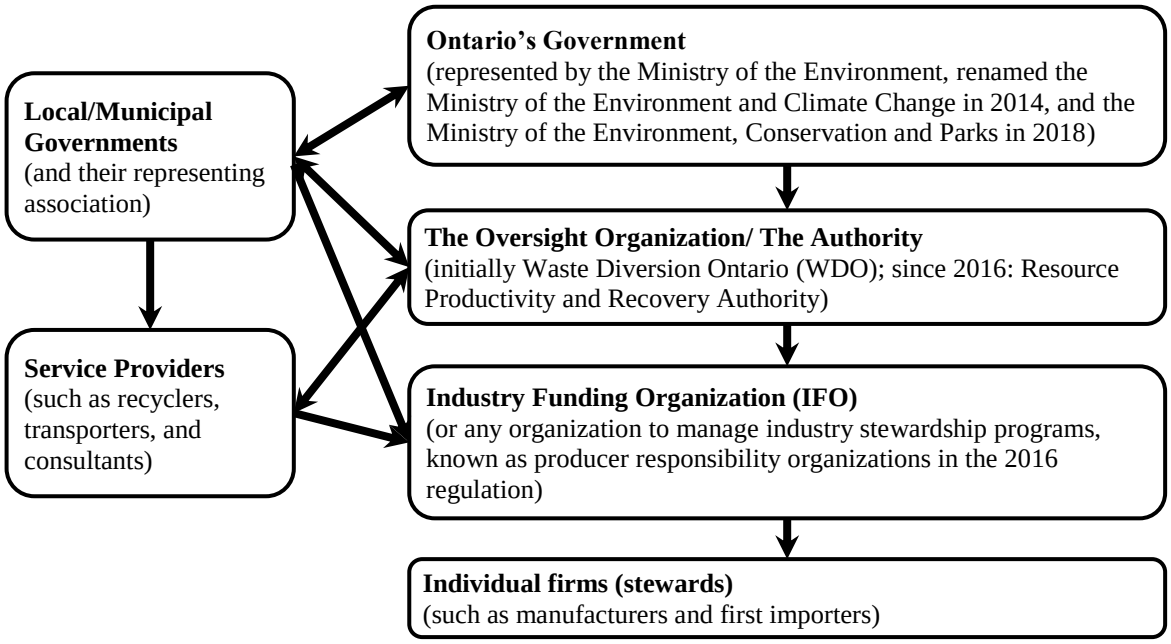

Figure 5. The Structure Established in 2002 by the *Waste Diversion Act*

With the IFOs running the programs, WDO was responsible for overseeing the IFOs on behalf of the Ministry. The budget of WDO, as a non-Crown organization, was also paid by the stewards through the IFOs, rather than by the Ministry. This model was relatively new. Monitoring compliance with regulation is traditionally an in-house responsibility of the government, funded through the tax system. However, this adopted governance structure put the costs of monitoring on industry—and, consequently, their specific consumers—rather than on government and, consequently, the public. Moreover, it was argued that this funding model would help WDO to be less influenced by politics; for instance, changes in the provincial government could not influence this organization and the programs by curbing its budget—challenges that had historically impacted waste management.

In a controversial move, the Ministry also established and designated an organization called Stewardship Ontario to act as the Blue Box program's sole IFO, i.e. the only collective which was responsible to collect fees from the firms that produced or distributed the designated materials. Indeed, every steward had virtually no choice other than to choose this IFO as its waste management collective. Therefore, although the idea

of stewardship per se, built on many years of debate on the core idea, did not create considerable negative reactions in industries except for a few sectors, dictating a particular IFO as the representative of different industries generated contention. As interviewee S6, an expert with experience in different actor groups, reported,

> *All the producers were obligated by law to participate in that stewardship organization unless they got permission to do something different, and getting permission to do something different was next to impossible. It was a quasi-monopoly scenario […] that many of the stewards objected to, both in principle and in practice. It was different than the way some of these programs had happened in Europe and elsewhere in the country where the industry created an association to manage [the program].*

In summary, the *Waste Diversion Act* laid the foundations of a unique collective-level regulation. In contrast to typical regulation, which targets individual firms, the Act focused on the collective level and individual firms had practically no other option to meet the waste management requirements, at least in the beginning. In 2003, Stewardship Ontario registered 3,300 firms as potential stewards and received reports from about 1,200 Blue Box stewards. Paying stewardship fees started in 2004, which covered half of the Blue Box Program expenses as the industry's mandated contribution. The role of WDO was mainly facilitation, ensuring that the IFO was meeting its responsibilities, including publishing the performance data.

4.2 Stage 2: Government Regulation (July 2008–May 2014)

The hazardous materials programs were built upon the Blue Box mandated action. After the initial establishment of WDO as the Ministry's oversight representative and Stewardship Ontario as the IFO, the Ministry gradually expanded the scope of its regulations to include materials such as used electronics, tires, paint, and batteries. In December 2006, the Minister filed the first version of *Regulation 542/06* under the *Waste Diversion Act* to designate MHSW materials. This regulation defined different types of MHSW materials. In a Program Request Letter to WDO's board of directors, the Minister

also directed WDO to develop a diversion program for MHSW. Further, he stipulated that Stewardship Ontario act as the IFO for the MHSW program as well as the Blue Box Program.

The contentious designation of Stewardship Ontario as the IFO for MHSW materials was deemed a political decision, but it could also create economies of scale and facilitate the operations, given the previous learnings. In addition, some new stewards for MHSW materials were already paying Stewardship Ontario for their products that were collected under the Blue Box Program. Some experts (even non-stewards) argue that alternative organizations could potentially be more successful IFOs for these classes of waste. For example, the paint and coatings industry believed that a Vancouver-based IFO, Product Care Association, experienced in hazardous materials programs since the 1990s, was the best option to be their IFO. Even Stewardship Ontario itself was reluctant to take on responsibility for MHSW materials, which lay out of its expertise with the Blue Box Program.

With this designation, Stewardship Ontario became the IFO for both the Blue Box and MHSW programs. The other two IFOs in Ontario, Waste Electrical and Electronic Equipment and Used Tires, were both established by the relevant industries. One year later, in December 2007, the MHSW Program Plan for Phase 1, developed by Stewardship Ontario and approved by WDO, was submitted to the Minister. Phase 1 included nine material groups: paints and coatings and their containers, solvents and their containers, single-use dry batteries, antifreeze and containers, used oil filters, lubricating oil containers, fertilizers and their containers, pesticides and their containers, and pressurized containers such as propane tanks. The Minister approved the Program Plan and it commenced on July 1, 2008.

Under the regulation, firms that had a commercial connection to such products (i.e., the stewards) were responsible for the products throughout their life cycles, including after consumption. However, this responsibility was practically relinquished to a collective (an IFO) by translating it into a financial commitment of the stewards. The role of the IFO was to identify the firms based on the provincial definition of stewards in Ontario, such

as producers, brand owners, and first importers. The IFO would then calculate the costs of collecting and handling waste disposal for each steward based on its market share and the handling costs. Stewards were mandated to enroll in the program and pay the costs. Potential free riders were caught by investigation in the marketplace by the IFO or other bodies. In practice, these functions required extensive operations. For instance, the regulation introduced nine broad product groups, but there were grey areas and the inclusion of many products was questionable. Moreover, for some products imported to the province, it was not clear which of the involved firms should be legally deemed the steward. Managing the operations was therefore complicated. With the extended operations of MHSW programs, Stewardship Ontario, which had initially outsourced its operations, employed consultants to create an internal structure for managing these operations internally.

A recurring question concerned the source of the funds spent on waste management. The regulation and government rhetoric had always emphasized that stewards—rather than taxpayers or municipalities—should pay for the costs of waste management. It was also often acknowledged that by charging the stewards, these costs became merely another item in firms' operational costs, and were consequently transferred to consumers of those products. For the provincial and local governments, this was a more favourable mechanism vis-à-vis spending their own budgets on waste management. Accordingly, after establishing this funding mechanism, government initially deemed it legitimate for the sellers to charge customers an additional fee for environmental protection. These handling fees were generally stated as an extra line in bills for Phase 1 materials.

Not surprisingly, business responses to these enforced programs were mixed. Evidence suggests that in the earlier years, business sometimes tried to forestall the regulation by means such as suggesting limited voluntary contributions. Nevertheless, when the industries realized that regulation was inevitable, they approached it as a means to create a level playing field and prevent free riding issues, which were common in the initial Blue Box Program. The regulation could force all the involved firms to participate and this was an advantage for business. Another consideration of business was the fact that a firm's responsibility was discharged by its financial contributions, and the costs could be

transferred to consumers through the environmental handling fees; this was another relief for the stewards, but overall, increased prices could have negative impacts on demand.

However, a major business concern was the predetermined path to meeting the requirement. The industries that were influenced by Phase 1 of MHSW raised their concerns about the government's decision to continue the quasi-monopoly of Stewardship Ontario as the only way to launch the program. Although the regulation allowed these stewards to establish their own IFO or an industry stewardship program after the initial launch by Stewardship Ontario, meeting the criteria for government approval as an independent IFO was highly taxing. Indeed, firms in industries like paint practically had no option but to work with the established IFO for the coming years; hence, they decided to take an active role in this relationship.

In the few years after the introduction of MHSW Phase 1, the main focus of WDO and the IFO was on operationalization. The IFO had many challenges to deal with, such as identification of products, interacting with stewards, setting fair fees, establishing collection sites, and dealing with service providers. Hazardous materials were mostly collected by municipal depots or through collection events, but there were also retailers who had agreed to establish drop-off depots for their customers to bring back their used hazardous materials. These retailers themselves were typically stewards, as they supplied their own brands of the designated products. With all of these operationalization hurdles, monitoring the programs was arguably a luxury and WDO was merely playing the role of a liaison between the IFO and the government.

Despite the above challenges, implementing Phase 1 was relatively smooth and the experts, especially from the government side, generally perceived it a success. On July 22, 2008, shortly after the commencement of MHSW Phase 1, in a Program Request Letter to WDO's board of directors, the Minister provided direction on the development of the subsequent phases of the MHSW program. This direction required an amended MHSW program to include all MHSW materials designated under Phase 2 and Phase 3, in addition to the materials currently included in Phase 1. Phases 2 and 3 included materials such as aerosol containers, fluorescent light bulbs and tubes, pharmaceuticals,

sharps such as syringes, and all types of flammable, corrosive, toxic, reactive, and leachate toxic materials not included in Phase 1. The Minister's letter also stipulated that the amended program include all of the materials in both of the new phases simultaneously. In September 2009, this Consolidated MHSW Program Plan (also known as the "Orange Drop Program") was approved by the Minister and its commencement was set for July 1, 2010. The stewards and the IFO had to establish the system for all included products in just nine months.

This quick expansion of the program was a bold decision, but extending producers' responsibility was a proliferating idea at that time, and governments were motivated to deploy it as quickly as possible. Almost simultaneously, in October 2009, the Canadian Council of Ministers of the Environment released the *Canada-Wide Action Plan for Extended Producer Responsibility*. The idea of extended producer responsibility suggests moving the responsibility upstream in the product life cycle to the producer, which obviates the need for resource allocation by municipalities and, in turn, taxpayers. The implementation of this plan was naturally left to the jurisdictional authority of each provincial government. Given its record in waste management, the Ontario government did not want to be a late mover. Further, many of the Phase 2 and 3 materials were already managed by most municipalities (and had been since the 1990s). Based on the Phase 1 experience, extended producer responsibility was proving an effective approach to transfer the costs of such programs from local governments to stewards.

The result of this shift, however, is generally recalled by experts with terms such as "mayhem," "crisis," and even "disaster" and "catastrophe." July 1, 2010 is still an unforgettable date for all involved in those programs. Twenty-two new material groups, many of which were consumables, were added to the initial nine MHSW material groups. These new groups included thousands of newly regulated products. Stewards, including retailers, were not yet ready to implement the right fees in their systems in a well-organized and harmonious way. Most of the stewards chose to recover the fees by way of a visible price in the bill to customers, which was common after 2008 for most of the Phase 1 materials.

Commencing the consolidated phase suddenly added an unexpected fee to many consumer products and created strong consumer backlash. On July 1, 2010, citizens who were shopping for daily products suddenly realized that they had to pay an extra fee for many products. Angry with the fees, consumers started to contact media sources. One expert (interviewee B14) recalled,

> *One of the things that caught the eye of the press was fees being charged on some everyday products that people consumed, and that people may not deem as being hazardous or special. For example, dish soap, and that was pictured in the Toronto Star, because a lady […] saw an eco-fee attached to her purchase and wondered what that was all about. There was some confusion with the program with which materials were included and which were not included, and that confusion resulted in fees for corrosive materials being applied to a non-corrosive irritant material, which was the dish soap [—hence the] higher fees.*

What was coined "eco-fees" soon became a hot topic (see Figure 6). The media started to critically question Stewardship Ontario, an organization which it considered responsible for these new fees. The problem was more confusing due to diversity of stores, such as company-specific specialized stores and independent general retailers. Some stores had not included the eco-fees in their bills, and some industries chose to keep eco-fees invisible (i.e., adding it to the overall cost of the products) and this created more confusion. In some cases, different retailers were even charging different eco-fees for the same product. Stewardship Ontario was the main target of this increased outrage from consumers and journalists, and some experts maintain that the IFO did not practice good public relations to manage the crisis.

such as laundry detergents and hand soaps — of 20 cents per 100 litres or 100 kilograms.

cents — also incorrect, since consumers should pay only 1 cent on that size.

is it a tax — none of the fees end up in government coffers.

• Retailers can choose to absorb the increases in product prices or

416-945-8687 or ellenroseman.com

New levies 'not a tax grab,' minister insists

FEES from A1

"Unfortunately, much of the coverage to date reflects a basic misunderstanding of both our mandate and our jurisdiction," it continues.

The memo says the organization is "working hard to correct these misperceptions."

Among these "fallacies" is that "the eco fee is not mandatory nor is it a tax — stewards have the option to pass the fees they pay Stewardship Ontario on to consumers."

"As one of the costs of doing business, the eco fee may be reflected in the product's sticker price — in which case the consumer is none the wiser," the advisory states.

"Or it may be itemized on the cash register receipt and added to the product price at checkout. In either

charge that — sometimes the retailer charges it, sometimes they don't — in order to operate the stewardship councils, to collect the material, to transport the material to make

Stewardship Ontario . . . have carte blanche to collect money from consumers

PETER KORMOS, NDP MPP

Canadian Tire apologizes for eco fee errors

Isabella Lam bought a $1 jug of bleach at Canadian Tire last week. Her bill was $1.55, which included an eco fee of

What happened? The stores didn't differentiate between corrosive products, such as toilet bowl cleaners and rust removers, and detergents, which are classified as irritants.

I also paid 28 cents on a package of four double-A non-rechargable batteries at a Canadian Tire store when the correct eco fee was actually 6 cents.

"Eco fees were not intended to generate profit for us and we're working to ensure the correct fees are charged going forward," Cole said.

Any money that is not reimbursed to customers will be remitted to Stewardship Ontario to pay for its recycling and disposal efforts, she added.

Diane Brisebois, president of the Retail Council of Canada, blamed the pricing errors on the number of individual products — known as stock-keeping units or SKUs — carried in large stores.

While some manufacturers will incorporate the eco fees into the price of their goods, others will pass them on to retailers — which pass them on, in turn, to customers.

"I wish I had a simple solution, but this program is so complex and touches so many products," says Brisebois, who's also a member of Stewardship Ontario's board.

In her view, "a communications snafu" resulted when the second phase was launched on July 1 without advance notice to customers.

"The industry did not spend enough time to educate, inform and motivate consumers, as it did in 2008. Instead, it spent more time on the implementation," she said.

After my column last Saturday, I heard from many people who tried to check the eco fees and found Stewardship Ontario's website hard to navigate.

I also heard from people who went to the affiliated website, www.makethedrop.ca, and couldn't find any drop-off locations close to their homes.

Wayne Jenkins, who lives in Waterford, Ont., was given drop stations in Cambridge, Hamilton and Dundas — about an hour's drive from his home.

He thinks he'll never be able to use the service.

John Hamlin, a painting contractor in Thunder Bay, was told to go to a landfill site to drop off leftover cans of paint and petroleum prod-

CANADA

WHAT GETS THE FEE

As of July 1, thousands of products are accompanied by an eco fee, ranging from a few cents to several dollars. They include:

All aerosol containers, from paint to hairspray

Rechargable batteries, as well as non-lead acid motive batteries

Corrosives and irritants like household bleaches, drain cleaners and detergents

Assorted toxic, flammable and reactive products

Syringes and needles

Pharmaceuticals for humans and pets, including prescription medicine, over-the-counter drugs and natural health products

Fluorescent tubes and bulbs

Fire extinguishers

For a full list and details on where to dispose those items once they've been used, visit makethedrop.ca

Consumers caught off guard by new recycling fee

ECO from A1

"The campaign consists of posters and radio spots, as well as a group that tours public events and provides information about the program.

"We would rather spend the money to educate people than to spend the money months ahead to say, 'Hey, there's a new eco fee coming,'" said spokeswoman Amanda Harper Seventy. "Our message to consumers isn't about the eco fees. Our message to consumers is about here are the materials and what to do with them."

By clicking the makethedrop.ca website and inserting their postal codes, residents can find which products they can recycle and where the closest collection site is located. There are 92 special disposal sites across the province.

Some retailers and consumers, however, say the silence has been the cause. If the consumers don't know of the fees before they buy the item, they won't know what to do with the waste.

When the first round of products was levied in 2008, Len McAuley was given a sign, explaining the fees to customers at Pollock's Home Hardware on Roncesvalles Ave.

"With this second phase, they haven't sent us anything," he said. "Basically, the list is getting longer. The government's not communicating to the public."

The fees now cover all aerosol containers from hairspray to whipped cream, pharmaceuticals, syringes, mercury-containing devices and other toxic, corrosive or flammable products. The start date of the new levies was set when the program came into effect two years ago and by coincidence fell on the same day as the HST launch, Harper Seventy said.

Progressive Conservative Environment critic Toby Barrett criticized some of the fees as being a tax grab "under the guise of environmentalism," noting particular concern with levies on tire extinguishers, which range from $1.22 to $686 depending on the weight.

"I feel the Ontario government has a bit of explaining to do. I think that would eliminate a lot of the frustration," he said.

However, Harper Seventy stressed that the fees aren't a tax.

"They are the program cost to collect and manage this material out of the waste stream," she said.

He noted the stewardship councils were set up under enabling legislation that was passed by the previous Progressive Conservative government in 2002, so it's odd that the Tories would be so critical.

"It's not a tax. The government does not see one penny of it. It all goes to the stewardship councils to make sure that all of these materials do not end up in our landfill sites," the minister said.

Chris Colorado's receipt shows the 13-cent eco-fee she paid on a bottle of dish detergent on Wednesday.

pt numerous complaints

The environmental fee for the new bulbs, which contain mercury, is 14 cents.

It's a classic mixed message and it has both supporters and critics crying foul over the eco fee scheme.

"The program is important but it has been delivered in an entirely

chief of staff Peter Wilkinson.

Figure 6. Instances of Media Attention to Eco-Fees in July 2010

Some additional side issues exacerbated the consumer backlash. One was unreasonable or wrong fees imposed on a number of products. For instance, the eco-fee calculated for a box of a product was added to the price of every individual unit in the box. Experts who were involved in operationalization of the consolidated program contend that with the government's short notice for implementing the consolidated plan, these problems were inevitable. Further, the market was not conditioned for such a dramatic decision in a short period and communication was poor, both before implementation and after the crisis.

The perception of the eco-fees as a new form of tax was another complication. Supporting this perception was the coincidence of the consolidated phase's implementation with an important change in the provincial tax system. Based on the Ministry's decision, the consolidated program commenced on exactly the same date that the harmonized sales tax was implemented in Ontario. This new tax system was in the

Liberal government's agenda for a few years, and consumers who had a negative perception of the new tax system perceived the eco-fees as yet another type of tax imposed on Ontarians—a tax on a tax.

This crisis also gave rise to conspiracy theory. Some involved experts still blame a specific retailer for encouraging its angry consumers to reach out to the media. Because charging recycling fees involved significant changes in firms' operations, some companies were willing to kill the program by fuelling the flame. But some other individuals involved in the operationalization of the programs refute these rumors by recalling the Ministry's short notice and how it confused retailers. As such, the operational errors were inevitable, and it was a natural reaction of uninformed employees of these retailers to advise consumers to blame those who made the main decision.

On July 21, 2010, after three weeks of furious debates and fights, the Minister revoked the consolidated program by filing a regulation that suspended the payment of fees on the products under Phases 2 and 3 of the MHSW program. Soon after, the existing Minister, John Gerretsen, was fired and John Wilkinson took the office. The new Minister, who has now held that office since August 18, 2010, asked WDO's board of directors to develop a revised program to include only Phase 1 materials. In developing this document, which was approved by the Minister, Stewardship Ontario updated the definitions of Orange Drop materials, with the new definitions taking effect on October 1, 2012. Despite the cancellation of Phases 2 and 3, collection of the newly designated materials in municipalities was neither new nor stoppable. Stewardship Ontario continued to operate the Orange Drop Program in its entirety until September 30, 2012. To manage the municipalities' dissatisfaction, the Ministry allotted a limited budget to cover some costs of six of the 22 material groups for a limited time.

The 2010 crisis influenced subsequent waste management policies and practices for at least another few years. The public remained sensitive to the costs of waste management and media frequently covered the operations and costs of Stewardship Ontario. This contention was a gift to opposition parties seeking to attack the Liberal government, which made that government and its relevant bodies increasingly cautious, as is reflected

in the publicly available documents; for example, board meeting minutes of WDO lack any detailed information after the crisis years. Another aspect of this caution is reflected in the increasing disfavour of the government with respect to visible eco-fees. Arguing that visible fees were a reason for the 2010 troubles, government representatives gradually put more pressure on business to bury the eco-fees in the final product price. Visibility of these fees did not violate any regulations and is common in most other Canadian jurisdictions, and even in some industries in Ontario, such as electronics and tires. However, in the years to come, stewards in industries such as paint were strongly discouraged from making an extra cost for waste management visible.

The 2010 problems were not limited to public disapproval. They also flamed the fire under the ashes of operating stewardship programs, and stewards started raising their own concerns about the rules and implementation afresh. One concern was program performance targets. The government had raised the idea of aspirational targets and asked the IFO to include such targets in its programs. In MHSW Program Plan 2009, for the paint and coatings class, the collection target for the first year of the program was 37 per cent. Targets for years 2–5 were 47, 57, 67, and 77 per cent, respectively. Other performance goals were equally challenging. Moreover, an increasing portion of the collected residual paint was expected to be recycled, which involved operational challenges. Paint stewards were also expected to establish an increasing number of return-to-retail depots in their own stores to make drop-off locations more accessible for consumers. Yet, establishing these depots was costly for participating stores and not many large companies were interested in volunteering to meet this goal.

As the collected volumes were ramping up, processing the collected materials was another challenge for stewardship programs. For paint and coatings, the only active recycler in Ontario was still Hotz, acquired by Envirosystems, Inc. in 2010, and the few other existing recyclers in North America did not have a growing market to accept Ontario’s collected residual paint. In fact, the market price of the recycled paint did not create enough margin for the recyclers to pay for collection; this made the recycling operations costly for the IFO and, consequently, stewards. In many cases, they would not only pay the costs of collection and transport, but also pay the recycler to take care of the

collected materials. With increasing volume, another active company in waste services, Photech Environmental, entered the paint recycling business in Southern Ontario and broke Hotz's monopoly. This helped the IFO dramatically in solving the problem of accumulated collected paint and complying with the program targets, highlighting Photech's services in separate sections of its annual reports for 2010 and 2012. For stewards, despite the importance of compliance, increased collection still meant paying more for operations. Both of the paint recyclers continued their operations in the coming years. In May 2012, Photech sent its recycled paint to the consumer paint market under the Loop Paint brand, whereas Hotz continued its bulk export marketing strategy—a weaker alternative in margins but perhaps more convenient.

Comparing the eco-fees across provinces, stewards raised additional concerns about the costs of the program in Ontario. Higher costs resulted in higher-than-average eco-fees in the province, which could not only disrupt the market and influence the demand, but could also disharmonize the markets across provinces. Whereas in most other provinces, municipalities were not charging the programs for their collection services, they were a main source of cost in Ontario. Further, stewards and IFOs continuously expressed their dissatisfaction about the efficiency of the municipalities and various service providers, such as hauling companies and processors. Stewards criticized some municipalities for discharging their public responsibilities and utilizing their political clout to influence the provincial government's decision, hiring unnecessary people in collection sites, and gaining popularity by leveraging funds imposed on businesses. As one steward (interviewee B11) noted,

> *We don't have control over [municipalities'] operating hours or how much we pay them […]it seems like they've built a Cadillac for return depots when they only need a Volkswagen. If you think of the process of returning paint, you're coming in, you're taking the can of paint, and you're putting it in a box, simple as that. That's what I'm paying somebody to do. I understand people have to make a living. I'm not saying they don't. All I'm saying is that I think they're being unreasonable in terms of what they're requesting as compensation.*

On the other side, some municipalities condemned stewards for attempting to evade the costs of their legal responsibilities and hinder the established recycling programs by finding exemptions and leaving the operational costs on municipalities. This sentiment was reflected in an uncomfortable conversation with a local government representative after I asked a challenging question about the methods of assessing the net environmental advantage of a specific recycling program. The question raised the fact that many consumers drive personal cars to return small volumes of a regulated material with minimal hazard for the environment, and inquired how the net environmental impacts of the programs are assessed. The expert (interviewee M1), angry with remembering how some stewardship programs were exempted from the regulation in 2010 and left the costs to municipalities, also cast concerns about the intentions behind this question:

> *[M]any, many product manufacturers are going that way [to prove that their products are environmentally safe, leaving the expenses on municipalities]. And I don't know who's funding your study, but if it's [a company name] who's trying to get out of funding things by finding alternative ways for municipalities to give up on these things, those are types of things where the municipality will have—and the general public will have—some issues.*

The same type of conflict was noticeable among stewards and other service providers, such as collectors of waste and processors and recyclers. WDO and the Ministry were the go-to authorities of various stakeholders with different levels of power. Whereas WDO was still a silent intermediary organization, the Ministry had its own problems and concerns. A steward, interviewee B11, described the political dynamics as follows:

> *Steward:* *There was a lot of politics involved, people moving […]. One time the Ministry would agree with us and then they would agree with Stewardship Ontario and then they would change their mind because there was a political faction that was involved.*
>
> *Researcher:* *Could you give an example?*
>
> *Steward:* *The trucking companies, for example, this is a lot of money for them. [The IFO] would sit down with them and try to negotiate with them and they would run to the Ministry and say, "Stewardship Ontario is not being fair with us." The*

municipalities—one of the things that really opened my eyes was power, because obviously we would engage the municipalities to pick up the waste and then we would pay them and you had some municipalities that did it in a fairly efficient manner and then there were other municipalities that, because they thought it was just cost plus, so whatever the cost are, you will pay plus and [the IFO] would bring this to their attention and say, "Look, this municipality is costing us x, you are costing us x times 5." […] and they'd say, "Well, that is none of your business. Your job is you pay us what we tell you." And the municipalities would obviously run to the Minister in Ontario and say again, "Stewardship Ontario is not being fair to us; we are a smaller municipality, we can't compete with those other municipalities." And so [the IFO] would say, "Okay, well then let that municipality handle your work." [This was the relationship] between the municipalities, the trucking companies, WDO, the Ministry…

Researcher: *So why do you see this as political?*

Steward: *It comes down to simple political clout. The [municipalities] had a tremendous amount of clout. They would go to the local MPP and they would say, "Hey, look what is happening, we are not going to let these [stewards] push us around, we will remember this when the next election [comes.]" So, the Ministry of the Environment was getting calls from MPPs across Ontario saying here is what is happening.*

Stewards also argued that service providers—viewed by them as actors with no special role in waste management and environmental protection—were making fortunes with the stewards' money without stewards being able to negotiate. An anecdote from the same steward demonstrates such dynamics:

One of our more animated [colleagues] went to a meeting and the guys running the trucking company showed up [in] Lamborghinis and Ferraris, and [our colleague] said, "Really? You guys are driving around in Ferraris and Lamborghinis and you are worried about [lowering costs]?!" So [the colleague] made sure that the Ministry found out that these guys were driving these types of cars to meetings where, apparently, they were saying "You are not giving us enough money."

With such tumultuous interactions with other stakeholders, many firms viewed Ontario as the most complicated province in terms of waste management. A manager from a manufacturing company (interviewee B13) described:

> *[In other provinces] there didn't seem to be all of these special interest groups […]. I don't remember having these issues in British Columbia, Quebec, or Alberta. It did seem sometimes when we had meetings [in Ontario] that the world was trying to beat up on us, because everybody wanted their pound of flesh.*

In the volatile circumstances after 2010, the last thing the Ministry wanted was noise from the operation side and local governments. Still, stewardship collectives would pursue cost efficiency whenever possible. For instance, in 2011, Stewardship Ontario managed to start changing the imbursement model of waste processors to an incentive-based one, which significantly lowered the income of processors and recyclers. However, with such conflicts, the context was devoid of trust among different actors, leaving no opportunities for cooperation. In a series of correspondence with an industry leader (interviewee B9), when I asked him whether they have ever invited NGOs to their collective's meetings to create mutual understanding, after a 15-day delay the leader replied:

> *Involving NGOs to advocate for transparency has been so disruptive to my normal paradigm that I have had to think long about this […]. My point is that there is a wide division and [an NGO's name] are usually positioned against manufacturers. There is a lot of baggage and I am not sure that manufacturers would trust them or be willing to engage, just like [the NGO name] do not trust manufacturers.*

Interestingly, WDO was historically a fairly silent actor, both before the 2010 issues and throughout this ongoing dissonance. Interviewee G9, an expert then involved in operations, remembers this low-profile role:

> *I didn't really even understand WDO existed. WDO, historically, was very small in staff… four, five people. […] WDO didn't have a day-to-*

> *day role with Stewardship Ontario the way it does now. When all of that was going on in 2010, even if you look through the news clippings, WDO was never even quoted. It's actually quite interesting to look through it and think, "Why wouldn't the media be contacting the organization that's supposed to be overseeing all of this when something went as wrong, as it did." So WDO's role back then was very minimal and hands-off. More behind the scenes than front-facing.*

WDO's role was more of an intermediary organization between the government and the IFOs, facilitating information transfer and mediation when conflicts arose among the stakeholders. Its initial structure, defined by the 2002 *Act*, included board members from not only provincial government, but various stakeholder groups with competing interests, including different stewards, municipalities, and service providers. On February 9, 2012, the Ministry changed the regulation to designate a "disinterested" board structure for WDO, with members assigned directly or indirectly by the Minister. It was the beginning of a shift in the role of this monitoring body and other elements of the system.

The transition to stage 3 happened gradually. Although it was sparked by the 2010 troubles, I consider a major action by business as the threshold of hybridization: the transfer of the paint stewardship program from the government-designated IFO to the industry's IFO, which was the harbinger of further changes in the system.

4.3 Stage 3: Hybridization (May 2014–Present)

The *Waste Diversion Act*, 2002, had formally considered the right for business to establish its own industry stewardship programs after the programs were initially launched—that is, after the first launch of the program, individual and groups of firms had the option to establish their own IFOs, distinct from the government-designated IFO. However, the requirements for taking on the programs by alternatives rather than Stewardship Ontario were so strict that industry's initial attempts in this direction failed.

Paint was always a main MHSW material class. In 2014, Stewardship Ontario collected 9,422 tonnes of paint and coatings materials, equal to one-third of all collected materials.

Eighty-two per cent of the collected paint was recycled. Budget-wise, Stewardship Ontario's highest revenue collected from the member companies came from paint. The paint and coatings industry had long planned to establish its independent industry stewardship program. The industry's choice was Product Care Association—an IFO involved in waste paint management programs in other provinces since the 1990s. Due to its experience, Product Care Association was even involved in the initial design of the MHSW program in Ontario, but the designation of Stewardship Ontario had kept it almost entirely separate from the program in the following years.

Nonetheless, over time, both government and industry learned that the imposed structure curbed the achievement of the program goals, and this learning facilitated the process. As one government expert (interviewee G6) described:

> *The province probably could've done a better job in helping and educating stewards on the opportunities that they could avail themselves of. A few years later [the Ministry and WDO] realized that no one's coming forward with an industry stewardship program. Everyone was just joining the [existing, government imposed] IFO […] so, to their credit, they put together a guidebook to develop industry stewardship programs.*

Business also views the change as a result of stewards' continual efforts. Interviewee B17 who had worked with different sides referred to the active role of business in this change:

> *Paint industry chaps jumped through the hoops to get their program under control, rather than just paying the eco-fees to Stewardship Ontario. The Ministry and Waste Diversion Ontario were reluctant at first, but over time they figured that this overloaded truck is stuck in mud and business may provide traction to get it out.*

On behalf of the paint and coatings industry, Product Care Association started negotiations with WDO and prepared an industry stewardship program which was finally submitted to WDO on May 23, 2014. In December, WDO announced that it had

approved the industry stewardship program and the effective date of Product Care Association's stewardship program would be June 30, 2015.

Substituting an industry-shaped program for the government-imposed IFO was deemed a step forward for the industry. The industry's collective, the former IFO, and WDO agreed on a process to transfer stewards who were current with financial and reporting obligations to Product Care Association. At the effective date of the June 30, 2015, 98 per cent of paint stewards, by market share, had already transferred to Product Care Association. The new collective seemed to have more agency to develop its industry-specific strategies and make the programs more efficient while meeting the targets. It should be noted that, theoretically, the firms in this industry had the right to establish different individual or collective stewardship programs (conditional on WDO's prior approval), but no other program yet exist. Therefore, in the short term, the introduction of the new stewardship program meant that, for practical purposes, firms would transition from one monopoly to another, as there was no other choice; however, in a year or so, they could act differently. Overall, the transition from Stewardship Ontario to Product Care Association has been described as relatively smooth. Product Care Association announced that it would follow the existing procedures for one year.

Despite its reluctance to accept the MHSW program in its early years, Stewardship Ontario was not content with this change, as it had invested in establishing different systems to run the program and was now losing a main part of its MHSW program, which had placed the burden of the fixed costs of operation on other MHSW stewards. Notably, Stewardship Ontario had already realized that establishing the industry-based stewardship programs was a growing trend—one that would impact its business significantly. To this end, in 2013, the IFO established a not-for-profit organization, Canadian Stewardship Services Alliance Inc., which focused on running such programs (especially for the Blue Box materials) to create harmony across Canadian provinces with heterogeneous systems.

As such, following the dynamics in the paint and coatings stewardship program, other industries also tried to establish their own stewardship programs, especially when they

heard that bigger changes were on the way which would impact this transition. As a consultant (interviewee S7) described:

> *Industry's now saying, "Oh, I saw the writing on the wall, let's get out while we can, have some more flexibility." What's happened there is they've just been able to not get encumbered and stuck in Stewardship Ontario […] because the government isn't allowing new [industry stewardship programs] now for these materials. That was why they said, "We gotta get out of here now!"*

As a side note, experts believe that government's acquiescence to change after such a prescriptive regulation was the gradual outcome of various factors. First, the irreconcilable stakeholder conflicts, especially with respect to inefficiency of the programs, proved the regulation inefficient. Among different powerful stakeholders with conflicting interests, business seemed to be the best actor to create efficient programs to manage the used products that they had manufactured themselves.

Second and more importantly, despite the environmental protection rationale behind the regulation, it was mainly designed to secure the business funding for municipalities to continue the status quo in waste management. Indeed, for most of the materials, paint included, no significant improvement was observed after nearly three decades of waste management practices. Many of these materials were not recycled but instead incinerated or disposed of safely. Such solutions are often less desirable and contested by environmental activists (Baxter, Ho, Rollins, & Maclaren, 2016) This latter approach was far from the emerging discourse of resource management, such as the cradle-to-cradle concept and, more recently, the concept of the circular economy. The circular economy focuses on enablers such as eco-design, innovation, business model change, reuse, and recycling, with the idea that these approaches will mainly be pursued by business (Beaulieu, van Durme, & Arpin, 2015; European Environment Agency, 2016). Yet, the regulation offered no incentive for such proactive actions by business, as firms could comply with the requirements by paying their shares to the IFO. With such shortcomings in the regulation and the solidified needs of society to not only prevent pollution but also

preserve resources, the circular economy gradually became a catalyst for change. Adopting this new approach in policies could also ensure Ontario's leadership in resource recovery programs.

To improve the situation, the Ontario government first proposed the *Waste Reduction Act*, 2013, known as Bill 91. The submitted Bill aimed to make dramatic changes in the waste management system, such as focusing on individual producer responsibility, relinquishing new high-level enforcement roles to WDO as the government's monitoring hand, and banning visible eco-fees. Such changes created strong backlash from the industries and the Bill was finally killed.

In the next course of attempts, the government directly adopted the concept of the circular economy. To effect this transition, in November 2015, the Minister posted a proposed waste reduction legislation for public comment. Entitled the *Waste-Free Ontario Act, Bill 151* proposed to enact the *Resource Recovery and Circular Economy Act* and the *Waste Diversion Transition Act*. These statutes were intended to replace the *Waste Diversion Act, 2002*. In addition, the Ministry released a *Draft Strategy* document which illustrated how the new legislation might be applied to create a circular economy in the province.

On November 30, 2016, the *Waste-Free Ontario Act*, 2016 was proclaimed. The new Act aimed to dramatically overhaul the province's recycling regime and transition to a more robust producer responsibility that left more flexibility for stewards. The Act empowered the Minister to direct the relevant IFO to implement a windup plan. The legislators argued that replacing IFOs with business-oriented programs would resolve the concerns regarding the IFOs' monopoly. More importantly, the Act allowed firms to adopt various individual- or collective-level programs, theoretically incentivizing firms to remove their waste or develop innovative solutions to manage post-consumer materials more efficiently and effectively. This regulation was expected to be a game changer, as it could provide financial incentives (e.g., fewer costs or even a profit) for improvement. Further, having multiple collective and individual programs could spur the competition and innovation needed for the transition to a circular economy. On March 1, 2017, the

Minister released the final revision of the *Strategy for a Waste-Free Ontario: Building the Circular Economy*.

As noted, the paint and coatings industry had already taken the initiative and established its industry stewardship program, run by Product Care Association. Along with the government's proclaimed support for more flexibility to encourage business to move towards a circular economy, Product Care Association attempted to improve its financial efficiency by managing program operations, for example, by establishing more return-to-retail depots at the industry members' sites (which were often free input channels compared to the municipal facilities). Moreover, Product Care Association started conversations with some of the more costly municipalities about lowering their operational fees. Municipalities, in turn, gradually realized the shift in their position. As industry stewardship programs and producer responsibility organizations took on the role of the government-imposed IFO, municipalities generally considered three possibilities going forward: (1) working with industry-based programs as service providers, (2) cooperating with another service provider by letting them use their existing facilities for collection and management of waste, or (3) shutting down their facilities completely.

Given the limited market for recycled paint, the industry stewardship program also considered alternative applications for collected paint, including both usable and unrecyclable materials, such as dried paint. Easy solutions for unrecyclable paint, similar to many other MHSW materials, include incineration to generate energy or desiccation and then disposal in special landfills. As a third option, for many years, a cement block manufacturer accepted these materials to add to its products, as scientific evidence suggests that this could enhance some of the characteristics of cement. But upon the introduction of the industry-based program, more innovative solutions received greater attention from the stewards. Using leftover paint to manufacture driveway sealants is a fourth alternative. Such solutions can solve the problem of unrecyclable materials, reduce the recycling costs imposed on stewards, and lower the dependence of the industry on recyclers. However, the major vehicle for such innovative solutions is recyclers themselves, which gave recyclers a dual role.

Although the actors agreed that groundbreaking innovation should be sought in the long term, with increased autonomy, the paint industry not only adopted strategies to enhance efficiency but also demonstrated many instances of proactivity. As one industry leader (interviewee B9) explained,

> *10 years ago, industry members didn't even know each other. Stewardship drove the agenda, and now, we can collaborate [within the industry]. We've developed a really good logistics and distribution network for collecting post-consumer paint. We haven't developed expertise in what we do with that [residual] paint. Well, what we're doing is okay, right, but I'd sure like to see that go to another level. [For me, that's] the big opportunity. So, [now we are] using up [residual] paint as paint, but what's even more clever that we can do with it? Is it a more deliberate use in cement processes and bonding processes? That's what I would like to see. It's going to take some R&D expertise.*

The large manufacturers' support for innovation in recycling was unprecedented. Whereas paint recyclers were initially deemed outsiders who would consume the free waste from virgin manufacturers' products to produce paint and compete with them, the industry gradually became more receptive to this sector, to the degree that even a leading recycling company's top manager joined the industry association's board of directors. Finding new applications for the collected materials was beneficial to everyone in the industry, as it would secure compliance, lower the stewardship costs for the members, and potentially resolve the concerns of virgin paint manufacturers about competing with recycled products.

The increased involvement of stewards in the program was also reflected in operational aspects. For instance, Product Care Association gradually recruited members to establish more return depots in their stores. Despite the costs for the participating stores, this was a cheaper input channel than municipal depots, which reduced the total costs for the collective as well as increasing consumer access and collection volume. Another instance

of proactive effort by business was the voluntary collection of a new material group, bulbs and lights. This product group was part of the consolidated program that was deregulated in 2010. In 2014, Product Care Association offered to voluntarily run a new program for this material group, with the condition that the government regulate these products after one year to ensure a level playing field. Admittedly, this proactive initiative was discontinued because the government did not regulate this material group.

The regulators have acknowledged that transitioning to a circular economy is a long-term plan, beginning with many consultations and step-by-step pilot actions for the first few years. As a primary part of this transition—and under the new Act, proclaimed simultaneously with the *Waste-Free Ontario Act*—WDO was replaced with a new organization. The new body, the Resource Productivity and Recovery Authority (referred to hereafter as "the Authority"), not only acquired responsibility for overseeing the programs, but is now responsible for compliance and enforcement as well. As an introductory action, the Authority started developing a comprehensive registry to collect data from various sources, including individual stewards—a task previously undertaken by the IFOs on a limited scale. These data would be used for a number of reasons (e.g., setting performance targets and penalizing stewards who cannot meet them). To meet its new mandate, the Authority also started to acquire and develop compliance and enforcement capabilities.

Gradually, both collectives and individual firms showed interest in establishing their own waste management and circular economy programs in accordance with the government's base regulation. At an individual level, in April 2016, one company (SodaStream) managed to get program approval for its refillable pressurized cylinders. Other collectives and individual firms also followed this pattern, and government cautiously scheduled the transition under the new *Act*. For instance, several firms proposed their plans to establish new programs to manage used tires by the end of 2018. The resultant market dynamics were deemed a driver of competition and, consequently, innovation. Ultimately, on April 12, 2018, the Minister issued a direction to the imposed IFO (Stewardship Ontario) to fully wind up the MHSW program by the end of 2020, marking the complete transition to individual producer responsibility for all materials collected under the program.

Chapter 5

5 Tensions and Underlying Mechanisms

In this chapter, I first recap the data from Chapter 4 and summarize how three different regulatory regimes were shaped. Doing so will provide a bigger picture of the shaping process and also allow me to theorize, in next chapter, on the proposed model of hybrid regulation and how it differs from other two alternatives. To this end, in this chapter, I draw on the data and explain the unearthed tensions and dualities, as inherent components of the studied hybrid model of regulation, and what underlies them.

5.1 From Regulation to Co-Regulation

The case of MHSW management demonstrates how, through the identified stages, ISR and government regulation were tested and proved ineffective, and how a hybrid form of regulation evolved with different features compared to those of conventional regimes. In the beginning, the emerging expectations called for industry's cooperation with other actors in post-consumer waste management, but despite government persuasion, business avoided taking on the costly responsibilities that were historically positioned at the societal level.

Consistent with the literature, I find that two decades of avoidance and push and pull (Chang et al., 1998) ultimately activated government regulatory institutions. Nonetheless, a main challenge was the fact that waste management has long been constructed as a collective issue. The government's solution to translate this collective mandate to individual firm practices was to impose a collective-level program to be run by a designated collective (IFO), along with an oversight authority (WDO), all funded by the regulated firms based on the costs of managing the waste their products create. This structure was deemed an innovative policy solution for the waste problem, but in practice, it proved far from efficient or progressive. Despite its advantages, the strictly regulated program not only did not result in new solutions for resource management, but also brought forth unexpected confrontation among the involved actors, especially

industries and municipalities, and ultimately transformed into a hybrid model of regulation.

Although the goal of this research is not to explore the transition process and causes, it is important to mention the factors that facilitated the evolution of the hybrid model. Based on the data presented in Chapter 4, four drivers were pivotal in transitioning from the collective-level regulation to the hybrid model. First, the regulation had hindered industry's ability to utilize its capabilities to enhance efficiency, and government tended to view business merely the provider of funds for waste management; this resulted in growing resistance and dissatisfaction among stewards. Moreover, past literature has noted that when industry faces shared "enemies," it gradually develops stronger in-group identity and shows more forceful reactions against the out-group (Pozner & Rao, 2006). As a result, various industries were challenging the prescriptive regulation simultaneously.

Second, the regulation fuelled the conflict of stakeholder interests and did not suggest a solution for such problems, creating ongoing confrontation rather than synergy. Whereas the source of funding was business, industries had minimal authority to run their programs at their discretion, as the *Ontario Regulation 101, Recycling and Composting of Municipal Waste*, 1994, had transferred that authority to municipalities (i.e., an array of 444 local entities with heterogenous needs and goals). The regulation had not predicted how these different interests among actors could be productively resolved, which changed the role of WDO from a monitoring authority to a mediator to control contentions. The conflictual years after 2010 made it clear that the existing regulatory regime could not proceed further.

Third, the strong backlash from citizens and media in the midst of the process weakened the provincial government with respect to post-consumer policies, making the government cautious and increasing media and consumer concerns about the programs. Whereas in the past the government had focused on controlling the flames among the stakeholders, it was now more open to revising the coerced regime, which made the transition possible.

Finally, the outcome of the regulation was far from the significant environmental improvement that it had aimed to achieve. Instead, the focus of the waste management programs was mainly on maintaining the status quo by securing business's financial contribution, rather than reducing the environmental impact by exploring innovative solutions and disruptive outcomes.

The turbulent period after the government regulation, fraught with conflicts among the actors, finally facilitated the transition from the government-regulated collective-level program into a regime that was co-regulated by both government and business and operated by business. The government's role in this model was to set the vision, broad goals, and high-level rules (such as *Waste Diversion Transition Act*, 2017), as well as to provide guidelines and general strategies. The role of businesses in rule setting was to translate the higher-level rules and goals into policies for practice based on their own discretion. For instance, firms can now choose to establish individual-level stewardship programs to manage their own waste, cooperate with other firms to establish a collective program jointly, or simply join an existing collective-level program. However, all such stewardship programs must still be approved by the Authority and Ministry in advance.

Upon implementation, both sides will also be involved in enforcement. That is, in addition to internal controls by business, external audits are also in place to ensure compliance, and the Authority monitors actual program performance to ensure that business meets the approved targets. Business's agency in co-regulation, for example, is reflected in the granted power at the operational level to negotiate with municipalities. Although collection of hazardous waste is still mostly done by municipalities, the industry's collective had the option to establish other collection channels, such as store depots, and choose the service providers. Still, the Authority monitors that process to ensure that the established municipal facilities are not neglected. Overall, this system has created a new model of co-regulation which is neither government regulation nor self-regulation, but both intertwined. I further explain the structure of this model in Chapter 6.

5.2 Tensions in Hybridization

As the case narrative depicts, conflicts of interest among different actors (often with respect to the costs and efficiency of the program) were a defining characteristic throughout the studied process. However, delving deeper into the data allowed me to understand that the complexity of the context went beyond mere conflict among the stakeholders. To understand the dynamics that characterize this hybrid model of regulation, as explained in Chapter 3, I used grounded theorizing and temporal bracketing to unearth the precise features that characterize the model. The result demonstrated that the co-regulated regime is characterized by four tensions, embodied in dualities, each shaped by different mechanisms.

Interestingly, these tensions and their underlying mechanisms were temporally bound to the hybrid regulation—that is, the tensions emerged parallel with transitioning of the mandated program into the hybrid collective action. Tracking the elements of the tensions in the data demonstrated that prior to the formation of the hybrid model, the government-regulated system was characterized by just one pole of each duality. This regulatory regime was associated with the concepts of *compliance*, *decoupling*, *control over means,* and *harmonization* (all of which are discussed in next sections). As the hybrid form evolved, the opposite poles of these four concepts—*proactivity*, *integration*, *control over ends*, and *distinctiveness*, respectively—also emerged and gained salience. The juxtaposition of these new concepts with the four existing concepts form four dualities that generate ongoing tensions as the characteristics of the identified hybrid regulation. The coding hierarchy was presented in Chapter 2 (see Figure 2) and below, I provide the data and explanation of each of the four tensions in the hybrid model.

5.3 Compliance versus Proactivity

Whereas government regulation often tends to seek and foster compliance, the circular economy relies heavily on innovative business models, technology development, disruptive changes, and products that can close the material cycles. In addition, as discussed in Chapter 2, proactivity in collective actions and ISR is an open question with conflicting evidence. Hence, it was not surprising that the developed hybrid model was

characterized by an ongoing tension between compliance and the expected proactivity. This tension was sustained by different mechanisms, explained below.

5.3.1 Boundaries of Formal Regulation

In general, Canada is viewed as a proactive country in regulating for environmental protection, especially compared to its main trade partner, the United States. For instance, under the third phase of *Canada Chemical Management Plan*, 1,550 substances are being reviewed over five years, and those identified as toxic will be banned. Unsurprisingly, business may find this proactivity a constraint, as one industry leader (interviewee B1) described:

> *Canada has its fair share—some would say unfair share—[of environmental regulation]; one of our colleagues [from] a large multinational manufacturer says, "Dealing with regulations in Canada is kind of like drinking water through a firehose!" And I know because we got wet every day. This ultimately impacts business operations.*

From this perspective, extending the scope of regulation not only has economic impacts, such as on the flow of business from Canada to the United States, but also hinders proactivity and innovation as the expanding scope of regulation calls for more business actions to guarantee compliance. Proactivity is often costly, at least in the short term; therefore, the more convenient alternative of compliance, which is an ongoing requirement due to government regulation, may frequently dominate the relationship. Although the data do not refute this argument, they do suggest that expanding regulation can in fact have an opposite impact and result in proactive actions by business. Interviewee B21, a representative of an IFO, explained how the IFO's prior compliance-driven actions were gradually accompanied by proactive actions to influence the next phase of government requirements:

> *We have to represent our members. Eye-opener! We are not an environmentalist not-for-profit for recycling. We are a bridge between industry and regulation. Unromantic idea but quite accurate: "We are a compliance vehicle for industry." This is the bottom line. […] So, we*

> *constantly maintain compliance, but now we sometimes try to do more, like, we sit together and think how we can do more "reuse." Reuse is definitely better than recycle for the environment and it may reduce our costs, but it needs a new system. We work on such projects without being obliged to.*

The same expert also described how that IFO occasionally expands the geographical boundaries of its waste management practices to sparsely populated regions not covered by the existing regulation. This costly expansion is often questioned by cost-conscious members of the collective. However, it is one of the means that business can utilize to influence the scope of government-imposed regulatory requirements.

5.3.2 Stringency of Regulation

Like the impact of broadening the government's requirements, the impact of imposing stricter requirements, businesses argue, forces firms to focus their attention on compliance. A steward's representative (interviewee B15) argued that,

> *Some provincial governments just compete in raising the bar. Ontario likes to be the leader. [Ontario's regulators] don't consider whether it would work or not; they just want to impose stronger regulations. We are always behind on the regulation. We can't keep up with them. It always takes time and resources and effort to implement the new legislation and before we are done, they are raising their expectations. This doesn't leave us time to think about innovation, to figure out how we can do things better.*

Similarly, interviewee S7, an expert who had worked with various stakeholders, provided an example of how over-regulating can be counterproductive by shifting the responsibility within the firms:

> *We worked with one company and there was a battle within that company. It's a well-known brand, and the environmental health and safety people who were so focused on making sure that they're clean*

> *got us involved [in that project] because they just said, "This [stricter regulation] is beyond our capabilities." Well, [the responsibility] got transferred over to finance and, well, they could care less about the environment—you know what I mean. […] [The finance people] weren't really paying as much attention and it drove the health and safety people nuts, but that's how companies take whatever it is and internalize it.*

In contrast, government argues that with the authority firms have gained in the transformed system, they can take the lead and shape innovative measures, reduce costs, and compete towards better solutions. This idea is central to the government's published strategies towards a circular economy.

Although stringent regulation can foster compliance and hinder proactivity, the data show that conversely, it can also trigger proactivity. One example of such proactivity in response to strict regulation was the voluntary program, launched by Product Care Association in 2015, to manage bulbs and lighting products. Indeed, industry aimed to set the foundations of the program through this voluntary action and expected the government to regulate this material group after one year. Regulation could set a level playing field, secure consistent funding by stewards, and prevent free riding. Surprisingly, because the government did not respond to this industry expectation, business ultimately stopped the voluntary program.

The dynamics over stringency of requirements were also reflected in the ongoing interaction between business and government in setting the targets. As interviewee S6, an expert who had worked with several different stakeholders, described,

> *[T]here's always a tension between what's being achieved today, and the government talks about aspirational targets. That's part of the ambiguity that was created by the legislation. A tacit recognition was that industry says, "We'll do the best we can, but we'll only go as far as what makes sense from a business perspective." […] Then two years*

later [stewards] are under pressure for not achieving their aspirational targets.

5.3.3 Program Scale

The scale of the waste managed by the stewards has always been a source of contention. As the program plans must be approved by the Authority, the collection and recycling amounts were determined in advance, after negotiations between the Authority and business. Historically, the actors had agreed on aspirational targets, expecting businesses to aspire to meet them, while no clear penalties were in place in case of not meeting them. From the business perspective, controlling the volume is necessary in order to keep the program costs manageable. It is therefore unreasonable to expect businesses to set ambitious targets that disrupt their cash flows and competitiveness. In practice, businesses adjust the scale for continual operation by mechanisms such as promotional and communication activities. The following dialogue with two stewardship experts (interviewees B1 and B8) illustrates this point:

Interviewee B1: If they double the amount [of waste] coming back, that's a cost for those producers […]. In the United States, they have these challenges because they are communicating very strongly in certain states and they are getting a lot back and they say, "Oh my god, the cost is so high and we have deficits." So, there is a calibrating that goes on in mature programs like [those] we have in Canada.

Researcher: How can you manage the input? Is it variable?

Interviewee B8: Because all those [old hazardous materials] are in basements and garages, they'll start coming back as consumers get more opportunities to bring them back to the corner of a store. So, if this happens, the amount of the environmental fee will have to go from $1.30 a gallon to [more] like $2. But it may go down later. So, there is ebb and flow in the cost of recycling.

In contrast, the government aims to increase the scale of the programs for two reasons. First, doing so would better protect the environment. Second, the government views increased volume as a means to foster competition towards a circular economy—that is, it hopes that collecting more waste will create opportunities for new firms to emerge and the resultant market dynamics could spur innovation, create new products, and

consequently lower the costs of waste management. Hence, scale can be used as a transformer to realize the envisioned future. As an expert in operations of the programs (interviewee B17) argued,

> *When you have a bit more of a broader view, when it's your responsibility to government to pay for the program [and] make sure you're meeting high environmental standards, then your lens changes to say, "I'm not just meeting the service need for my community; I'm now meeting a legal requirement for the entire province, and that forces me to think of things differently. Can I get better economies of scale? Can I rationalize, can I standardize some of the things that are happening in the field?" Standard contracts, that saves money.*

As such, scale can be deemed a potential driver of innovation and increasing the scale can transform the equation. However, given the significant marginal costs of expanding waste management programs in the short term, a larger program can also be viewed as a barrier to regional competitiveness, which can encourage business to keep the scale at the level of minimal requirements.

Another factor that fuels the tension between proactivity and compliance is frequently reflected in the rhetoric of actors on the government side. These actors tend to position Ontario as the vanguard of stewardship and the circular economy programs, and frequently highlight the unique aspects of the program. Scale is a key driver of this uniqueness and a larger scale would make it possible to develop more advanced features. For instance, the program scale allowed the Authority to develop a database during the hybridization process which was frequently raised in many consultation sessions and interviews as a unique achievement of the system, such as this excerpt from interviewee G9:

> *This registry is going to be very comprehensive [with] strong data coming from Ontario waste providers and everyone in the province. That will allow the Authority to do some very intense analytics, because that [is what is] missing from anywhere in the world. Taking what was*

> *sold in the market and taking what was actually recycled and matching them up, nobody actually really does that […] it's all very piecemeal all over the world.*

5.4 Decoupling versus Integration

An ongoing tension in the co-regulated model is whether business should integrate post-consumer waste into its core operations, or continue considering it as separate from the technical core. Three different mechanisms underlie this tension between decoupling and integration.

5.4.1 Responsibility Positioning

As a unique jurisdictional characteristic, from the beginning, Ontario regulation mandated waste management to be operated by the government-designated IFO. This structure could utilize the preexisting solutions for waste management, which were all based on aggregated collection of materials, but it practically discharged the stewards from their presumed post-consumption responsibility by translating that responsibility into a merely financial mandate. An expert in government (interviewee G6) recalled,

> *The government and the legislation were not initially clear enough in assisting stewards to understand exactly how to develop an [industry stewardship plan] or what was involved. It was rather vague, it was very non-descriptive, and because this was brand new territory for Ontario and for companies, it was easier for them to just say, "Stewardship Ontario, here's my cheque, just the cost of doing business in Ontario that you handle, you discharge my responsibilities."*

The very notion of collectivity of the action did not face strong criticism, and many stewards still find it a more practical and efficient way to manage waste due to the economies of scale. Nonetheless, regulators themselves later questioned the collective design of the system. These actors found the mandate for acting collectively not only a constraint on progress, but a potential threat due to the possibility of price fixing and coalescence of competitors. Over time, these perspectives changed and actors on the

government side argued that managing waste should be an individual responsibility of every single producer. A “true” extended producer responsibility model, therefore, is one that integrates waste management into a firm’s business. The responsibility of a firm is not transferrable to a collective that is funded by individual firms. Having said this, the regulators now acknowledge that it might not be possible (from a practical standpoint) for every individual firm to collect and manage its own post-consumer materials individually.

These dichotomous views were also noticeable among stewards. Some stewards who had already established their systems based on collective operations found integration problematic and argued that the responsibility could be met by exogenous entities. Yet, other stewards sought opportunities to integrate their own post-consumer materials into their businesses. Each model seems to have its own advantages, and both compete in intra-industry discussions.

Government has always emphasized the notion of a level playing field. More recent arguments focus on the fact that policy should create an atmosphere for encouraging and protection of individual actions for better waste management practices; in a level playing field, they argue, leader businesses would be able to innovate and lower their costs, whereas when responsibility is put on the collective, the collective may discourage any movement towards individual progress, which can hamper the transition to a circular economy. Nevertheless, having a level playing field does not negate the ability of some individual firms to fulfill their responsibilities through a collective. In sum, the question of whether or not the waste responsibility can be transferred within a firm’s operational boundaries does not appear to have a clear answer.

5.4.2 Cost Positioning

The debate over whether waste management is an integral part of the core business or an ancillary operational practice is also represented by the controversy over whether the costs of managing waste should be visible to consumers as a separate item on their bills or not. With no restriction in the early regulation, most of the stewardship programs in Ontario decided to operate visible eco-fees at point of sale. However, as noted in Chapter

4, the government gradually adopted a strong position against visibility of fees. For example, when the paint and coating industry developed its own stewardship program, despite its eagerness to demonstrate the fees on the bill to remain consistent with most other jurisdictions, it was urged to bury the eco-fees in product prices. Indeed, the government perceived avoiding visible fees as a tacit condition for approval of the industry's stewardship plan in 2014. Treating the costs of recycling as a visible add-on at the point of sale is desired by many stewards, as it can have advantages such as harmonization in their sales system across provinces. Yet, some stewards argue in support of *invisible* fees.

Visibility of fees became a red line issue during the transition to the hybrid model. Especially after the 2010 crisis, government adopted an increasingly negative position against visible fees. This stance has been gradually framed as a tenet of the whole idea of stewardship. Interviewee G9, an expert from the government side, argues that having visible fees is at odds with the philosophy of true extended producer responsibility:

> *[T]he cost of an [extended producer responsibility] program is not an eco-fee. It is not a visible tax. It is a cost of doing business and should be treated as such. It is no different than your CEO salary. […] Stewards have difficulty recognizing it as a cost of doing business and want to treat it as a tax, so they want to have it as a visible fee. […] The more that you insist that a television has a $40 visible eco-fee on it, it turns more into a user-pay system, and that's not [extended producer responsibility]*.

The government views visible fees at the point of sale as a trigger for consumer complaints, arguing that the costs of the programs are all open to the public and accessible on the program websites, which obviates the need for mentioning them on customers' bills. A representative from the Authority described that years after the 2010 crisis, some consumers are still contacting them and expressing their distrust about whether the fees mentioned on their bills are really used to protect the environment. Visibility of the eco-fees also attracts more media attention, and media continue to

frequently investigate this area. An interview participant from the Authority remember that the media does not care about the Blue Box IFO's surpluses, because that program does not have eco-fees. Similarly, interviewee G9 described,

> *When it's visible, they're perceiving it as a tax. When it's incorporated, they're perceiving it as a cost of doing business. It's the perception. […] In Ontario, at least, when people see a visible fee, they get mad, very mad.*

As such, the question of who pays for waste management has remained a point of controversy, buried in rhetoric and semantics, with each actor arguing from a different perspective. In fact, in the data, I noticed that even the same interviewee might argue differently at two different points in one meeting. Although it is more than evident that costs are officially and publicly communicated and imposed, stewards tend to frequently credit themselves as the cost-bearers. For this reason, they argue, they should be the main decision makers—even as they argue, in a contradictory direction, that increased costs will harm the consumers who pay these costs. Government experts asserted that the costs should be somehow internalized and absorbed in business, but in some arguments, the consumer (rather than general taxpayers) was also acknowledged as the person who should pay the costs. These experts further argued that integrating costs into business costs will encourage firms to innovate and find solutions to avoid waste management costs; thus, integration of costs can have long-term advantages.

Overall, although most experts from various stakeholder groups seem to agree that managing waste is, in most cases, cost-intensive and this cost will normally be passed to the consumers through pricing mechanisms, the controversy over who should pay still lingers. An interviewee with experience with different stakeholder groups (interviewee S7) articulated this controversy:

> *It's semantics but it's a way of getting around the optics of the fee […]. Different people have different opinions. It really becomes interesting. I personally would prefer to see that [on the bill], but other people react differently to that. The government doesn't want industry to turn this*

> *back on them and make it a political issue. Eco-fees do that. If you look at some of the history of the MHSW [materials] and the tax, that was what so much of the venom from the public was.*

5.4.3 Issue Interconnectedness

The co-regulation provides an opportunity to view the problem from more than one viewpoint. In this case, the introduction of the concept of the circular economy also provided new areas to revisit the program boundaries. In essence, the circular economy views environmental considerations as fundamentally intertwined and systemic, which requires simultaneous efforts in a number of areas, such as procurement, design, production, consumption, and post-consumption. This inherent interconnection has been acknowledged in Ontario's revised approach to waste management, encouraging the stewards to consider various objectives and means in the long-term transition towards a circular economy. Yet, the government itself is accused of isolating the waste problem from other issues in hand—that is, "decoupling" it to make it more manageable. For instance, the data suggest that different recyclers criticize the government for not supporting green products and even releasing functional policies that ban or discourage the purchase of a recycled product that, according to the recycler, has proven technically identical to the comparable virgin product.

Whether or not to address the waste problem in connection with other issues is another ongoing question in business. Whereas some stewards believe that they need to address it as something that is interconnected to other practices, others argue that such an approach would further confuse the problem of waste with other issues, which will increase the issue's complexity, as one stewardship leader (interviewee B15) expressed:

> *These new folks tend to mix different things around environment. They are now mixing waste management with eco-design, with innovation, with production and [greenhouse gases]. These are separate issues. They confuse all of these and it becomes a "jack of all trades and good at none" [situation]. And we still don't know how to deal with the*

waste sector of our industry. We don't have a solution yet. And they don't say how they want to deal with all these together.

5.5 Control over Means versus Ends

The co-regulation based on the studied model raises another question: As both government and stewards are involved in both regulatory stages (i.e., rule setting and enforcement), to what level should the regulators engage in each? Put differently, to what extent should each of the two parties, especially government, intervene in defining the means, and to what extent should each focus on controlling the ends?

5.5.1 Cooperative Structure

Some involved informants believe that business-government relationships in Ontario are noticeably far from cooperative. This argument can be observed in the stage 1 of the studied process, when business did not develop appropriate voluntary programs, resulting in a stringent government regulatory regime. Yet, this non-cooperative approach seems to be bidirectional, as stewards complain about the government's limited trust and cooperation with business. Many other experts agreed with this complaint, asserting that regulators of waste management have historically determined both *what* shall be done and *how* business shall do it. They unanimously described the government's collective-level regulation as over-prescriptive. The most salient instances of this over-prescription are the imposition of an IFO in earlier years, the pressure on the industry to keep all of the involved actors (including service providers) content as an informal condition to approve the industry stewardship plans, and dictating the invisibility of eco-fees (while this was neither mandated nor uniform across different industries) as another condition for program approval.

Due to this level of prescription, many interviewees agreed that in Ontario (compared to other jurisdictions), stewards have had few opportunities to collaborate with government or other stakeholders. Some stewards argued that despite their willingness, the government is not willing to cooperate with business beyond a certain level, and tends to prescribe means as much as possible. From their view, the cooperation does not go beyond formal consultations when a new policy is being developed. As an example,

when the Ministry and its bodies were planning the transition to the circular economy in 2017, several stewards' representatives complained that they were not informed why and how the system would change. As a result, stewards believe that opportunities for cooperation are systematically missed in the complicated system, where industry's attempts to help are (supposedly) appreciated, but not considered. Business views this non-cooperative structure as a general characteristic of the government's system and perspective, which is not limited to the MHSW program. For instance, one industry member (interviewee B1) recalled a multi-stakeholder workgroup as a means for the government to merely fulfill a bureaucratic mandate:

> *[The group] is comprised of NGOs, industry associations, etc. We sit around and make nice for a whole period and complain about what governments are doing […] and the government talks about what they are doing to make our lives miserable and they seem to enjoy it! So, we have to do it and the government checks the box, "Consulting Canadians and Civil Society," I guess.*

As such, in absence of an atmosphere shaped by trust and cooperation, the regulators normally tended to determine not only the goals but the means needed for the ends. Although the co-regulated model partly shifted the regulators' focus from means to ends, the tension seems to be ongoing. This tension is highly salient in the studied case, but may also be noticeable in any form of co-regulation. In addition, such a tension may vary through the process.

5.5.2 Control Structure

Waste Diversion Act, 2002, gave birth to a unique control structure in waste management systems, in which stewards fund the government-imposed system to monitor and sanction themselves. The non-Crown delegated body, then WDO, gradually grew and developed the required systems, and its costs doubled from 2010 until its transformation to the Authority in late 2016. As interviewee G9 from the government side mentioned,

> *One thing that is a challenge even today when you have oversight: there is always a push to spend as little as possible. The stewards don't*

> *want—and rightfully so, I don't blame them for this—to spend a lot of money on an oversight body that watches them. It would be counterintuitive for them. So I think that there, historically, has always been a strong push to keep WDO's costs very low and to keep [its] interference in the programs, if you will, very minimal.*

Still, WDO's administrative costs of monitoring, proportionally split among various programs, were not a significant part of program expenses. Particularly for MHSW programs before 2016, the regulatory costs generally constituted about 1 to 2 per cent of all the program expenses. When WDO transitioned to the Authority and took on the responsibility of compliance and enforcement as well, stewards started raising their concerns about the required resources for its new projects. The first project was establishing a new comprehensive IT system—a registry to collect large data directly from all relevant stakeholders. With its own logic of efficiency, simplicity, and cost reduction, business found this system unnecessary and costly. This issue was raised in different forms; such as when, in an observed business convention, a participant from the stewardship programs challenged this control structure as follows:

> *We're still pulling the string of this Authority and their budget went up $2 million. But a year ago it was already up to $7 million and counting. So, we expect that number, I make a guess, will be $20 million next year, because they are going to buy a brand new IT system to collect the data from all the material categories, and all the program operators already have that material. The [stewardship programs] collect that as part of doing their job as program operator and they can just hand it over [to the Authority]. [The Authority] want to duplicate the effort. We all know what IT systems cost and the ongoing maintenance will even cost more.*

Although the Authority had its own reasons for needing such a comprehensive registry, many of the interviewed stewards described it as a redundant activity with high security risks due to the collection of confidential data from all involved companies, with no value

added. From the business standpoint, stewardship programs collect all the needed data, which are already audited and can simply be expanded with more third-party audits to resolve the Authority's potential trust gap. Several interviewed stewards complained that they were not informed about the rationale behind the need for this registry, nor was their concern sufficiently addressed in public events in which I participated. In discussions with experts from the government, lack of accessible and trustable information for monitoring and decision making was explained as a problem with the past system. WDO had no control over the information, nor could it force the IFOs to provide the information that it required. Thus, from that organization's perspective, the solution was sought in owning the information independently, even if it initially results in redundant data collection, as stewards were concerned.

Therefore, although the co-regulated model aims to balance the level of control of each group over means and the ultimate goals, the exact level of control that can foster a constructive collaboration between the parties will remain a blurry target, subject to ongoing dynamics and bargaining.

5.6 Harmonization versus Distinctiveness

When business and government cooperate in a regulatory regime, it remains an ongoing question whether the regime should create harmonious practices across various locations, products, and industries, or respect granularity and specificity across the impacted units. The data show that different factors may urge business and government to support or oppose each pole of this duality, creating continuous tension. These factors can be categorized according to two main mechanisms.

5.6.1 Government Distinctiveness

The value of polycentric institutions in protecting society and the environment, and in addressing global environmental issues, has been long acknowledged by scholars (Ostrom, 2010b, 2012). Polycentric systems have multiple authorities at differing scales, each exercising sufficient independence to make norms and rules within its focal domain. A polycentric system can better pursue goals, first by experimentation across the units based on local context, and then by sharing the learning (Ostrom, 2012). Moreover, one

of the circular economy's tenets is diversification (i.e., the involvement of complex modules and subsystems) because involving heterogeneous subsystems can enhance the main system's resilience (Beaulieu et al., 2015; Ellen MacArthur Foundation, 2013).

This polycentricity is observable at both provincial and municipal levels. By definition, provincial policies bring into account the unique aspects of the jurisdiction. While this ability might be the raison d'être of a federal system, participating experts acknowledged that it could also create quasi-competitive mechanisms that lead to unnecessary schisms, making it hard to align idiosyncratic policies across provinces. In case of waste management in Ontario, the architecture of the system makes it unique in Canada, referred to by its supporters as "true extended producer responsibility," which is also curiously followed by other jurisdictions. Similarly, as discussed earlier, local municipal governments tend to emphasize their unique local needs that should be treated differently by stewardship programs. Interviewees from both municipal and provincial levels viewed this autonomy as a potential advantage bestowed by the constitution, as one participant (interviewee M8) clarified:

> *The idea that a municipality still has its own autonomy, that's entrenched in the Municipal Acts; it is what it is because of our constitution. Our constitution, with the division of powers, 91 and 92, that allows municipalities to be responsible for waste. That is not unique to Ontario. That is a nation-wide concept.*

From a legal perspective, waste programs should respect these differences as each municipality has its idiosyncratic needs. For example, in many regions, consumers carry their hazardous waste to depots, but in cities like Toronto, the local government tends to have provisions in place to collect MHSW waste from households that otherwise would need to use public transport to carry their hazardous waste to depots; a sparsely populated municipality may need only a few collection events year round. Municipalities have also developed heterogeneous provisions for recycling, such as the type of materials they accept and how waste should be categorized. However, operation-wise, such distinctions often generate extra costs and problems. Therefore, those involved in managing and

funding the operations strongly advocate harmonization and cost standardization. In one observed business convention, a steward complained about how the authority of municipalities to develop their idiosyncratic systems caused preventable costs to the expense of business, resulting in unnecessarily fancy facilities with little practicality:

> *They have a region in Ontario, kind of Taj Mahal collection area, which the industry has to pay for, and we didn't want to [raise a fuss about it] because during the development of the legislation, they would just run to Queen's Park to complain [to the government]. So, they were charging $40 per hour whether they collect 10 [units of products] or 500. Just to be the "Maytag repairman."*

Referring to a classical TV commercial, this quotation reflects stewards' concern about how distinct municipal systems could cause stewards significant costs in some municipalities, making the program far from the operationally efficient for business. Of course, municipal experts challenged this view by reminding that stewards only paid their own share of the programs, not even all of it, let alone for the facilities and existing technology.

Furthermore, by and large, the governments of Canada and Ontario were both viewed by business as strong advocates of global environmental actions. This approach specifically impacted the chemical industry and MHSW stewards, and firms sometimes expressed their concerns about this progressive view, such as Canada's focus on environmental issues in the G8 summit in 2017, or the formation of the Standing Committee on Environment and Sustainable Development at Canada's House of Commons.

Some business experts interpreted these measures as prioritizing global issues to domestic needs, which shrinks the economy. From the business perspective, the importance of transnational issues should be determined based on the local issues; one example of this was what an industry member termed "the Trump effect." To illustrate, after the U.S. presidential election in 2016, with increasing pressure by Donald Trump on other members of the North American Free Trade Agreement (NAFTA), businesses in Canada had their own share of concerns about the harms that altering NAFTA might have

on the country's economy. But despite these concerns, some stewards were hopeful that the Trump effect might slow down the high-level decisions in Canada about the environmental policies, as this expert (interviewee B1) stated:

> *With what's happening in the United States with the whole NAFTA thing, I think that's backed up a bit; I think they are less activist now in Ottawa than they were intending to be. That's my hope [...]. There is also a dissenting report by the Conservatives on the Standing Committee; that's kind of pushing back a bit […]. Hopefully, that Trump effect will see all those things go away.*

Given that the United States is the main trade partner of many Canadian industries, from this expert's view, the Trump effect could help preserve the local alignment with the United States. Conversely, global trends could act in the opposite way, creating opportunities for the United States as a "polluted haven."

This example reflects the fact that business tends to welcome global harmonization when it can facilitate doing business. The Global Harmonized System (wherein different countries seek to embrace more commonalities in their requirements for products, labelling, and stewardship) is another example of this sentiment. Stewards consider this system useful as it can engender more alignment in Canada-U.S. standards, facilitating operations for multinational firms.

In summary, regulators may emphasize developing distinctive systems to meet unique regional needs across jurisdictions and municipalities, and may aspire to take leading positions in global environmental moves. Meanwhile, business is generally an advocate of harmony, especially with its trade partner countries.

5.6.2 Operational Simplicity

As mentioned, distinctiveness rarely results in optimal cost effectiveness in a regulatory regime. To reduce costs, the system needs to harmonize the units within the domain. Harmonization can be favourable for both government and business. For government, because the process of regulating is highly time-consuming and resource-intensive,

harmonization can simplify the complexity (e.g., by treating different municipal systems equally). Further, it is often simpler for regulators to treat all regulated materials equally. For stewards, harmonizing the operational aspects of running the programs is a highly desirable goal, but harmonizing across different material groups is not, as reflected in a quotation from interviewee S6—an expert experienced in various stewardship programs:

> *MHSW is very product specific. Therefore, it lends itself more to the producers of that product to say, "Well, why am I associated with these other people? I produce tanks for consumer carbonated drinks; why am I associated with propane tanks?!"*

In summary, harmonization results in a simplicity that underlies efficiency; hence, business values harmonization, which serves the economy of the program. Furthermore, harmonization creates economies of scale, which again increases cost efficiency (e.g., when the same collection system serves a variety of materials). However, because all different regions and different material groups have their idiosyncratic needs, an opposite force directs the programs to a level of distinctiveness. Interestingly, whereas government initially respected the distinctiveness across the regions, harmonization is even desirable for regulators who prefer to develop more abstract and generalizable rules. As a result, tension between these two concepts will remain a salient tension in a hybrid model of regulation.

Chapter 6

6 Theory and Discussion

This research aims to answer the question: *How can business and government coordinate their actions to realize a circular economy?* To answer this question, I studied a context where effective coordination was not realized through a government-persuaded voluntary collective action, nor through a government regulation. The shortcomings of either alternative (i.e., ISR and government regulation) and the unsatisfactory outcomes ultimately led to the formation of a coordination mechanism in which both business and government participated in developing a regulatory regime. This regime is more effective in generating the expected results and facilitating the transition to a circular economy. Thus, I answer the above research question mainly by understanding the resultant coordination mechanism, which is a hybrid form of regulation. Moreover, understanding the stages before the formation of this hybrid regulation model helped me to better understand the model and its advantages compared to the two pure alternatives, and to provide a comparative model based on both the literature and my findings.

In this chapter, I first overview the context and outline the phenomenon based on both the literature and my research. This overview lays the ground for making sense of the process and answering the research question. Next, I explain the pattern of the hybrid model and the main actions in rule setting and enforcement, and how these actions are required to achieve the outcomes. I also explain how this model can solve the common limitations of the two pure alternatives. Lastly, I elaborate on the tensions that characterize this hybrid model.

6.1 Revisiting the Phenomenon

Post-consumer waste has historically been managed by local governments, using tax-based budgets, often as an amorphous mass of useless materials with no distinction among producers and products. This aggregative model of waste management has been so deeply entrenched in the socio-technical institutions that when the responsibility of managing post-consumer materials transferred from the society level to the firm level, it

was disruptive and almost impossible for the average firm to control its waste individually. This collective responsibility, therefore, required collective action. Yet, in Ontario, for about two decades, business avoided taking on the new responsibility voluntarily except for a few isolated, short-lived self-regulation programs. The ebb and flow of government's pressure on business resulted in inconsistent responses and unfulfilled ISR. Not only was business uncooperative with other actors, but individual industries and firms were not even motivated to cooperate among themselves.

In response, the provincial government regulators imposed costly regulations on business. Due to the collective structure of the existing waste management systems, and because no other solution was available for handling the relatively urgent problem of waste, the regulation aimed to maintain the status quo. The result was a governance system to coerce collective-level business actions and translate them into firm-level mandates. This translation was achieved through monetary tools which are common in many government regulatory regimes, such as carbon taxing. The regulation aimed to secure the pre-existing waste management systems operated on the discretion of municipal governments. Moreover, to secure the expected outcomes, regulators strictly defined the means by which the program had to operate and be monitored, all of which was to be funded by regulated firms but without giving them much authority to define the means.

The regulators viewed this model of linking individual and collective regulation as an innovative policy regime. Theoretically, it aimed to convert a collective responsibility into a shared responsibility (i.e., distributive to any firm). This model could utilize the existing institutions and processes that were mostly shaped by almost independent municipalities in a polycentric system. This type of regulation partly solved the problem of business's avoidance of taking voluntary collective actions consistently, and met the government's goal of securing sufficient funds to help municipalities maintain their existing systems. However, it completely failed in spurring new solutions for the ultimate environmental goals. Further, this rigid structure left minimal agency to industry, resulting in new costs for firms who deemed the process inefficient. Yet, the collective-level regulation had hindered industry's typical capabilities to improve the operations and enhance the efficiency. Finally, conflict of stakeholder interests and power imbalances in

fulfilling the regulation brought about continuous dissonance and, in many cases, far-from-optimal results. Thus, overall, neither the society-level not business-level goals were achieved.

Consistent with the past literature, when non-cooperative firms faced shared ”enemies” in this context, they gradually developed stronger in-group identity and showed more forceful reactions against the out-group (Pozner & Rao, 2006). Various industries challenged the stringent regulation, which can be viewed as a form of institutional work by industry (Lawrence & Suddaby, 2006; Nilsson, 2013). Simultaneously, the government’s ambitious extension of the collective-level regulation to a number of other products also created strong backlash from citizens and media, which put extra pressure on the regulators, who acknowledged the drawbacks of the prescriptive regulation. As a result, the government-imposed collective-level regulation transformed into a new form of collective action—one that differs from previously known models and is a hybrid regulatory regime. I outline this model by identifying the pattern that was used for different materials through the process of hybridization.

6.2 The Hybrid Model of Regulation

Inspired by the case of the MHSW program in Ontario, the model that this research suggests goes beyond the conventional forms of government and self-regulatory regimes and is a mixed regulatory model (Rees, 1988) with business at the centre stage. It is different from the two common forms because the involvement of business and government is almost equal, in a way that even some stewards perceive the system as their own program in which government intervenes—a claim that was rejected with the data. It is different from ISR because the government’s involvement is beyond the known intervention of non-business actors in ISR (King et al., 2012), and it is not a conventional government regulatory system because the role of business is beyond normal. Although the importance of “listening to firms” in regulatory systems is acknowledged in the literature (Malesky & Taussig, 2017), the level of business involvement in rule setting and enforcement exceeds the common levels drastically.

Hybridity refers to “the state of being composed through the mixture of disparate parts” (Battilana & Lee, 2014: 400). In particular, using the label of “hybrid” in this research is informed by the literature on “mechanism-centred” hybrids (Seibel, 2015). Whereas a conventional “sector-centred” perspective of hybridity focuses on overlapping sectoral segments and coordination structures that arise due to the conflict of sectors (e.g., in cross-sector partnerships), a mechanism-centred perspective conceptualizes hybridity as a combination of basic sector-specific mechanisms. Such an approach facilitates the exploration of latent hybridity (Seibel, 2015).

As such, a hybrid regulation utilizes different mechanisms common in the two pure regulatory solutions (i.e., government regulation and ISR), and moves between the mechanisms of these two forms iteratively. For example, as discussed in Chapter 5, whereas provincial government regulation protects the discretion of municipal governments and their idiosyncratic models, business is preoccupied with the concept of efficiency, which calls for harmonized models. In the identified hybrid model, neither a heterogeneous nor a homogenous system is prioritized, but in such a complex phenomenon, actors iteratively consider these options in multitudinous real situations and co-develop systems that may draw on various combinations of the two. The resultant program will go through a dynamic process that can better address the emerging and outstanding issues over time. Accordingly, the proposed hybrid model inherits some characteristics of each of the original regimes but also resolves some of their shortcomings.

To explain the identified hybrid model, we must reconsider that every regulatory regime has two core processes: rule setting and enforcement. The former denotes all the processes of formation and release of the goals, policies, and rules; the latter deals with monitoring and control mechanisms to ensure compliance and penalize non-compliant actors. In a pure government-regulated regime, the government both sets the rules and the enforcement provisions, either directly or through its affiliated organizations. In a pure self-regulatory regime, industry voluntarily sets the rules and may or may not establish intra-industry enforcement mechanisms. As discussed in Chapter 2, scholars have also noticed self-regulatory regimes in which the government, for instance, runs either rule

setting or enforcement, and leaves the other to industry (Gunningham & Rees, 1997; Rees, 1988).

The marriage of government regulation and ISR mechanisms in this particular hybrid model requires both actors to coordinate both rule setting and enforcement. This interconnectedness is beyond the division of practice between the two sectors with occasional interactions. As shown in Figure 7, the identified hybrid model involves five core practices in rule setting and enforcement.

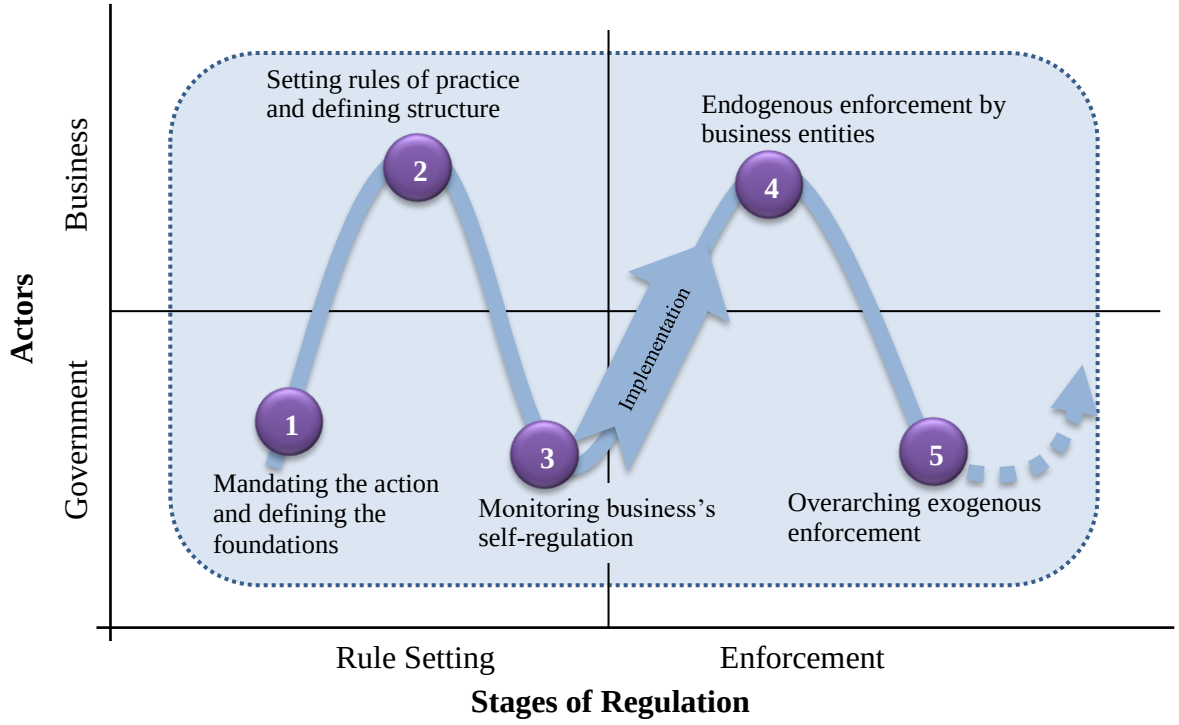

Figure 7. A Hybrid Approach to Regulation and Its Five Core Practices

6.2.1 Rule Setting

Government and business coordinate rule setting through the three first core practices. In the first core practice, after the identification of the specific market failure, government institutes a regulatory regime. At this point, to ensure that an appropriate and timely action will be taken, and business will not pursue avoidance or resistance strategies,

government mandates the action by defining the foundations of the regulatory regime. These foundations can include ultimate goals, the scope and type of actions needed, those responsible, and even broad requirements that need further development. Government can also develop roadmaps or propose strategies to guide the next steps, but at this stage, the requirements do not go beyond high-level principles and requirements, leaving it to business to study the practical aspects and set rules that may vary across different industries, sectors, groups of firms, or even individual companies and products.

This approach is equifinal and ensures the flexibility required for utilizing business's capabilities to develop solutions that meet the high-level goals and principles, but does not disregard legitimate firm-level interests. An exemplary instance of flexibility in the studied case was business's agency during the hybridization process (stage 3 in the narrative) to take actions either individually or collectively, in any collective forms that a group of firms may find effective and efficient. In sharp contrast to the structure that government imposed through the collective-level regulation (stage 2), such flexibility resulted in the active involvement of industry in maintaining its efficiency-driven mechanisms (e.g., minimizing the costs of operations by utilizing different arrays of individual and collective actions). More importantly, the active involvement of business can bring about competition, as different service providers will emerge to provide more efficient and effective services and individual firms may also opt to seek internal solutions. This market competition mechanism is a driver of innovation that propels movement towards the intended outcomes (here, a circular economy) while serving business's interests.

The above dynamics unfold in the second core practice, in which business finds the opportunity to develop policies that translate the foundational rules into operation-level regulations and structures, in the form of competing systems that pursue the designated goals. In such a regime, the private involvement goes beyond the conventional means in government regulation, such as industry lobbying and government's formal consultation with stakeholders.

In the third core practice, the fine-grained regulation developed by business should be approved by the government to ensure that it can meet the foundational requirements—that is, the translation of foundational rules to practice rules set by business will address the focal market failure and meet the intended goals. Moreover, because the model allows for the formation of heterogeneous self-regulatory regimes by business, this core practice helps government to ascertain that the business systems complement each other, and no gap will remain unaddressed. Together, these first three core practices embody the coordination of government and business in rule setting, as the first part of a regulatory regime.

6.2.2 Enforcement

Upon implementing the co-defined regime based on the agreed-upon structure, both the government and business sides are also involved in enforcement. As the fourth core practice, industry actors establish their own monitoring and compliance mechanisms to ensure that their regulatory system is implemented in compliance with the regulatory regime. Somewhat predictably, business organically creates this endogenous enforcement because it not only prevents potential government sanctions due to non-compliance, but also, with collectively shaped actions, it serves the participants' interests by preventing free riding. Endogenous enforcement might deploy both norm-based mechanisms similar to those in conventional collective actions (Ostrom, 2000a) and formal enforcement mechanisms, such as industry audits.

For two reasons, endogenous enforcement does not obviate the need for exogenous enforcement by government or its designated third party. First, historically, ISR has been vulnerable to becoming a self-serving means, minimizing industry efforts, and generating insufficient efficacy (Borck & Coglianese, 2009; King & Lenox, 2000; Rivera, 2010). This risk is higher in contexts with a less successful history of partnership and more heterogenous actors, such as the one I studied. Second, given that the hybrid model allows equifinality (i.e., firms can adopt various means to meet the ends), there is a risk that the expected total sum of the adopted actions leaves unattended gaps; hence, exogenous enforcement can ensure that no void has remained across different actions taken in the regime.

Accordingly, the fifth and last core practice is where government establishes its independent mechanisms to monitor the compliance of all firms impacted by the regulation and impose penalties and potential incentives on that basis. As a unique characteristic of the studied regulatory regime, this government enforcement mechanism is mandated to be entirely funded by industry. Such a provision can secure that government change or budget fluctuations will not harm the outcomes.

6.3 Solving the Ubiquitous Drawbacks of Regulatory Regimes

Each of the five core practices involved in setting the rules and enforcing the identified hybrid model is arguably necessary to resolve the key shortcomings of prevalent regulatory solutions. The first such shortcoming is the fact that the very formation of a regulatory regime is uncertain. Business operates at a different level compared to society and this jeopardizes the formation of such regimes, because the issues at the society level do not immediately transfer to business issues (Garud & Gehman, 2012; Geels, 2011; Geels & Schot, 2007). Therefore, when a new issue emerges at the macro level, it may gradually take the form of a business responsibility (e.g., managing post-consumer materials). In such cases, immediate and comprehensive government regulation might not take form to translate the issue into a business mandate. Further, literature has well acknowledged that self-regulation is vulnerable to substantial delay, until the external pressure reaches a certain level (Egorov & Harstad, 2017). Lack of an official mandate for action makes the initiative vulnerable to business resistance or intermittent actions by businesses just to safeguard themselves. The first core practice of the proposed hybrid model solves this shortcoming by early government rule setting at the minimal level. By limiting government endeavours to the fundamental goals and broad requirements of the future regime, the formal regulatory process becomes less costly and sufficiently agile—qualities that are not common in formal bureaucratic regulation.

Second, in the second core practice, the involvement of business in setting the rules can not only prevent potential conflicts which may stem from ineffective regulation, but can also give the firms an opportunity to utilize their expertise in market mechanisms and enhance the efficiency, effectiveness, and innovativeness of the regulatory regime. When

rule setting deals with evolving problems and unprecedented business practices, such as those to close material loops, constraining the involvement of business to the methods common in public policy making, such as stakeholder consultation when legislation is under development and lobbying, can miss the multiple aspects and impacts of the policy. Insufficient engagement of business can bring about shortcomings in implementation, such as minimal business response (i.e., just sufficient to ensure compliance with requirements), and lack of fit between the imposed rules and complexities of the resultant actions. This shortcoming can lead to the two forms of decoupling, as discussed by Bromley and Powell (2012): a gap between policy and practice, or a gap between practice and goals.

Third, government approval of industry's regulatory process, which occurs as part of the third core practice in the model, will prevent the problem of converting a collective action to a self-serving mechanism, as noticed in the literature (Borck & Coglianese, 2009; King & Lenox, 2000; Rivera, 2010). This core practice is not common in any of the discussed regulatory regimes. Yet, by doing so, government ensures that first, the individual or collective business entity has translated the goals to means and proposed a workable structure to coordinate the actions, and second, the aggregation of the planned actions by different entities leaves no gap or overlap across the actions that may cause future conflicts. Thus, expectedly this practice needs government to protect the interests of various stakeholders, which may require a process of negotiation and adjustments.

Fourth, business's endogenous control mechanisms in the fourth core practice can utilize intra-industry institutions that sustain the action. In a conventional collective action, norm-based control mechanisms are the main means to secure the compliance of individual entities. Endogenous norms and intrinsic motivations can be such effective levers that scholars prioritize them over exogenous regulatory control (Montgomery & Bean, 1999; Ostrom, 2000a; Reeson & Tisdell, 2008). Although informal and norm-based control mechanisms may also take shape in the hybrid model, formal endogenous control mechanisms are necessary to prevent free riding. Endogenous enforcement can also secure compliance with regulation, as the minimal level of requirement. Moreover, it

can prevent the second and more common form of decoupling discussed by Bromley and Powell (2012) (i.e., a gap between daily practice and intended outcome).

Fifth, endogenous enforcement mechanisms in a non-voluntary action, such as the hybrid model, are not sufficient, because it may not deliver the required "iron fist," which is missing in many self-regulatory regimes and is often deemed the main reason for underperformance of the self-regulated firms (Héritier & Eckert, 2009; King & Lenox, 2000). In absence of formal enforcement bodies, intra-industry enforcement mechanisms may hardly suffice to penalize the non-compliant firms. Therefore, exogenous enforcement is crucial when firms are not cooperative enough to self-regulate effectively. Further, exogenous enforcement can secure transparency and prevent information asymmetry, as performance reports and information sharing are often a requirement of regulatory systems.

In this way, the identified hybrid model is an apt solution for many emerging social and environmental challenges that can best be addressed by collectives, given the diverse challenges in collective-level regulation to address market failures. We will compare this hybrid model with other alternatives in next chapter.

It should be noted that the above account of the iterations in a hybrid model represents the minimal interactions required to prevent the drawbacks of alternative regulatory regimes. In practice, such interactions typically exceed these minimums, as business, government, and other stakeholders actively interact in each of the five core practices. For example, consistent with the data on the hybridization process in Ontario's MHSW program, in the third core practice, the government did not merely approve a proposed self-regulatory regime; it may include a dynamic process in which different parties agree on different elements of the industry's regulation. In addition, the proposed interactions in the model do not substitute for other common interactions in formal regulation, such as lobbying or advocacy by the industry to influence the initial regulatory foundations.

Regulatory regimes are subject to cyclical change, and the proposed model can also take the form of cycles; to this end, point 5 in Figure 7 may continue with a new cycle of rule setting and enforcement.

6.4 Tensions as Characteristics of the Hybrid Model

In Chapter 5, I explained how the analysis revealed that the model is characterized by four dualities that embody four tensions. These tensions are unique to the hybrid regulation, compared to other regulatory regimes. This finding is consistent with the existing studies on hybrids, as hybridity, by definition, refers to the composition of disparate elements (Battilana & Lee, 2014; Jay, 2013; Seibel, 2015). The same quality applies to the identified model, as the model iterates frequently between the two distinct regulatory regimes by government and business, and juxtaposes two sets of mechanisms that, in a pure form of regulation, do not coexist.

Further analysis revealed that none of the four tensions were salient in the previous stages of the studied phenomenon; yet one pole of each duality was identified at the second stage, when government coerced the collective-level regulation. First, the government regulation was shaped to engender *compliance*. Although industry increasingly contradicted the prescriptive regulation from time to time, firms had no option other than short-term acquiescence (Rivera, 2010) and to meet the minimal requirements.

Second, at this stage, the program was formally *decoupled* from business—industry did not "own" the practices and merely contributed financially. This action was deemed a legitimate response because at that early stage, the government's primary focus was on securing the existing waste management practices through municipal systems, and this goal could be met by financial contributions from business.

Third, this regulatory regime established strong *control over means* to ensure that, in such a de novo collective-level regulatory system, the linkage between individual firms and the collective initiative is strongly established and will yield the expected result. The government's focus on means was especially significant because of business's past avoidance of taking collective actions. It took some years until the insufficiency of ends in meeting higher-level goals, such as closing material loops, attracted the government's attentions.

Finally, regulation typically tends to create *harmony*. In the collective-level regulation, the government was naturally preoccupied with designing a novel system to handle the collective-level problem of waste. Not surprisingly, the result did not address the heterogeneity of the involved materials, industries, and regions. It established a single IFO to run the program in 2002, with its scope gradually expanded to other materials, including MHSW materials in 2008. The regulators did not pay sufficient attention to the idiosyncratic needs of different sectors and product-specificity of waste management—though admittedly, is it difficult to include such details in such a regulatory regime.

These characteristics are not unique to the studied government regulation. Any such regime that tackles new collective-level problems is likely to focus on compliance, allow decoupling, focus on establishing means, and try to harmonize the practice.

The transition from the collective-level regulation to the hybrid model was parallel with the emergence of four new concepts that are opposite poles of the four initial dominant concepts. Interestingly, the new concepts did not dominate their opposite poles; rather, the opposite poles continued to coexist and sustain ongoing tensions. Figure 8 summarizes the process and demonstrates the existence (or absence) of each concept in the three stages. The two first stages represent the pure forms and the last stage represents the hybrid model.

As outlined in Chapter 3, a tension is defined as the state of "two phenomena in a dynamic relationship that involve both competition and complementarity" (English, 2001; Epstein et al., 2015). Importantly, the identified tensions are not merely conflicts among the actors. In most cases, these tensions exist even within a single actor group, such as the ongoing question among the stewards of whether they should integrate waste management operations into their core business or decouple it by outsourcing it to recyclers and service providers.

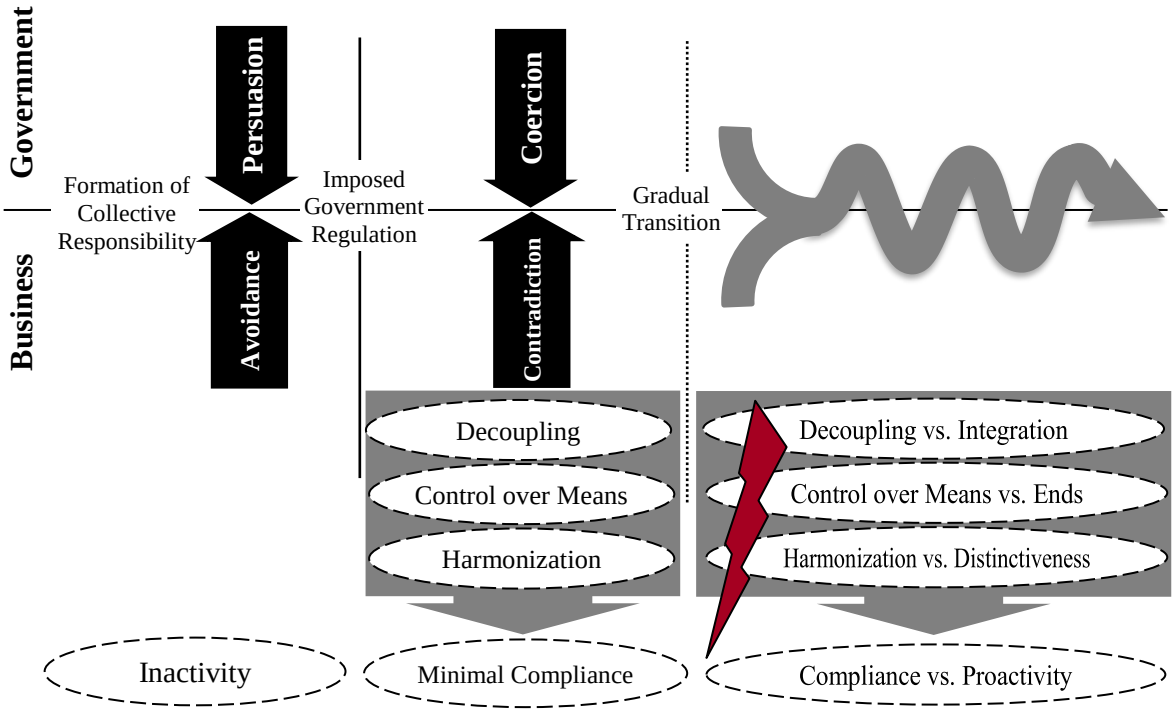

Figure 8. The Formation of the Hybrid Model and Emergence of Tensions

Figure 9 includes four 2x2 grids that schematically demonstrate how each of the mechanisms that underlie a specific tension (as identified in Figure 2 and also explained in Chapter 5) can be associated with an actor and one pole of the duality. For instance, in the compliance-proactivity duality, three mechanisms underlie the tension. As per "stringency of regulation," whereas business argues that imposing more strict regulation urges firms to merely try to minimally comply, data suggest that more strict regulation can also enhance proactivity, and some stewards confirm this view; thus, stringency of regulation feeds into this tension even within business. Alternatively, as per "program scale," whereas business argues that increasing the scale of programs increases costs and harms the competitiveness of Canadian business, government tries to use scale and encourage business to find innovative solutions to appreciate the value of waste; thus, program scale feeds into this tension due to the different ways in which business and government perceive the issue. It should be noted that this depiction of tension

mechanisms provides a schematic view and the identified mechanisms involve somewhat more complicated relationships, as discussed in Chapter 5.

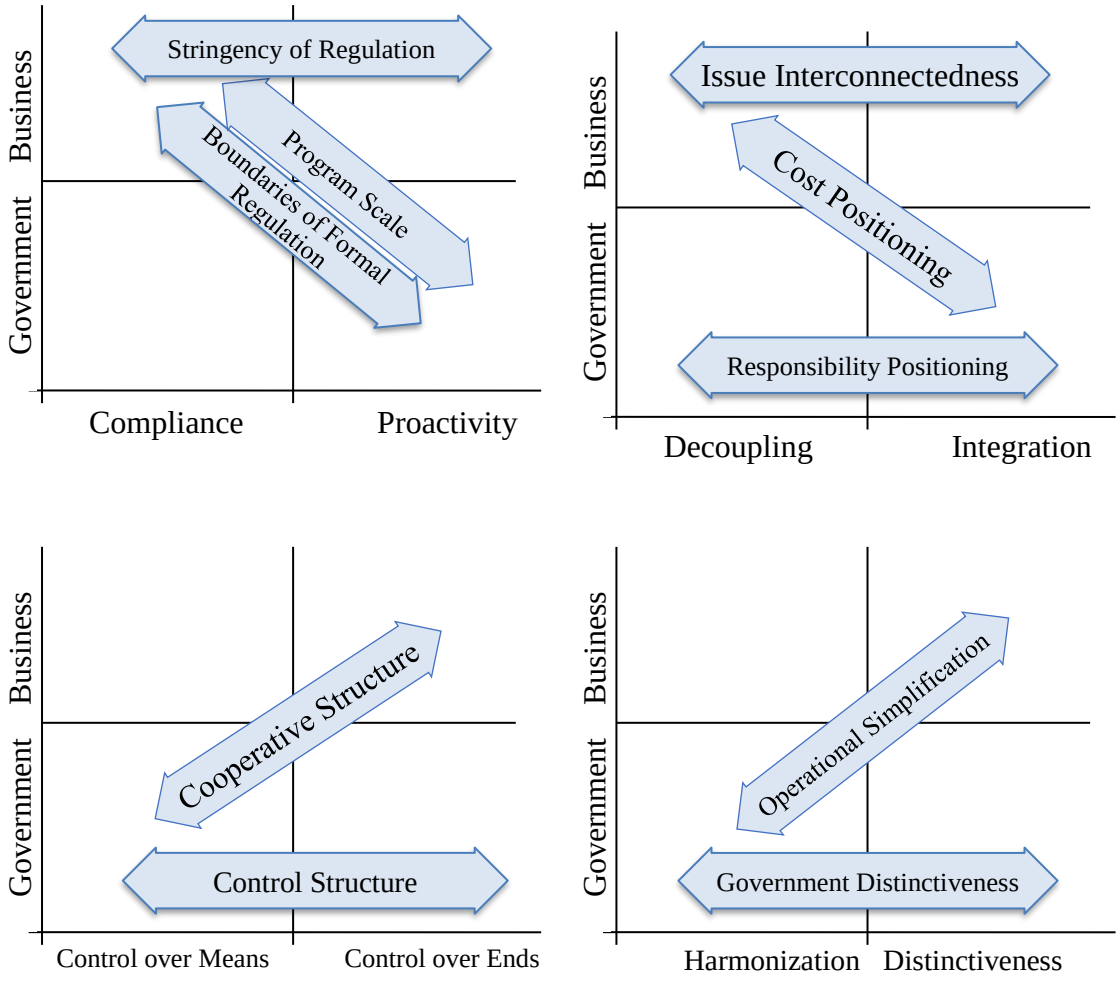

Figure 9. Associating Tension Mechanisms to Business and Government

The four tensions embody the nature of this hybrid model. The fact that they were not salient in the previous stages is due to this nature that juxtaposes inconsistent elements from pure models. More particularly, the tension between proactivity and compliance did not emerge in stage 2 because, first, the prescriptive structure imposed by government curbed any actions by business except for the incremental moves that ultimately transformed the regime. Further, the compliance-based regime treated the post-consumer waste responsibility as a fixed cost added almost harmoniously to all similar products,

offering little motivation for proactive efforts. The decoupling-integration tension did not take form in stage 2 simply because the regime prescribed a pre-existing system decoupled from business—and again, the coerced structure left no room for developing integrative ideas. For the same reason, the focus was on controlling the rigid structure and the means, rather than leaving them to business and focusing on the end. Finally, the stringent regulation treated the regulated units harmoniously, as government regulation is often abstract and general, leaving practical details to implementers.

These tensions can prevent the dominance of one pole of each of the dualities over a long period of time, because different actor groups—as well as the heterogeneous actors within a group—may lean towards to opposing poles, especially in the long term. For example, although stewards initially preferred a decoupled system to fulfill the requirements, many of them later considered the potential advantages of integrating the system into their business. Therefore, the tensions do not represent a transition phase; rather, they depict the ongoing dynamics of this hybrid model. Arguably, the four identified tensions apply to any form of hybrid regulation to protect the natural environment due to the coexistence of conflicting elements in such a model. In the following section, I provide a theoretical overview of each tension.

6.4.1 Compliance versus Proactivity

The notion of proactivity or reactivity is a point of apparent conflict in the existing literature. On the one hand, collective action is fundamentally viewed as the most proactive strategy taken by industry to go beyond compliance and address social and environmental expectations (Rivera et al., 2009). On the other hand, ISR scholars have noticed that despite this gesture of goodwill, industry often aims to meet the bare minimum expectations in advance, rather than waiting for more strict requirements (Borck & Coglianese, 2009; King et al., 2012). Further, such actions are far from real proactivity, because (similar to business's response to typical government regulations) they entail minimal compliance with basic requirements. These two perspectives, both supported by diverse evidence, bifurcate the existing views to ISR.

The studied hybrid model represents and reconciles both perspectives. I propose that industry moves in cycles of proactivity and passivity. This proposition is supported by the observation that when the studied industries confronted the surging regulatory requirements, after a period of compliance seeking, they decided to take the lead and perform a few proactive actions. Indeed, business may find that economizing the costs by focusing on bare minimal compliance can be even more costly when exogenous actors take the lead and raise the requirements continually. Thus, although proactive business actions impose immediate cost, proactivity may financially pay off in the long term. This dual effect creates a tension between compliance and proactivity in the hybrid model, as the regulatory elements of the action activate compliance, which seems a less costly response. Yet, proactivity can forestall further imposition of government requirements with respect to the ongoing action.

As the data suggest, the compliance-proactivity tension is reflected in industry's periods of proactivity throughout their ongoing compliance efforts, such as the voluntary adoption of the bulb and lighting waste program in 2014, or the decision to seek innovative solutions for used materials like coatings and tires. Figure 10 represents an example of how, through the surging requirements in the studied context, firms signalled different levels of proactiveness. Given the uncertain short- and long-term costs of proactive actions and the heterogeneity of incumbent the firms that partake in collective decision making, choosing between the two poles of the duality will constitute an ongoing tension between them.

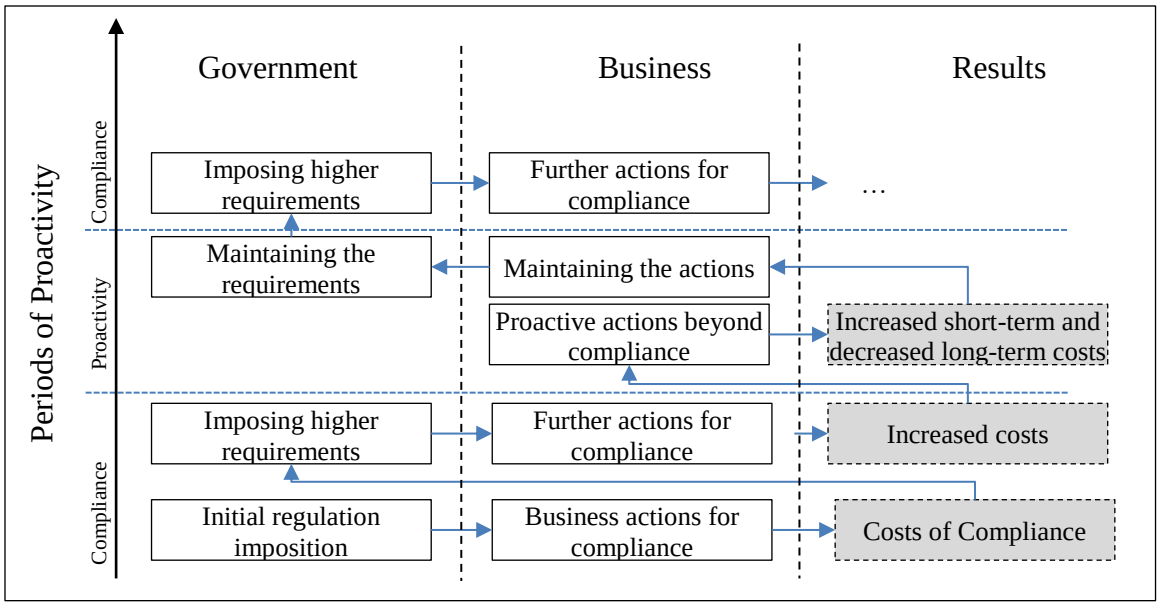

Figure 10. A Schematic Flowchart of Periods of Proactivity in the Hybrid Model

6.4.2 Decoupling versus Integration

Decoupling might be the first response of business to a new policy, where compliance with the policy becomes ceremonial (Fiss & Zajac, 2012; Meyer & Rowan, 1977; Sandholtz, 2012). Organizations decouple their practices when they find a conflict between their core practices and the fragmented environment, characterized by diverse rules, soft laws (e.g., standards), and norms. Decoupling may represent a disconnect between either formal policy and daily practice, or daily practice and intended outcome (Bromley & Powell, 2012). As Sandholtz (2012) notes, decoupling seems to be the most replicated finding across many studies of compliance. In fact, enforcing compliance on firms may curb the goal achievement prospects (Wijen, 2012). Nevertheless, decoupling can create legitimacy (Meyer & Rowan, 1977) and serves the interests of powerful organizational leaders (Westphal & Zajac, 2001), among other results. As represented in the case study, when regulation requires a new business practice to protect the natural environment, decoupling can save costs and help business buffer its core practices.

Nonetheless, by allowing business to self-regulate towards the goals, a hybrid regulation can also encourage business to integrate the new policy into its core; this may occur in a variety of ways. First, business may gradually find potential advantages in integration of

the program within its core (as in the studied context, where the industry eventually accepted the waste sector within its boundaries, and began to discuss whether integration was also possible within individual firms). Second, the diversity of involved firms in a collective action and their agency to develop different self-regulatory provisions can create integration opportunities that may be pursued by some innovative actors. In particular, environmental frameworks such as the circular economy suggest various business models that bring environmentally beneficial operations to the heart of firms' practices (Bocken, Short, Rana, & Evans, 2014; Ellen MacArthur Foundation, 2013).

It should be noted that innovative outcomes in such a system are not merely the result of complete integration. For instance, mainstream business may decouple its responsibility and transfer it to service providers who, for their own interest, compete to develop innovative solutions. As such, the ongoing tension between proactivity and integration can support innovation in different forms. In short, heterogeneity of firms in such a hybrid regime will create an ongoing tension between adopting practices to decouple the requirements versus integrating them within the core business.

6.4.3 Control over Means versus Ends

In the studied context, regulators gradually restructured the regime to leave part of the means to industry and focus more on *control over ends* (i.e., outcome-based enforcement). This approach can utilize the self-regulatory capacity of firms in developing strategies and practice-level policies and designing actions that can meet the environmental goals in the most efficient way. However, in a real setting, the regulator's tendency to intervene in means will not vanish easily, for a number of reasons. First, the boundaries between the roles of government and business in rule setting and enforcement are blurry and remain open to interpretation in different contexts. We can expect that, in order to protect its interests, business would prefer to extend its share in rule setting as much as it can, and government may tend to curb it. Further, in a turbulent field with multiple stakeholders and pre-established institutions, government is also influenced by other actors, such as NGOs and municipal governments, and should protect its interests as well, which might conflict with those of business, resulting in government's further involvement in setting rules and controlling the ends. As such, the degree to which a

government may allocate resources to control the means or the ends will remain an ongoing tension in the hybrid model.

6.4.4 Harmonization versus Distinctiveness

As noted, scholars have discussed the critical role of polycentric institutions in protecting society and the environment and addressing global environmental problems (Ostrom, 2010b, 2012). Unlike a monocentric governing unit, polycentric systems have multiple authorities at differing scales, each exercising sufficient independence to make norms and rules within the focal domain. Such systems can have various advantages. For instance, given the uncertainty and changing nature of sustainability problems as grand challenges (Ferraro, Etzion, & Gehman, 2015), optimal solutions do not exist; a polycentric system can better pursue the goals by fostering experimentation across the units based on local context and sharing learning (Ostrom, 2012). The strengths of a granular, polycentric system are also well understood in the circular economy approach to sustainability. The circular economy supports diversification (i.e., involvement of several modules and subsystems) as one of its tenets, because diversification can enhance system resilience (Beaulieu et al., 2015; Ellen MacArthur Foundation, 2013).

Nevertheless, polycentricity may not serve optimal cost effectiveness in a regulatory regime. To reduce costs, the system needs to harmonize the units within the domain. Harmonization results in simplicity, which underlies efficiency, which in turn serves the economy of the action and might be key in sustaining the regime. Furthermore, harmonization creates economies of scale, which is again a major driver of cost-efficiency. In the context of this study, where different regions pursued their own idiosyncratic needs, business found it extremely expensive to maintain the existing granularity. Arguably, the tension between the two concepts will remain an ongoing tension in a hybrid regulatory model.

In summary, the four tensions in the model represent fundamental dualities that the studied hybrid regulation for the circular economy confronts. The tensions between the poles of these dualities are not temporary and will sustain as long as the hybrid model exists, because the inherent mechanisms in the hybrid model perpetuate the conflicting

poles. These mechanisms are fuelled by the conflicting elements of government regulation and self-regulatory regimes. Hence, harvesting the results of a hybrid model requires tackling such tensions continually and constructively. Such an effort needs both groups of actors—that is, government and business—to find the balance in each tension over time, in a way that does not jeopardize the hybrid nature of the model (i.e., with dominance of the mechanisms of one regulatory regime) over the long term. Maintaining such a balance will secure the livelihood of the action and the achievement of the expected innovative outcomes.

Chapter 7

7 Contribution and Conclusion

As stated, the main goal of this research has been to answer the question: *How can business and government coordinate their actions to realize a circular economy?* This question is vital because overconsumption of natural resources—and its subsequent impact on society—is reaching crisis levels, making the circular economy imperative. However, the circular economy requires various disruptive business models and value chains, innovative technologies, and novel institutions, which call for synergistic business actions and policy changes. Hence, given the urgency of closing material loops, coordinating government regulation and business's self-imposed regulation is critical to propel actions. Nonetheless, effective coordination is the missing link in many contexts, including the one studied here.

To this end, simply increasing either government regulation or self-regulation cannot address the problems, as each alternative suffers from its own inadequacies. Instead, as some scholars have noted, innovative amalgamation of the two can have remarkable advantages (Gunningham & Rees, 1997; Rubenstein, 2011). I studied a case where, in absence of cooperative business-government relations, such an innovative model evolved. I identified the pattern of this particular model of hybrid regulation as one in which both business and government coordinate both rule setting and enforcement through five core practices. The main advantage of the model is that it can ultimately result in business proactivity. Proactivity drives innovation and can yield groundbreaking solutions to meet the vision and goals set by government. A key finding about the model is that it is characterized by particular constructive tensions; this is an important finding, as it emphasizes the ongoing dynamics that must be continuously managed. Acknowledging such tensions and their potential constructive nature is crucial in generating the expected innovative outcomes.

By answering the above question, this research contributes to theory in three major ways. First, it extends the theory of ISR, as one type of collective actions, by attending to the marriage of government regulation and self-regulation. Scholars of ISR have long

realized that regulators frequently influence or intervene in self-regulatory regimes, creating a blurry boundary for "self"-regulation (King et al., 2012; Rees, 1988), but mixing the two can have merits too. In spite of this awareness, especially by scholars in public policy, literature on ISR (and relevant fields such as collective action and inter-organizational relationships) is preoccupied with intra-industry coordination. My research illuminates this grey area of business-government interactions in ISR by identifying a hybrid model. This regime evolved as the outcome of a learnings process after decades of trial and error with the two pure models of self-regulation and government regulation. The structure of the hybrid regulation model can resolve the common drawbacks of each pure alternative.

Second, by going beyond the static depictions of regulatory regimes, my research identifies four major tensions that characterize the hybrid regulation model. These tensions stem from the hybrid nature of the action and are shaped through the coordination of actions undertaken by heterogeneous actors. They need to be managed in balance; otherwise, the hybrid model may tend towards one of the original regulatory forms, limiting the potential outcomes of the model and giving way to appearance of the common regulatory problems. Thus, active participation of different actors in the model can secure its sustainable proactive outcomes.

Last and perhaps foremost, I suggest that this hybrid model is especially apt for addressing the circular economy and other emerging social and environmental collective responsibilities that require proactive business actions. Such actions are often urgent and need immediate attention, but coordinating and implementing them is costly. Therefore, in absence of government mandates, they are not likely to be realized in the short term. In fact, the circular economy calls for the orchestration of distinct elements that, with the established institutions, may not fit well together. This model can harmonize social-level issues with both industry-level and firm-level practices.

In this chapter, I discuss each of the above contributions in more detail. Using a combination of literature and this study's findings, I provide a comparative analysis of the identified model with pure models and discuss the advantages of the former. I

conclude by explaining the implications of these contributions for practice and discussing their limitations and boundaries, as well as the opportunities they afford for future research.

7.1 Crossing the Boundaries of Regulatory Alternatives

Some studies on common pool resources and the tragedy of the commons point to government-regulated actions that translate resource protection to firm-level mandates, but firms can take collective action proactively and self-regulate to prevent the tragedy of the commons (King & Lenox, 2000; Oliver, 1993; Ostrom, 1990; Poteete, Janssen, & Ostrom, 2010; Rivera, 2010; Sandler, 1992). In contrast to the mandatory nature of government regulation, business collective action is largely shaped by the assumption of voluntariness, managed by norms and internal control mechanisms, as opposed to exogenous rules (Ostrom, 2000a; Ostrom et al., 1994). These two alternatives, for a particular purpose and in a limited scope, can *substitute for* each other; thus, ISR can obviate the need for government regulation. In a broader institutional landscape, various government-regulatory and self-regulatory regimes can co-exist and *complement* each other.

In practice, the two pure models are rare. Business often influences government regulation by advocating and other means, and government sometimes influences ISR in one way or another (Gunningham & Rees, 1997; Maxwell et al., 2000; Short & Toffel, 2010; Sinclair, 1997). This involvement has created grey areas in the boundaries of the literature (King et al., 2012). Broadly speaking, management scholars acknowledge the dynamics of inter-organizational relationships (Majchrzak, Jarvenpaa, & Bagherzadeh, 2015). Yet, the ISR dynamics are not sufficiently studied, especially when government's role exceeds partial intervention. Given that more complex and dynamic patterns of interaction between organizations are associated with successful outcomes (Majchrzak et al., 2015), crossing the boundaries of these two models is crucial for addressing the increasing complexity of sustainability issues.

This study contributes to this gap by undertaking an empirical investigation of a dynamic model in which, rather than influencing each other, government regulation and self-

regulation are intertwined. The existing empirical ISR studies do not sufficiently address such an amalgamation of the two alternatives. Most notably, Rees (1988), acknowledging the need for investigating hybrid models, argues that government intervenes in ISR either at arm's length by mandating the industry to regulate itself (i.e., "mandated full self-regulation") or by taking on either regulating *or* enforcing, but not both (i.e., "mandated partial self-regulation"). The hybrid model that I study goes beyond these alternatives, as it was developed after trialling the two pure models and involves a balanced combination of elements of both regimes. Drawing on the literature and the discussions in Chapter 2, Figure 11 illustrates how the studied hybrid model differs from the major known pure and mixed alternatives.

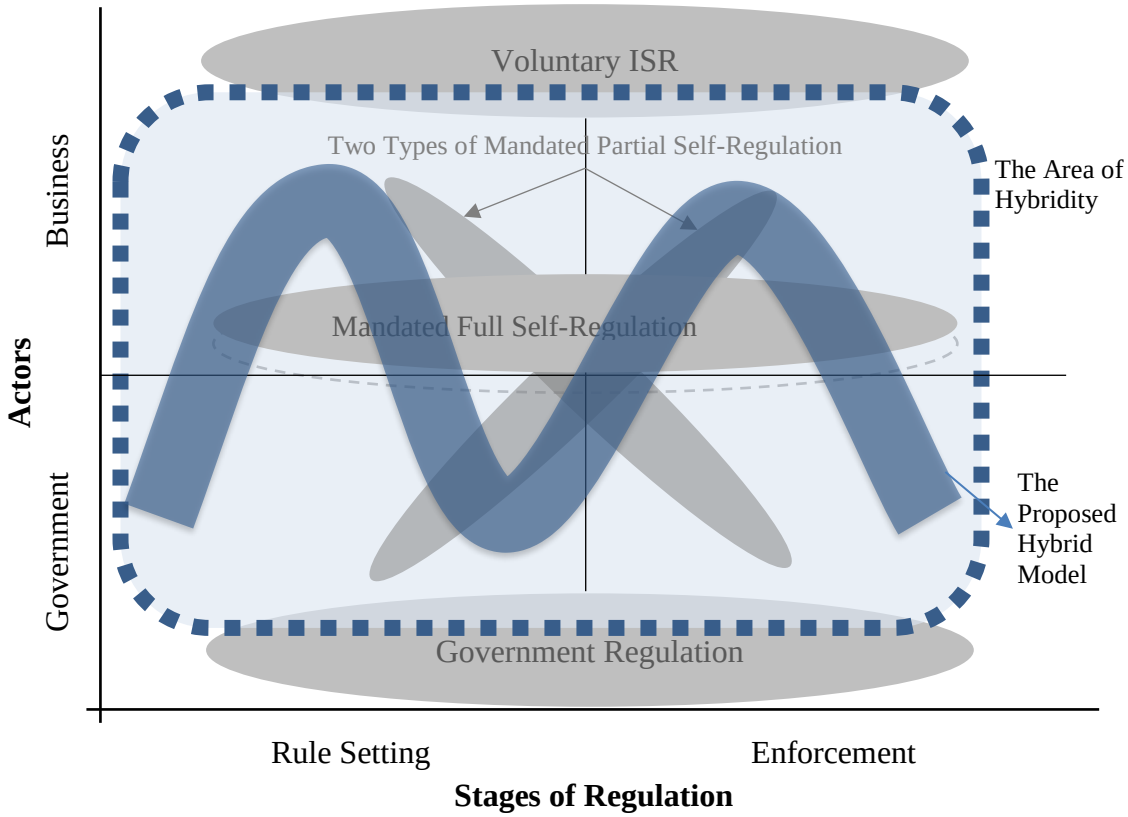

Figure 11. The Major Regulatory Regimes and the Proposed Hybrid Model

Table 3 also draws on both the literature and my findings to compare the hybrid model with government-imposed and self-regulatory regimes—specifically, when new but challenging collective responsibilities emerge in society, offering no or little incentives

for firms to respond voluntarily. This insufficient motivation of business is different from many conventional regimes studied in ISR, as will be elaborated later.

Table 3. Comparing the Model with Pure Regulatory Regimes in the Absence of Motivation for Cooperation

	Self-Regulation	**Government Regulation**	**The Hybrid Regulation Model**
Dominant State	Government/stakeholders: Persuasion and potentially sanction Business: Mainly avoidance, potentially isolated minimal actions as late as possible	Government: Coercion Business: Compliance and/or contradiction	Business and government coordinate rule setting and enforcement
Outcome	Inactivity	Often minimal compliance to prevent penalties	Compliance and periods of proactivity
Characteristics of the Regimes:			
Embedding Responsibility in Business	Not realized	Business decouples responsibility by separating practice from outcome	Tension between decoupling and integration
Focus of Control	No control	Mainly over means	Tension between control over means and ends
Approach to Polycentric Issues	Disjointed and temporary actions by business	Harmonized regulation to serve heterogeneous needs	Tension between harmonization and distinctiveness
Common Shortcomings and Solutions:			
Defiance/ Avoidance/ Delay	Despite the expectations, business may avoid taking timely collective actions	Business may resist regulation or formal regulation may take a long time	With government's high-level rule setting, business is motivated to flexibly self-regulate
Free Riding	Avoidance of participation by most individual firms	Potentially resolved if efficient government enforcement in place	Resolved by co-enforcement
Lack of Transparency	Ubiquitous information asymmetry	Potentially resolved if regulation requires disclosure	Resolved by co-enforcement
Underperformance	Minimal or no performance, due to non-participation, ceremonial adoption, or late response	Minimal performance to comply to policy	Compliance with requirements which become stricter over time, and periods of proactivity and innovation that improve performance

Many previous studies have shown that problems such as business avoidance/ resistance/ delay, information asymmetry, free riding, minimal environmental performance, and (most importantly in this context) lack of proactivity and improvement are ubiquitous across the different regulatory alternatives to protect the environment (Arimura et al., 2016; Blackman & Rivera, 2011; Borck & Coglianese, 2009; Darnall & Sides, 2008; Egorov & Harstad, 2017; Gamper-Rabindran & Finger, 2013; King & Lenox, 2000; Potoski & Prakash, 2013; Rivera, 2010; Sandler, 2015; Tashman & Rivera, 2016). These drawbacks will be resolved by adopting the mechanisms utilized in this hybrid model. This work proposes new possibilities in coordinating the actions of multiple actors, including heterogeneous firms with diverse views of the problem and government. Moreover, the comparison among the models clearly demonstrates that, in order to solve sustainability issues, we need more mixed models, rather than more of each pure alternative.

7.2 Hybrid Mechanisms and Tensions as Intrinsic Characteristics

The form of hybridity identified in the regime occurs *between* organizations, rather than *within* them. This is not a common approach to study hybridity. Although the term "hybrid" has been used in various contexts, extant studies have mainly explored hybridity within organizations such as social enterprises (Battilana & Dorado, 2010; Battilana, Sengul, Pache, & Model, 2015; Peteraf & Barney, 2003). The hybrid nature of such organizations can cause tensions—for instance, between social and economic dimensions (Battilana et al., 2015)—due to different identities (Pratt & Foreman, 2000) and logics (Jay, 2013) as organizations face conflicting institutional demands (Greenwood, Raynard, Kodeih, Micelotta, & Lounsbury, 2011).

This research, however, explores hybridity that occurs between organizations in order to enhance the efficiency of coordination. The result is a mechanism-centred perspective which is less discussed in the literature (Seibel, 2015). The model conceptualizes hybridity as a combination of sector-specific mechanisms. My findings contribute to this stream by delving into what constitutes a specific hybrid regulation. The hybrid model is built upon the mechanisms borrowed from the two pure alternatives—mechanisms such

as business's efficiency-driven tools and government's enforcement practices. The juxtaposition of these distinct mechanisms underlies tensions, as these distinct mechanisms may serve conflicting aims and compete to attract the regime's resources towards different goals.

Understanding hybridity is particularly important in regulatory regimes. The advantages of hybrid regulation were long acknowledged by policy scholars (Rees, 1988), but were not sufficiently studied by business researchers. In contrast to the relatively static formulation of regulatory regimes (including ISR) in business literature, there regimes are often highly dynamic; thus, studying hybrids can draw attention to the changing nature of the regulatory regimes. The acknowledged dynamism in the studied model can better address the emergent issues in real time, compared to a static approach.

Hybridity in such inter-organizational coordination leverages some of the principles and concepts uncovered in the existing literature. Consistent with previous works in the broad field of multi-organizational collaboration (De Rond & Bouchikhi, 2004; Majchrzak et al., 2015), I argue that the identified tensions make the hybrid model unstable, because they involve contrary forces that can throw the relationship off balance. Without balanced management of these tensions, the hybrid model may shift towards one of the constituent regulatory forms, which will constrain its outcomes. An illustrative example of unbalanced management and its impact is the voluntary adoption of bulbs and lighting materials by a business collective, described in the data. When government avoided regulating the material group, business discontinued the proactively shaped program, as government's role was pivotal in creating a level playing field and preventing free riding. Government's avoidance of taking its enforcement role, therefore, shifted the regime towards an ISR regime fraught with non-cooperation and free riding, which ultimately resulted in the lighting program's failure. Forward-moving dynamics are necessary to drive action towards the goal, as each pole of each tension represents part of the interests—and not meeting the interests beyond a certain level hampers this movement.

Adopting a tension perspective also helps to better understand the complexity of collective actions discussed in the literature. As explained in Chapter 2, scholars have

identified conflicting results for exogenous intervention in self-regulated regimes. On the one hand, intervention can "crowd out" the collaborative behaviour of the firms in a voluntary regime (Montgomery & Bean, 1999; Ostrom, 2000a; Reeson & Tisdell, 2008), for example, due to its affect on intrinsic motivations (Beretti et al., 2013; Frey, 1994). On the other hand, exogenous intervention can provide the "iron fist" missing in many self-regulatory regimes when norm-based controls cannot deliver the expected outcome (King & Lenox, 2000; Tashman & Rivera, 2016). Given the diversity and complexity of ISR models, such inconsistent outcomes of exogenous intervention are not surprising, but adopting a tension perspective can inform these complexities. For instance, intervention in the means versus in the ends will produce a different outcome. Whereas strong intervention in defining and controlling means is likely to shift a hybrid system towards a command-and-control system and negatively impact innovative outcomes, intervention in enforcement is less likely to have such an impact but may negatively affect cost efficiency. These different outcomes are helpful for theory and practice and further research can shed more light on these findings.

It should be noted that as long as the hybrid model exists, the tensions within it will never be resolved, as the conflicting poles that embody the tensions are embedded in the model. For example, one may argue that the *decoupling-integration* tension would be resolved if all firms adopt innovative technologies to integrate post-consumer materials in their value chain; nevertheless, such a new state, even if realized, would fundamentally obviate the need for a regulatory regime, as the ultimate goal would be realized. In other words, the hybrid regulation model is a solution for new responsibilities that business may be reluctant to assume, not those profitable practices that are proactively embraced by firms.[7]

[7] In Ontario, profitable waste management programs were excluded from the regulators' radar as business addressed them long before regulators attended to such waste. For example, with respect to the MHSW materials, although oil filters and containers are regulated, used lubricant oil itself is not, because business had already established profitable oil recycling operations. The need for regulating oil only arose after the profit declined and used oil was occasionally sent to other regions for incineration.

7.3 Levels, Innovation, and Propelling the Circular Economy

Business practices to address ecological challenges often occur at the firm level. Yet, sustainable development was originally introduced as a macro-level concept (WCED, 1987) that should be practiced at all levels (van Marrewijk & Werre, 2003) and in its essence, "sustainability is a collective good" (Geels, 2011: 25). As a result, academics, managers, and policy makers continue to struggle with the question of how to effectively translate higher-level issues into firm-level practices (Geels, 2011; Geels & Schot, 2007; van Marrewijk & Werre, 2003). This collective-individual interrelation is especially crucial for common goods.

When industry does not voluntarily translate the collective responsibility into its agenda, government is expected to react by imposing firm-level regulatory solutions. Government regulation generally targets individual firms. However, regulation may not provide an ideal means for crossing the levels. For instance, cap-and-trade systems are widely used as an innovative carrot-and-stick regulatory regime to control firms' greenhouse gas emissions. These systems aim to both impose negative externalities as a cost on business and encourage firms to reduce their ecological footprints. Yet, the effectiveness of these systems has been questioned. When imposed on all incumbent firms, these systems can create a new equilibrium—a new normal to sustain "business as usual" by adding an almost equal item to operational costs across all firms, which will ultimately be passed on to consumers; this can reduce the expected outcomes of the system.

Tackling the world's increasing environmental challenges will require more than imposing prices on unsustainable practices. Particularly in the circular economy, global issues such as resource depletion need innovation to disrupt the status quo (Beaulieu et al., 2015; Bocken et al., 2017; Ellen MacArthur Foundation, 2013; European Environment Agency, 2016; Geissdoerfer et al., 2017). Further, collective action is critical to pursue sustainable development, and policy coherence is critical to spurring such practices (OECD, 2018). Translation of a collective responsibility into a shared responsibility is necessary but not sufficient. Innovation is also a required outcome, whether it is achieved collectively or individually.

Innovation forms the missing link in solving such broad sustainability problems. On the one hand, government-driven regulatory regimes can hardly translate a collective responsibility into firm-level practices while spurring innovation, because developing innovation-based policies is significantly more difficult than compliance-based policies. Indeed, the relationship between conventional government regulation and innovation has demonstrated no consistent picture (Blind, 2012; Blind et al., 2017). Further, business's reaction, especially when regulation is stringent, is often minimal measures for compliance and "pinhole seeking." Moreover, firm-level government-induced responses may not achieve maximum effectiveness and efficiency at the collective level, as these require coordination processes and government is not the best coordinator of business actions.

On the other hand, for several reasons, waiting for self-regulatory solutions to emerge organically has proved to be an unrealistic option. The complexity and diversity of the emerging sustainability expectations make it even less likely that firms will reach an agreement and voluntarily respond to disruptive expectations such as post-consumer materials management. Even if business adopts such actions, the efficiency of conventional ISR remains unproven.

The hybrid model can provide this innovation-based journey to the circular economy by suggesting a regulatory tool to coordinate actions and translate a collective responsibility into a shared responsibility distributed to all individual firms. This level-crossing approach is particularly important for the circular economy, as it requires both firm-level innovative practices and social-level policy; however, connecting the two still remains a challenge (Beaulieu et al., 2015). The hybrid model can utilize business's innovative capabilities, but leaves the decision of whether to act individually or collectively up to firms. When this right is reserved for competing firms, they organically generate competing solutions to meet the imposed goals through different solutions. The multiplicity of firms in a field can create different firm- or group-level self-regulatory solutions that compete with each other and propel action towards less costly solutions that meet the imposed goals.

Among the remaining questions in the ISR literature are, what are the characteristics of the institutional problems that are associated with carrying out different regulatory mixes? And what are the institutional mechanisms by which such problems can be moderated or corrected? (Gunningham & Rees, 1997: 398) This study contributes to answering these questions by introducing a mix of the two regimes to achieve a circular economy in a non-cooperative context (see next sections).

Finally, this research also speaks to the so-called "Porter hypothesis." According to this hypothesis, stringent environmental regulation—conditional on efficiency—not only enhances social welfare but serves firms' economic performance as well, because stringent regulation can induce business innovation and thereby increase firms' competitiveness (Porter, 1991; Porter & van der Linde, 1995). Various theoretical and empirical studies have supported and challenged this hypothesis and the results do not provide a consistent picture (Blind, 2012; Blind et al., 2017; Palmer, Oates, & Portney, 1995). Among those criticizing it, some question how regulation can be simultaneously stringent and efficient (Wagner, 2003). The proposed model and its underlying mechanisms can address this conflict: regulation can be stringent and efficient when stringency and efficiency are determined by different mechanisms. In the hybrid model, the role of government is mostly focused on setting goals and foundations, and it is left to business to identify the most efficient approach to meet them. Thus, as discussed in Chapter 6, although setting higher goals by government can reduce efficiency in the short term, when business holds the power to define the rules of the game itself, it can use its capabilities in the longer term and enhance efficiency. Indeed, efficiency is a relative concept. The hybrid model allows firms and government to attend to the dynamics of the process and the changes in the stringency-efficiency-innovation sequences. A command-and-control regime is unlikely to offer the flexibility that Porter identifies as necessary for innovative environmental solutions, as it hinders efficiency.[8]

[8] Porter and van der Lynde (1995) emphasize the importance of industry participation in setting the standards. However, they do not explain how industry may participate in setting stringent requirements. Such participation can hardly take form if the roles are not identified.

7.4 Contribution to Practice

7.4.1 Implications for Business

In addition to theoretical contributions, this research has several implications for business. First, the case depicts how business's reluctance to respond to emerging expectations can result in substantial costs and challenges. If the industries in Ontario had adopted and maintained voluntary actions to manage their post-consumer materials (similar to what industries did in provinces such as British Columbia), they could probably have established more efficient actions and consequently shaped the foundations of future regulation. Industry's resistance also constrained its ability to participate in future programs (e.g., by giving control to peripheral stakeholders such as service providers who made a profit from the program with no pivotal role in serving the environment). It took years for business to regain the authority to economize on such operational costs.

Second, when non-business actors convert a higher-level responsibility into a collective responsibility for business, responding collectively by firms might create significant economic advantages compared to individual actions. Collective action can create economies of scale as well as specialization. In the context of post-consumer resources, many used materials are inputs to manufacture other products rather than the same product. Therefore, waste processing may require different technologies from those used by the original manufacturers. A collective pursuit by business can help members minimize their costs, if not make a profit. Business practice, however, is mostly shaped by individual actions and competition, which may conceal opportunities for collaboration.

Third, business needs to value the role played by regulatory bodies in helping it meet social expectations. In the context of this research, actors acknowledged that government-driven monitoring mechanisms can provide a level playing field and an efficacious lever to prevent free riding. An interesting observation from the data is the fact that, simultaneous with the involvement of government, the role of other actors (e.g., NGOs) was gradually minimized, to the degree that the hybrid model is mostly shaped by

business and government. In a context fraught with conflict, dealing with one actor who can integrate diverse interests into a more consistent set of requirements seems to be more effective than dealing with multiple groups.

Last, but certainly not least, business must acknowledge constructive tensions in the development of such interactive programs and relationships. In fact, many actors, including firms, confuse tension with conflict of interest and contradiction. Viewing tensions as intrinsic to complex, multi-faceted phenomena, such as the grand challenge of sustainability, provides unique opportunities for synergistic actions towards more efficient, effective, and innovative solutions (Hahn, Pinkse, Preuss, & Figge, 2014). Accordingly, acknowledging the role of different actors in balancing these tensions helps business to make more informed decisions.

7.4.2 Implications for Policy

In terms of implications for policy, the case of the MHSW program in Ontario demonstrates how depriving industry of its coordinating capabilities can be counterproductive, creating detrimental conflicts among the stakeholders. In this context, the negative conflicts were ameliorated after the government partly relinquished self-regulatory processes to business. At that point, as the foundations of the program and its ultimate goals were relatively respected across the board by all involved actors, the conflicts of interest among the stakeholders were replaced with constructive tensions between the necessary but contradictory concepts contained in the hybrid model.

Another implication of this research for regulatory process pertains to the notion of responsive regulation—that is, the idea that regulatory policy should be responsive to industry self-regulation structure by considering different levels of institutionalization, morality, and formality, among other things (Ayres & Braithwaite, 1992; Gunningham & Rees, 1997; Parker, 2013). Responsive regulation may far exceed the common rights of business to provide feedback on legislation or adopt advocacy activities. Although the importance of attending to firms' perspective in legislation has been emphasized in literature (Malesky & Taussig, 2017), my model suggests that responsive regulation can have more progressive forms. In the Ontario case, two forms of policy responsiveness

emerged that were critical for the formation of the hybrid model. At a basic level, after business took a more active role, the regulators gradually conferred a level of authority to business to establish independent programs and modify some practice-level policies independently. Later, at a more progressive level, regulators enhanced the flexibility to allow firms to launch different self-regulation systems at the industry, group, or even firm levels in future. I argue that to navigate these tensions, regulators must consider the notion of responsive regulation as a main lever for business-government interactions, not least in maintaining the balance of constructive tensions.

Perhaps the main contribution of this research to policy is the proposed hybrid model as a means to translate collective-level responsibilities into business practices. The model resolves many drawbacks in government- and industry-regulated systems. A main advantage of the model also lies in the flexibility of firms to choose between individual- and collective-level actions—actions that organically evolve and compete with each other towards better outcomes. As an add-on to the proposed model, by laying the burden of monitoring and sanctioning costs on business, government can both secure the actions and direct the costs to the specific consumers of product groups, rather than the general public.

7.5 Boundaries and Generalizability

Single-case studies usually fall short in generalizability, and this embedded single-case study is no exception. Yet, the value of such cases lies in their uniqueness. Compared to other cases with the same goal, the case of MHSW programs in Ontario is relatively extreme, as the respective roles of business and government in the regime were almost equal. This parallel involvement of both sides is far beyond government regulations influenced by industry or ISR regimes influenced partially by government. Extreme and revelatory cases can add significant value to theory with the generous information they provide compared to ordinary cases (Hällgren et al., 2018). Such a case, sometimes called “talking pig” (Siggelkow, 2007) or “black swan” (Flyvbjerg, 2006), is valuable in extending the boundaries of extant theory, challenging or falsifying previous works, and sparking imaginations with creative results for both theory and practice.

This study expands theory in the area of ISR by proposing an efficient regime in a particular context. The context of the research has three distinct qualities. First, in contrast to many other self-regulatory regimes, the driving force of the action was a responsibility that was deeply rooted in collective processes, because producers of similar consumer products cannot collect and manage their post-consumer materials individually unless extreme disruptions take shape in institutions and technology. Thus, the regime broadly called for collective action. But, in the complex and multi-actor context, it was not clear how this collective action can be fulfilled by individual firms. Second, the new expectation was costly and challenging, leaving no motivation for business to proactively participate. Exacerbating this unwillingness was the lack of cooperation among the actors. Not only did firms in the same industry have little experience in cooperation, but cooperation with other actor groups was also deeply harmed by severe conflicts. Third, the government was too ambitious to curb the goals to compliance with a set of requirements; instead, it sought innovative solutions to help transition to a circular economy.

These three characteristics shape the boundary conditions of the findings. Although the results still need to be validated by generalizable empirics, the identified model can be proposed for similar contexts in which one or more of the above characteristics exist—that is, (1) there exists no trusted and optimal means to translate the collective responsibility into requirements for individual firms, (2) the involved firms are not cooperative or motivated enough to undertake timely and efficient actions voluntarily, and/or (3) the problem lacks a solution and therefore needs innovative outcomes. In absence of any of these conditions, although the model may still work, it seems less efficient compared to the existing models. For instance, where business proactively cooperates in leading the environmental agenda, a pure ISR model may work more efficiently. My data from other regions show that post-consumer material management for the circular economy is an exemplary context involving all these characteristics. According to the data, many of the implemented regimes do not generate innovative outcomes, which makes them inefficient for the circular economy journey. Notably, however, the proposed model may not be limited to the circular economy.

Given the design of the research (i.e., exploring an existing model through an embedded single-case analysis), the study supports the fact that the proposed hybrid model can be more efficient than other models discussed in Chapters 2 and 6, and it can spur proactivity and innovation; however, it is key to note that this is only one model to this end. That is, there might be other models with more efficiency and higher outcomes.

7.6 Future Research

My field work, data analysis, and theorizing have opened up many promising opportunities for future research. Some of these possibilities are touched on in this research, but still need further work; I list a few such possibilities below.

The first opportunity is a more focused work on the evolutionary process of the MHSW program. Although this study investigates the longitudinal data, due to the research question, it is designed to investigate the established hybrid model and its characteristics. Adopting a more focused process research methodology and delving deeper into the transition processes could shed more light on how (and possibly why) each identified stage evolved and transformed (Langley, 1999; Langley & Tsoukas, 2016).

Relevant to the above opportunity, the role of business in formation of the hybrid model deserves better understanding. This role is a type of institutional work carried out by business (Lawrence & Suddaby, 2006; Nilsson, 2013). The data suggest that without such institutional work through stage 2 of the process, the hybrid model cannot be realized, which may result in more stringent regulation and less proactivity. As such, although business initially avoided proactive actions for environmental purposes in this case, proactivity took the form of institutional work. Understanding how uncooperative firms coordinated the institutional work and how the resultant proactivity led to a new form of proactivity towards the goal of the hybrid regime can contribute to the literature on institutional work and its transformation.

A third avenue for research is a comparative multiple-case study on different jurisdictions. Indeed, different provinces have pursued post-consumer waste management in different regulatory forms, resulting in different outcomes. A few Canadian

jurisdictions have taken more extensive steps and achieved remarkable results. A comparative case study could reveal what underlies the formation of regulatory regimes and how the socio-political atmosphere can influence regulatory regimes (e.g., a study that considers the type and level of business-government cooperation and how it has impacted the ultimate results).

Although this research focuses on one particular hybrid model, various combinations of regulatory regimes may be utilized to yield the expected outcome. In fact, the "area of hybridity" demonstrated in Figure 11 can include diverse innovative combinations to serve the circular economy. Exploring such models and their potentials can contribute significantly to the knowledge of mixed regulatory models—an area which needs more work by business scholars. This fourth opportunity for research could help scholars investigate the tensions of hybridity in other contexts as well.

Finally, considering the data retrospectively, it is evident that although actors such as NGOs initially played a relatively active role (mostly in the 1980s and 1990s), their role was gradually weakened to the extent that they are no longer active players in the current study. The simple explanation for this development may be that the involvement of government and its "hard institutions," i.e., regulation, obviated the need for such actors and "soft regulation" (Reinecke & Ansari, 2015). Yet, this area could be a fertile avenue for research on the complementarity and substitutivity of the roles of actors such as NGOs and governments. For instance, under what conditions can stringent regulation weaken non-business actors? How can the formation of different institutions (e.g., norms and hard regulations) change their roles? And more broadly, how can such entities make growth, change, or resolution decisions when the socio-political context changes?

7.7 Conclusion

> *Specifically, I call on you—individually through your firms, and collectively through your business associations—to embrace, support, and enact a set of core values in the areas of human rights, labour standards, and environmental practices* (Annan, 1999).

The above statement to the World Economic Forum by former United Nations Secretary-General Kofi Annan has commonalities with the Ministry of the Environment's 1983 call for voluntary business actions which opened Chapter 1. Much has been said about the pivotal role of business in sustainable development, mostly by adopting a normative approach to encourage business to voluntarily participate in synergistic practices. To this end, much has been done by individual firms voluntarily. But much has been missed too. First, the speed of such voluntary participation to develop solutions is not commensurate with the speed of unsustainable practices (e.g., the surging rate of natural resource consumption). Second, firms are still insufficiently involved in collective work, especially to protect common goods. The notion of competition has arguably overshadowed business and constrains collaboration and collective work. In absence of collective endeavours, many required changes are not realized in a timely manner; this has certainly been the case for the change in institutions and value chains to close resource loops.

With the need for sustainable solutions becoming increasingly urgent and publicized, it is now evident that we cannot simply wait for innovative solutions to emerge through a Schumpeterian approach. To realize a circular economy, policy is required too. If many thought leaders have deemed business the vehicle for sustainable development in the past, scientific facts such as those regarding resource depletion demonstrate that the vehicle must gain traction. Business can be the vehicle, but policy should accelerate it. And that policy needs to encourage both innovation and collective work by firms preoccupied with competition. These two aims can be met only through innovative regulatory regimes, as banal policy merely revolves around compliance with requirements at the individual level. Hence, the uncertainty, diversity, and complexity of sustainability as a grand challenge or wicked problem makes conventional policy an inefficient means (Head & Alford, 2015). To address such issues, an efficient regime embraces business capabilities rather than suppress them (as command-and-control regimes do); however, it should also be forceful enough to urge potentially uncooperative firms to participate. Thus, the combination of government regulation and business regulation is crucial.

Furthermore, the assumption of cooperative actors can sometimes be unsubstantial or problematic. The notion of within-community cooperation has been considered in voluntary collective action studies (Ostrom, 2010b), including those studies that address the characteristics of communities that cooperate (Rivera, Naranjo, Robalino, Alpizar, & Blackman, 2017). Most works on within-community, inter-organizational, and cross-sector collaborations are shaped by the assumption of cooperative actors (for example see Albareda, 2008). In such contexts, although actors might have conflicts of interest, they are willing to compromise part of their interests and navigate through intra-industry or cross-sector projects to meet the common goals. Admittedly such cases are not rare, but they do not reflect the complete reality. Arguably, a more frequent situation is the ubiquitous opportunities that are missed because non-cooperative actors do not even think about such collective actions. Non-cooperation is arguably common across competition-oriented firms, and it is even more common across firms and non-business actors.

Therefore, the urgent environmental problems at hand demand collective actions in non-cooperative settings fraught with conflicts, where participants work under “coerced cooperation” (Levi, 1988; Ostrom, 2000a). Such dynamics are not ignored in the broad cooperation literature (Majchrzak et al., 2015) and are addressed in ISR models developed by economists (Lyon & Maxwell, 2016; Maxwell & Decker, 2006; Poteete et al., 2010). Management scholarship, however, needs to delve deeper into such contexts and extend the existing knowledge. The tension perspective is a useful approach to this end. As my research demonstrates, involving cooperative actors is not necessary for a collective action to result in innovative outcomes; rather, a regulatory regime can deliver remarkable innovation as long as it acknowledges, utilizes, and manages the inherent tensions.

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Appendices

Appendix A: List of Interviews (Company and individual names are confidential)

Date	Interviewee's Position	Actor Group					Duration (minute)	Content of Data	Interface
		Stewardship	Government	Municipality	Service Provider	Other			
31-May-16	Two stewardship senior managers	*					60	Introductory information about a specific program	Phone call
15-Jun-16	President and CEO	*					45	General information about different programs	Facetime
28-Jun-16	President	*			*		345	General information about collection and recycling	In person
11-Jul-16	VP of Operations	*					120	General information about the waste management system	In person
11-Jul-16	CEO	*					60	The waste management system from the perspective of stewards	In person
11-Jul-16	Product Development manager	*					30	Their innovation process and projects	In person
12-Jul-16	Director of Communication	*					90	Communicating the programs	In person
12-Jul-16	President	*					135	General information about the MHSW program	In person
28-Jul-16	President/Board member				*		180	General information	In person
02-Aug-16	President and CEO	*					60	Information about one industry's actions	Facetime
13-Sep-16	President and CEO	*					350	Information about one industry's actions	In person
29-Sep-16	President and CEO	*					70	General information	Facetime
09-Nov-16	Project Manager	*					30	Potential innovations in industry	In person
23-Jan-17	Chairman and General Manager	*					105	Collective actions and challenges	In person

Date	Interviewee's Position	Actor Group					Duration (minute)	Content of Data	Interface
		Stewardship	Government	Municipality	Service Provider	Other			
25-Jan-17	Director of the Ontario Programs	*					120	Processes and challenges in Ontario	In person
06-Feb-17	Director and board member	*					100	Recycling from the perspective of a retailer and manufacturer	In person
14-Feb-17	Project leader		*				105	Ups and downs of the recycling program and government bodies	In person
24-Feb-17	Sr. Analyst		*				70	Policy making in Ontario	In person
01-Mar-17	Directeur Général	*					300	General information and history	In person
02-Mar-17	General Manager				*		100	About the history and operations of the company	In person
02-Mar-17	Retired expert					*	90	Background info about the evolution of recycling in early years	In person
02-Mar-17	President and board member	*			*		90	Early years of the program and status quo	In person
08-Mar-17	Corporate director	*					100	Various aspects from a steward's perspective	In person
11-Apr-17	various role in operations and service	*	*		*		120	History of the program in Ontario	In person
04-May-17	VP executive	*					80	History and rationale behind historical events	In person
08-Jun-17	VP operations				*		45	Formation of recycling in Ontario in 1990s and current challenges	In person
08-Jun-17	VP business development				*		105	Formation of recycling in Ontario in 1990s and current challenges	In person
23-Jun-17	President					*	90	Policy making processes and ebbs and flows	In person
27-Jun-17	Director of operations			*			60	Recycling operations in a region	In person
27-Jun-17	Director of Policy		*	*			60	History of regulation in Ontario and issues they address in their region	In person

Date	Interviewee's Position	Actor Group					Duration (minute)	Content of Data	Interface
		Stewardship	Government	Municipality	Service Provider	Other			
04-Jul-17	supervisor			*			60	History of the program in Ontario	In person
04-Jul-17	President & CEO	*					90	General issues about recycling	In person
13-Jul-17	VP executive	*					100	History and rationale behind decisions	In person
19-Jul-17	Two directors	*					60	General MHSW transition	Phone call
28-Jul-17	VP compliance	*			*	*	20	General issues	Phone call
01-Aug-17	Store manager	*					20	Consumers, market issues, and collection	In person
01-Aug-17	Site manager			*			20	Municipal waste collection	In person
03-Aug-17	Executive director	*					130	Evolution and challenges of a particular MHSW program	Phone call
10-Aug-17	VP compliance	*			*	*	150	Evolution of MHSW	In person
14-Aug-17	Director			*			40	On municipalities and conflicts	Written
15-Aug-17	Manager			*			45	Operations for diverse materials	In person
16-Aug-17	VP compliance	*			*		100	All aspects of a particular material group	In person
17-Aug-17	Executive director					*	70	Broader issues and challenges in policy	In person
17-Aug-17	Senior advisor			*			60	Various policy-related issues and processes	In person
21-Aug-17	Project leader			*			120	Programs from the municipal perspective	In person
25-Aug-17	Chairman		*		*		60	Transition in policies and programs	In person
26-Sep-17	Public information manager		*				30	Provincial policies	In person
26-Sep-17	Director of operations		*				60	Provincial policies	In person

Date	Interviewee's Position	Actor Group					Duration (minute)	Content of Data	Interface
		Stewardship	Government	Municipality	Service Provider	Other			
27-Sep-17	President				*		60	Recycling a MHSW material	In person
20-Nov-17	Project leader		*				60	Policy making and monitoring	Phone call
27-Nov-17	President				*		95	Evolution of the programs	Phone call
04-Dec-17	Director	*					60	Stewardship from the perspective of retail	Phone call
08-Dec-17	Director			*			45	On municipalities and tensions	Written
08-Dec-17	Director			*			60	On municipalities and tensions	Phone

Appendix B: List of Observations (Company and individual names are confidential)

Date	Type of Observ-ation	Type of Site/ Event	Actor Group					Duration (minute)	Content of Data
			Stewardship	Government	Municipality	Service Provider	Other		
29-Jun-16	site visit	A recycling factory	*			*		60	Technical issues in recycling operations
12-Jul-16	site visit	A stewardship organization	*					120	General information about their program
12-Jul-16	site visit	A steward's site	*					120	Their innovation projects across the company's sites; safety issues
12-Jul-16	site visit	A manufacturing site					*	60	How they recycle concrete and use residual paint as an additive to concrete
12-Jul-16	site visit	A stewardship organization	*					240	General operations, their small workshop in the office, and collection system in stores
28-Jul-16	site visit	A recycling factory				*		180	General information
07-Sep-16	event	An industry board meeting						60	The dynamics of their stewardship program
13-Sep-16	site visit	An industry association	*					350	Stewardship management processes
01-Mar-17	site visit	A stewardship organization	*					300	General information
02-Mar-17	site visit	A recycling factory				*		100	Recycling processes
24-May-17 25-May-17	event	An industry annual conference	*			*		900	Various professional and policy issues
08-Jun-17	site visit	A recycling factory				*		150	Formation of HHW recycling in Ontario in 1990s and current challenges
28-Jun-17	event	A stewardship program board meeting	*					60	This research and how it can contribute
01-Aug-17	site visit	A store with waste collection depot	*					30	On collection of waste paint
01-Aug-17	site visit	A waste collection site			*			30	Broadly on waste collection operations

Date	Type of Observ-ation	Type of Site/ Event	Actor Group					Duration (minute)	Content of Data
			Stewardship	Government	Municipality	Service Provider	Other		
15-Aug-17	site visit	An MHSW collection site			*			60	Operations for different materials
16-Aug-17	site visit	A recycling factory	*			*		30	Operations
21-Aug-17	site visit	An MHSW collection site			*			160	Their operations and challenges in collection
07-Sep-17	Webinar	A webinar on global stewardship programs				*		60	Harmonization of stewardship
27-Sep-17	site visit	A recycling factory				*		30	Recycling operations
04-Oct-17	Event/ Webinar	A stewardship office		*				120	Views on fees and stewards' concerns
08-Nov-17	webinar	A webinar on global issues in compliance of hazardous materials				*		30	Harmonization of hazmat
09-May-17	webinar	A webinar on circular economy					*	65	The dynamics of implementing the circular economy
07-Dec-17	webinar	A webinar on global waste management issues		*	*			105	General info about operationalization of a new waste program and imposing bans across regions
18-Dec-17	webinar	A public session on Ontario's new regulation and plans		*				90	General info about the fees and windup programs, and questions for consultation process
22-Jan-18	webinar	Regulation in European Union and the emerging issues				*		35	Info on the forthcoming changes in European regulations
23-Jan-18	webinar	Consultation session on the tires program windup plan	*	*				180	The plan for next steps approved by the Minister
29-Jan-18	webinar	Consultation session on the tires program windup plan		*				120	Question and answer on windup plan, mainly with focus on service providers

Date	Type of Observ-ation	Type of Site/ Event	Actor Group					Duration (minute)	Content of Data
			Stewardship	Government	Municipality	Service Provider	Other		
07-Mar-18	Webinar	Overview of regulation in the chemical industry				*		60	General info about regulating new chemicals
09-Mar-18	Webinar	Final consultation on fee setting policy		*				90	Details on the fees of the Authority
24-Apr-18	Webinar	Session on regulatory changes for preservatives in paints					*	45	Legislative atmosphere in the U.S. and Canada with respect to preservatives
21-Jun-18	Conferen ce	Conference on resource recovery partnership	*	*	*	*	*	270	The dynamics and frontiers of resource recovery in different jurisdictions
21-Jun-18	offline observati on	The Authority's annual general meeting		*				60	The trends and issues in policies and programs
07-Oct-18	webinar	The Authority's consultation session on waste electronics program	*	*				60	How the WEEE windup is planned to be conducted in 2020
10-Dec-18	Webinar	Session on global issues in hazardous products labelling				*		60	General ideas about different regions and labelling systems requirements

Appendix C: Original Ethics Approval Letter

Western Research

Research Ethics

Western University Non-Medical Research Ethics Board
NMREB Delegated Initial Approval Notice

Principal Investigator: Pratima Bansal
Department & Institution: Richard Ivey School of Business\Ivey School of Business,Western University

NMREB File Number: 107834
Study Title: Tackling Sustainability Tensions in Innovation Process

NMREB Initial Approval Date: May 12, 2016
NMREB Expiry Date: May 12, 2017

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Letter of Information & Consent	Interview	2016/04/03
Instruments	Interview Questions	2016/04/03
Western University Protocol	Received May 12, 2016	
Letter of Information & Consent	Observation - Main	2016/05/10
Other	Research Summary - Observation - Secondary	2016/04/25

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the above named study, as of the NMREB Initial Approval Date noted above.

NMREB approval for this study remains valid until the NMREB Expiry Date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

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