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# C.D. Howe Institute

# COMMENTARY

ECONOMIC GROWTH AND INNOVATION

## The Eco-Fee Imbroglia: Lessons from Ontario's Troubled Experiment in Charging for Waste Management

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### **In this issue...**

Eco-fees have proved to be a political disaster. Good governance and attention to program participants' incentives could produce better results.

## THE STUDY IN BRIEF

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Charging for the life cycle cost of waste management is contentious. The recent example of some retailers charging “eco-fees” in Ontario, with respect to sales of household products such as detergent, batteries and fluorescent light bulbs, is a case in point. However, the Ontario program for municipal waste, which the provincial government has partially abandoned, is just one example of the movement known as Extended Producer Responsibility (EPR), which is spreading across the country and to many products. As in numerous other jurisdictions, Canadian provinces have imposed, or are considering, similar EPR programs for products such as tires, electronics and countless other goods.

This *Commentary* uses lessons from Ontario’s waste programs to examine EPR’s potential attractions – when such programs are properly designed.

Policymakers in Ontario and other provinces that are considering implementing EPR programs should implement systems that impose responsibility for dealing with waste on individual producers, and allow for a range of contractual arrangements to undertake these responsibilities. The underlying governance structures are central to the effectiveness, efficiency, and fairness of EPR programs, but are often neglected or poorly designed.

EPR programs need not suffer the fate of the failed Ontario hazardous waste program. Policymakers can make these programs work through better institutional design, such as by setting realistic waste diversion targets, increasing competition among individual and collective waste diversion systems set up by producers, ensuring balanced representation between industry, environmental groups, and the public on the boards of waste diversion programs, and providing inducements to consumers to participate in the EPR program. Failure on these criteria may lead to unnecessary costs for consumers, with perhaps little environmental benefit.

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INDEPENDENT • REASONED • RELEVANT

**P**aying for the cost of waste management is becoming increasingly contentious. Witness the recent controversy in Ontario over “eco-fees” for household hazardous waste such as detergent, batteries and fertilizers.

The Ontario government implemented its plan to make producers pay for a share of a program to address such waste on July 1, 2010. It had hoped the plan would lead producers to reduce waste from their products by, for example, making their components more recyclable or reusable.

However, public outcry over the imposition of fees relating to this plan by some retailers led the government to suspend and eventually to scrap the program. Yet, the difficulty was not in the concept of making producers more responsible but in the institutions and structure of the policy that Ontario implemented. This *Commentary* uses the lessons from Ontario’s waste programs to examine why the idea of imposing responsibility on producers is attractive and how such programs can be structured more effectively.

While controversial, governments around the world are extending similar programs to a wide range of products from electronics to cars, tires, and appliances. Waste has long seemed a natural by-product of human activity. In a market economy, producers make goods that they sell to consumers who, in turn, use and dispose of the goods and their packaging. Such a system obviously has costs – the direct costs of collecting and disposing of the waste and indirect costs such as the environmental effects of hazardous waste and the waste of the resources that could have been used for other purposes. To the extent that producers and consumers do not fully bear these costs, they shift (or externalize) some of them onto others.

Governments around the world are attempting to shift responsibility for the costs of waste from

municipalities and taxpayers to those who create or generate it, often through programs called Extended Producer Responsibility (EPR). They hope that EPR programs will provide incentives for producers to design their products in a manner more conducive to recycling or reuse and to promote more efficient and innovative forms of waste services. Much of the rhetoric surrounding EPR may be good politics, but there is little public (or industry) understanding of what is at stake in the expansion of EPR to an ever-wider range of products, as reflected in the recent public controversy in Ontario over “eco-fees” (widely perceived and described as new taxes) for common hazardous household products.

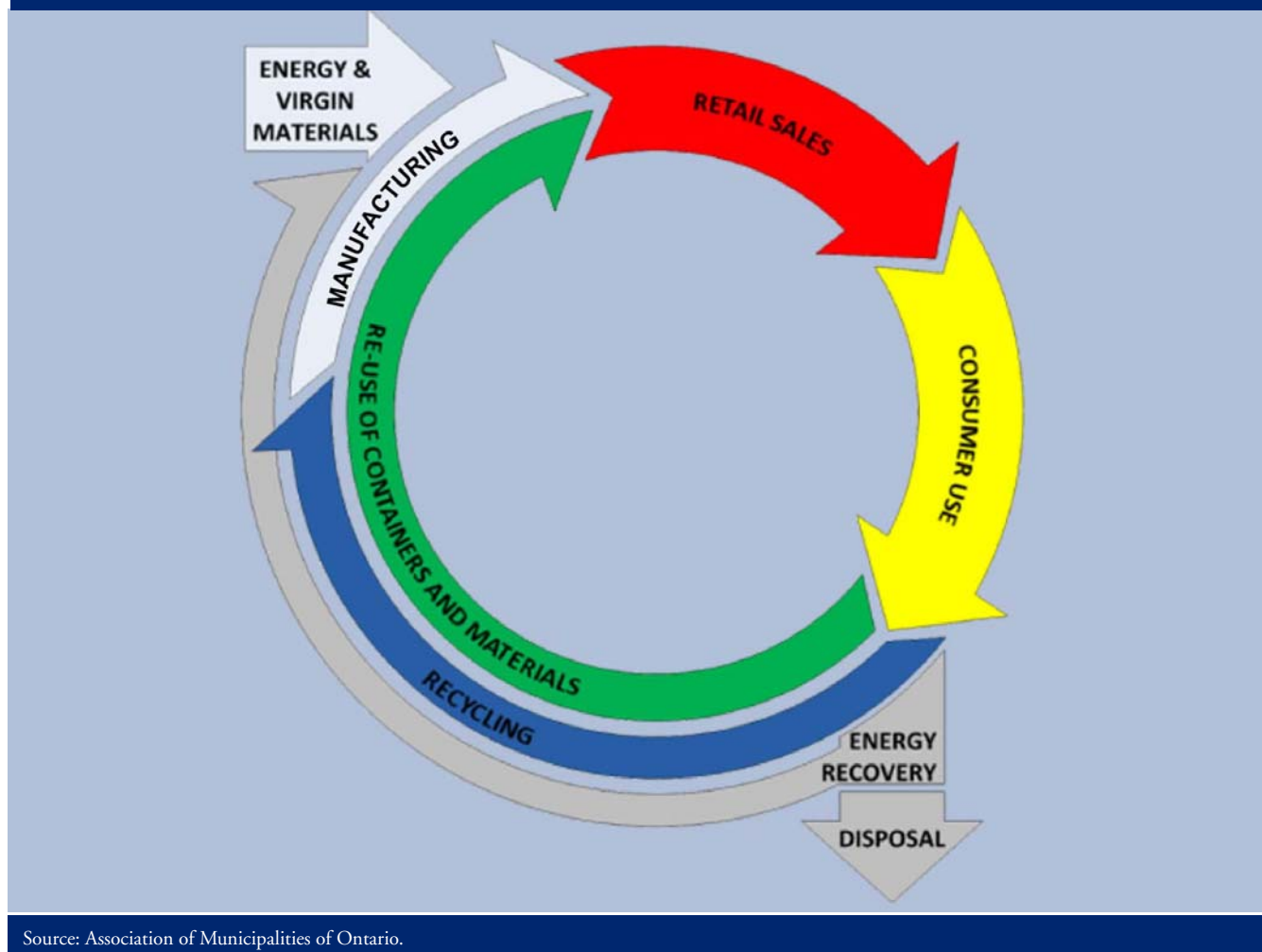
In this *Commentary*, we conclude that the best system is one that imposes individual responsibility to the greatest extent possible and allows for a range of contractual arrangements to undertake these responsibilities. We argue, however, that the underlying governance structures are central to the effectiveness, efficiency, and fairness of the program but are often neglected or poorly designed. We recommend that:

- Governments should set targets (such as for diversion rates) based to the extent possible on a cost-benefit analysis of target levels and through a transparent process;
- Governments should allow both individual and collective programs to operate concurrently and, to the maximum extent feasible, use individualized producer payments;
- The system should provide inducements for consumers to participate in end-of-product-life collection/recycling functions;
- The system should encourage as much competition as possible in the provision of collection/recycling services; and
- The governance system adopted should ensure a balanced representation of interests (including industry, environmental groups, and the public) and transparent processes for setting, monitoring, and enforcing policies by the decisionmaking bodies.

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Figure 1: The Product Life Cycle



Source: Association of Municipalities of Ontario.

## Assessing EPR Programs

The traditional view of the end of life of products – at least for those of residential use<sup>1</sup> – is as waste, collected by municipalities and disposed of in landfills, often municipally operated and financed by local taxpayers. Under the EPR approach, however, responsibility for waste management would initially fall partly or completely on the producer, rather than the municipality or taxpayers. As the Organisation for Economic Co-operation and Development (OECD) explains, EPR is “an environmental policy approach under

which the responsibility of producers for their products and packaging is extended to include the social costs of waste management, including the environmental impact of waste disposal” (OECD 2005). The core concept is that the producer takes into account the costs of the end stages of the life of its product, whether by disposal, recycling, or reuse (Figure 1). In theory, the producer then would have a financial incentive to reduce these end-stage costs just as it has for production costs.

EPR programs have now spread to more than 25 countries (Khatriwal, Kraeuchi, and Widmer

<sup>1</sup> The other large category of waste is industrial, commercial, and institutional. Such waste is covered by regulations under the *Environmental Protection Act* that require generators to audit their waste, develop waste reduction plans, and separate recyclables (Ontario Ministry of the Environment 2009).

**Table 1: Founding Date and Status of EPR Programs in Canada**

PRODUCT	BRITISH COLUMBIA	ALBERTA	SASKATCHEWAN	MANITOBA	ONTARIO	QUEBEC	MARITIMES
Hazardous waste	1997; drop off at PRO collection depots.					2008; take-back through PRO.	
Beverage containers	1997; tax and visible levy at purchase, drop off for refund on levy, PRO contracts for processing.	1997; deposit paid at purchase with refund at dropoff, producers pay a PRO that contracts for processing.	1999; tax and deposit paid at purchase, drop off for refund on deposit, PRO contracts with province to process.	1995; for beer: deposit paid at purchase, drop off for refund; others: recycled through Blue Box - 80% producer funded.	Alcohol containers: pay deposit refunded at dropoff, producers pay; others: Blue Box - 50% producer funded.	1999; pop/alcohol containers: pay deposit, refunded at dropoff; Blue Box as supplement - 60-75% producer funded.	Deposit paid at purchase, drop off for partial refund, half kept to fund system, PROs contract for processing.
Batteries	Voluntary for rechargeable batteries.					Drop off at collection point, PRO processes. PEI only: consumer dropoff.	
Medication	1996; drop off, PRO ships for disposal.	1988; voluntary, PRO contracts with private disposer.					Nova Scotia only: consumer dropoff.
Tires	2007; levy at purchase, free dropoff, distributor contracts for processing.	1992; levy at purchase, free dropoff, PRO contracts for processing.	1998; levy at purchase, free dropoff, PRO contracts for processing.	1995; levy at purchase, free dropoff, PRO contracts for processing.	2003; Levy at purchase, free drop off. PRO contracts for processing.	1999; levy at purchase, free dropoff, provincial recycler processes.	Levy at purchase, free dropoff, PRO contracts for processing.
Used oil	1992; levy at purchase, free dropoff, retailers contract for processing.	1997; levy at purchase, free dropoff, PRO contracts for processing.	1997; levy at purchase, free dropoff, PRO contracts for processing.	1997; levy at purchase, free dropoff, PRO contracts for processing.	2004; free dropoff, producer fees pay PRO, which contracts for processing.		Free take-back with retailer responsibility.
Paint	1994; eco-fee at purchase, free dropoff, processing by PRO.	2007; advance disposal fee, free dropoff, processing by PROs.	2005; eco-fee at purchase, free dropoff, processing by PRO.		2001; free dropoff to retailers who transport at no cost, processed by PRO. Nova Scotia only: drop off to retailers, PROs contract for processing.		
Electronics	2006; advance disposal fee, free dropoff, PRO contracts for processing.	2004; advance disposal fee, free dropoff, provincial recycler.	2006; advance disposal fee, free dropoff, PRO contracts for processing.		2009; advance disposal fee, free dropoff, PRO contracts for processing.		Nova Scotia only, pending in PEI.
Packaging				2010; all packaging collected through provincial PRO.	Residential packaging through Blue Box - 50% producer funded.	2005; residential packaging through Blue Box - 60-75% producer funded.	
Future	Batteries and antifreeze by 2010, launch 2011.	Late 2010 legislation expected on EPR packaging.	2009 new environmental regulation, no new EPR categories.		Plan for appliances, expansion of hazardous and special waste program, used oil, extension of EPR programs into industrial, commercial, and institutional sectors.	Changes for used oil and paint plus new programs for electronics and batteries expected.	Nova Scotia and PEI considering broader EPR legislation.

Sources: Canada 2007; Container Recycling Institute 2009; Moyes 2010; Ontario 2010; SWEEP 2010.

2009),<sup>2</sup> including Canada, where the Canadian Council of Ministers of the Environment (2009) has committed Canadian jurisdictions to working toward the implementation of EPR programs within six years for packaging, printed materials, mercury containing lamps and other products, electronics and electronic products, household

hazardous and special wastes, and automotive products; and within eight years for construction materials, demolition materials, furniture, textiles, carpets, and appliances. A number of provinces also have product-specific EPR programs (see Table 1). Ontario, for example, has developed programs relating to packaging and printed paper,

2 One of the first was a 1991 German law that required producers and retailers to take back packaging and set recycling rates for the returned packaging (Walls 2006). The European Union now requires member states to establish systems to meet recycling targets. EU members have tended to address these targets through EPR programs covering such products as used motor oil, packaging, used tires, batteries, and waste electrical and electronic equipment (European Union 2008). EPR has also spread to countries in Asia. South Korea, for example, has an EPR program that covers a range of products including tires, lubricants, fluorescent lights, metal cans, waste electrical and electronic equipment, and packaging. Japan has programs that cover vehicles and appliances (Walls 2006).

waste electrical and electronic equipment, used tires, and household hazardous waste,<sup>3</sup> and plans to extend EPR to a wider range of goods and implement mandatory waste diversion requirements (Ontario 2009).

### *The Potential Benefits of EPR*

An expanded role for producers in the waste management process is thought to lead to a range of benefits relating to the whole life cycle of a product that stem from forcing producers and consumers to face the “externality,” or costs, they impose on other parties as a result of their production and consumption activities (Sachs 2006). The efficacy of EPR programs heavily depends, however, on the policy choices that are made in their design, objectives, and implementation – many have been criticized as a costly and cumbersome way of achieving their goals.<sup>4</sup> To understand these policy choices, it is instructive to look at three broad goals of EPR: to reduce environmental harm, reduce costs, and increase the fairness of the distribution of costs.<sup>5</sup>

#### Reducing Environmental Harm

Two broad environmental benefits have been claimed for EPR. First, EPR might reduce the impact of production on the environment to the extent that it gave producers incentives to reduce waste, say, by using less packaging, and increased recycling and reuse. Further, to the extent that EPR either reduced the amount or toxicity of waste (such as by reducing levels of packaging or levels of hazardous waste in products) or increased recycling and reuse, there would be fewer landfill sites holding waste from which pollution could

flow, and fewer hazardous materials going into landfills or being incinerated. Second, EPR might reduce the need to obtain and process new materials as reuse and recycling increases; moreover reuse and recycling may require less energy use than processing new or unused resources.<sup>6</sup>

#### Reducing Costs

EPR could reduce the financial costs of dealing with waste through the incentives it imposes on producers, fostering what economists call static and dynamic efficiency. Static efficiency is the minimization of costs given existing technology and institutions (Deweese 2009). In the case of EPR, if producers were forced to pay the cost of waste management, they would have an incentive to reduce the amount of waste they produce. They would also have an incentive to ensure that whatever systems were in place for managing waste were as efficient as possible. Dynamic efficiency refers to innovation in new technologies or organizational arrangements that reduces costs over time (Deweese 2009). This innovation can occur at all stages of the life cycle of a product. Proponents of EPR argue that it would enhance “design for the environment” – that is, design would take into account the whole life cycle of the product through to its after-life management, including recycling and reuse.

EPR programs, however, can come with potential inefficiencies. One is high transaction costs – such as the cost of setting up the program,<sup>7</sup> the cost to industry to comply with requirements (such as sorting different waste streams or products), the cost to government and industry of monitoring compliance, and the cost of enforcement. While some of the transaction costs

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3 These programs fall under Ontario’s *Waste Diversion Act*, 2002 (Ontario Ministry of the Environment 2009).

4 For discussions of the concerns with EPR, see, for example, OECD (2005); Sachs (2006); Walls (2006); Binkley (2009); Dewees (2009); and Trebilcock (2009).

5 For a discussion of criteria for evaluating policy, see Revesz and Stavins (forthcoming).

6 Ontario (2009); but see Sachs (2006), who argues that it is not clear that less energy is used in the recycling and reuse of some materials.

7 This includes the cost of negotiating the program between the government and the various actors, the cost of negotiating any contracts between or among parties under the program, and the cost of the government’s obtaining information to establish regulatory targets (such as collection and recycling rates).

might be merely shifted to the EPR program from elsewhere, the additional costs of EPR can be extremely high depending on the products involved and the structure of the relevant market.

Another potential inefficiency of an EPR program is the risk that it will encourage anti-competitive behaviour. Depending on how the program is set up, firms might impede competition by, for example, banding together to form an association that exercises power as the single or dominant buyer in downstream markets for collection, reuse, and recycling.

A third potential inefficiency is the cost of program inconsistency across jurisdictions. Some jurisdictions might impose stringent requirements, some lenient, some simply different rules. Such differences can influence the market share of different producers because of their different costs of dealing with waste. It also might be difficult for producers to engage in eco-design if faced with multiple compliance requirements in different markets.

### Increasing Fairness

Neither environmental effectiveness nor economic efficiency in general takes into account who bears the costs or receives the benefits of an EPR program. In changing the focus of responsibility, however, an EPR program, regardless of its other benefits, might distribute the costs of environmental harm more fairly by making the polluter pay for the costs of disposal up front while recognizing that some or all of these costs might be passed on to consumers (as with any other production cost), depending on elasticities of demand and supply in the relevant product market. This is a way to ensure that those who benefit from the production and consumption of the product – that is, both the producer and consumer – also pay the costs.

### *The Challenge of Design Choice*

A good EPR program is thus one that reduces environmental harm, reduces costs, and increases fairness. However, the transaction costs – in

particular, the information costs – of particular designs require choices that involve tradeoffs among these goals.

One way to address the environmental impact of products is for producers to take account of both the direct and indirect costs of their products and production processes (such as of environmental harm from disposal). If they were to incorporate these costs in the same way as costs for labour or materials, they would have an incentive to reduce them by changing processes and materials to gain an advantage in the market. The difficulty, of course, lies in appropriately pricing all the various harms that might arise from processes and products and apportioning them to each producer.

One solution would be for producers to face individual targets for amounts of products to be recycled or reused. They could be given the flexibility to determine how best to meet these targets, including through combining efforts where economies of scale favour this option. If the targets were mandatory and backed by penalties, producers again would face at least a part of the cost of the end of life of their product. This cost could be included in the costs of production and passed on in whole or in part to consumers as with any other costs. Consumers could then choose among products based on cost, including the cost of their end of life, which, in turn, would give producers an incentive to take further steps such as increasing recycling or reducing packaging. Such competition would drive both static and dynamic efficiency in both goods production and waste management services.

As governments design EPR programs, they face several key choices:

- What are the program's goals and how are they to be set?
- What are the specifics of the program's design? For example, who will be responsible for meeting targets? How will the program be financed? Do consumers have an incentive to participate? How are collection and recycling services provided?
- Who decides how the program is designed and implemented?

## Setting Goals

In a world of perfect information, the solution to environmental costs arising from waste would be to impose the appropriate price on those who created the harm. The government would merely need to determine the cost of the harm and impose a tax that forced the producer to internalize the cost. The producer then would make the appropriate production and waste management decisions taking into account all relevant costs.<sup>8</sup>

In the real world, however, information is always lacking, and governments cannot impose the perfect tax. Thus, in designing EPR programs, they turn instead to quantity targets, which require someone (for example, individual producers) to divert a certain percentage of waste to recycling. In order to ensure efficiency and environmental effectiveness, these targets need to be set bearing in mind the marginal costs and benefits of taking action, and should be adopted only if the benefits they provide justify the costs.<sup>9</sup>

One difficulty with such rational planning is that there is often not enough information about, say, the costs and benefits of meeting particular recycling targets or the actual impact on the environment of increasing levels of particular forms of recycling. Further, parties might possess significantly different information – industry, for example, might know more than government about the potential costs of changing product design or recovering materials.<sup>10</sup> Rational planning, based on cost-benefit analysis, often also does not take into account equity concerns: the

optimal waste-reduction policy might impose a heavy cost on low-income individuals.

While it is crucial to set policies based on the best understanding of costs and benefits, these difficulties point to the impossibility of doing so on a completely technocratic basis. Moreover, the process of setting targets gives rise to a principal-agent problem: the risk of divergence between the interests of the principals (in this case, citizens) and the policy goals chosen by the agents (the legislators or regulators) whereby the principals have difficulty monitoring or controlling the agents. Legislators, for example, could attempt to satisfy the preferences of citizens but be mistaken about the nature of those preferences.

Alternatively, legislators could attempt to impose their own view of the social good, irrespective of the preferences of citizens. Finally, and most malignly, legislators or regulators might not attempt to increase social welfare at all but instead aim at furthering their own self-interest by, say, granting favours to concentrated interests in the hope of future benefits (such as campaign contributions or future job opportunities) or increasing their prestige.

Fortunately, there are solutions to such principal-agent problems. One of the most important is transparency. A government will have greater success in achieving targets if it sets them using the best information it can obtain and uses open processes fostering accountability for the resulting decisions. Unfortunately, when it comes to diversion or recycling rates, the processes governments typically use to set goals seem quite opaque. Often, the goals seem to have the

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8 For example, Germany's end-of-life vehicle (ELV) program, despite the increasing portion of recyclable components now incorporated into vehicles, yields a net environmental detriment. The ELV Directive requires that 95 percent of plastic on cars be recycled, but recycling plastic is expensive. Therefore, manufacturers have chosen to reduce the amount of plastic in new cars by replacing it with metal, which is heavier and decreases fuel efficiency. Furthermore, such plastic recycling as does take place involves greater energy and physical inputs than those used in producing from virgin inputs. In short, not only is the Directive's 95 percent recycling rate not socially optimal, it is potentially thermodynamically impossible (Binkley 2008).

9 The United Nations Environmental Programme (2009) has released a guideline for rational and transparent target setting when developing integrated waste management plans. The guideline illustrates requirements for sound targets such as specificity, measurability, and achievability. It also outlines a target-setting process, including mathematical formulas to reach the desired outcome.

10 Governments at times have attempted to set "stretch" goals – goals that industry argues are impossible or too expensive – to try to force industry to make ambitious efforts.



superficial attraction of round numbers – increase diversion rates by 50 percent over five years – and it is not clear whether they represent a careful analysis of the marginal social benefits and costs of abatement measures, or are simply the result of horse trading between governments and various stakeholder groups, or are pulled out of the air by politicians or bureaucrats for their sound-bite value. Without a clear and transparent analytical foundation, there exists no firm means of evaluating whether the goals are efficient in themselves or have been achieved efficiently.

### Program Design

A range of questions typically is addressed in any discussion of EPR program design. First, should there be individual or collective responsibility for meeting goals or targets set out by legislation or regulation?

If individual producers are to be responsible, a number of alternative arrangements are possible (see van Rossem, Tojo, and Lindqvist 2006). One is individual physical responsibility, whereby a producer undertakes end-of-life (EOL) processing of the good in-house instead of merely providing the financing to ensure that the good is recycled. Such schemes are rare, however, because they tend to be inefficient and costly.<sup>11</sup> Another arrangement is individual financial responsibility, under which each producer contracts with third parties to collect, sort, transport, and process EOL goods.<sup>12</sup>

Individual EPR creates incentives for competition among producers to meet targets and

to do so at a lower cost. This, in turn, induces “design for the environment” because producers who, for example, include higher levels of recyclable materials in their products might be able to meet their targets at lower cost. Design for disassembly also makes EOL processing more efficient.<sup>13</sup> The disadvantage of individual EPR systems is that, if each manufacturer is only a small portion of the market and each contracts out separately, there might be significant inefficiencies from failing to take advantage of economies of scale (Walls 2006; Binkley 2008). Transaction costs can also increase through, for example, the cost of sorting by brand after collection, unlike in collective systems, where all brands are processed together (Sachs 2006). As well, orphaned goods whose manufacturers have gone out of business, and historical goods that were manufactured before EPR was implemented, are problematic to the extent that their collection and management use resources that would otherwise be used for non-orphaned waste.

Under collective responsibility programs, some collective body – often called a Producer Responsibility Organization (PRO) – contracts for collection, sorting, transportation, and processing either jointly or separately depending on the market structure and the type of good.<sup>14</sup> A PRO can be formed by individual companies to meet EPR targets collectively and are usually organized by product.<sup>15</sup> In competitive markets, it is also possible for waste service providers to form a PRO that can handle a variety of products. A PRO pools financial responsibility where it is funded based on market share of sales and where targets are set for the good or for the PRO as a whole,

11 One example is Jura, a Swiss manufacturer of coffee makers, that arranges to have its appliances returned to be remanufactured (see Tojo 2003; SENS 2010).

12 Producers can contract with different parties for each of these four services or combine them depending on the complexity of the EOL process for a particular good. Some authors claim that the first form of contracting creates more incentives for designing car components for reuse since the primary contracting party is the disassembler. They also claim that the second scheme incentivizes the reuse of metal (Binkley 2008). However, in a world without transaction costs, contracts would be made with the most efficient party, and it should make no difference whether the contract is with the disassembler or the shredder.

13 An example of such design is the grill on the front of BMW autos, which previously required time-intensive disassembly but which now consists of two plastic pieces that can simply be unclipped (Binkley 2008).

14 For instance, more complex goods such as computers are likely to require specialized techniques to disassemble safely and therefore require more parties, such as providers of disassembling services, than does cardboard packaging.

15 In South Korea, for example, there are 11 PROs, one for each category of goods covered by EPR (Asian Development Bank 2006).

rather than for individual producers. If the municipality or local authority remains involved in the process, it is likely to be at the collection stage and potentially also at the sorting stage – which is much less onerous under collective responsibility than under individual responsibility because the former does not require that goods be sorted by brand, but only by materials category (Walls 2006).

The main advantage of any PRO system is that it exploits economies of scale by giving a central body the responsibility of contracting for the disposal of greater volumes of product (Khatriwal, Kraeuchi, and Widmer 2009). Also, collective systems are much better equipped than individual systems to handle historical and orphaned goods, as they can simply be processed with the rest of the goods.<sup>16</sup> On the other hand, if producers in a collective system all pay the same, regardless of innovations they make toward environmental sustainability, incentives to “design for the environment” can be significantly weakened (Asian Development Bank 2006).

While collective forms of EPR can generate some static efficiency gains, particularly where there are significant economies of scale in collection, sorting, or recycling, the key question is how much is lost in terms of dynamic efficiency (or innovation incentives), especially in a small jurisdiction that might have limited leverage over the design of products manufactured for and supplied to much larger geographic markets. This tradeoff between static and dynamic efficiency is highly dependent on particular product and waste stream characteristics, and in this respect it is difficult to see how to avoid highly context-specific analysis if one is to develop any firm judgments about the magnitude of these tradeoffs.

The choice of collective versus individual EPR likely depends on the market for the particular waste stream. In a competitive system, the fees and

the form of collective versus individual action are left to market participants. Every individual producer is responsible for meeting mandated targets and goals, but can do so either individually or by participating in a collective scheme. In this system, a producer might belong to a PRO to benefit from the economies of scale to be realized when all goods are processed together. The PRO might be funded by individualized fees paid by producers that are specific to the brand of good, which would create stronger individual financial incentives than in the fully shared system, where fees are paid without regard to the qualities of the specific product. If there is competition between PROs, fee structures might be designed differently to take account of different product characteristics. How effectively such a system works depends in part on its general governance structure, including the transparency, objectivity, and credibility of any government oversight or target setting.

#### Making Producers Bear the Costs

If producers are made to bear the full cost of an item’s use and EOL handling, they are likely to have incentives to “design for the environment” and improve the handling of products at the end of their life; efficiency and fairness would also mean including the cost of disposing parts that are not recycled (Ontario 2010). These costs can then be embedded in the price of the product and passed, in whole or in part, on to the consumer, depending on supply and demand conditions in the market for the product. Municipalities or local authorities also might be responsible for some portion of the EOL process, such as collection, transportation, or sorting (Walls 2006), and receive payment from producers either under contract or by government regulation. However, to the extent that taxpayers share the burden through the involvement of their local authority, incentives are

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16 For example, in Switzerland, the EOL processing cost of orphaned goods, as with any other good, is paid at the time of purchase and can be simply added as a percentage to the market share calculations in producer-funded systems (Khatriwal, Kraeuchi, and Widmer 2009).

reduced for manufacturers to produce goods in an environmentally sustainable way.

Some (mixed) forms of EPR aim to combine the advantages of individual financing through enhancing incentives to “design for the environment” with the scale effects of combining efforts with other producers. The financing portion of mixed responsibility arrangements can be designed in one of two ways: first, individual producer targets can be laid out by statute or regulation, and producers then pay for each unit that is processed through a PRO; or, second, overall goals can be set for the industry, and the PRO then devises an individualized fee scheme to hold producers responsible for their products (Walls 2006). The first method might require brand sorting and detailed reporting requirements by the PRO to ensure that it is charging producers the correct amount. The second method is much easier to implement on a practical level but its effectiveness depends on how the fee is calculated: the more precisely the fee can approximate the recyclability of a good, the greater is the incentive to “design for the environment” (Asian Development Bank 2006).

Further, an individualized system can be extremely costly. Costs could be apportioned not just according to product category, or even by producer within the category, but by models sold by each producer as they may have very different components (Sachs 2006). The cost of such apportionment would in many cases be prohibitive. In practice, therefore, most EPR programs entail per unit fees often by product.

The central dilemma in the design of EPR programs, however, is that, while collective implementation might achieve economies of scale and minimize transaction costs, the less individualized is the fee structure, the weaker are the incentives for any particular producer to “design for the environment.” As the choices are so dependent on the particular product and product/waste market, individual market

participants, including producers and waste service providers, should decide how to resolve these tradeoffs in each case. If there is a clear target for recycling levels for each producer, producers should be able to decide if it is worth the cost to separate out their own products or act collectively.

#### How Should Consumers Be Involved?

Consumers can be included in an EPR system in two principal ways. First, the cost of the recovery and recycling and management of a product can be included in its price, inducing individuals to change their patterns of demand. The price, however, must reflect these costs. Across the board per unit fees regardless of the environmental impact of particular products would create different incentives than prices that were tailored more closely to the actual environmental properties of the products. Second, consumers can be involved in the collection process, as when consumers do a preliminary sorting of materials that are collected at the curbside or drop off waste at a collection centre. Usually, such disposal is free, as fees tend to create an incentive to dump illegally (Khatriwal, Kraeuchi, and Widmer 2009), although even free dropoff entails a cost to the consumer in terms of time, effort, and, likely, fuel (Nakajima and Vandergurg 2005).

To engage consumers, many programs rely solely on moral suasion and education combined with attempts to lower the cost of involvement by, for example, establishing more convenient collection points. Others programs, such as deposit-refund schemes, offer consumers financial incentives to return products.<sup>17</sup>

#### The Role of Competition

Imposing collection and recycling targets and allowing producers to meet them in the most cost-efficient manner should promote competition that leads to static and dynamic efficiency, although

<sup>17</sup> For example, Ontario has a deposit-refund system for beer bottles. Since the 1940s, deposits have been paid on beer at point of purchase and are refunded in part when empty bottles are returned. This system is funded through the deposits, and producers take full responsibility for recycling. In 2008, the program recovered 94 percent of all beer bottles sold (Product Policy Institute 2010).

standards would need to be set to ensure that waste was managed in an environmentally desirable manner.

Competition might be reduced, however, if a program establishes a single or dominant supplier – say, a municipality that provides collection.<sup>18</sup>

In that event, the monopoly supplier of particular waste services might exercise its market power as sole or dominant purchaser in downstream markets for collection, reuse, and recycling, enter into long-term exclusive contracts with downstream parties that impede entry by more competitive suppliers, or deny access to these services by upstream parties that are not members of the PRO (European Union 2005).<sup>19</sup> As a result, while individual producers should be permitted to decide whether to meet their targets individually or together, when they act together they should be subject to the requirements of the *Canadian Competition Act*.

### *Who Decides? The Governance Problem in EPR Programs*

The allocation of responsibilities among government, independent agencies, and PROs, and the governance arrangements for each is crucial to the success of any EPR program.

A government might delegate the power to design or implement an EPR program to another body such as a PRO because it lacks the expertise, time, or information that such a nongovernmental body might have. Producers, for example, know more about the nature of the relevant markets, and about the substances and processes used to make particular products. A government also might wish to pass on the costs of regulation to producers.

The decisionmaking bodies can be more or less independent of government. Independence might be desirable if there is concern that decisions would be subject to government whims. It can be enhanced through fixed terms for members, limits on legislative or executive control over the structure or processes of the body, limited executive or legislative review of policy decisions, or officials' inability to issue policy directives to the body (see Vermeule 2007; Stephenson 2008).

Delegating powers to an independent body, however, can exacerbate the principal-agent problem – in this case, between legislators and the ultimate decisionmakers, whether ministry officials, the PRO, or individual producers that depend on the structure of the EPR program. The principal-agent problem can lead to a decision made by an agent in good faith but in error in attempting to fulfill the wishes of legislators, or by an agent that seeks to impose or fulfill its own view of which policy would increase social welfare, or by an agent that seeks to further its own interests – for example, by increasing the size of its department or creating a competitive advantage for existing firms.

A range of control mechanisms or governance structures can reduce this principal-agent concern, including careful design of governance structures of entities created by EPR legislation, legislative or ministerial review, public participation, and the courts. None of these methods is completely satisfactory, however, as each depends to a large extent on the information, expertise, and resources of the body that is acting as a monitor – whether legislators themselves, the Ministry or other public bodies, the courts, or the public. Moreover, each form of review is costly, both directly, in the resources needed to understand and review policy decisions, and indirectly, in the opportunity costs

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18 As Dachis (2010) notes, there are significant cost advantages to having competition for waste services.

19 For example, South Korea has one PRO for each type of material covered by EPR; these have erected barriers to entry, leaving small importers without the means to meet their EPR goals. The government is now attempting to address this by mandating lower barriers to entry to PROs (Asian Development Bank 2006).

to the reviewing party. These design elements are crucial, however, to controlling the risks from delegating decisions and to achieving the purported benefits of EPR programs.

With individual forms of EPR, it is difficult, if not impossible, to assign collective responsibility for designing an EPR system to a PRO composed solely of industry representatives and expect them in turn to assign highly differentiated cost burdens to members based on their individual costs of abatement. Much would turn on the decisionmaking rules within such an organization, but assuming that decisions are made by majority voting, innovators, almost by definition, likely would be in the minority, outvoted by non-innovators with incentives to spread their higher abatement costs across the membership of the PRO as broadly as possible even though this might entail implicit cross subsidies from more efficient to less efficient members. This tendency would be exacerbated by the need for the PRO to deal collectively with the costs of orphaned products and historical waste. To expect such an organizations to adopt policies of collective responsibility for some classes of products and individual responsibility for other classes is likely unrealistic. Moreover, it would be attractive for an industry to adopt a collective form of EPR with a significant degree of market power to deal with providers of other inputs into the abatement process, such as collectors and recyclers. In some cases, such market power could counterbalance that possessed by providers of some of these inputs, such as municipal collection systems, but monopolies on both the buyer and seller side of a market may not be efficient and often lead to bargaining breakdowns.

Similarly, it obviously would be simpler, both politically and bureaucratically, for a government environmental agency to deal with a single industry organization, rather than several competing organizations or a plethora of individual producers. It is significant (but not surprising) that most EPR programs in the European Union have gravitated over time to collective means of meeting EPR goals, often including per-unit fees.

In short, solutions to the design concerns underlying EPR are likely to depend heavily on the interests that are involved in designing and implementing these solutions. Establishing a system that is effective, efficient, and fair therefore would place considerable weight on the governance structures that are implemented to resolve these issues, including questions of expertise, resources, objectivity, transparency and legitimacy, to which too little attention has been paid in the design of EPR programs.

### EPR in Ontario: A Cautionary Tale

EPR policies are already in place in Canada, and their expansion has entailed much controversy. In Ontario, for example, the expansion of the province's hazardous and special waste program on July 1, 2010, caused considerable public backlash (Walkom 2010). To help focus the discussion on the key design elements of EPR programs, we examine the Ontario experience, and we find that existing provincial programs have had mixed success at meeting the goals of EPR.

#### *The Growth of EPR in Ontario*

Modern EPR programs in Ontario were born out of the Blue Box program, established in the 1980s as a municipally operated and funded curbside recycling program for household plastics, glass, steel, paper, cardboard, and aluminum (Product Policy Institute 2010). Concerns over the increasing cost of this program led to the enactment of the 2002 *Waste Diversion Act* (WDA) and the creation of Waste Diversion Ontario (WDO) (see Coalition for an Efficient and Rational Bluebox 2005). WDO was established as a permanent, nongovernmental corporation consisting of representatives from the industrial, municipal, and commercial sectors, and the environmental community (Ontario 2010).

Under the WDA, brand owners and first importers of designated products are called stewards, who can join together to establish "industry funding organizations" (IFOs), which are the equivalent of PROs elsewhere. IFOs are responsible for developing and operating waste

diversion programs and funding them with fees charged to the stewards. WDO incorporates IFOs, reviews their proposed plans, and forwards them to the minister of the environment for approval (Ontario 2010). For more than four years after the enactment of the WDA, Blue Box was the only program in operation. Since 2008, WDO, in conjunction with industry, has also developed programs for waste electrical and electronic equipment, municipal hazardous and special waste, and used tires (Canadian Institute for Environmental Law and Policy 2008).

### The Blue Box Program

After beginning as a municipally operated program in the 1980s, in 2004 Blue Box was the first program to be designated under the new WDA, and Stewardship Ontario was established as the IFO for the program (Canadian Institute for Environmental Law and Policy 2008). Under the WDA, stewards are responsible for 50 percent of the cost of the Blue Box program; thus, Blue Box is not a true EPR program but a mix of government and producer funding. Municipalities are responsible for collection as well as for contracting with transporters and recyclers for EOL processing. Stewardship Ontario charges producers fees calculated based on the number of tonnes of Blue Box waste each producer creates as well as a portion of the shared program costs. Stewards incorporate these fees in the price of their goods. Stewardship Ontario then reimburses municipalities for 50 percent of the program costs (Stewardship Ontario 2010). The minister of the environment intends to increase producers' contributions, eventually moving to having

stewards pay 100 percent of the EOL costs of Blue Box materials (Ontario 2009).

### The Municipal Hazardous or Special Waste Program

The Municipal Hazardous or Special Waste Program (MHSW) is a three-phase plan developed by Stewardship Ontario in cooperation with WDO. The first phase was approved by the minister of the environment in February 2008 and implemented on July 1, 2008 and phases 2 and 3 were implemented on July 1, 2010.<sup>20</sup> Stewardship Ontario as the IFO charges fees to stewards based on their per-tonne production of the particular category of MHSW goods and a portion of shared program costs (Stewardship Ontario 2009a). Stewards were able to choose how to manage their fee for these goods, and some retailers charged consumers a separate "eco-fee" visible only on the receipt at point of sale (Ontario 2010). However, poor public education and its implementation on phase 2 and 3 goods coincident with that of Ontario's Harmonized Sales Tax (HST) led to a considerable backlash against the program from the media and the public.<sup>21</sup> Accordingly, on July 20, 2010, the Ontario government suspended steward fees for 90 days on goods in the second and third phase in order to work with stakeholders to review the program. During this period, goods were still collected, but taxpayers shouldered the costs (Howlett 2010a). The province eventually abandoned the second and third phases of the program altogether, opting instead to fund municipalities to dispose of these wastes.<sup>22</sup> However, goods covered under phase 1 of the program are still subject to steward fees and

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20 Phase 1 materials included paint, antifreeze, selected fertilizers, solvents, used oil filters, single-use batteries, and pressurized containers (Environmental Commissioner of Ontario 2010). In this phase, stewards paid 80 percent of the total cost of the program, while the rest was covered by municipalities. Phases 2 and 3 added all batteries, aerosol containers, portable fire extinguishers, fluorescents, switches, and measuring devices containing mercury, pharmaceuticals, sharps, all fertilizers, flammable materials, corrosive materials, irritants, toxics, reactives, and leachates (Environmental Commissioner of Ontario 2010). With the introduction of phases 2 and 3, stewards moved to paying 100 percent of the program costs (Stewardship Ontario 2008a).

21 For example, although the fee was released simultaneously with the introduction of the HST, none of the HST information circulated to the public mentioned environmental fees. Public advertisements for the program also made no mention of fees (Orange Drop 2010).

22 The provincial government will provide municipalities with \$8 million to aid in disposing of these items (Howlett 2010b).

retailers are entitled to charge consumers point-of-sale fees, if they choose.

### The Waste Electrical and Electronic Equipment Program

Another program, created by Ontario Electronic Stewardship (OES) in conjunction with WDO, is the Waste Electrical and Electronic Equipment Program (WEEE), a multiphase program with five-year collection, reuse, and recycling targets.<sup>23</sup> OES sets steward fees based on each producer's per-tonne production of the materials covered by the program as well as a portion of the shared program costs. Industry stewards are responsible for paying all costs, but, as with Ontario's other EPR programs to date, stewards have full discretion on how to manage the fee. Many of them again have chosen to pass the cost on to retailers, who, in turn, pass it on to consumers in the form of an eco-fee shown separately on receipts at point of sale.<sup>24</sup> Collection is implemented through a voluntary consumer dropoff system to product-specific collection centres.

The WEEE program is likely to be expanded given the Canada-Wide Action Plan on EPR, created by the Canadian Council of Ministers of the Environment in 2009, under which Ontario committed to establishing an EPR program for household appliances within eight years of the

plan's adoption (Canadian Council of Ministers of the Environment 2009).

### The Used Tires Program

Used tires were designated under the WDA in 2003, and Ontario Tire Stewardship (OTS) was established as the program's IFO.<sup>25</sup> Industry resisted the creation of the program, however, claiming that the existing free market collection system was efficient enough as it diverted 95 percent of the approximately 12 million scrap tires generated by the province annually. Other stakeholders were concerned that the new program would allow industry to pass on the costs to consumers through handling fees and that the funding scheme eventually would subsidize tire burning. In 2008, the minister asked WDO to develop a revised plan, which was approved in April 2009.<sup>26</sup> As with other EPR programs in Ontario, stewards pay a fee to their IFO based on the number of tires they produce as well as their share of the program costs (Ontario Tire Stewardship 2010a). Stewards then decide how they will manage the fee; commonly, it is passed on to retailers and then to consumers in a way similar to the "eco-fees" of other programs (Solid Waste & Recycling 2010a). Consumers can drop off used or scrap tires at collection points across the province, even in remote and northern areas (Ontario Tire Stewardship 2010b).<sup>27</sup>

23 Phase 1 of the program commenced on April 1, 2009, and included televisions, fax machines, computers, printers, and peripherals. Phase 2, implemented on April 1, 2010, added modems, copiers, typewriters, scanners, telephones, cell phones, PDAs, pagers, audio and video players, cameras, equalizers, amplifiers, radios, receivers, speakers, tuners, turntables, projectors, video recorders, and handheld computers (Ontario Electronic Stewardship 2010).

24 The program covers waste from the residential as well as the industrial, commercial, and institutional sectors. To facilitate collection from the latter sectors, a list of large-volume-pickup service providers is available; some charge a fee per skid but many transport such waste free of charge (Ontario Electronic Stewardship 2009).

25 In September 2004, WDO approved a Scrap Tire Diversion Program, which was sent to the minister of the environment for approval, but, possibly due to ministerial turnover, never implemented.

26 The program, launched in September 2009, covers all used tires including passenger car and truck tires and off-road tires used in agricultural, forestry and mining operations.

27 Collection points may accept up to four tires per resident per day without charge, and may impose a fee at their discretion for the dropoff of any additional tires. This restriction reflects both space limitations and a desire to discourage abuse of the program by the industrial, commercial, and institutional sectors.

### *Setting Targets for EPR Programs*

According to the minister's 2009 report on the WDA, the long-term goal of Ontario's EPR program is to develop a zero-waste society. Such a goal, however, is physically impossible.<sup>28</sup> The more immediate goals thus are to create programs for categories of waste and to set progressively more demanding target recycling rates, or "diversion targets" within those programs (Ontario 2009).<sup>29</sup> Diversion targets are set for overall program performance, rather than for particular categories of products. For example, the Blue Box program was given a diversion target of 50 percent for 2006, 60 percent for 2008, and 70 percent for 2011 (Stewardship Ontario 2010). As earlier targets were actually met before the deadline, it is possible that they were not set ambitiously enough. Indeed, critics suggest that Ontario should move away from global targets entirely since, they argue, higher levels of diversion could be obtained by moving to individual product targets (Waste Diversion Ontario 2008). The issue of appropriate goals has long troubled the Blue Box program, with decisions about what to include in the program having to take into account concerns about funding and compliance by municipalities (Coalition for Efficient and Rational Blue Box 2005).

For Ontario's other three EPR programs, however, individual product or material targets have been set by IFOs and approved by the Ministry of the Environment,<sup>30</sup> although many targets are not met – for example, less than half the targeted amount of antifreeze is diverted.<sup>31</sup> It is difficult to determine the appropriateness of any of these targets, however, as it is not clear how

they were created. For example, in the case of the Blue Box program, there is a lack of transparency regarding the criteria or process used by the minister (Waste Diversion Ontario 2005). Transparency and accountability issues are even more troublesome in the other programs, as stewards set the targets themselves with review by WDO and approval by the ministry. Critics suggest that the minister should provide more information on how these targets were created and more direction regarding how they should be met in order to improve waste diversion efforts (Canadian Institute for Environmental Law and Policy 2009). Such transparency would lead to greater accountability for target setting and increase public credibility about the ultimate goals of the programs.

### *Designing EPR Programs*

This section looks at the tradeoffs Ontario made in designing its EPR programs - individual versus collective responsibility, the extent to which the producer should be made to pay, how to involve the consumer, who should be responsible for collection and recycling – concerns about those choices, and the experience of some other jurisdictions.

#### Individual versus Collective Responsibility

Ontario's EPR programs give producers (either as a whole for a sector or as groups of producers) the option to engage in collective responsibility, where the industry as a whole is responsible for meeting certain targets through an IFO, or individual responsibility, where a particular firm

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28 Though advocates of zero-waste programs admit the infeasibility of such a goal, they nevertheless insist that zero-waste systems are still the best way for societies to reduce significantly the amount of waste in need of disposal (Leroux 2001).

29 Recycling rates are calculated by weighing the products that are actually recycled, and dividing by the weight of all the goods that could have been recycled within the program (Stewardship Ontario 2003).

30 IFOs calculate these targets using the year before the introduction of the program as the base-line recycling rate and adjusting the target annually based on the quantity of that product or material the IFO anticipates will be introduced into the market each year. The annual amount introduced into the market is calculated by adding expected annual growth in the number of households and income and subtracting for the expected effects of the program on decreasing the supply of these products or materials going into the market (Stewardship Ontario 2007).

31 Data are so far insufficient to determine if targets are being met in the WEEE and Used Tires programs, but the results of Phase 1 of the MHSW, established in July 2008, show an erratic pattern.



contracts for or undertakes EOL services for the goods it produces. *The Waste Diversion Act* requires all producers of products and materials covered by EPR programs to register with the IFO for the product or material unless they submit an application to WDO committing themselves to individual responsibility.<sup>32</sup>

Most producers in Ontario bound by EPR programs engage in a collective responsibility scheme whereby the IFO is responsible for paying all costs incurred in the collection, hauling, and processing of EOL goods. The IFO then bills registered producers based on the quantity of waste they produce that are covered by the program as well as a portion of the overhead costs of running the collective scheme.

To engage in individual responsibility scheme, the producer must submit an Industry Stewardship Plan (ISP) to WDO for approval. Under the *Waste Diversion Act*, WDO may approve the plan only if it is satisfied it will achieve objectives similar to or better than those of the waste diversion program approved by the minister. If WDO refuses to approve a plan, an applicant may submit it directly to the minister, but until it is approved, producers must still pay fees to the IFO even if they are covering their own EOL costs.<sup>33</sup>

Internationally, as in Ontario, the most common responsibility schemes are those that have both a collective and individual option for compliance. Most jurisdictions allow choice between individual and collective responsibility to let market forces generate the most efficient system.<sup>34</sup> Mixed systems can suffer from some of

the same shortcomings as collective systems, such as lower levels of “design for the environment,” but the solutions - either increased regulation or more complex fee schedules – work equally well in both mixed and collective systems.

### Making the Producer Pay?

The *Waste Diversion Act* permits IFOs to charge stewards reasonable fees to cover the development, implementation, and operation of a diversion program, a reasonable share of costs incurred by WDO in carrying out its responsibilities under the act, and a reasonable share of costs incurred by the Ministry of the Environment in administering the act. However, the Act does not mandate how stewards are to raise funds to cover their share of the fees. Blue Box program stewards, for example, incorporate their fees into the price of their goods, while in the MHSW, Used Tires, and WEEE programs, stewards’ discretion in passing on the costs has resulted in some retailers charging stewardship costs to consumers as a separate visible charge (Ontario 2008, 2010).<sup>35</sup>

Allowing stewards to choose how they will manage their fees gives them flexibility, which might increase the program’s efficiency and rate of compliance, but Ontario stewards have not always chosen the most effective means to promote the dynamic effects of the fee. Theoretically, whether the fee is included in the production costs of the good or marked separately on the price tag should make no difference as long as the consumer has a chance to judge the full cost of the product before

32 The only exception is for producers of goods covered by the Blue Box program that have annual sales greater than \$2 million and generate more than 15 tonnes of Blue Box waste (75 tonnes in the case newspapers) (Stewardship Ontario 2010b).

33 Currently, there is only one approved individual scheme in Ontario, the Heating Refrigerating and Air-Conditioning Institute, which received approval in March 2010 to recover thermostats containing mercury (Solid Waste & Recycling 2010b). Others, such as Canadian Tire’s ‘Take Back the Light’ program for fluorescents and the Rechargeable Battery Recycling Corporation of Canada’s program for consumer-type batteries, are in the process of seeking approval (Stewardship Ontario 2009b; Canadian Tire Corporation 2010).

34 In Germany’s ELV program, all manufacturers contract for EOL services independently despite the option to form a PRO (Nakajima and Vandenberg 2005); conversely, in Switzerland’s WEEE system, the vast majority of producers join a PRO.

35 Some critics of Ontario’s fee structure claim that “eco-fees” are an indirect tax and therefore unconstitutional since only the federal government has the power to levy an indirect tax (Artuso 2010). For a charge to be a fee, it must be based on covering the cost of providing the good or program. Furthermore, critics claim, even if “eco-fees” are considered a direct tax, they are imposed by fiat, which is again unconstitutional since provincial governments have the power to levy direct taxes only by legislation, not by regulation (Alarie and Poschmann 2010). However, similar programs, such as the deposit-refund system, have existed in Ontario and other provinces since the 1940s. For a discussion of the “eco-fee” issue, see Environmental Commissioner of Ontario (2010).

purchasing it, thereby sending a price signal to producers.<sup>36</sup> Visible fees, however, tend to do a better job of promoting awareness of the program (Binkley 2008), although the Ministry of the Environment (Ontario 2008) advocates that fees remain invisible. International experience shows that both visible and invisible schemes are workable as long as they create price signals.<sup>37</sup> Whether particular retailers or stewards choose to show or hide a fee might reflect their attitude toward shifting blame for the fee rather than enhancing its incentive effects.

More important, however, the incentive effects of an EPR program also depend on the manner in which steward fees are calculated. Currently, in Ontario, fees charged to producers do not generally vary with the recyclability of goods. Producers therefore have less incentive to design their products in an environmentally friendly manner. These perverse incentives could be eliminated by calculating steward fees based on the relative recyclability of each steward's good, so that producers that send more of their goods to landfills, or whose goods cost more to recycle, pay higher fees. Calculating relative recyclability would be comparatively simple for products that are made predominantly of one material, as is the case for most Blue Box items, Used Tires, and some MHSW. However, calculations for more complex goods such as computers and other WEEE products involve high information and transaction costs due to the plethora of different metals, plastics, and chemicals involved in the manufacturing of these products.<sup>38</sup> Ontario's fee structures need to be more attentive to the individual tailoring of fees where feasible (Environmental Commissioner of Ontario (2010)), although recognizing that such tailoring will not always be cost effective. Instead, they have

tended toward the option that reduces the incentive effect of the fees.

In the case of MHSW, however, the backlash against "eco-fees" has caused Ontario to abandon the payment system and to announce that, instead, it will fund municipalities to dispose of these wastes. As a result, neither the producer nor the consumer faces incentives relating to the costs of dealing with these products. The costs are shifted to the taxpayer, with the funds coming partially from provincial revenue and, where the transfer to municipalities is not sufficient to cover the costs of the program, from municipal revenues (Howlett 2010b).

#### Why Would Consumers Participate?

Consumer participation in Ontario's EPR programs involves payment for the program at point of purchase and voluntary dropoff, either in a Blue Box or at a collection centre. With the exception of the deposit-refund system for beer, wine, and spirit containers, consumers have no incentive to participate in EPR programs other than from an altruistic desire to protect the environment, or in municipalities with a pay-as-you-throw program to reduce waste costs. Where participation involves a significant effort on behalf of the consumer, as is the case in collection centre programs like MHSW, WEEE and Used Tires, issues of compliance arise.

Beer, wine, and spirit containers under the deposit-refund system have the highest compliance rate of any recycling program in Ontario (City of Toronto 2010). Both deposit-refund systems and household pickup systems create better incentives for compliance than voluntary dropoff programs, yet three-quarters of Ontario's EPR systems are based on voluntary

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36 Note in this regard that fees that are identified only at the checkout counter seem an inefficient mechanism for influencing consumer demand, at least for products that are one-off purchases or purchased rarely.

37 The Swiss WEEE program, which performs well, has a mandatory visible fee (Khetriwal, Kraeuchi, and Widmer 2009). Fees remain hidden in Germany's EPR system for packaging, but that program too enjoys a high level of success (Quinn and Sinclair 2006).

38 Germany's packaging system engages in this specific fee-setting process to an extent by charging fees that incorporate the sales volume, weight, and relative recyclability of the predominant material used (OECD 1997).

dropoff. This is likely because dropoff programs are the least costly to implement and, because of the lower volume of such materials, have lower total recycling costs. Again, however, these choices tend to reduce the incentive effects of the program.

### Who Collects and Recycles?

A concern with collective responsibility schemes is collusion among producers to gain power in the market for waste management services such as collection, hauling, and processing. Ontario's EPR program, however, gives considerable power to WDO and the various IFOs to control the market for these services. Under both the Used Tires and WEEE programs, for example, service providers (collectors, transporters, processors) must register and enter into an agreement with the IFO to be eligible to receive payments and incentives under the program (Ontario Electronic Stewardship 2009; Ontario Tire Stewardship 2009).

Similarly, under the now-abandoned MHSW program, the IFO (Stewardship Ontario) had considerable power. Under the household hazardous waste program, there were three categories of transporters and processors, all of which had to register with Stewardship Ontario. First, transporters and processors in the municipal collection channel contracted with a municipality to provide EOL services for MHSW. Stewardship Ontario reimbursed the municipality, which, in turn, paid the transporters and processors. Second, transporters and processors in the non-automotive commercial collection channel contracted with Stewardship Ontario and were assigned a number of retailer-owned collection sites to service. Transporters and processors from non-automotive commercial collection sites had to report the quantities of MHSW they managed and were reimbursed by Stewardship Ontario. Finally, automotive MHSW such as oil filters and antifreeze usually were collected at service centres and automotive dealerships. Contracts between

automotive commercial collection centres and downstream registered transporters and processors were negotiated between the parties with no involvement from Stewardship Ontario. All registered transporters and processors contracting with automotive commercial collection centres were eligible for transportation and processing incentives from Stewardship Ontario once they reported the quantities they managed (Stewardship Ontario 2009c). It is not clear how these wastes will be handled given recent government announcements about the program.

For the Blue Box program, on the other hand, municipalities are responsible for collection and contracting with downstream transportation and processing firms. Stewardship Ontario is not involved in the process; instead, it compensates municipalities for up to 50 percent of the costs. Any producer that chooses to form its own ISP is likely to have unique methods of contracting for the collection, transportation, and processing of its EOL goods.

Ontario's EPR programs therefore provide considerable market power to IFOs, which essentially are what economists call monopsony purchasers of waste services. When there is a monopsony purchaser of downstream services, the number of downstream contracts that are entered into will be limited, and rival collectors, haulers, and processors might not be able to sustain operations while they wait for current contracts to expire (European Union 2005). This reduction in competition can result in higher long-term contract costs.<sup>39</sup>

### *Governance in EPR Programs*

There are major concerns about the design choices made in Ontario's EPR program, but who is making these choices? There are three levels of decisionmaking in Ontario's EPR programs:

- The minister of the environment: The minister, an elected member of the provincial government, is responsible for setting the framework for waste

<sup>39</sup> Germany is promoting more competition in its EPR packaging program, where one PRO controlled the system for more than a decade, by facilitating the creation of other PROs (Germany 2009).

diversion through the WDA and its regulations, enters into an operating agreement with WDO, may establish policies or enact regulations that WDO must follow, and designate wastes that are to be subject to the program.<sup>40</sup> Perhaps most important, under the Act the minister is responsible for the approval of IFO and ISP program plans and enforcement in instances where prosecution for offences under the act is required.

- **Waste Diversion Ontario:** The board of directors of WDO has sixteen members, nine of whom are appointed by stewards or municipalities, one by nongovernmental organizations (NGOs), and six by the minister (one civil servant, the balance members of the public).<sup>41</sup>
- **Industry funding organizations:** The role of an IFO is to develop, implement, and operate waste diversion programs on the industry's behalf under the direction of WDO. Each IFO has a board of directors as well as officers of the corporation. In general, boards are appointed by the stewards or related associations – for both Stewardship Ontario and OES, all directors must be employees of a steward or a steward-related association. The Retail Council of Canada has representation on both the OES and the Ontario Tire Stewardship, while an additional two of the sixteen-member for Stewardship Ontario board must be independent of commercial ties to Blue Box or MHSW waste.

Ontario's EPR programs, therefore, are considerably decentralized. The ministry sets the general framework and goals, while WDO and the IFOs work out the details. WDO and, especially, the IFOs are dominated by steward representatives. The presence of industry representatives gives these bodies expertise in relevant products and product markets, but risks a lack of detachment from industry interests and the encouragement of programs that favour stewards rather than those who might be more effective in reducing environmental harm at least cost in a fair manner. As part of its announcement that it was

ending the household hazardous waste program, the Ontario government stated that it would place consumer representatives on the boards that will deliver waste diversion programs (Howlett 2010b).

The ministry is attempting to control the principal-agent problem that underlies this decisionmaking framework by requiring that IFOs obtain approval for plans from WDO and the ministry, but this structure provides only weak oversight. The problem is that representation on the WDO board lacks the balance that otherwise might offer confidence that it is providing objective oversight of IFOs that are completely dominated by stewards. The effectiveness of the system accordingly depends on the ministry's capacity, in terms of resources and expertise, to review the plans of WDO and the IFOs, or its willingness to rely on decisions made by organizations that appear to be dominated by industry representatives. Adding public participation might add a further check on industry control, but that would depend on public representatives' attention to and understanding of the issues.

## Making EPR Work

EPR could have significant environmental benefits as well as increasing the efficiency and fairness of how the end of life of products is handled. As with most regulatory programs, however, EPR programs risk being designed in a manner that does not fulfill their potential and that might even be more harmful, costly, and unfair than more traditional waste systems. Much depends on the governance structure.

The Ontario experience is instructive. The minister sets targets and the general regulatory framework, which makes sense given that the minister is accountable to the legislature and the public. The details are then delegated to different bodies in order, it is assumed, to save costs and leverage their expertise. While the general

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<sup>40</sup> *Waste Diversion Act*, 2002, S.O 2002, c. 6, as amended).

<sup>41</sup> The chair is designated by the board from among its members. The chair is responsible for breaking tied votes and signing WDO's annual reports. No board member is entitled to remuneration. See WDA and Amendment No. 1 to the Operating Agreement between the Minister of the Environment and Waste Diversion Ontario, dated April 17, 2008.

structure seems reasonable, however, the details are problematic. It is unclear if the targets set for the program are rational, as the process by which they are set is opaque. Further, the choice of many of program details is questionable. In each design choice, the decision was made in a fashion that reduces the incentives to take action: while the system allows for individual and collective responsibility, fees are set on a per-unit basis that reduces the dynamic incentives; consumers have no incentive beyond altruism to participate in the program; and the IFOs essentially are monopsonists in the market for recycling services, reducing the efficiency of the downstream waste processing system. Moreover, because of the manner in which the system was structured and implemented, the Ontario government faced outrage by the public over its household hazardous waste program and was forced to remove even the limited incentives that were in place.

In the light of the “eco-fee” controversy of July 2010, some commentators now suggest that the role of government be strengthened to prevent undue industry influence (Ontario 2010; Tabuns 2010). The focus on the governance structure is correct, but increasing the direct role of government is only one solution – and one that would reduce the value of specialized expertise. There is no reason WDO should be dominated by parties with an economic stake in the design of the EPR program. The plans of IFOs with steward representation should not be reviewed by steward representatives from those particular industries. Further, the entire review process should be open to public scrutiny to ensure that there is at least the possibility of a check on capture by industry representatives.

In establishing an EPR program, certain key considerations should be kept in mind. First, ensure that EPR targets are realistic so that the program achieves a net environmental benefit; targets should be based to the extent possible on

the marginal costs and benefits of different target levels. Because of the lack of complete information on costs and benefits and because of equity concerns that are central to the creation of EPR programs, the process should be transparent, with clear avenues for public notification and comment and for political accountability. Such transparency and accountability would be enhanced by the completion and publication of a cost-benefit analysis for each target.

Second, allow both individual and collective programs to operate concurrently, which would promote economies of scale and competition. At the same time, the system should to the maximum extent feasible use individualized producer payments, with appropriate penalties for not meeting targets, rather than have individualized plans exist as a largely unused exception to the collective system (as currently in Ontario).

Third, the program should be subject to the *Competition Act* to ensure maximum efficiency and environmental protection.

Fourth, the system should provide inducements for consumers to participate in end-of-product-life collection and recycling functions beyond education and moral suasion.

Finally, the governance system should ensure a balanced representation of interests and transparent processes for the decisionmaking bodies so that design and implementation choices are made objectively and credibly. EPR program design for individual products or categories of products should not be left only to producers or IFOs. An independent agency (whether a restructured WDO or an analogous agency) should make design choices. This agency should include industry representation but not be dominated by producers. There should also be effective representation of other affected groups, including consumers, municipalities, and environmental groups. The key should be to ensure there is expertise on this agency as well as independence from producer or political control.<sup>42</sup>

<sup>42</sup> For example, the Waste to Worth policy documents recommend that the provincial government appoint WDO board members based on skill and desired competency (Ontario Ministry of the Environment 2009).

Given that competition is central to an effective and efficient EPR program, the agency should be given the power to monitor the program carefully, including the ability to impose audit requirements.

In sum, EPR programs need not suffer the fate of the failed Ontario Municipal Hazardous or Special Waste program. Policymakers can make these programs work through better institutional

design, such as by setting realistic diversion targets, increasing competition between individual and collective IFOs, ensuring balanced representation on IFO boards, and providing inducements to consumers to participate in the EPR program. Failure on these criteria may lead to unnecessary extra costs with perhaps little environmental benefit.

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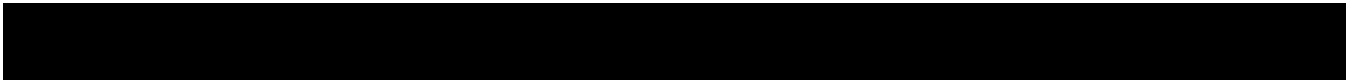
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