

Beyond the Blue Box

Ontario's Fresh Start on Waste Diversion and the Circular Economy



A Special Report to the
Legislative Assembly of Ontario
October 2017



Environmental
Commissioner
of Ontario

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October 2017

The Honourable Dave Levac
Speaker of the Legislative Assembly of Ontario
Room 180, Legislative Building
Legislative Assembly of Ontario
Queen's Park
Province of Ontario

Dear Speaker,

In accordance with section 58(4) of the *Environmental Bill of Rights, 1993*, I am pleased to present a Special Report of the Environmental Commissioner of Ontario for your submission to the Legislative Assembly of Ontario. *Beyond the Blue Box: Ontario's Fresh Start on Waste Diversion and the Circular Economy* reports on the provincial government's ambitious new *Waste-Free Ontario Act, 2016*. Ontario rarely adopts a significant new environmental statute. This Act can be a much needed fresh start for Ontario's waste policy.

For economic, environmental and climate reasons, Ontario must make better use of resources, and transform our pattern of take-use-dispose into a circular economy. In this report, the ECO summarizes key lessons from Ontario's first 40 years of trying to divert waste from landfill, and uses them to understand the main challenges ahead.

The ECO is optimistic that the new law will provide better governance, transparency and accountability than did the *Waste Diversion Act, 2002*, which it replaces. Taking organic waste out of landfill will alone contribute significantly to Ontario's environmental and climate goals, and taking more toxics out of landfill will help protect public health.

But the economic obstacles to a circular economy remain profound. For most Ontarians and most materials, it remains cheaper to buy new stuff, use it briefly and then throw it away than to reuse those resources over and over. This substantial obstacle is due partly to culture and habit, partly to government policy, and partly to the high cost of labour in comparison to the cost of materials.

By paying attention to what has worked, and what hasn't, in the last 40 years, the government can make the *Waste-Free Ontario Act, 2016* a significant tool for improving Ontario's environmental footprint. There are enough new mistakes to make in the world; let's not make the old ones again.

Sincerely,



Dianne Saxe
Environmental Commissioner of Ontario





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Executive Summary

Ontario has a waste problem. For decades, the Ontario government has pledged to tame this problem. But despite ambitious targets and seemingly widespread recycling, diversion rates have stagnated and the mountain of waste continues to grow. Now that Ontario has a new *Waste-Free Ontario Act, 2016*, what will change?

This Special Report looks at Ontario's efforts to tackle waste: past, present and future. We look at why waste is such an important environmental issue, and consider what has worked in the past, what hasn't, and why. We then look at what the new law is likely to change, and some key challenges in the transition from the old law to the new one. Finally, we recommend how to maximize the environmental benefit of the new legislation.

In brief, the new law can be expected to improve governance and accountability, and to increase the amount of materials diverted from disposal. It is less clear how much the new approach will overcome the economic obstacles to diversion, and move Ontario toward the much more challenging goal of a circular economy. Ontario must learn from its past failures to change the economics of waste.

Ontario Has a Waste Problem (Part 1)

Ontarians, like most Canadians, throw away far more waste per capita than most people on Earth. About three-quarters of that goes to landfill or incineration.

Landfilling and incinerating waste have adverse environmental consequences. They squander valuable resources, can contaminate air and water, and generate powerful greenhouse gases that increase climate change. Incineration releases toxic pollutants into the air that can harm human health, while landfilling can release toxins into the soil and groundwater, reduce property values, and use up precious disposal capacity that is difficult and expensive to replace.

We throw out too much. Most of it goes to landfill.



FIGURE 1.3. Annual generation and disposal of waste in Ontario in 2014.

Source: Environment and Climate Change Canada, *National Inventory Report 1990-2015: Greenhouse Gas Sources and Sinks in Canada, Part 2* (2017).

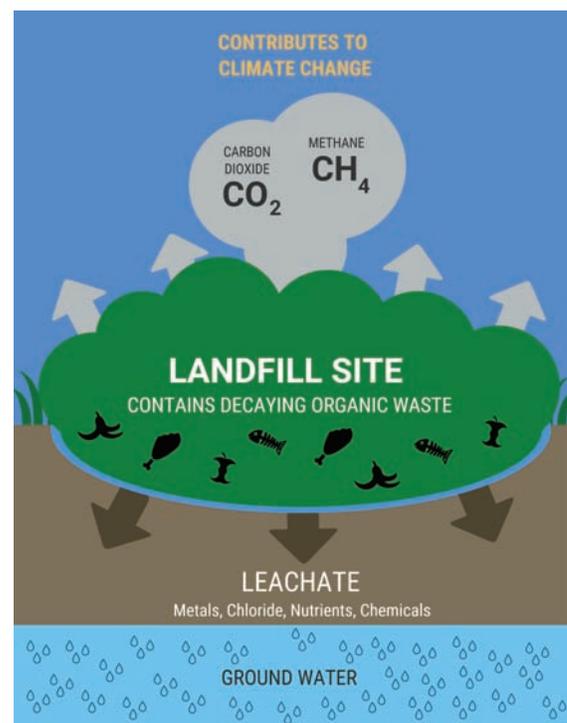


FIGURE 4.1. The environmental impacts of landfilling waste. Source: Created by the ECO.

40 Years of Recycling (Part 2)

Ontario had a waste disposal capacity crisis in the late twentieth century: more and more waste, with less and less landfill space. It therefore became urgent to divert waste from landfills through the “3Rs” (in order of importance): Reduce, Reuse and Recycle. Except for some modest and mostly ineffective attempts at waste reduction and reuse, Ontario has focused on recycling.



Ontario’s much-loved, flagship recycling program, the Blue Box, began as a voluntary initiative. By 1994, the province required most municipalities to offer Blue Box curbside collection of printed paper and some packaging. But packaging waste kept increasing, funding was a constant challenge, and overall diversion rates were modest.

The government introduced the *Waste Diversion Act, 2002 (WDA)*, to increase waste diversion and to transfer some of the cost of waste diversion from the taxpayer back to the brand owners and importers of packaging and other products (called “stewards”).

The *WDA* required stewards of designated wastes to partially or fully finance and operate a program, via

an Industry Funding Organization (IFO), to divert that waste from landfill. The *WDA* created an independent, non-government corporation, Waste Diversion Ontario (WDO), to oversee the development and operation of waste diversion programs. Creating the WDO was intended, among other things, to insulate the provincial government from the intense and difficult politics of waste.

We've been trying to divert waste from landfill for 40 years.

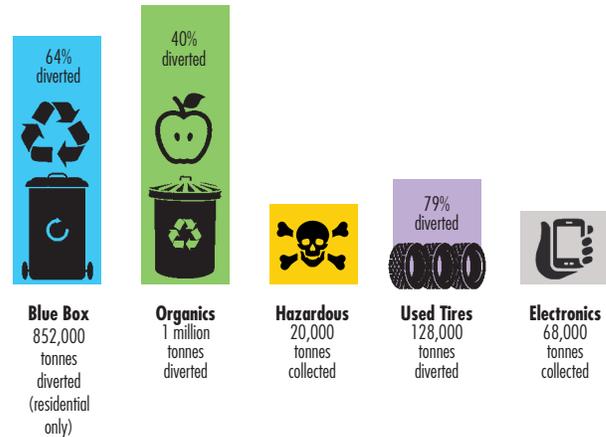


FIGURE 2.3. Diversion rates for the four *WDA* programs, plus household organic (i.e., food and yard) waste as a comparator (for 2015/2016). Source: Created by the ECO, using data from various sources.

Problems with the *Waste Diversion Act* (Part 3)

The *WDA* was only partially successful. The residential Blue Box program grew, and three additional mandatory diversion programs were successfully rolled out (used tires, waste electrical and electronic equipment, and municipal hazardous or special waste). But **diversion rates stagnated and costs rose**, while ever-more wastes were created.

Most of Ontario’s wastes remained outside the *WDA*, including organic waste (e.g., food and yard waste) and most industrial, commercial and institutional (IC&I) wastes, which together make up over three-quarters of Ontario’s waste.

The old law didn't work. Waste diversion stagnated at 25% and taxpayers still pay too much.

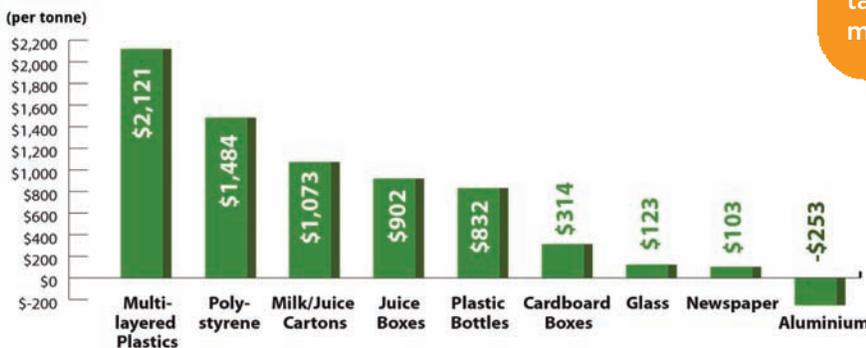


FIGURE 3.2. Net cost per tonne to recycle, by material (2014). Source: Continuous Improvement Fund.



In addition, the botched rollout of “eco-fees” (charged to consumers at the point of sale to fund household hazardous waste diversion) became a public relations disaster, which halted the expansion of producer-responsibility-based waste diversion in Ontario.

Meanwhile, **WDO and the IFOs had major problems of governance, accountability and transparency.** Policy responsibility was unclear and its implementation inconsistent. No one had clear accountability for results. Essential data was confidential or contested. Enforcement of non-compliance was weak. Some rules were perceived to be unfair; some decisions were poorly understood and poorly communicated. Stewards, required by law to pay increasing costs through opaque monopolies (i.e., the IFOs), had neither regulatory nor financial incentives to reduce, reuse or divert more waste or to develop markets for collected materials. Relationships among Blue Box stewards and municipalities deteriorated to litigation over whether stewards were paying their fair share. The province remained enmeshed in bitter struggles among stakeholders of the different programs to the general dissatisfaction of all.

By and large, the WDA and the WDO were unsatisfactory.

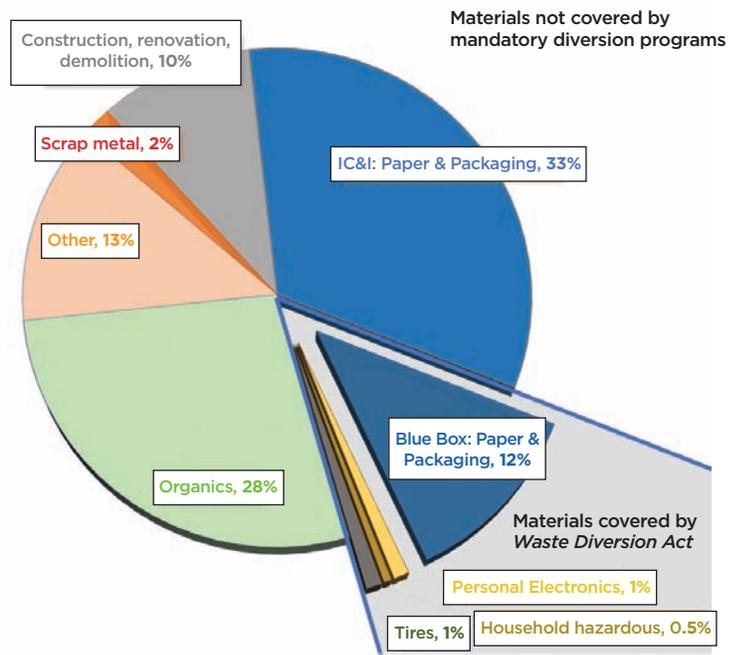


FIGURE 3.4. Most of Ontario’s waste is not yet covered by mandatory diversion programs. Source: Created by the ECO using data from Statistics Canada, the MOECC, and Stewardship Ontario.

Waste Diversion by the NUMBERS

In 2004, Ontario set a goal that it would divert 60% of its waste by 2008

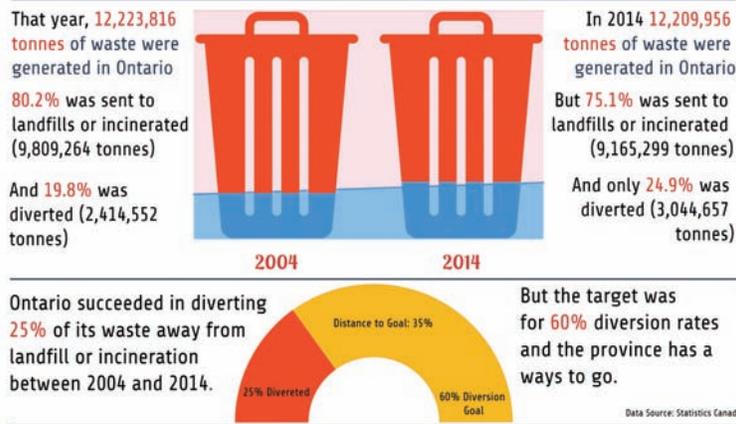


FIGURE 3.1. Waste diversion by the numbers. Source: Created by the ECO using data from Statistics Canada.

A Fresh Start for Waste Diversion in Ontario (Part 4)

In 2016, the *WDA* was repealed and replaced by two companion statutes, the *Resource Recovery and Circular Economy Act, 2016 (RRCEA)* and the *Waste Diversion Transition Act, 2016*, collectively called the *Waste-Free Ontario Act, 2016*. Both are essentially enabling laws, whose effect will depend upon (future) regulations. The *RRCEA* also required the government to adopt a formal *Strategy for a Waste Free Ontario*, which commits the government to a number of actions to complement the law.

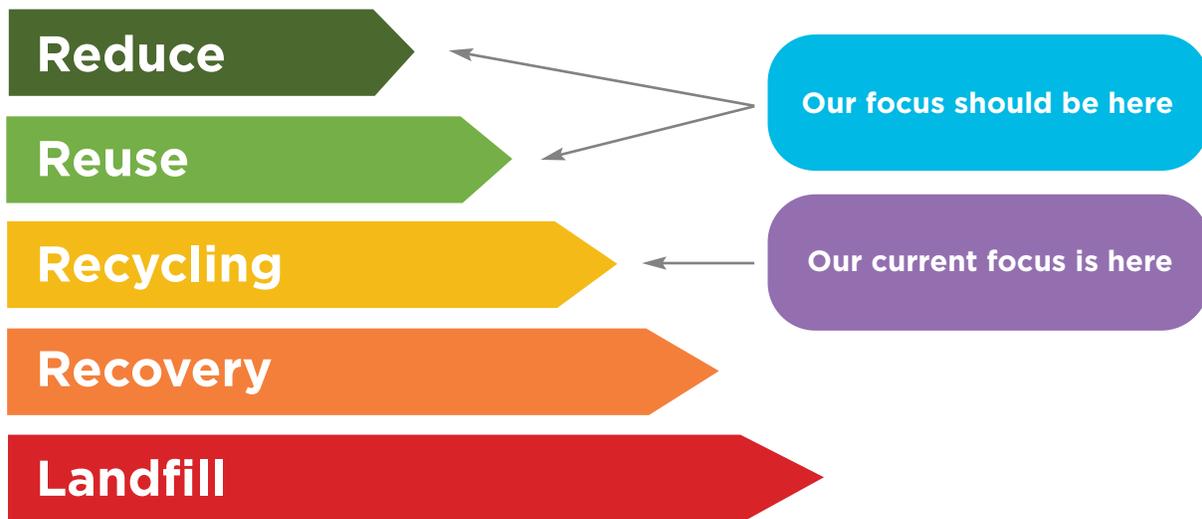
The *RRCEA* does away with the IFOs, and moves towards **individual producer responsibility**, where each producer will be directly financially and legally responsible for the waste it causes its customers to produce. This shift to direct responsibility for individual

producers, if combined (as the Strategy promises) with firm diversion targets, **should result in more diversion** of materials that are already collected, perhaps at a lower cost. The Strategy's commitment to mandate diversion of additional types of material, as well as potential disposal bans, should further push up provincial diversion rates.

The *RRCEA* also replaces the WDO with a new non-Crown, not-for-profit corporation, the Resource Productivity and Recovery Authority. **The new Authority should have improved governance, accountability, transparency, data and enforcement.**

A new waste law and strategy – what will they change?

Most favoured option



Least favoured option

FIGURE 4.2. The Waste Hierarchy. Ontario's new Strategy aims to focus on more than just recycling. Source: Created by the ECO.



Beyond Diversion: Looking Forward to the Circular Economy (Part 5)

Even more ambitious, the *RRCEA* and the Strategy commit to moving Ontario to a circular economy. In a circular economy, resources would not be used once and then discarded as trash. A circular economy would overcome economic and social barriers – the high costs of waste diversion, the low cost of (especially US) landfills, the fluctuating values of most collected materials, and the ever-growing diversity of wastes – so that resources are used efficiently and repeatedly, with commercially successful markets for diverted materials and closed-loop forms of production. As in nature, resources would be used again and again, ideally being continually used for their highest and best use.

In a circular economy, we reuse resources, instead of waste them.



FIGURE 5.1. Linear Economy versus the Circular Economy. Source: Sustainable Brands.

Will the Environment Win? (Part 6)

In the short term, three waste diversion (recycling) issues are critical for the *RRCEA* to be an environmental success:

- Minimizing organics in landfill and using them as a resource instead;
- Ensuring stringent, enforceable (and enforced) standards for what counts as “recycling”; and
- Extending mandatory diversion to IC&I and other high-priority wastes.

In the long run, what matters most is the Strategy’s ambitious vision of a circular economy. This is an enormous goal, with enormous potential benefits for the environment and our climate, but one that Ontario cannot achieve on its own. Ontario can move in this direction by minimizing how much waste we generate, and by maximizing the value, and the use, of the resources that waste contains.

Essential next steps.

Many of the economic and policy issues that have plagued the province for decades, especially the high cost of diversion as compared to landfill, could continue to challenge Ontario waste policy under the new law. Key to achieving Ontario’s new vision of a circular economy is learning from our past mistakes.

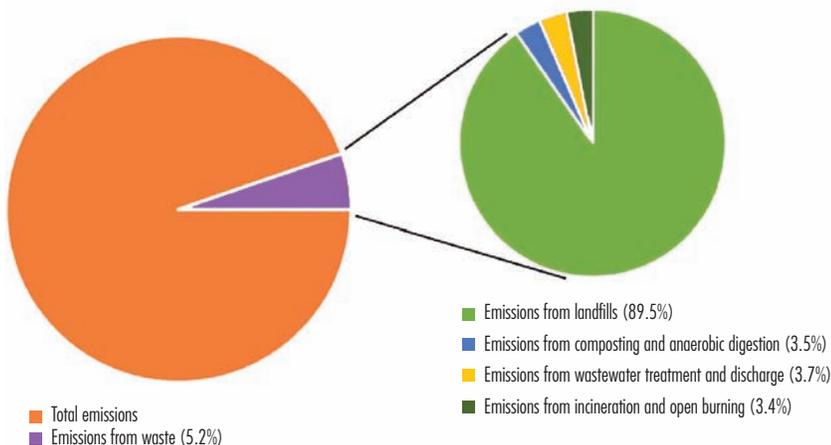


FIGURE 1.4. Portion of total greenhouse gas emissions reported from waste, and breakdown of sources of waste emissions. Source: Environment and Climate Change Canada, *National Inventory Report 1990-2015: Greenhouse Gas Sources and Sinks in Canada, Part 2* (2017).

Recommendations:

The ECO recommends that the Ministry of the Environment and Climate Change:

1. set deadlines for the actions identified in its *Strategy for a Waste Free Ontario*;
2. adopt some form of disposal ban on food waste;
3. make the process for approving anaerobic digestion and composting facilities fast and predictable, while protecting public health and environmental interests;
4. develop recycling standards that are clear, enforceable and provide a high level of environmental protection;
5. expand and enforce source separation and diversion obligations for the IC&I sectors;
6. document how new waste policies compare to those tried before, and what lessons have been earned from previous efforts;
7. make the ultimate goal of Ontario's circular economy policies the creation of profitable markets for all end-of-life materials; and
8. work with other ministries to integrate circular economy objectives into policy and practice across government.

“We can't solve problems by using the same kind of thinking we used when we created them.”

– *Albert Einstein*



Part 1: Ontario Has a Waste Problem

Abstract

Ontarians produce an enormous amount of waste. Most of it ends up in landfills. Landfilling and incinerating waste has adverse environmental consequences, and siting new facilities is very hard. Part 1 explores the environmental consequences of our high-consumption, high-waste lifestyle in order to better understand why enhanced waste diversion is so important.



We throw out too much. Most of it goes to landfill.

**PART 1:
ONTARIO HAS A WASTE PROBLEM**

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1.0 Ontario Generates a Lot of Waste

Ontario produces an astonishing amount of waste: about 12 million tonnes annually.¹ Overall, Canada produces more garbage per capita than most other countries in the world.² With over a third of the country's population calling Ontario home, the province carries a fair share of the blame for that title.³

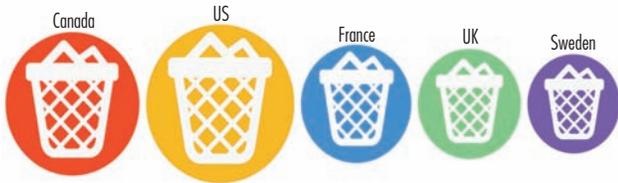


FIGURE 1.1. Canada's annual waste generated, calculated per person (850kg), compared to the U.S. (940 kg), France (700 kg), U.K. (653 kg) and Sweden (587 kg). Source: The World Bank, *What a Waste: A Global Review of Solid Waste Management* (2012).

We throw out all kinds of stuff: food, electronics, mattresses, pharmaceuticals, appliances, tools, lightbulbs, batteries, carpets, construction materials, textiles, plastics, paper, packaging and much more.

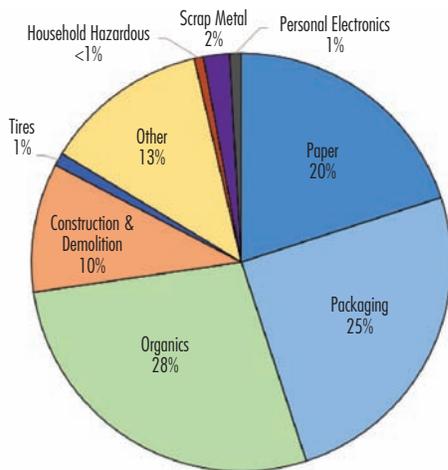


FIGURE 1.2. Rough breakdown of Ontario's waste stream. Source: Data from the MOECC's 2013 *Waste Reduction Strategy*.

Some of this waste we recycle or compost, but **most of our waste is thrown out** in landfills (and some in incinerators). In 2014, the most recent year for which full data is available, Ontarians sent about 9 million tonnes of materials to landfills and incinerators.⁴ Two thirds of this waste – about 6 million tonnes – went to Ontario landfills, while 2.7 million tonnes was exported to landfills in the United States, and 3% went to incineration⁵ (see Figure 1.3).



FIGURE 1.3. Annual generation and disposal of waste in Ontario in 2014. Source: Environment and Climate Change Canada, *National Inventory Report 1990-2015: Greenhouse Gas Sources and Sinks in Canada, Part 2* (2017).

1.1 Why is Waste a Problem?

1.1.1 Environmental Consequences of Waste Disposal

Poorly managed waste can cause serious environmental problems. One major issue is that when waste is disposed in landfill and rainwater filters down through that buried waste, it picks up metals, chloride and other minerals, nutrients, chemicals and other toxic materials, creating a contaminated liquid called “leachate.” Some older landfills, which lacked rigorous leachate collection systems, contaminated ground and surface water with their leachate. Modern landfills are now required to have

^a There are a number of different sources of data on waste disposal and diversion rates in Ontario. In this report, we rely largely on Statistics Canada information, but both the Ontario Waste Management Association and the Resource Productivity and Recovery Authority also collect data on certain aspects of the Ontario waste sector. The numbers vary somewhat from data source to source, and the most recent year available differs by source as well. We have chosen to rely primarily on Statistics Canada, where available, because it provides a complete record of data relating to both the residential and non-residential sectors.

expensive, leachate collection systems, which must be operated for decades into the future.⁶

Decomposing waste in landfills also produces gases that can cause fires, damage vegetation and create unpleasant odours. Some of these gases are powerful greenhouse gases (GHGs) that drive climate change. In 2015, 5.2% of Ontario's total GHG emissions –

8.6 megatonnes – were reported to come from waste, with 8 megatonnes (mostly methane) coming directly from landfills and incinerators (the other 0.6 megatonnes came from composting and wastewater treatment) (see Figure 1.4).⁷ Although some of this methane is captured and can be used as fuel (marketed as “biogas” or “renewable natural gas”), most of the gas generated is released to the atmosphere (see *Focus on Climate* box below).

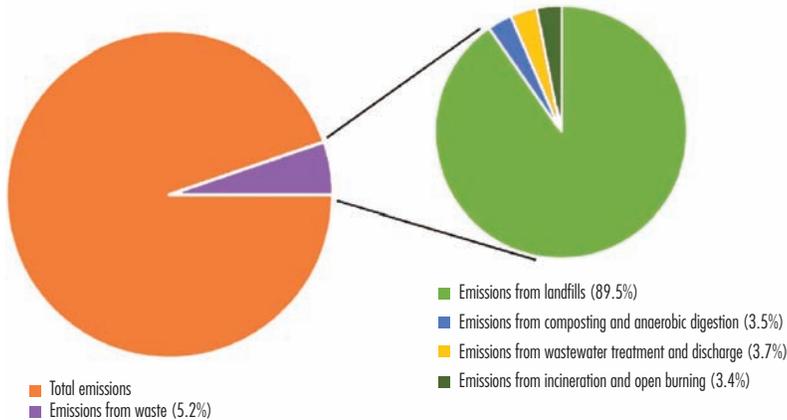


FIGURE 1.4. Portion of total greenhouse gas emissions reported from waste and breakdown of sources of waste emissions.

Source: Environment and Climate Change Canada, *National Inventory Report 1990-2015: Greenhouse Gas Sources and Sinks in Canada, Part 2* (2017).

1.1.2 Focus on Climate: Waste has a Bigger Impact Than We Think

The official inventory, shown in Figure 1.4, of the waste sector's contribution to Ontario's GHG emissions do not tell the whole story. As reported by the ECO in our 2016 Annual Greenhouse Gas Progress Report, *Facing Climate Change* (see Chapters 2 and 3), the emissions officially attributed to waste understate the total amount and impact of GHG emissions that come from waste and drive climate change.

Official reports don't include all the waste generated in Ontario

For the purposes of calculating Ontario's GHG emissions from waste, only the emissions from waste disposed of within the province are included. This methodology is consistent with international emissions reporting guidelines that are used by countries when reporting their GHG emissions (as required by the United Nations Framework Convention on Climate Change).⁸ This approach, however, does not provide Ontarians with a complete picture of our contribution to global GHG emissions from waste.

For example, it fails to include the emissions from the millions of tonnes of waste shipped out of Ontario each year to landfills in the United States. Because much of this waste is carried by private haulers, it is difficult to determine the exact amount of waste involved. The federal government estimates that about 2.7 million tonnes of waste were exported in 2014 (although according to MOECC, the amount could be as much as 3.3 million tonnes) – roughly 30% of all waste generated in Ontario.⁹

Official reports underestimate the amount of waste going into Ontario landfills

The most recent federal data (from Statistics Canada and Natural Resources Canada) reported that Ontario landfills – the main source of the waste sector's GHG emissions – received approximately 6.1 million tonnes of waste in 2014, resulting in 7.7 megatonnes of GHG emissions.¹⁰

continued...



However, in 2016, the Ontario Waste Management Association released its first annual *State of Waste in Ontario: Landfill Report*. Based on a survey of the Association's members, this report concluded that Ontario landfills received 7.7 million tonnes of waste in 2014.¹¹ This suggests that the Government of Canada is significantly underestimating the amount of waste landfilled in Ontario each year, and thus the amount of GHGs generated by Ontario landfills and the waste sector.

Official reports overestimate the efficiency of gas capture systems

Large Ontario landfills are required to capture, and then use or burn, GHGs generated from the site.¹² Government estimates of the amount of GHGs released from landfills rely on assumptions about the efficiency of these capture systems; overestimating the level of efficiency will underestimate the gases released. The ECO has previously documented flaws in these assumptions, which mean that official estimates understate GHG emissions from Ontario landfills (see the ECO's 2012 Annual Greenhouse Gas Progress Report, *A Question of Commitment*, pp. 68-69).

Official reports hide the near-term importance of methane

Canada follows internationally accepted protocols when it calculates GHG emissions from each sector in each province. These protocols include factors that are used to convert the measure of different types of gases into one common unit based on the gas' unique climate change impact. This allows governments to more easily tally and compare the total emissions contribution of different sectors and different gas types.¹³

Much of the gas released from landfills is methane, a potent greenhouse gas. In recent years, it has become clear that the impact of methane on climate change is more potent than previously thought.¹⁴ As a result, the factor used to convert the measurement of methane into the common unit underrepresents its climate change impact – meaning that methane's impact has been underreported. When estimating the impact of a given GHG, most calculations focus on the impact of the gas over a 100-year time span; this hides the fact that methane is about 100 times more potent than CO₂ during the time it stays in the atmosphere (about 12.6 years).

Taken together, these two factors mean that the impact of methane on the climate has historically been underestimated. When the ECO recalculated the contributions of methane from waste based on a higher – and, in the ECO's opinion, more accurate – global warming potential on a 20-year basis, we found that waste is responsible for 15% of all Ontario emissions – not 5.2% as is officially reported.¹⁵

Air pollution is another problem created by waste. Incineration releases particulate matter and small amounts of toxic pollutants, such as dioxins and furans, which are known contributors to health problems.

Waste also ends up as litter. Litter is unsightly and expensive to manage, and can pose significant problems to ecosystems and wildlife. For example, plastic garbage can break down and be ingested by microscopic organisms and larger wildlife, introducing toxic chemicals into their bodies and the food chain (for more on this issue, see Part 3.2 of the ECO's 2014/2015 Annual Report).

Lastly, but certainly not least, every missed opportunity to reuse and recycle materials that otherwise go into the waste stream (and to design products to be reusable and more durable in the first place), means new materials must be extracted from the earth. Extracting new materials (e.g., through mining) generates GHG emissions, water pollution, and toxic chemicals, as discussed below in *Life Cycle of a Cell Phone*. The amount of carbon dioxide embodied in the materials extracted and in the goods produced and transported around the world each day represent a massive, under-recognized source of GHG emissions. Further, throwing organic materials (like banana peels and corn cobs) in the garbage wastes valuable nutrients that could be spread on farm fields as compost, or turned into renewable energy.

Life Cycle of a Cell Phone

The life of a typical smart phone makes a perfect case study of the significant environmental consequences of mining, refining and manufacturing a single product: GHG emissions are generated; landscapes are de-naturalized; water is polluted; and toxic chemicals are emitted at almost every stage of the industrial manufacturing process.

Cell phones have become one of the most ubiquitous signs of modern life. Over 85% of Canadian households subscribe to mobile phone services and almost 75% of Canadians have a smartphone (as opposed to a basic cell phone).¹⁶ Smartphones, in particular, have dramatically changed how many of us interact with the wider world. For many, it is difficult to imagine being without the entire Internet at one's fingertips, let alone the convenience of being able to contact anyone at any time. As important as they are to so many, most cell phones lead relatively transient lives – they come and go quickly, with the average Canadian phone being replaced every 2.5 years.¹⁷

The 62 different metals¹⁸ contained in the average cell phone must be mined from all corners of the globe, and then processed using and creating toxic chemicals that often contaminate the surrounding air, water and soil. By one estimate, the gold contained in just one phone creates 100 kilograms of mining waste.¹⁹ Plastic, contained in equal part to metals in the average cell phone, is almost always made from fossil fuels and the plastic anticipated to be used in 2017 cell phone production will use over 7 million barrels of crude oil.²⁰ Other parts are made from materials like glass and ceramics,²¹ which require sand, obtained from quarries, as a source ingredient.

These refined materials are then manufactured into component parts, and assembled into the cell phone. Globally, most of this work takes place in China.²² During this part of the process, workers may be exposed to toxic materials like mercury and lead,²³ which have massive impacts on human health as well as the surrounding environment.²⁴ These phones are then shipped around the world, generating greenhouse gas emissions and packaging waste in the process.

A few short years later, these phones are discarded. Most Canadians give away, store or recycle their old cell phones, but about 5-10% of old cell phones are still sent directly to landfill.²⁵ In the landfill, the metals and plastics in cell phones can contribute to toxic leachate, which can pollute groundwater and soil. Additionally, failing to recycle cell phones means a missed opportunity to recover metals that can be reused. For example, copper can be completely recovered without losing quality, and the process uses about 80% less energy than required to mine and refine the same amount of virgin copper.²⁶ Moreover, it is becoming increasingly difficult to find economically accessible sources of many of the metals in cell phones, which may result in shortages of affordable metals.²⁷



FIGURE 1.5. Life of a Cell Phone
Source: Created by the ECO.



1.1.3 Waste Disposal Capacity

Another problem with throwing out so much waste is that it creates a powerful demand for landfills (and incinerators), which are unpopular neighbours. Few people want one of these facilities near them. Because of numerous environmental problems caused by older landfills (see the ECO's 2009/2010 Annual Report, *Redefining Conservation*, Part 6.1), it has become extremely difficult and expensive to find suitable locations for new facilities. Proposals for new or expanded landfills are often faced with intense public opposition and/or litigation from those concerned with potential environmental ramifications and/or decreased property values.

1.2 Why Do We Create So Much Waste?

Waste is a complicated problem with many causes.

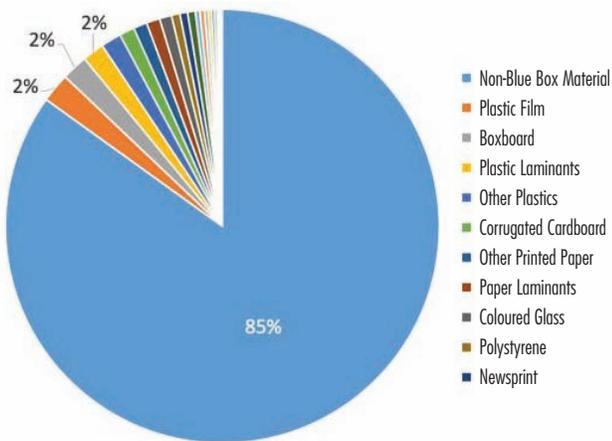
One factor is just how much we consume. The average Ontarian, like the average North American, has a lot of 'stuff.'²⁸ Global supply chains and improved technology provide Ontarians and people around the world with ever easier, cheaper access to almost any product they might desire. Moreover, much of that 'stuff' cycles faster than ever through our lives and homes. Cell phones are replaced every two and a half years on average, with many other electronics not lasting much longer.²⁹ Clothing, increasingly inexpensive and subject to the ever-changing trends of "fast fashion," often lasts only a season or two.³⁰ Many kitchens are dominated by packaged food, single-use coffee pods, and disposable cleaning wipes, pads and scrubbers.³¹ Scale up this "out with the old, in with the new" mentality to other items, such as appliances and furniture, and the amount of waste we produce grows exponentially.

Constantly improving technology, declining prices, and the convenience of packaged food and disposable cleaning materials have all made life easier for many Ontarians, but today's consumer culture also creates massive, often invisible, environmental impacts. Most of the products in an average Ontario home are made from materials mined or manufactured outside of Canada, and curbside waste collection across most of the province means few of us see the volume of waste we generate in anything more than small weekly increments. As a result, many Ontarians never turn their mind to the impacts this high-consumption, high-waste lifestyle has on the environment.

Consumer culture is not the only factor. It can be challenging for even the most motivated consumer to avoid creating waste every day. For example, health and safety laws, fear of tampering, theft prevention and marketing all contribute to large amounts of packaging waste. Consumer products and appliances are often cheaper to replace than to repair, partly because they are designed that way and partly because labour costs where most products are made are so much lower than they are in Canada. Appliance certifications, such as EnerGuide, focus on operational efficiency and ignore durability.³² "Best before" dates and liability laws may strive to protect health but also contribute to food waste. Bedbugs have made it challenging to reuse mattresses and upholstered furniture. Time-starved households may understandably choose convenience over waste minimization.

1.2.1 Complexity and Inconvenience

Another factor is likely the often-complex network of recycling options. While it is possible to recycle many items, from single-use batteries to used oil filters, the availability of recycling for individual materials differs from municipality to municipality, and many people are simply unaware of the options or find the distinctions confusing. Accordingly, about 15% of household garbage consists of recyclable materials that should have gone into the Blue Box:



Even when one knows about and understands the recycling options, it may not be convenient to make use of them. Throwing an item in the trash is far simpler than tracking down the proper recycling facility, especially in rural areas. Lack of infrastructure may pose another challenge. For example, many multi-unit residential buildings, which have much lower recycling rates than single family homes, were built with no easy way to accommodate source-separated materials. Typically, there is only one garbage chute, and there may be no appropriate space for recycling trucks to pick up recyclable materials.

FIGURE 1.6. Breakdown of recyclable materials found in the garbage.
 Source: Continuous Improvement Fund, Co-Ordinated Waste Composition Studies Update.



Part 2: A 40-Year History of Recycling in Ontario

Abstract

For almost four decades, the Ontario government has tried to tame the province's waste. Part 2 looks at the history of waste management in Ontario, including the creation of the Blue Box and the introduction of the *Waste Diversion Act, 2002 (WDA)*. Part 2 also details the key elements of the *WDA*, as a basis of comparison with the new law, described in Part 4 of this report.

We've been trying to divert waste from landfill for 40 years.

**PART 2:
A 40-YEAR HISTORY OF RECYCLING IN ONTARIO**

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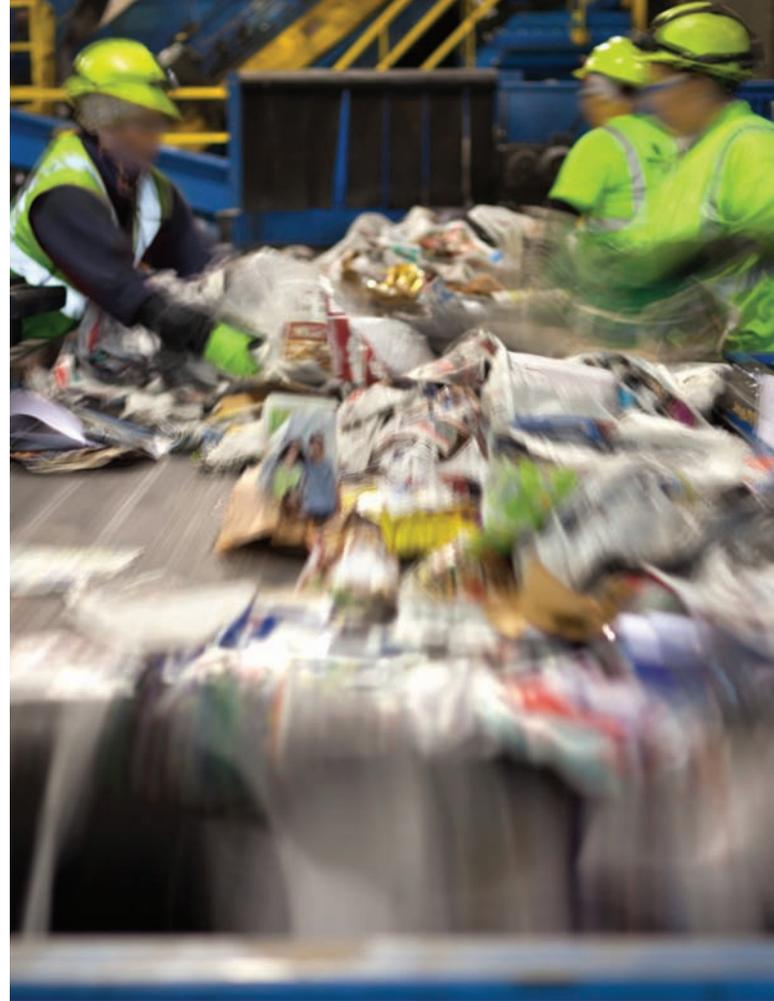


2.0 What is “Waste Diversion”?

Waste diversion has historically been the term used in Ontario for preventing waste from going to a landfill or incinerator. Recently, government has changed its language and replaced this term with “resource recovery” to emphasize the importance of not just diverting waste from landfill, but also reutilizing the materials. Whether called “waste diversion” or “resource recovery,” these efforts include what is often summarized as the “3Rs”:

- **Reduce** the generation of waste through reduced consumption.
- **Reuse** products that already exist.
- **Recycle** the remaining materials that cannot be reused.

There is sometimes a 4th “R”, for energy **Recovery** from incineration. The role of energy recovery in waste diversion has been contentious in Ontario (see Box “*What about the Fourth R, Recovery?*” in Part 4.2).



2.0.1 When Does Waste Need Diversion Regulation?

Resources are readily recovered and reused when good economics make waste diversion pay for itself. **When markets work well to keep materials in use, governments should be slow to meddle.** For end-of-life materials with reliable market value, government waste diversion regulations (including producer responsibility schemes) may do more harm than good.³³ Only when recycling is unprofitable is government regulation (such as mandating producer responsibility or banning materials from landfill) needed to keep wastes out of landfill.

For example, privately owned scrap yards compete to recycle metal items because of the robust markets for many metals. Similarly, consumers need no laws to keep old cars out of landfill, because they can easily find someone to pay for them. End-of-life vehicles like old cars are bought and sold, disassembled and processed in an elaborate system of for-profit private companies independent of the original vehicle manufacturers. They remove parts for refurbishment and resale, sell metal frames to steel mills, etc. and send to landfill only what they cannot sell.

On the other hand, waste diversion regulation is necessary to avoid disposal of potentially recyclable materials (like textiles, tires, mattresses, plastics, hazardous wastes, etc.) when the cost of recycling is higher than the revenue that it can generate. For such materials, imposing responsibility back on the original producer may be the best answer until a consistent profit can be made from recycling. Good government policy should ultimately work towards creating **a profitable market for all end-of-life materials** that we use (see Part 6.1.5).

continued...

Meanwhile, waste policy must be highly attentive to the specific economics of each individual waste; a working market may exist for one product and not for a closely related one. For example, consider batteries. Lead acid (car) batteries are the most completely recycled consumer product in North America, with an estimated recycling rate of over 95%.³⁴ This is not due to government regulation or to any waste diversion program. Rather, used lead acid batteries stay out of landfill because there is a reliable market for them. Lead smelters compete to purchase such batteries, to melt them down for use in new batteries. Other entrepreneurs compete to collect such batteries and to sell them to the smelters, making a profit along the way. Even if lead acid batteries end up at a landfill, landfill operators pick them out for resale.

The situation is entirely different for other classes of batteries, such as the small single-use batteries that power flashlights, toys and television remotes. Because of high processing costs and low yields, recycling these batteries costs money.³⁵ The consequence? Diversion rates for single-use batteries were about 5% up until 2009,³⁶ meaning that the toxic metals and acids in these batteries almost always went to landfill.

In these widely different economic circumstances, no “one size fits all” policy would work. Ontario’s waste oversight body (Waste Diversion Ontario) unwisely considered lumping all types of batteries together into a single waste diversion program that would have cannibalized the existing lead acid battery market and created an uneven playing field among the competing businesses, in order to subsidize single use battery collection. This proposal was rejected. Instead, two single-use battery diversion programs, one mandatory and one voluntary, have now pushed Ontario diversion rates for single use batteries up to 33%.³⁷

2.1 A Brief History of Waste Diversion in Ontario

2.1.1 Why Diversion?

Ontario had a waste disposal capacity crisis in the late 20th century: more and more waste, with less and less landfill space. A growing quantity of waste, coupled with the difficulty of siting new landfills, created **an urgent need to divert materials from landfills**, even though waste diversion typically costs more than landfill.

2.1.2 Voluntary Diversion: The Blue Box Program

Throughout the 1970s and 1980s, the government tried, with little success, to curb the growth in disposable beverage containers, which were replacing refillable containers³⁸ (see *What Happened to “Reduce” and “Reuse”?*). Around this same time, Ontario’s flagship recycling program, the Blue Box, emerged as a voluntary initiative.³⁹ Gradually, more and more municipalities began to offer residential Blue Boxes as part of their waste collection, in order to save scarce landfill space. However, waste diversion was modest and funding was always a challenge.



What Happened to “Reduce” and “Reuse”?

Historically, Ontario – like most other jurisdictions – has focussed heavily on the third and lowest priority R: recycling. Relatively little attention has been paid to the first two Rs (reducing the generation of waste in the first place and reusing used products and packaging).⁴⁰

The reasons are illustrated by the Ministry of the Environment and Climate Change’s (MOECC’s) attempts to minimize carbonated beverage (soda pop) waste packaging. Decades ago, the beverage industry started switching from refillable glass bottles to “once-through” containers, such as cans and plastic bottles. Manufacturers, retailers and consumers preferred the new containers, which were lighter, unbreakable, cheaper to ship and easier to stack. Once-through containers also avoided the deposit-return system, and the messy process of storing, returning and cleaning empties.

There were, of course, consequences. Local bottlers were forced out of business, and consumers started discarding heaps of beverage containers as waste and litter, saddling municipalities with the costs of waste disposal and litter cleanup.

The MOECC made a brief, but ineffective, effort to preserve the market for refillable glass soda bottles. It adopted and tried to enforce a law that required reusable bottles and a law requiring equal advertising for soda in refillable bottles, but it could not stem the tide of the new disposable containers.

Eventually, the MOECC abandoned the fight. The ministry ultimately compromised by setting only minor limits to non-refillable containers (and stopped enforcing even those),⁴¹ coupled with an agreement from the beverage industry to partially fund a municipal collection program for non-reusable beverage containers. The rest of the cost was left to municipalities and their taxpayers. This set the stage for the Blue Box program that provides curbside pickup of household printed paper and packaging, plastic and cans from most Ontario single family homes. It also set a **powerful precedent: Ontario would only make industry pay part of the cost** of end-of-life management of the wastes they cause consumers to create, and then only for residential waste. Municipalities would be left to pay the rest.

2.1.3 First Law: *Environmental Protection Act*

The *Environmental Protection Act (EPA)* is Ontario’s first and main law used to regulate waste management in the province,⁴² and included some early waste diversion regulations. In 1994, Ontario adopted the ‘3Rs’ regulations under the *EPA*, which remain in force today:

- The first 3R regulation (O. Reg. 101/94) requires municipalities with a population over 5,000 to offer curbside residential collection of: most plastic, glass and aluminum bottles and other packaging (such as jars, tins and containers);

paper (such as newspaper); and cardboard. These materials are generally collectively referred to as “paper and packaging.”

- The other 3R regulations (O. Reg. 102/94, O.Reg. 103/94, and O. Reg. 104/94) require some large industrial, commercial and institutional facilities to: conduct waste and packaging related audits and prepare reduction workplans; separately collect some common recyclables; and make reasonable efforts to ensure that source separated wastes are reused or recycled.

The *EPA* has also been used to regulate a few other diversion programs (distinct from those created under the *Waste Diversion Act, 2002*), including the collection program for pharmaceuticals and sharps,⁴³ and the Beer Store bottle deposit program (see box, *Beer and Alcohol Container Deposit-Return Programs*).⁴⁴

2.1.4 Second Law: *Waste Diversion Act, 2002*

Despite the 3Rs regulations, packaging and other waste kept increasing throughout the 1990s, **funding for the Blue Box program was a constant challenge, and diversion rates remained modest.** In the absence of a strong market for collected materials, more funding was needed to increase diversion. Therefore, in 2002, the province adopted a new law, the *Waste Diversion Act, 2002 (WDA)* to expand waste diversion programs in Ontario. The *WDA* was intended “to promote the reduction, reuse and recycling of waste and to provide for the development, implementation and operation of waste diversion programs.”⁴⁵ The *WDA* and its regulations required industry to fund 50% of the Blue Box program, and set diversion targets for the Blue Box (the original target was to achieve 50% diversion by 2006, later increased to 60% by 2008). The *WDA* eventually added three other provincially mandated, industry-funded recycling programs: municipal hazardous or special waste; used tires; and waste electrical and electronic equipment (see Part 2.2.4).

The *WDA* was repealed in November 2016, when the *Resource Recovery and Circular Economy Act, 2016 (RRCEA)* came into effect.

2.2 Key Elements of the *Waste Diversion Act, 2002*

2.2.1 The *WDA* Shifted Some Responsibility to Steward Organizations

The *WDA* was Ontario’s first legislative foray towards “extended producer responsibility” (EPR). The theory of EPR is to hold the manufacturers or importers of products responsible (financially and/or physically) for the end-of-use management (e.g., reuse, recycling and/or disposal) of their products and/or packaging, rather than either the individual who used the product or municipal governments.⁴⁶

A key feature of *WDA* diversion programs were Industry Funding Organizations (IFOs). IFOs were statutory corporations representing and funded by all companies with a commercial connection to a designated waste, called “stewards.”^b IFOs developed and operated most waste diversion programs, except for the Blue Box. The Blue Box program continued to be operated by municipalities, as required by O. Reg. 101/94, with partial funding from Stewardship Ontario (the IFO for the Blue Box). Each IFO collected data and set and collected fees from its stewards (e.g., the electronics IFO would collect fees from manufacturers and retailers like Sony, Dell and Best Buy) to cover some or all of the costs of diverting the designated product or packaging from the waste stream. The IFOs controlled the data they collected, and kept much of it confidential. This limited their accountability to stewards, to Waste Diversion Ontario (WDO), to municipalities and to the public.

The diversion programs could include: activities to reduce, reuse and recycle the designated waste; research and development related to recycling the designated waste; activities to develop and promote end markets for the resulting recycled materials; and educational and public awareness activities.

^b “Stewards” was the preferred term for responsible entities under the *WDA*. The Ontario government seems to have abandoned this term, instead favouring “producers” for responsible entities under the *RRCEA* (though it is largely the same entities affected under both laws). Accordingly, in this report, we use “stewards” when speaking in the context of *WDA* responsibilities, and otherwise use “producers.”



2.2.2 Diffused Direction and Oversight: The Minister and Waste Diversion Ontario

Responsibility for the success of WDA diversion programs was diffuse.

WDO, a non-government corporation, had primary oversight duties under the WDA. WDO oversaw the development, implementation and operation of diversion programs, and reported to government on their effectiveness. For the first ten years, WDO was run by a board that represented industry, municipalities and other interested parties, but was dominated by stewards.⁴⁷ In 2012, the Minister of the Environment and Climate Change changed the WDO board to a “skills-based” board that he appointed.⁴⁸ WDO was funded by stewards through their IFOs.

The Minister provided broad-brush policy direction, but left most details to the WDO and the IFOs. The Minister: “designated” certain wastes by regulation (i.e., determined which wastes should be diverted); triggered the creation of diversion programs; and “requested” that certain components be included in diversion program plans (such as program targets, accessibility, and promotion and education). The Ministry had exclusive responsibility for enforcing compliance with the WDA, and could charge the cost back to the IFOs.

Each waste diversion program required formal approval from the WDO and from the Minister. But although the Minister had to approve each program plan, the Minister could only request, not compel, changes to an approved plan. Once approved, IFOs were responsible for running the programs, except for the Blue Box program, which continued to be delivered by municipalities, primarily at public expense.

2.2.3 The WDA Increased Funding, Helped Grow the Blue Box

The WDA and its regulations required industry to fund 50% of the Blue Box program. Increased funding helped Ontario’s Blue Box program capture a wide variety of materials (see Figure 2.1).

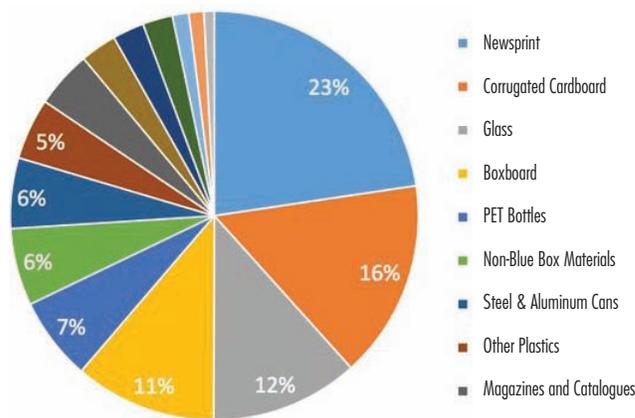


FIGURE 2.1. What’s in the Blue Box.
Source: Continuous Improvement Fund, Co-Ordinated Waste Composition Studies Update.

Capture rates vary among the different Blue Box materials, and remain higher in single-family homes than in multi-unit residential buildings (see Figure 2.2).

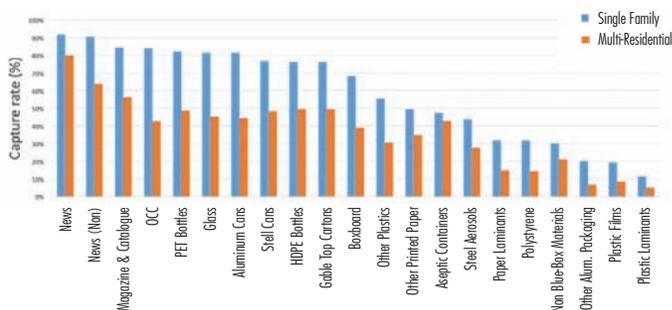


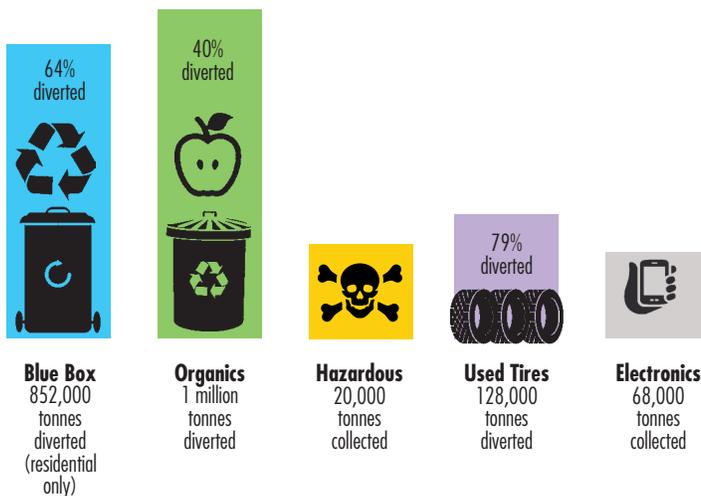
FIGURE 2.2. Capture rates for Blue Box materials, for single-family and multi-residential homes.
Source: Continuous Improvement Fund.

2.2.4 The WDA Expanded the Number of Recycling Programs

In addition to the Blue Box, the government required WDO to set up three new recycling programs, each operated by an IFO:

- A **used tires program**, operated by Ontario Tire Stewardship;
- A **waste electrical and electronic equipment (WEEE) program**, operated by Ontario Electronic Stewardship; and
- A **municipal hazardous or special waste (MHSW) program**, operated by Stewardship Ontario (which collects single-use batteries and pressurized cylinders under the “Orange Drop” program);⁴⁹ other household hazardous wastes are operated through alternate diversion programs (see *Alternative Industry-Run Recycling Programs*).

All of the WDA programs have been successful at diverting additional wastes. The Blue Box program has remained Ontario’s best known and best loved program, and the most successful of its kind in Canada. The Blue Box has diverted an impressively large amount of material, only surpassed (by weight) in recent years by the growth in voluntary municipal programs for organic waste (see Part 3.1.3 for more on organic diversion).



Alternative Industry-Run Recycling Programs

If a steward, or group of stewards, wanted to operate their own funding organization and diversion program – separate and apart from the designated IFO – they could apply to WDO to do so.

WDO approved diversion programs for eight categories of household hazardous wastes,⁵⁰ which provided alternate diversion programs to the Stewardship Ontario-run program, for:

- Used paints (operated by Product Care Association);
- Pesticides, solvents and fertilizers (operated by Product Care Association);
- SodaStream’s CO₂ cylinders (operated by SodaStream); and
- Antifreeze, empty oil containers and used oil filters (operated by Automotive Materials Stewardship).

In each of these cases, stewards believed it was to their advantage to operate their own program.⁵¹

FIGURE 2.3. Relative diversion rates of each WDA program, plus household organic (i.e., food and yard waste) as a comparator. Note: for the hazardous waste and electronics programs, because of the nature of these materials, collection rates are used in lieu of diversion rates. Source: Created by the ECO, using data from various sources.⁵²





Photo of the 1990 Hagersville tire fire, which burned for 17 days, drove 4,000 people from their homes, and cost the province \$15-\$25 million.⁵³ (Photo credit: Ted Brellisford, The Hamilton Spectator.)

While diverted tire, electronics and household hazardous wastes weigh comparatively little, diverting these materials from landfill provides disproportionate environmental and health benefits. **The tire program, for example, cleaned up stockpiles of old tires around the province, which had posed a significant fire and environmental risk,** as illustrated by the 1990 Hagersville tire fire.

Similarly, electronic and hazardous waste contain toxic chemicals that can contaminate landfill leachate, or, in the case of hazardous materials flushed down drains or poured down sewers, can contaminate water sources. A 2009 study found that waste diversion programs operating in Ontario in 2007 provided an annual benefit of nearly \$1 billion in avoided environmental and health costs (e.g., the impacts associated with carcinogens, toxics, ocean acidification and climate change).⁵⁴

Beer and Alcohol Container Deposit-Return Programs

Two of Ontario's most successful waste diversion programs, with remarkable recovery rates of 88% (beer containers) and 78% (liquor containers), are producer-responsibility programs that operate outside the *WDA*. The Beer Store's deposit-return program, which is industry-operated and funded, diverted 268,000 tonnes of packaging (mostly glass bottles and metal cans) from landfill in 2016, about 70% of which were refillable bottles (the remainder are recycled).⁵⁵ The Ontario Deposit Return Program for wine, cooler and spirit containers, which is paid for by the Liquor Control Board of Ontario (LCBO) and operated by the Beer Store, diverted over 111,000 tonnes of packaging from landfill in 2016.⁵⁶

These deposit-return systems provide a sufficient financial incentive to many consumers to return their own containers; other containers are collected and returned for profit by private-sector entrepreneurs. Many of the remaining containers end up in municipal Blue Boxes – about 37% of the glass in Blue Boxes is deposit-return material.⁵⁷



Part 3: Problems with the *Waste Diversion Act*

Abstract

Despite almost four decades of recycling, including 15 years of the *Waste Diversion Act, 2002*, Ontario has not had great success meeting its waste diversion targets. Diversion rates have stagnated and the mountain of waste continues to grow. Part 3 explores the main reasons for this failure. The province needs to learn from these failures in order to make a success of Ontario's new *Resource Recovery and Circular Economy Act, 2016 (RRCEA)* and Strategy described in in Parts 4 and 5 of this report.

The old law didn't work. Waste diversion stagnated at 25% and taxpayers still pay too much.

**PART 3:
PROBLEMS WITH THE *WASTE DIVERSION ACT***

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3.0 Waste Diversion has Stagnated

In 2004, the province set a goal of recycling or composting 60% of all waste instead of sending it to landfill by 2008.⁵⁸ The many Ontarians who make diligent use of their Blue Box, electronics return opportunities, and/or “green bin” composting programs may think that the province has met this goal.

In fact, **Ontario has not made significant gains over the past two decades in increasing the percentage of waste recycled and composted.** Although the total amount (by weight) of waste recycled and composted did grow by 26% between 2004 and 2014,⁵⁹ as a percentage of all waste (by weight), the amount diverted grew only marginally. Ontario’s total waste diversion rate still hovers around 25%, far short of the province’s 60% target.⁶⁰

Several shortcomings and challenges with the *WDA* contributed to this stagnation: most wastes were never designated under the Act, economic barriers persisted, and structural problems limited effectiveness. We explore each of these issues in this Part.

Waste Diversion by the NUMBERS

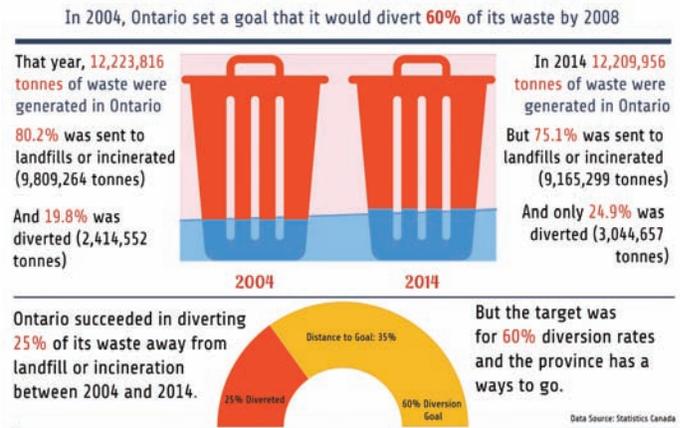


FIGURE 3.1. Waste diversion by the numbers. Source: Created by the ECO using data from Statistics Canada.

The Evolving Tonne

Calculating precise waste generation and diversion statistics is challenging, due in part to the changing composition of materials. Waste – both disposed and diverted – is typically measured by weight (even though the number, type and volume of materials is usually more relevant for diversion and disposal costs). For years, the amount of heavy materials (like newspapers, magazines and glass jars) in the Blue Box has

been plunging, while the amount of light, thin and complex plastics has dramatically risen. Similarly, innovation has led to significant reductions in the weight of electronic wastes. This shift from heavy to lighter, more complex materials is referred to as the “evolving tonne”.

Just as happened with soda bottles (see Part 2.1.2),

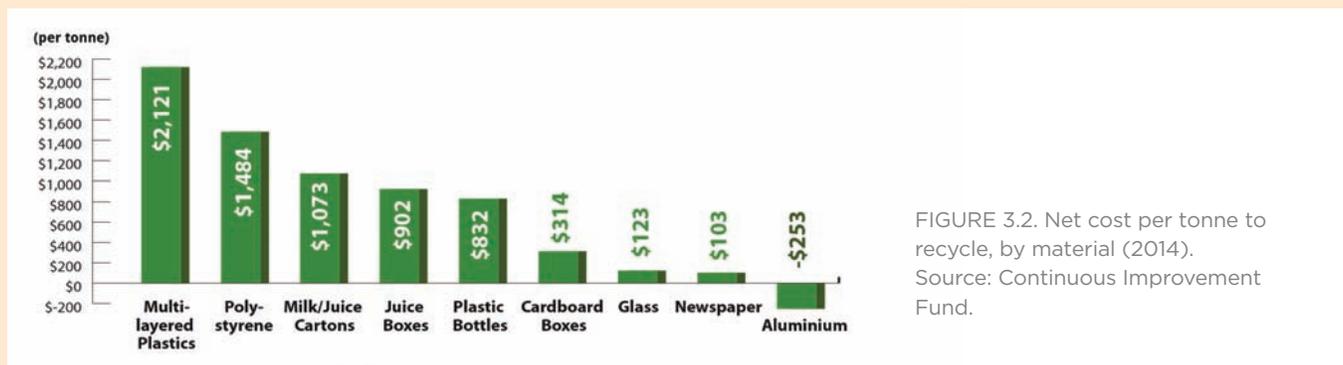


FIGURE 3.2. Net cost per tonne to recycle, by material (2014). Source: Continuous Improvement Fund.

manufacturers often prefer lighter products and packaging, which can save them money, consume fewer raw materials and require less energy to transport. But these lighter, thinner, more complex plastics and other packaging materials also increase recycling costs (see Figure 3.2). **The evolving tonne has been the main driver of growing costs in the Blue Box system.**⁶¹ For example, it used to take 35,000 plastic water bottles to recover 1 tonne

of plastic; now it takes almost 70,000 bottles.⁶² The reduced weight of wastes diverted through the Blue Box and electronics programs alters the reported diversion rates (i.e., the amount of diverted waste as a percentage of all waste), even if there has been no change in the proportion of recyclable materials on a per item basis.⁶³ Although we know it exists, the total impact of the evolving tonne on diversion numbers has yet to be reliably quantified.

3.1 Most of Ontario’s Wastes Were Never Designated under the WDA

3.1.1 Blue Box is Bigger in Our Hearts and Minds than in Reality

Ontario’s long-running municipal Blue Box program, which provides residential curbside collection of printed paper (such as newspaper), cardboard, and most plastic, glass and aluminum packaging (such as jars, bottles, tins and containers) – generally referred to collectively as “paper and packaging” – is the province’s signature waste diversion program.

The Ontario public is deeply attached to the Blue Box. In a 2011 survey conducted by Stewardship Ontario, 75% of respondents reported that the Blue Box was their primary environmental effort.⁶⁴ Even more respondents (80%) stated that the Blue Box has changed the way their households operate. Whether or not packaging is Blue Box-friendly influences Ontarians’ decisions on which products to

buy, and is the key measure by which they assess a manufacturer’s environmental commitment.

While Ontario’s Blue Box program is among the best in the world, its role in the hearts and minds of Ontarians is much larger than its actual environmental impact. Much as we love it, **the Blue Box collects less than 8% of Ontario’s total waste stream** (see Figure 3.3), and some Blue Box materials cost an extraordinary amount to recycle (see *The Evolving Tonne* box in Part 3.0).

In addition, not everything collected in the Blue Box is diverted from landfill. For example, a tonne of clean newspaper typically yields between 80 to 86% recycled fibre.⁶⁶ Whereas a tonne of aseptic containers (e.g., juice boxes) often yields only 35% to 60% of a tonne of recovered paper fibre and much of the remaining material is ultimately landfilled.⁶⁷

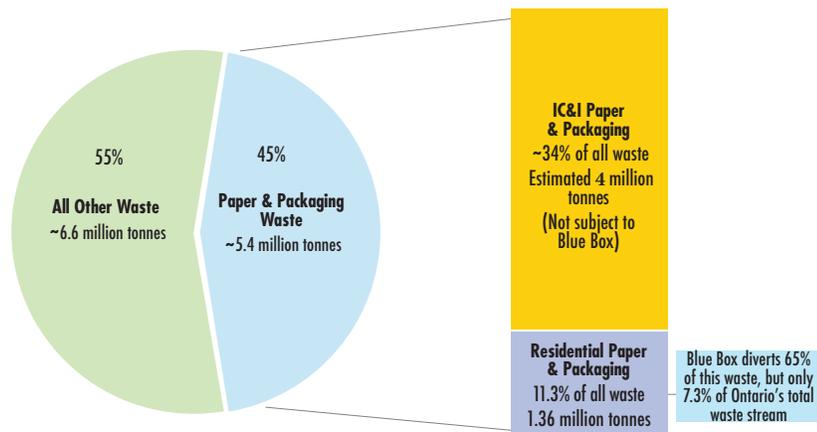


FIGURE 3.3. How much of Ontario’s total waste stream does the Blue Box actually divert? In 2014, the Blue Box successfully diverted 65% of all residential paper and packaging waste; however, most of Ontario’s paper and packaging waste is produced by the industrial, commercial and institutional (IC&I) sector, which is not included in the Blue Box. Source: Created by the ECO, using data from Stewardship Ontario and MOECC’s 2013 *Waste Reduction Strategy*.⁶⁵



3.1.2 WDA Mandated Diversion for Only a Handful of Materials

As described in Part 2.2.4, the government only mandated four recycling programs under the WDA: Blue Box, used tires, household hazardous wastes, and electronics. **The Ontario government has not**

introduced any new diversion programs under the WDA since 2009, primarily due to the “eco-fees” debacle of 2010 (see box).

Eco-fee Debacle Halted Expansion of Extended Producer Responsibility

The household hazardous waste (MHSW) program began well with Phase 1 in July 2008.⁶⁸ However, the poorly planned expansion of the program to Phase 2 in July 2010 met with enormous backlash. At the same time as a confusing rollout of the harmonized sales tax (HST), some (but not all) retailers started charging consumers a visible “eco-fee” on the purchase of everyday hazardous items such as household cleaners, pharmaceuticals, fire extinguishers, rechargeable batteries and compact fluorescent light bulbs.⁶⁹ Even though similar fees were already in place for other items such as tires, the public responded with widespread outrage over this new fee that some called a “tax.”⁷⁰ (For more details, see the ECO’s July 2010 Special Report: *Getting it Right: Paying for the Management of Household Hazardous Wastes.*)

The controversy led the government to immediately suspend the expansion of the producer-funded program.⁷¹ Instead, the province (i.e., Ontario taxpayers) funded the separate collection and management of Phase 2 materials until September 2014.⁷² As of October 2014, the costs for managing Phase 3 materials⁷³, and several Phase 2 materials, reverted to municipalities if they chose to continue voluntarily collecting these wastes – which several municipalities did.

The government later re-introduced a producer-funded program for one category of the Phase 2 hazardous wastes, but not under the WDA. Since 2012, Ontario Regulation 298/12 under the *Environmental Protection Act* has required the producers of pharmaceuticals and sharps to collect and manage these products at no cost to consumers.

The result is that **about 85% of Ontario’s waste was never designated under the WDA** (see Figure 3.4), and many high-priority materials (which are subject to diversion programs in other jurisdictions), have been left without mandated, producer-funded diversion programs. These high-priority materials include:

- Food waste
- Rechargeable batteries
- Fluorescent bulbs and tubes (although recently passed federal legislation may soon require a collection program⁷⁴)
- Appliances
- Mattresses
- Carpets
- Textiles
- Furniture and bulky items
- Construction and demolition waste

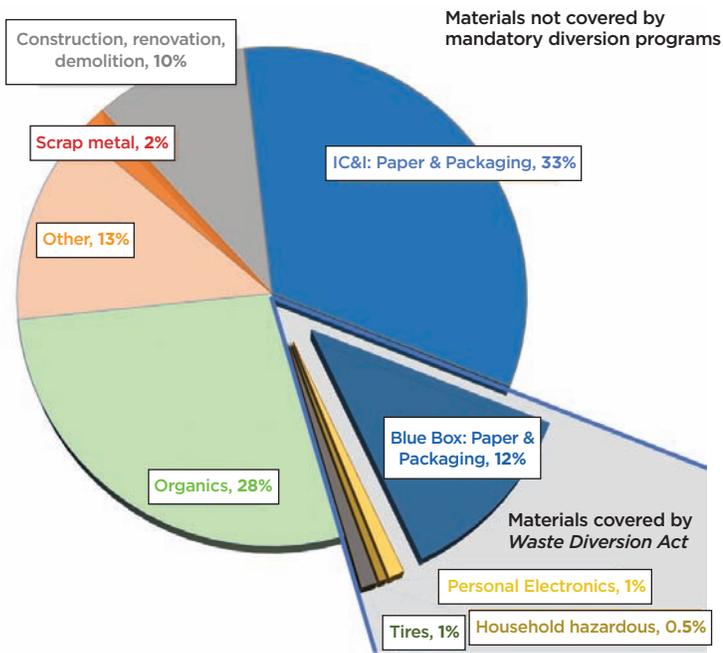


FIGURE 3.4. Composition of waste stream in Ontario by material type, indicating the portion of material categories covered by programs mandated under the *Waste Diversion Act, 2002*, now repealed. Note: not all household hazardous wastes are covered under the *WDA*. Source: Created by the ECO, using data from MOECC's 2013 *Waste Reduction Strategy*, and data from Stewardship Ontario with regard to paper and packaging.⁷⁵

3.1.3 Too Much Organic Material Going to Landfill

Organics (such as food and yard waste) make up about 30% of Ontario waste⁷⁶ and are a significant source of greenhouse gases (see Part 4.2.1, *Focus on Climate*). Yard waste collection is mandatory for municipalities over 5,000 people,⁷⁷ but food waste collection is not. To conserve landfill space, some large municipalities voluntarily offer curbside collection of residential food waste, usually called “green bin” programs.

In 2015, about 40% of Ontario’s organic waste (representing 1.34 million tonnes, or 11% of the total waste stream) was diverted from landfill, i.e. processed in composting or anaerobic digestion facilities (see Figure 3.5).

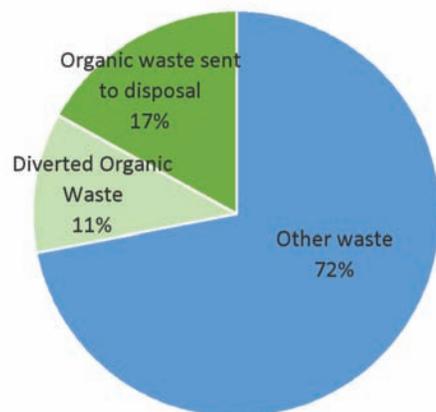


FIGURE 3.5. Diverted organic waste, as a percentage of all waste (2013). Source: Data from the MOECC’s 2013 *Waste Reduction Strategy* and the WDO municipal datacall information for 2014.

Most smaller municipalities are reluctant to increase organic diversion because green bin programs are expensive and are funded entirely by municipalities. In addition, it is challenging to site and operate organics management facilities due to onerous MOECC requirements for odour control and community concerns about odour. Long wait times for MOECC approvals also discourage such facilities (although the ministry has committed to improve its approvals processing time).

Another challenge is **the lack of strong end markets** for the compost, digestate and biochar that is produced through organic diversion programs. Although these products can be valuable sources of nutrients for farmers, home owners, municipalities and landscapers, increasing the amount of material produced will require an equivalent expansion in the market for such materials.⁷⁸



3.1.4 Non-Residential Waste Has Been All But Ignored

The single biggest factor in Ontario’s poor waste diversion record is the lack of attention to non-residential waste. While Statistics Canada cites single-family residences in Ontario at relatively strong diversion rates (about 37%) (other data suggests it may be as high as 47%⁷⁹), diversion rates in the industrial, commercial and institutional (IC&I) and construction, renovation and demolition (CRD) sectors are much lower (about 15%).⁸⁰ In total, over twice as much residential waste is recycled than non-residential waste, even though the IC&I and CRD sectors generate more waste (see Figure 3.6).

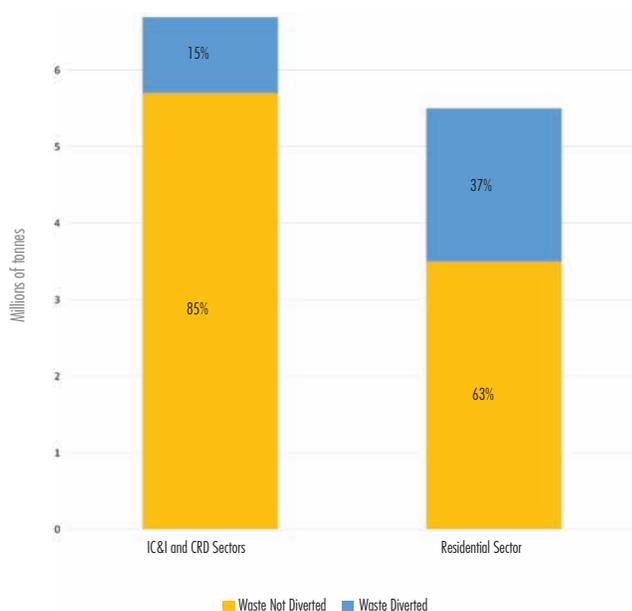


FIGURE 3.6. Total waste generated and diverted (million tonnes) for industrial, commercial & institutional (IC&I) and construction, renovation and demolition (CRD) sectors and for residential sector.

Source: Statistics Canada (data for 2014).

This disparity in diversion rates is largely because Ontario imposes few obligations on IC&I and CRD operations, and those that do exist for IC&I (under the “3Rs” regulations, see Part 2.1.3) are rarely enforced.⁸¹ The IC&I sector includes a huge number of properties – everything from factories to retail malls to restaurants, universities, hospitals, and even many multi-residential buildings (such as condominium towers)⁸² – so **weak requirements for IC&I have a massive impact on Ontario’s overall diversion rates.**

Further, unlike the residential sector, the IC&I and CRD sectors have never been included in any programs or funding from stewards to divert recyclable paper and packaging from IC&I facilities or CRD sites, even though much of the paper and packaging wastes from these sectors is the same as the Blue Box wastes generated by households. Without funding or programs from stewards, and with minimal obligations to divert their own waste, IC&I and CRD businesses often choose the least costly option – in many cases shipping their waste to low-cost landfills in the United States.

3.2 Economic Barriers

Government intervention can influence economic signals to help drive waste diversion. The *WDA*, however, did not address the fundamental cost discrepancy in managing waste: **landfilling in Ontario is generally cheaper than recycling, and out-of-province landfills are cheaper still** (see Figure 3.7).

Even though the recycling process often yields usable materials that can be sold, the market price garnered for materials rarely covers the costs of recycling. Except for aluminium cans, which are often picked out of Blue Boxes by individuals, the materials collected in diversion programs cannot be sold for as much as it costs to collect and process them. As shown in Figure 3.2 above, the cost-to-revenue ratio is especially high for complex light-weight materials, such as multi-layer aseptic cartons (often referred to by the tradename “Tetra Pak”).

The higher cost for recycling relative to landfilling discourages the voluntary establishment of new recycling programs, or the addition of non-mandated materials to an existing program. In some cases, waste generators voluntarily pay to recycle lower-value materials (such as construction waste). Fee-based voluntary recycling programs are better than no recycling program, but the expense typically limits participation.



FIGURE 3.7. Cost of disposing IC&I organic waste compared to cost of diverting organic material, includes average collection, transportation and processing costs.
 Source: Created by ECO, based on data from the MOECC Discussion Paper: *Addressing Food and Organic Waste in Ontario*, (2015).

In addition to cheap disposal, on the revenue side of the equation, **the WDA failed to create stable, reliable and broad markets for recycled materials.** Such markets are key to sustainable, cost-effective waste diversion programs. The province has had minimal success in encouraging such markets, and both the province and producers have generally failed to use their procurement power to support them.

3.2.1 Rising Blue Box Costs

Economic issues affect multiple programs, but were particularly visible for the Blue Box. The WDO documented numerous problems with the Blue Box program, mostly driven by its unexpected, dramatic rise in costs.⁸⁵

When the WDA was adopted, stakeholders believed that the Blue Box program would become financially self-sustaining within 5 years (i.e., that the sale of collected materials would cover collection and recycling costs). This did not happen. Instead, both cost per tonne of collected materials and total Blue Box costs climbed rapidly (reaching hundreds of millions of dollars per year), far higher and faster than revenues from sale of materials (see Figure 3.8).

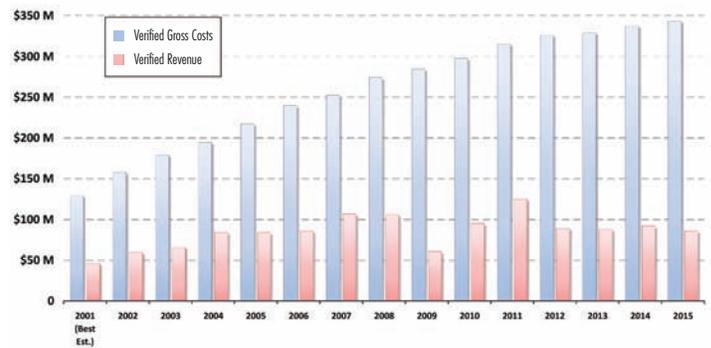


FIGURE 3.8. Ontario Blue Box gross costs and revenue, over time.
 Source: Continuous Improvement Fund.

One key reason for the escalating costs was the expansion in difficult-to-recycle packaging materials (see *The Evolving Tonne* in Part 3.0). In addition, because of O. Reg. 101/94, almost every municipality ran its own Blue Box, whether it made economic sense to do so or not. Understandably, smaller and more remote communities had much higher costs, sometimes due in part to duplicated effort, and to smaller than optimal processing facilities (see Figure 3.9). Because different municipalities accepted different materials into their respective Blue Boxes, markets were fragmented and consumer confusion increased contaminant levels.



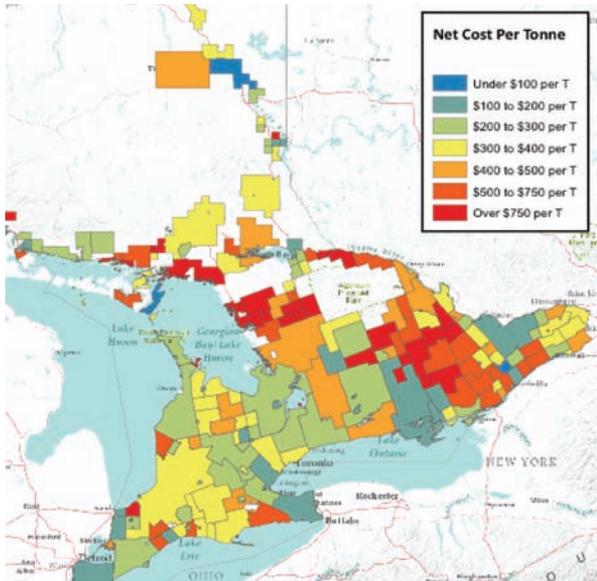


FIGURE 3.9. Costs of operating municipal Blue Box programs across Ontario.
Source: AMO, Municipalities' Report to Waste Diversion Ontario on Blue Box Funding (2015).

The **rising costs were a near-constant source of strife, exacerbated by the unique funding arrangement of the Blue Box program**, which required municipalities to pay all program costs and then to seek partial reimbursement from stewards two years later. The

WDA explicitly required stewards to pay municipalities 50% of the total net cost of operating Ontario's Blue Box program, and WDO devoted nearly six person-months every year verifying every cost that municipalities reported, which municipal governments had already certified as accurate. Even after this elaborate certification and verification process, stewards challenged municipal cost claims every year.

By 2013, the relationship between Blue Box stewards and municipalities broke down into an acrimonious arbitration over the amount that stewards owed to municipalities. Municipalities were ultimately awarded the \$115 million they claimed for their 2012 costs.⁸⁴ Municipalities also showed that between 2003 and 2014 they had paid \$233 million more than a true 50% (which alone was more than \$1 billion).⁸⁵ Even this amount understated the impact of Blue Box costs on municipal taxpayers.⁸⁶

On its face, the Blue Box cost-sharing arrangement runs contrary to the principle of extended producer responsibility; instead of stewards bearing the full cost of waste from their products, the Blue Box put significant financial burden on municipal taxpayers. Ontario is the only province that allowed stewards to pay so small a share of the Blue Box costs for their products and packaging (see Table 3.1).⁸⁷

TABLE 3.1. Provincial Comparison of Costs and Performance.

Metric	British Columbia (2015 Projected Performance)	Saskatchewan (2015 Projected Performance)	Manitoba (2013 Performance)	Ontario (2013 Performance)
Net cost per tonne	\$452	\$261	\$275	\$274
Net cost per capita	\$27	\$10	\$19	\$19
Recycled kgs per capita	59.7	40.1	68.7	68.3
% of households with access to printed paper and packaging recycling	>80%	TBD	93%	97%
Net Cost Per Capita Paid By Stewards/Producers	\$27 (100%)	\$7.50 (75%)	\$15.20 (80%)	\$9.50 (50%)

Source: Kelleher Environmental and Love Environment Inc., Comparison of Ontario Blue Box Program Costs With Other Jurisdictions (2015).

3.3 Structural Problems

Other failings of the *WDA* contributed to Ontario's low diversion rates.^c

3.3.1 EPR Only Partially Realized

The *WDA* never implemented true extended producer responsibility (EPR) – where producers are fully, financially and legally, liable for managing end-of-life materials. The *WDA* was only a partial step towards EPR. This half-measure placed an unfair cost on municipalities, while doing little to encourage more sustainable product and packaging design by industry.

Under the *WDA*, stewards were not individually liable for meeting any performance outcomes. Instead, the IFOs – a regulated monopoly – operated most diversion programs, whose performance targets were both weak and unenforced. Stewards' only obligation was to pay a stewardship fee to their IFO. **The *WDA* did not incent waste reduction or better environmental design.**⁸⁸ For example, because all stewards of a particular product paid the same fee to their IFO regardless of their product's cost to recycle, there was no financial incentive to improve the design of their product to increase reuse or recyclability (i.e., the fee paid for an easily recyclable television was the same as that paid for a very difficult to recycle television). The IFO structure also gave no financial incentive to stewards to use end-of-life materials in their products or packaging.

The IFO structure allowed stewards to pass on their recycling costs to consumers, rather than internalize these costs as envisioned in an EPR system. The individual stewards in the electronics, hazardous waste and tire programs were each charged a set “per item” or “per kilogram” fee by their IFO, which was easily passed on to customers. Tire stewards pay “tire stewardship fees” (e.g., currently \$3.30 per

passenger vehicle tire) to cover the costs of collecting and diverting used tires, which is directly passed on to consumers via a levy paid on purchase. Stewards of electronic goods similarly pass on the full amount of their steward fees as “environmental handling fees” charged to consumers at the point of sale.

Further, stewards were only held liable for managing a portion of their designated wastes. IFOs were only required to pay for managing the wastes that were captured by the diversion program. This fact, combined with low diversion targets, created a disincentive to collect and divert more materials. The costs of dealing with wastes that should have gone into the program but instead ended up as litter, in sewage, or in municipal landfills were borne entirely by municipalities and their taxpayers. Additionally, for the Blue Box program, even for those materials that were properly collected and diverted, stewards only covered part of the program costs, with the rest covered by municipalities (see Part 3.2.1).

3.3.2 Governance, Transparency & Accountability

Inadequate governance, transparency and accountability among the WDO, the IFOs, municipalities and the MOECC led to distrust among stakeholders and frustrated progress.⁸⁹

No one was clearly accountable for either policy or results; blurred and overlapping responsibilities allowed each party to blame someone else. By giving most program oversight to the WDO, the government attempted to reduce its own role in, and duck responsibility for, waste diversion. This satisfied no one, and did not spare the government from either lobbying or criticism.⁹⁰

^c The problems in this section are specific to the now-repealed *Waste Diversion Act, 2002*, and we therefore discuss them in the past tense. However, in many cases, they will continue to affect program operation at least until all existing diversion programs are fully transitioned to the *RRCEA*.



WDO's effectiveness as an oversight body was hindered in several ways. For example:

- The *WDA* lacked clarity on the respective responsibilities of the WDO, the Minister and the IFOs. The resulting confusion often left WDO struggling.
- WDO had an inherent conflict of interest: how could it impartially oversee stewards' IFOs and their program plans, when stewards were the only source of WDO's funding, as well as of most of its staff and board? WDO always struggled with limited financial resources, and dependence on stewards for those resources.
- The lack of clear and enforceable performance targets for IFOs meant there was no definitive standard against which to measure the IFOs (and thus little incentive for IFOs to reduce waste and increase recyclables).
- Only the ministry could enforce the Act, and it rarely took any enforcement action.
- WDO had no direct access to data about stewards, making it difficult to take informed action.
- WDO had neither data from nor authority over the service providers (e.g., waste haulers) who handled most recyclable materials, further reducing WDO's ability to oversee the entire waste sector.

There were also criticisms about the impartiality and effectiveness of WDO's board. Initially, the board consisted of representatives of stakeholder groups, primarily stewards. The board was vulnerable to domination by the largest industry actors, making it difficult for those representing non-business interests to be heard. In 2012, the Minister changed the board to be skills-based, stating that a skills-based board better reflected "modern governance practices."⁹¹

Similarly, in the case of IFOs, stewards with smaller market share stated that, while they had no choice about funding the organization, they were entirely excluded from decision making about how to spend the money. The process for setting and using steward fees was highly complex and opaque to many stakeholders, and the underlying data was often kept secret. In addition, some stakeholders felt that the IFOs did not sufficiently consult with all affected stakeholders during development of new diversion program plans.



Part 4: A Fresh Start for Waste Diversion in Ontario

Abstract

Successful passage of the *Waste-Free Ontario Act, 2016* was a significant achievement.

The new *RRCEA* and its *Strategy for a Waste Free Ontario* seek to address the past challenges of waste diversion (discussed in Part 3) by:

- 1) Establishing a new, better framework for producer-funded waste diversion, and committing to supplemental measures set out in the Strategy to support increased diversion; and
- 2) Articulating a new vision of consumption as a closed loop (rather than one-way), and identifying actions to help manifest this vision.

Part 4 describes the new law and the key differences between the *WDA* and the *RRCEA*, and analyzes the key actions set out in the Act and Strategy that could support increased diversion.



A new waste law
and strategy –
what will they
change?

**PART 4:
A FRESH START FOR WASTE DIVERSION IN ONTARIO**

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4.0 The *Resource Recovery and Circular Economy Act, 2016*

At its most basic level, the *RRCEA* continues the *WDA* system of provincial designation of specific materials for diversion. However, it differs from the *WDA* in many significant ways. It takes a different approach to producer responsibility; it has stronger enforcement mechanisms; it enables greater provincial oversight and direction on waste diversion matters; and it replaces *WDO* with a different sort of oversight organization, called the Resource Productivity and Recovery Authority (the “Authority”), with expanded duties and powers.

The key differences between the *WDA* and the *RRCEA* are set out in Table 4.1.

TABLE 4.1. Comparison of Key Structural Features of the *WDA* and the *RRCEA*.

	<i>Waste Diversion Act, 2002</i>	<i>Resource Recovery and Circular Economy Act, 2016</i>
Oversight Body Composition	<i>WDO</i> was composed of board members appointed by both the Minister of the Environment and Climate Change and the <i>WDO</i> ’s Board. Board appointments were initially based on stakeholder representation, but after 2012 were based on skills set out in an operating agreement between the Minister and <i>WDO</i> .	The Authority is mostly composed of elected board members, as well as some members appointed by the Minister of the Environment and Climate Change. Board appointments are based on skills prescribed in the Act and set out in an operating agreement between the Minister and the Authority.
Oversight Body Role	<i>WDO</i> : oversaw the development, implementation and operation of waste diversion program plans; approved industry stewardship plans; and reported annually to the government. It did not have the power to enforce the <i>WDA</i> , nor any powers to compel data from IFOs or stewards.	The Authority: carries out oversight, compliance and enforcement activities; collects data directly from industry; participants serves as a data clearing-house by operating the Resource Productivity and Recovery Registry; and reports annually to the government.
Diversion Program Organization	An IFO, created under the <i>WDA</i> , was responsible for collecting fees from stewards and delivering the diversion program; individual stewards had little direct involvement.	There are no mandated IFOs; instead producers are individually responsible for the collection and management of designated materials; it is up to them to decide how they fulfil these responsibilities.
Steward Responsibilities	Stewards were required to pay fees to their IFO to wholly or partly fund diversion program development and implementation. Fees were not tied to the recyclability of a given product’s design (except, to some extent, Blue Box). Blue Box stewards repaid municipalities for a minority of program costs. Newspaper stewards “paid” their share through “free” advertising.	Individual producers of designated materials (including Blue Box materials) are to be financially and environmentally responsible for meeting waste reduction and resource recovery obligations to be set by the government; the scope of these obligations is not yet clear. Individual producers will also be required to meet registration, promotion and education, and reporting requirements. It is unclear what rules will apply to newspaper stewards.

	Waste Diversion Act, 2002	Resource Recovery and Circular Economy Act, 2016
Service Provider Responsibilities	Service providers (e.g., waste haulers, recyclers, etc.) had no responsibilities under the act.	Other persons (e.g., various service providers, municipalities) may be required to register with the Authority. They may also be required to meet promotion and education and reporting and record keeping requirements.
Data Collection	Stewards were required to provide data on their products to their IFO, but that information was not available to the WDO, municipalities, the public, or the MOECC.	Producers of designated materials are required to submit data/information related to their products and diversion activities directly to the Authority. Other persons (e.g. service providers, municipalities) may also be required to submit data/information related to their resource recovery and waste reduction activities directly to the Authority. The Authority will publish relevant information on its registry. The Authority also has the power to require the IFOs to submit information prior to the wind-up of existing waste programs. The MOECC also has power to require the Authority to submit information to it.
Performance Standards	Performance targets, which were set out in program plans, were unclear and largely unenforceable. Because WDO had no direct access to data about stewards and no enforcement tools, it was difficult to take informed action.	The Minister of the Environment and Climate Change has the authority, through regulations, to establish clear standards for a designated material, including targets for waste reduction and resource recovery, acceptable recycling processes customer service standards, and promotion and educational requirements.
Climate Change	The Minister of the Environment and Climate Change was responsible for prescribing materials for diversion and approving waste diversion program plans.	The MOECC: prescribes materials for diversion; sets resource recovery and waste reduction requirements for those materials; and oversees the performance of the Authority. The Minister also prepares policy statements to further the provincial interests set out in the <i>RRCEA</i> (most planning documents must then be consistent with these policy statements). The Minister is required to produce the accompanying Strategy.

Each of the changes set out above are positive steps that should help to address many of the structural deficiencies of the *WDA* set out in Part 3 of this report. It is important to note, however, that **the *RRCEA* is largely enabling legislation that leaves most details to future regulations.**



4.1 Transitioning from the Old to New Diversion Framework

The *Waste Free Ontario Act, 2016* also created the *Waste Diversion Transition Act, 2016* (the “Transition Act”). The Transition Act is an interim law that deals with the logistics of transitioning from the *WDA* to the *RRCEA* framework. It provides for the repeal of the *WDA*, the winding up of existing IFOs and the transition of the four existing waste diversion programs to the new producer responsibility framework set out under the *RRCEA*.

The province aims to transition the first three programs (used tires, waste electrical and electronic equipment, and municipal hazardous or special waste) by 2020.⁹² In February 2017, the MOECC announced that the used tires program, currently run by Ontario Tire Stewardship, would be the first to transition to the new framework.

4.1.1 Blue Box: A Challenging Transition

Blue Box is to be transitioned to more of a producer pay system by 2023.⁹³ In the meantime, Blue Box stewards are to pay municipalities “at least” 50% of program costs, or a higher percentage determined by the Minister.

Extra time has been allocated to **transitioning the Blue Box program** because, as mentioned in Parts 2 and 3, its structure differs from the other diversion programs. With municipalities operating the program (often through contracts with collection and/or processing service providers),⁹⁴ and stewards later repaying a limited portion of the program costs, its transition will be especially complicated. Blue Box transition faces a wide variety of challenges:

- One group of complex issues relates to the assets and employees that the province and stewards encouraged/required municipalities to acquire to run the Blue Box program (e.g., recycling trucks, recycling facilities, etc.). Some municipalities purchased dual-side trucks, one side to pick up Blue Box materials, and the other to pick up other municipal wastes. Simply ending municipal responsibility for Blue Box

could leave municipalities with millions of dollars in stranded (undepreciated) assets,⁹⁵ a number of surplus employees, and relatively new equipment that can no longer be operated efficiently.

- A second group of issues relate to the relationship between municipalities and ratepayers, who generally consider the municipality responsible for anything that occurs at curbside.
- A third group of issues relate to the contracts between municipalities and recycling/garbage service providers. Some contracts are just for Blue Box materials; others include other wastes. The large number of individual multi-year contracts have differing terms and expire in different years, mostly before 2023. For example, about 13% of current municipal service contracts expire after 2023, yet the entire program is supposed to be out of municipal hands by then.⁹⁶ On the other hand, it is even less clear what either municipalities or service providers should do about contracts that are expiring now.
- It remains unclear what percentage of municipal costs related to Blue Box materials will actually be paid by stewards under the new system. Nothing in the current Strategy would compensate municipalities for the costs of recyclable products and packaging that are not put into the Blue Box, i.e., that go to landfill or litter. For materials that do go into a Blue Box, experience in other jurisdictions (such as British Columbia) suggests that municipalities who wish to continue to provide collection services may receive considerably less than 100% of their service costs.⁹⁷
- The appropriate boundary between residential Blue Box materials and IC&I sources of the same material (which stewards have never paid for) remains unclear.
- Stewards have paid Blue Box costs two years in arrears since the *WDA* came into force. It is unclear whether, or how, the final years before transition will be addressed.
- There appears to be no stakeholder willing and able to fund recycling of newsprint, home-printed paper, and cardboard boxes from out-of-province providers.

Before Blue Box transition planning can begin in earnest, the parties (producers, municipalities and potential private service providers) must know the key elements of the new system that the province intends to require. For example:

- What will the minimum service standards be? Will all Ontarians have access to current curbside collection services at the same frequency regardless of cost, including high-density residences and northern and remote communities? If so, who will pay for collection and recycling in exceptionally high cost locations? If stewards are only required to achieve a province-wide average diversion rate, it will make financial sense for them to pay for diversion only in areas that are densely populated and inexpensive to serve.
- What materials must be collected, and will that be uniform across the province, regardless of cost?
- Will there be minimum requirements for improved environmental outcomes (e.g., through higher mandatory collection rates and/or higher requirements for reuse of the collected materials)?

Each of the **decisions about Blue Box standards** will have financial and environmental implications; they **will require difficult trade-offs** between diversion rates, program costs (for the producers), costs left to municipalities, and convenience for participants. Until these decisions are made, however, how can potential service providers, including municipalities, evaluate whether to contract with producers to provide collection or recycling services or whether to exit the market completely, and whether to repair/replace/upgrade existing assets?

On August 14, 2017, the Minister wrote to the Resource Productivity and Recovery Authority and to Stewardship Ontario instructing them to develop a proposal for amending the Blue Box Program Plan, "collaboratively with municipalities, stewards and affected stakeholders."⁹⁸ The proposal is to build on the accord reached by key stakeholders (the Association of Municipalities of Ontario, the City of Toronto, the Regional Public Works Commissioners of Ontario, the Ontario Municipal Waste Association and Stewardship Ontario) and as outlined in a letter sent to the Minister in July 2017.

The proposal for the new Blue Box Program Plan is to be submitted to the Minister for approval by February 15, 2018. This "first phase" of transition for the Blue Box program is to set the stage for the "second phase", i.e., when it becomes full individual producer responsibility in 2023 under the *Resource Recovery and Circular Economy Act*. During this first phase, Stewardship Ontario will continue to be the IFO for all Blue Box stewards, and will continue its monopoly on providing Blue Box programs on behalf of stewards.

The Minister's August 2017 letter contains an ambitious list of things to be accomplished in the transitional Blue Box Plan (see endnote for details),⁹⁹ but does not indicate how they are to be achieved. In essence, the Minister is looking to the Authority, Stewardship Ontario and municipalities to rapidly agree on solutions to a long list of complex issues that have bedeviled recycling in Ontario. It is good to see that stakeholders are working together, and that the letter directs the Authority's attention to many of the challenges identified in this report. But delegating these issues to the Authority muddies accountability again. And it is not clear how or when the public will have an opportunity to comment on the complex trade-offs to be made.

4.2 Supplementary Actions under the Strategy to Support Diversion

The *Strategy for a Waste Free Ontario*, which is required by the *RRCEA*, commits the province to supplementary actions to complement the new waste diversion framework and promote increased diversion. **The Strategy introduces a new target of 80% diversion by 2050, and eventually zero waste altogether** (for more about these goals, see Part 5).

The key actions identified in the Strategy relating to enhancing diversion are summarized below. These actions should go a long way to address the overarching issue raised in Part 3, that much of the waste stream was simply being ignored, as well as address some of the economic barriers to increased diversion.



The Strategy also identifies actions the provincial government intends to take to work towards its vision of a circular economy, which is discussed in Part 5.

Designate new materials. As noted in Part 3.1.2, the province has not introduced any new diversion programs since 2009. The Strategy includes a **commitment to designate new materials for diversion**. This is significant because, just like the *WDA*, the *RRCEA* merely creates the authority for, but does not compel, new materials to be added. The Strategy identifies small appliances, batteries, fluorescent bulbs and tubes, mattresses, carpets, furniture and bulky items, as well as clothing and textiles as among the first materials to be designated (based on past consultations).

Implement an organics action plan. Too much organic material (food and yard waste) is still going to landfill (see Part 3.1.3). The commitment to implement an organic waste action plan is significant because organic waste makes up nearly one-third of all waste,¹⁰⁰ it contributes to landfill leachate,¹⁰¹ and is responsible for almost all greenhouse gas emissions

from the waste sector (see box below, *Focus on Climate: The Relationship between Organic Waste and Climate Change*). **Taking organics out of landfill could dramatically reduce both greenhouse gas emissions and the need for landfill space.**

In May 2017, the MOECC posted a discussion paper, *Addressing Food and Organic Waste in Ontario*, on the Environmental Registry for public comment.¹⁰² This discussion paper solicited public input on a future “Food and Organic Waste Framework” (which would include a Food and Organic Waste Action Plan and a Food and Organic Waste Policy Statement) to guide provincial action to reduce the amount of organic waste going to landfill and create a circular economy for organic waste. The discussion paper sought input on what actions should be taken to: (1) reduce food and organic waste going to disposal, and (2) support processing capacity and stimulate end-markets for food and organic waste. Once input on the discussion paper from the public, as well as from other stakeholder consultations (including a working group) are compiled, the MOECC will produce a draft Framework for further public comment.

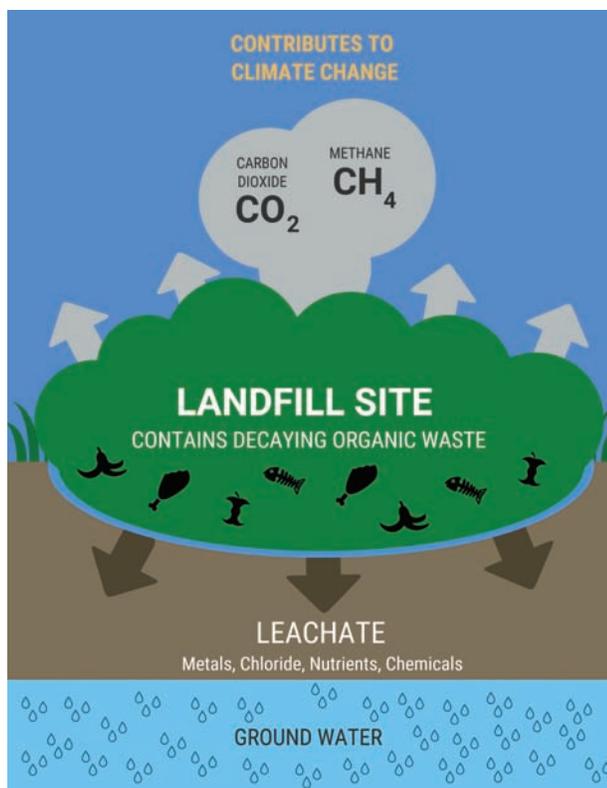


FIGURE 4.1. The environmental impacts of landfilling waste. The actions in the Strategy should help divert more waste from landfill and minimize environmental impacts. Source: Created by the ECO.

4.2.1 Focus on Climate: The Relationship between Organic Waste and Climate Change

Landfills produce 90% of all greenhouse gas emissions from Ontario's waste sector.¹⁰³ Most of this gas is produced from decomposing organic matter. Although some gas will always be created as organic matter breaks down, the decomposition conditions (e.g., the presence or absence of oxygen) make a big difference to how much and what kind of gas will be created.

When organic material decomposes in open-air conditions, such as a backyard compost pile or well-aerated facility, it produces carbon dioxide (CO₂). Much of this CO₂ comes from and goes back to the natural carbon cycle where it is taken up by plants and then released back into the atmosphere.

When organic matter decomposes in wet, oxygen-limited conditions – such as a landfill – it produces not just CO₂, but also methane and nitrous oxide, which are much more potent and harmful greenhouse gases. As a result, a given amount of organic matter in a landfill will make a much larger contribution to greenhouse gas emissions than the same amount of matter in a compost pile or well-aerated compost facility.

Another means to reduce greenhouse gas emissions from organic waste is through anaerobic digestion. Anaerobic digesters decompose organic material in the absence of oxygen, generating methane and other gases, but they can be designed to capture these gases (often referred to as “biogas” in this context). Biogas may serve as a fuel source, much like natural gas. Some landfills have similar gas-capture systems, but their use is limited and they generally have lower methane capture rates than digesters (see *Focus on Climate* box, Part 1.1.2). Although the combustion of biogas releases CO₂ (a greenhouse gas), CO₂ has a much lower global warming impact than methane. Further greenhouse gas reductions occur when biogas displaces the use of fossil fuels, like oil or gas. Biogas from organic waste can also be generated and captured at wastewater treatment facilities (for more on this see the ECO's 2016/2017 Energy Conservation Report, Volume One, *Every Drop Counts*).

Composting or digesting organics can significantly reduce the greenhouse gas emissions from organic waste. Given that about 4.6% of all of Ontario's officially reported greenhouse gas emissions come from the decomposition of organics in landfills (and possibly much more – see *Focus on Climate* box, Part 1.1.2),¹⁰⁴ and the possibility for biogas to displace fossil fuels, there is significant potential to make an impact on Ontario's emissions through organics diversion.

Moreover, composting organics can help Ontario fight and adapt to climate change through the important role of compost in building healthy soils. Healthy soils that have high organic content can sequester CO₂ in the ground. The ECO estimates that from 2 to 4.75 tonnes of CO₂ equivalent can be stored per hectare, per year by adopting soil health principles, including the appropriate use of compost. To learn more about soil health and the role of composting in such an approach, see the ECO's 2016 *Putting Soil Health First: A Climate-Smart Idea for Ontario*.

Finally, while organic diversion from landfills is a critical component of reducing future emissions from waste, it does not address the significant amount of gas yet to be released from organics already in landfills. The Strategy proposes to increase the amount of biogas captured from landfills, including increasing biogas captured as a result of the province's commitment to develop an offset protocol for landfill gas capture projects under the offsets component of Ontario's new cap-and-trade program.



EBR Application for Review: 3Rs Regulations

Under the *Environmental Bill of Rights, 1993*, any two Ontarians can submit an application for review asking the government to consider changes to certain laws, regulations or policies. In 2012, the ECO received such an application asking that the MOECC review O. Reg. 103/94, one of the 3Rs regulations. The applicants argued that the regulation, which requires source-separation programs at certain IC&I facilities, was too lenient on certain businesses, reducing the amount of recycling taking place in Ontario.

In the fall of 2016, shortly before the *RRCEA* came into force, the MOECC notified the applicants that it had decided to undertake a full review of all the 3R regulations as part of its new waste Strategy. The ministry committed to undertake the review within three years of the release of the final Strategy (i.e., by February 2020).

Focus on the IC&I sectors. The IC&I sectors generate most of Ontario's waste (see Part 3.1.4), but are currently subject to relatively few recycling requirements. The Strategy identifies several actions to increase diversion from the IC&I sectors, including: collecting additional information about diversion in the IC&I sectors to inform decision making; a new commitment to amend the 3Rs regulations that govern diversion in the IC&I sector (see box below); and efforts to divert more paper and packaging from the IC&I sectors.

Disposal Bans. Disposal bans (i.e., prohibitions on sending certain materials or items to disposal) can help ensure that materials are reused and recycled to the greatest extent possible. Such bans have been successfully implemented in other provinces and countries.¹⁰⁵ A disposal ban can overcome economic barriers and correct the cost imbalance of recycling compared to disposal. The Strategy contemplates using disposal bans (which could apply at the transfer station to stop out-of-jurisdiction export of waste) for food waste and materials designated under diversion programs, as well as for fluorescent bulbs, but notes that such a decision will only be made after extensive consultation.

What about the Fourth R, Recovery?

In recent years, many waste experts have begun adding a 4th R after reduce, reuse and recycle - recovery. This refers to energy recovery operations that burn waste materials at extremely high temperatures and use the heat, e.g., to create electricity.

Energy-from-waste has become very popular in some European countries, but is still relatively limited in Canada, with only a few facilities in Ontario operating or under development. The Strategy is consistent with the province's pre-existing policy on energy-from-waste, which treats it more as energy generation than as a waste management approach. The Strategy explicitly notes that: "Although energy from waste and alternative fuels are permitted as waste management options, these methods will not count towards diversion in Ontario."¹⁰⁶

Most favoured option

Reduce

Reuse

Recycling

Recovery

Landfill

Least favoured option

FIGURE 4.2. The Waste Hierarchy.
Source: Created by the ECO.

Some stakeholders have concerns about air pollution from energy-from-waste facilities,¹⁰⁷ as well as concerns that recognizing energy-from-waste as part of a broader diversion strategy may undermine efforts to properly reduce, reuse and recycle materials. If garbage has a productive use in energy generation, people and governments may be less motivated to pursue other (often more expensive) diversion programs. Another concern is that if too much energy-from-waste capacity is built, these facilities could draw materials away from recycling facilities in a need to “feed the beast.” This occurred in some European jurisdictions, like Sweden and Germany, that had to import waste from other countries to feed their energy-from-waste facilities.¹⁰⁸

Advocates of energy-from-waste argue that these concerns can be addressed through policy that clearly prioritizes other diversion programs ahead of energy generation, and instead treat energy-

from-waste as an appropriate last resort before landfilling. They point out that the electricity produced can displace fossil fuels – thus reducing greenhouse gases – and that the process greatly reduces the volume of physical waste material, meaning it takes up less room when ultimately deposited in a landfill. There is also a legitimate question whether energy recovery might actually be a better approach than recycling for some materials (e.g., lightweight, hard-to-recycle plastics) when assessing the total lifecycle environmental impacts of a product or packaging.

Avoiding the energy-from-waste policy debate in the Strategy will not make it go away. Despite the province’s zero waste goal, some amount of residual waste will remain for decades to come, even as reduction, reuse and recycling efforts are enhanced. Energy-from-waste may well be an appropriate means, at least transitionally, of making the most of this remaining waste material.

4.3 How Will Ontario’s Diversion Programs Change?

Because so many of the details are left to regulation, the ECO cannot make firm predictions about what will happen under the new regime. By itself, the *RRCEA* prescribes no materials for diversion and no diversion targets that must be met. That said, the Strategy states that the province intends to take aggressive action to support the *RRCEA*.

4.3.1 Increased Diversion

As shown in Part 3.1.2, the *WDA* mandated diversion for only 15% of Ontario’s waste stream (see Figure 3.4). If implemented, the actions enabled by the *RRCEA* and contemplated in the Strategy – such as

designating additional materials, developing higher recycling standards (see Part 4.3.2) and stronger diversion targets, developing the organics action plan, and implementing disposal bans on certain products – should decrease the amount of Ontario waste going to landfills and incineration.

There are a number of positive benefits to reducing the amount of waste going into landfills or incinerators, as discussed in Part 1. Perhaps most significant is that increased diversion of organic materials, in particular, will reduce greenhouse gas emissions. The MOECC estimates that **increasing Ontario’s organic waste diversion rate by 10% would avoid approximately 275,000 tonnes of greenhouse gas emissions per year** – that’s equivalent to removing 64,000 cars from Ontario roads.¹⁰⁹ Also, as the Strategy notes, “improved resource recovery will reduce [other] greenhouse gas emissions.”¹¹⁰



Reducing waste sent for disposal should also reduce costs to Ontario municipalities, and thus taxpayers. Currently, waste disposal is largely funded by municipalities, and thus Ontario taxpayers. Expanded producer-funded waste diversion programs should reduce the amount of waste going to disposal facilities.

4.3.2 Robust Recycling Standards

The Strategy calls for the development of various standards, to be established in regulations, including:

- performance standards for producers (such as requirements for waste reduction, collection and diversion);
- environmental standards that govern the waste management processes;
- recycling standards that govern the recycling process;
- customer service standards that govern the services that must be provided to the public; and
- promotion and educational standards that govern public outreach initiatives.

Clear, strong standards on all these fronts are necessary to ensure effective diversion.

Recycling standards are particularly necessary. Clear and stringent recycling standards (i.e., standards that define which processes or outcomes achieve true diversion¹¹¹) are necessary to ensure that activities categorized as “recycling” really achieve environmental benefits, such as creating valuable materials suitable for reuse. Currently, this is not always the case. For example, some forms of “recycling” merely crush a given material (like glass) before using it at a landfill to cover other wastes, or for other marginal uses. Stringent – and enforced – recycling standards should improve current environmental outcomes from recycling and ensure that more collected materials are in fact being recovered and reused.

Robust recycling standards would mean better environmental outcomes and a level playing field for market participants. When the threshold for what can be called “recycling” is low, companies that use a more expensive, but more environmentally favourable method are at a disadvantage. For example, in 2014, the MOECC contemplated expressly allowing battery-derived “smelter slag”, which was being used as aggregate, to be considered “recycling”. Existing recyclers objected, expressing concern that they would be forced out of business because they could not compete with “recyclers” who were not following as environmentally stringent a process. The province ultimately agreed and did not make the change.¹¹²

Standards must be relatively easy to enforce, meaning that they contain objective, measurable criteria. They must also actually be enforced.

4.3.3 Less Prescriptive Approach, Greater Flexibility for Producers

The *RRCEA* takes a more outcomes-based approach to producer responsibility (as opposed to the *WDA*'s focus on a prescriptive process). Under both the old and new framework, government has the authority to identify materials that must be diverted; however, in a major shift under the *RRCEA*, the Authority does not play a role in designing or administering waste diversion programs. This redefinition of the Authority's role should address many of the governance problems with the old WDO structure discussed in Part 3.3.

An important change is **the elimination of the IFOs, which could introduce an element of competition for producers' business.** Producers can meet their obligations individually or through other avenues (such as collectives, which may contract with competing service providers).¹¹³ In Europe, such competitive systems reduced producers' costs.

Individual, rather than group, responsibility should improve environmental outcomes. Because producers under the *WDA* paid fees to IFOs based on the type of product they produced or imported, there was zero incentive to design better products (i.e., you paid the same whether you designed a very eco-friendly

television or not). But by making producers directly responsible for waste diversion activities, the *RRCEA* lays the groundwork for a system that better connects the costs and benefits of waste diversion activities for individual companies. For example, if a company produces an easily recycled television, they will reap the benefit of reducing their own recycling costs. If that happens, there should – theoretically – be more of an incentive to create efficient recycling systems and to design more environmentally friendly products at the outset.

4.3.4 Revamped Oversight Mechanisms

Although the new Authority takes over some of WDO’s previous duties, its mandate, powers, and structure have all changed for the better. In terms of mandate, the Authority takes on many new duties, such as managing the Resource Productivity and Recovery Registry and providing compliance and enforcement of producer responsibilities. In terms of structure, the intent is to have a skills-based board of directors, managed by a majority of elected member-directors (versus Minister-appointed member-directors). There are no designated seats for representatives of producer organizations, the waste management industry, the public or municipalities. The Auditor General can now audit the Authority, to ensure that it uses money well.

Enforcement responsibilities shift from the MOECC to the Authority. Under the *WDA*, the ministry was often criticized for lackluster enforcement. The MOECC states that the *RRCEA* provides the Authority with the tools to ensure “a fair system that discourages non-compliance and prevents free-riders.”¹¹⁴ **Moving enforcement to the Authority** – a body with a dedicated mandate to enforce the *RRCEA* (as opposed to environmental laws generally), and with dedicated funding for its work – could yield better results.

4.3.5 Separation of Policy and Oversight

The *RRCEA* addresses the *WDA* criticism that the province was ducking responsibility for waste policy. Under the *WDA*, the WDO’s role in developing waste diversion programs with IFOs meant that it played a policy-making function to some degree; this often complicated its role as an oversight body. The *RRCEA*, however, clearly establishes the Authority as an oversight, compliance and enforcement body without policy-making functions. The *RRCEA* puts clear responsibility for waste policy back on the government. **Policy direction will be provided by the government** through policy statements and regulations, which must be developed openly, after public consultation. The Minister can now issue policy direction to the Authority, and can intervene in certain situations.¹¹⁵

These policy statements will be used to “help coordinate decision-making across private and public sectors, where cooperation is integral to achieving resource recovery and waste reduction outcomes,”¹¹⁶ enabling the government to provide “overarching policy direction on the whole spectrum of resource recovery and waste reduction issues.”¹¹⁷ While policy statements are approved by the government and issued by the Minister, the *RRCEA* requires consultation with stakeholders, including municipalities, producers, the waste diversion industry, environmental groups, and the public, before issuing a policy statement.

Although the specific applications of policy statements remain to be seen, they could be used to provide consistent direction on matters such as establishing criteria and principles to facilitate sustainable packaging, reuse and recycling methods, and implementing efficient and effective approvals processes.



4.3.6 Reduced Role of Municipalities in Waste Diversion

In another significant departure from historical waste management practices, **the RRCEA does not establish any explicit role for municipalities in waste diversion**, whereas they are currently heavily entrenched in the operation and funding of the Blue Box program. Municipalities are, however, contemplated as a potential (paid) service provider for waste collection and management. As described in Part 4.1.1, transitioning the Blue Box program from the WDA to the RRCEA framework will undoubtedly be challenging, but should ultimately distribute the costs of recycling more fairly and accurately.

4.3.7 Better Data and Performance Metrics

Good data helps drive good policy and decision making. One common critique of the WDA was that it did not provide WDO with data collection powers, which hindered its ability to direct or enforce better diversion programming.¹¹⁸ Under the RRCEA, the province will benefit from stronger data collection requirements, to be carried out by the Authority and reported to government in an annual report. The Strategy discusses the importance of performance metrics at length.

More information, including performance information, will be particularly helpful in informing decision-making around IC&I diversion programs, as there is much debate about the best approach. The Strategy explains: “there is no one-size-fits-all model to address the reduction, reuse and recycling of waste in these sectors. The province requires better data to understand which approach works best and to make informed evidence-based decisions.” To this end, the Strategy specifically notes that the MOECC intends to “[enhance] data collection, reporting and performance measurement from generators and service providers.”¹¹⁹



Part 5: Beyond Diversion: Looking Forward to the Circular Economy

Abstract

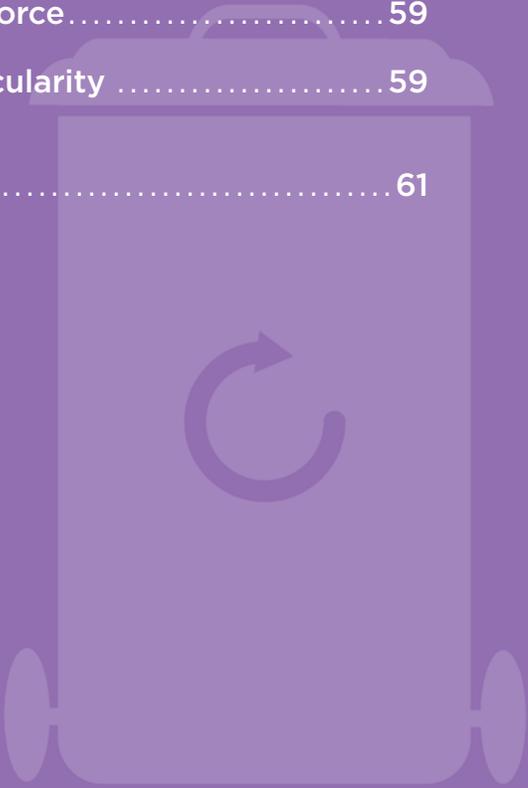
Part 5 takes a closer look at Ontario's broader goal of creating a circular economy. We consider the key ingredients in such an economy and review the actions identified in the Strategy to help move towards a waste-free future.



In a circular economy, we reuse resources, instead of waste them.

**PART 5:
BEYOND DIVERSION: LOOKING FORWARD TO THE CIRCULAR ECONOMY**

- 5.0 Ontario’s New Vision for a Waste Free Ontario 56**
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5.0 Ontario's New Vision for a Waste Free Ontario

As discussed in Part 2, the Ontario government has historically paid little attention to the first two Rs: reduce and reuse. Until the introduction of the *RRCEA* and the Strategy, government had not really tried to tackle the root causes of most waste.

Ontario's new vision is that "waste is seen as a resource that can be recovered, reused and reintegrated to achieve a circular economy."¹²⁰ The two goals are: (1) zero waste in the province; and (2) zero greenhouse gas emissions from the waste sector. While strong requirements for extended producer responsibility are a necessary part of these goals, they alone will not make Ontario (or any jurisdiction) waste-free. Such a bold vision requires a global effort to fundamentally restructure basic social and economic practices that encourage consumption and waste over durability and reuse.

An effective circular economy would generate no waste because all the materials in every product are recovered and reused repeatedly at the end of the product's life. In contrast, Ontario's current economy is predominately linear – resources are extracted, products made and used, and then discarded as waste (see Figure 5.1).



FIGURE 5.1. Linear Economy versus the Circular Economy. Source: Sustainable Brands.

5.0.1 Focus on Climate: How the Circular Economy Helps Fight Climate Change

Developing a circular economy benefits the environment in the form of reduced demand for virgin resources and landfill space. It also has positive implications for global greenhouse gas emissions. The Strategy's goals of both zero waste, and zero emissions from waste, acknowledges the clear opportunity to take meaningful climate action through resource recovery and waste management decisions. Not only is reducing emissions an explicit goal of the Strategy, but moving Ontario towards a circular economy is a key action in Ontario's 2016 Climate Change Action Plan.

As a result, many initiatives will serve both Ontario's waste and climate goals. The most obvious example of this are the plans to address organic waste (see Part 4.2). But potentially more significant are the greenhouse gas reductions that may be achieved by transitioning to a circular economy. **Reusing and recycling materials almost always uses less energy than extracting, using, and discarding virgin resources** (recall the example of copper in *Life Cycle of a Cell Phone*, in Part 1.1.2, which requires about 80% less energy to recycle than to mine and refine the same amount of virgin material). Considering these broader, system-wide implications, it becomes clear that a circular economy will likely play a vital role in achieving both provincial and global greenhouse gas reduction goals.

A circular economy is more than just the sum of innumerable isolated waste diversion efforts. Rather, a circular economy is an entire system in which environmental and economic goals are aligned. In a circular economy, reducing and reusing materials is not only environmentally responsible (see Focus on Climate box, Part 5.0.1), but also economically savvy.¹²¹ Shifting to a circular economy can provide substantial gains in employment and economic

growth as value-added services (e.g., recycling, composting and repair work) replace traditional waste disposal. A 2014 Canadian study stated that increasing waste diversion in Ontario from 23% to 60% would support an additional 12,700 jobs and add as much as \$1.5 billion to Ontario's GDP.¹²² In this way, the "closed loop" of endlessly repurposed goods decouples prosperity and comfort from the need to extract virgin resources from the environment.

The Circular Economy in Action: Mitigating the Impact of "Fast Fashion"

Textiles are often cited as the next frontier for effective, widespread reuse and recycling initiatives. The rise of "fast fashion" (inexpensive, trendy clothing that is not meant to last long) has led to a massive increase in the amount of textile waste.¹²³ In Ontario, 85% of most textile waste ends up in landfills.¹²⁴ Some customers and retailers have started to think about the impacts of all this waste, and the opportunities to close the loop. And now that new technologies are making it possible to 'upcycle' textiles as never before, recycling could soon pay for itself.¹²⁵

Some big name clothing manufacturers are already working on closed loop production strategies, such as certain lines from H&M, Speedo and Adidas.¹²⁶ H&M – a company that has taken considerable criticism for driving the fast fashion trend – has also introduced recycling bins in its stores with the goal of fully reusing all of the materials it receives.

Beyond these private sector efforts, some municipalities are testing textiles recycling programs,¹²⁷ and Ontario has identified textiles as a high-priority candidate material for future diversion programs.

5.1 How Do You Build a Circular Economy?

Although circular systems for some individual materials exist or are being developed (see box, *A Second Life for Blue Box Plastics*), there is no single or simple path to a circular economy.

A number of countries around the world, such as Scotland, Finland and the Netherlands, are taking action to move towards a circular economy. China has an ambitious vision of moving its enormous

economy to this model, so as to "maintain rapid economic growth over the coming decades while simultaneously improving environmental quality..."¹²⁸ For Ontario to do the same, **businesses and consumers alike must rethink product development, manufacturing, distribution and use.** Recognizing resources where we once saw waste will require collaboration and coordination among a large group of stakeholders.



The Circular Economy in Action: A Second Life for Blue Box Plastics

One example of an Ontario company seeking to “close the loop” on plastic waste is Canada Fibers and its affiliate Urban Resource Group. Together, Canada Fibers/Urban Resource Group processes more than half of all Blue Box materials in Ontario, as well as recyclables from the IC&I sector – altogether, it handles over 1 million tonnes of material a year.

But the process does not end at the sorting centre; once the recyclable plastic has been sorted at Canada Fibers’ state-of-the-art Toronto complex, it is then transferred next door to Urban Polymers. There, it is further sorted, ground, and washed by plastic type and colour, and then melted down to create small pellets that are then sold to manufacturers in packaging, construction and home

improvement as a raw material used in the production of new products.

The manufacturing of recycled plastic is considerably less energy intensive than producing plastic from petrochemicals and does not require extraction of raw resources from the earth. Urban Polymers estimates that use of its recycled plastic products saves nearly 77,000 tonnes of greenhouse gases from being released into the atmosphere. This diversion is equivalent to off-setting the electricity use of over 11,000 homes for one year in Ontario.

Canada Fibers/Urban Resource Group provides similar circular solutions for cardboard and wood materials. They credit their success to their philosophy, stating “where others see waste, we see an opportunity to create local, sustainable products.”

The Ellen MacArthur Foundation, a U.K. charity dedicated to “accelerating the transition to the circular economy,” has articulated the “building blocks of a circular economy.”¹²⁹ They are:

- 1) Businesses need to build their expertise in circular design so that they are technically able to design better products and systems;
- 2) Businesses need to embrace new business models that do not rely on the current linear take-make-dispose model of production;
- 3) Employees need to build new skills and knowledge relating to designing compostable and reusable products, and managing the logistics of a circular resource system; and
- 4) Market mechanisms must align to support circularity.

Essentially, transitioning to a circular economy requires that: the workforce and businesses have the skills and knowledge necessary to deliver circularly designed products; businesses throughout the entire supply chain must rethink their entire approach from a systems perspective; and economic policies and programs must incent supportive activities and discourage disposability and disposal.

The government of Ontario can play an important role in each of these areas.

5.2 Ontario's Plan for a Circular Economy

The *Strategy for a Waste Free Ontario* identifies four objectives, each with associated actions, to move the province towards its zero-waste goal and a circular economy. The four objectives are:

- 1) Enhance provincial direction and oversight;
- 2) Enable efficient and effective recovery systems;
- 3) Increase waste reduction and resource productivity; and
- 4) Create conditions to support sustainable end-markets.

5.2.1 Fostering Circular Businesses

With respect to the first two components of a circular economy identified by the Ellen MacArthur Foundation – fostering businesses with expertise in circular design that embrace circular models of production – the Strategy identifies several potential initiatives for Ontario. For example, the Strategy states that policy statements could be used to “establish criteria and principles to facilitate sustainable packaging” and “guide reusing and recycling methods.”¹³⁰

The Strategy also states that “Ontario will also use a variety of tools and take actions to incent businesses to show leadership and demonstrate efforts to increase resource productivity by reducing the use of raw materials and avoiding waste to maximize the recovery of materials at their end-of-life.”¹³¹ Moreover, the Strategy commits the province to work “towards reducing [regulatory] barriers to adopting new innovative technologies.”¹³²

Green procurement policies are one specific way that government can help foster circular businesses. Procurement policies that direct government to favour products that incorporate recovered materials when making purchasing decisions provide a financial incentive to businesses wishing to win government contracts. The Strategy commits the government to reviewing its existing procurement

policies to ensure that they “send the right signals to shift the market toward greater recovery and reintegration of resources into new products and services.”¹³³

Ontario also supports the Circular Economy Innovation Lab – a not-for-profit initiative to “bring together public and private sector leaders and innovators to co-generate, test and implement circular economy solutions.”¹³⁴ Although the Strategy includes many actions that will affect businesses and likely require them to adopt more circular practices (something discussed in greater detail below), it does not reference the innovation lab, nor commit to any other policies, programs or actions aimed directly at fostering innovative circular business expertise on a broad scale.

5.2.2 Training a Knowledgeable Workforce

Although the government of Ontario is heavily involved in economic development and workforce training, such training is not currently focused on a circular economy. The province could better align its existing economic development efforts with the goals of the Strategy. For example, the provincial government could introduce policies and programs to support training relevant to the circular economy for both businesses and workers. Similarly, Ontario could also introduce policies that encourage businesses to improve the environmental performance of their products and provide incentives to businesses that adopt circular economic practices.

5.2.3 A Marketplace that Supports Circularity

What Kinds of Policies Support a Circular Marketplace?

The final component – aligning market mechanisms to support circularity – is undoubtedly the most difficult element of this transformation, but also the most essential. A true circular economy must have reliable, sustainable markets for all recovered resources. The Strategy acknowledges that the circular economy largely depends on making the 3Rs more financially attractive than sending materials to landfill or incineration.



Establishing a supportive marketplace will be a very tall order. Ontario relies on national and international markets to supply many raw materials, goods and waste. Competitiveness concerns and national and international trade laws affect the market, and, moreover, few product and packaging decisions are made in Ontario. A circular economy may be especially hard to achieve for the complex, light-weight plastics and plastic composites that continue to grow in popularity.

Making producers truly responsible for the full costs of end-of-life management of both packaging and products forces them to internalize the environmental costs that have been historically borne by the community as a whole. This responsibility should incent producers to create more environmentally friendly products and more effective recycling programs. But it is not enough on its own. Other policies that can help create markets that encourage circularity include:

- full-cost individual producer responsibility obligations that allow differentiation of products based on their environmental properties;
- banning disposal (landfilling, incineration and export) of certain materials;
- landfill surcharges;
- setting and enforcing recycling targets;
- mandatory recycled content requirements for some items;
- green procurement policies for government; and/or
- financial incentives for products and businesses that promote circularity (such as a lower tax rate on second hand goods, or on the cost of repairing items).

What Policies does the Strategy Identify to Support Circularity?

Many of the actions contemplated in the Strategy are aimed at addressing market failures that currently make it costlier to employ circular processes than to simply send waste to disposal.

Specifically, many of the actions are aimed at requiring more comprehensive participation of producers to divert waste or aimed at ensuring basic standards are met by both producers and waste industry participants. These include many of the actions discussed in Part 4 that aim to ensure that more materials are being diverted by more sectors (such as IC&I sectors), and to ensure that basic producer responsibility, recyclability and customer service standards are met. Imposing these diversion obligations on all producers of designated materials, as well as across all sectors will negate the financial incentive for wastefulness that may otherwise exist. Furthermore, imposing standards on producers and service providers will help create a level playing field by ensuring that no one can financially gain by delivering sub-par products or services.

Other actions reach beyond comprehensive producer responsibility to focus on stimulating markets for recovered materials. In addition to green procurement practices that help build market demand for recovered materials (already discussed above), disposal bans are also contemplated in the Strategy as a potentially powerful tool to direct materials to end-markets.

Disposal bans prohibit the disposal of certain items regardless of the comparative costs of disposal versus recycling. This can provide a significant incentive to companies to redesign products so they do not contain materials that are subject to bans, or to make them easier to recycle or repair. The Strategy identifies the following materials as among the likely candidates for a disposal ban, emphasizing that any ban would be phased in over time: organic waste, beverage containers, and fluorescent bulbs and tubes. In most cases, it is necessary to apply the ban at the transfer station (rather than at the location of the landfill or incinerator), so as to ensure that the materials are not simply exported to landfills outside of Ontario.¹³⁵

The Circular Economy in Action: Emphasising the first 2Rs

Building a circular economy will require much more emphasis on the first 2Rs - reducing and reusing materials - and only resort to the third R (recycling) where necessary. One way of reducing material consumption in the first place is through the growth of businesses that provide members with access to occasional-use items so that individuals don't have to buy them outright (therefore reducing the total number of items that must be produced to meet demand). Car-sharing services such as Zipcar and Car2Go are one example, another is the proliferation of tool libraries that loan out specialised equipment. When it comes to reuse, organizations that strive to help teach people how to repair items themselves are playing an important role. Repair Cafés, operating out of community centres, libraries and other community locations in a number of Ontario cities, have volunteers help people fix everything from small appliances to clothing and books. Similar organizations offer specialised help, such as Toronto's Bike Pirates, a volunteer-run organization that teaches bike repair and offers space for repair work (and also reuses donated bikes and bike parts).



Part 6: Will the Environment Win? Recommendations

Abstract

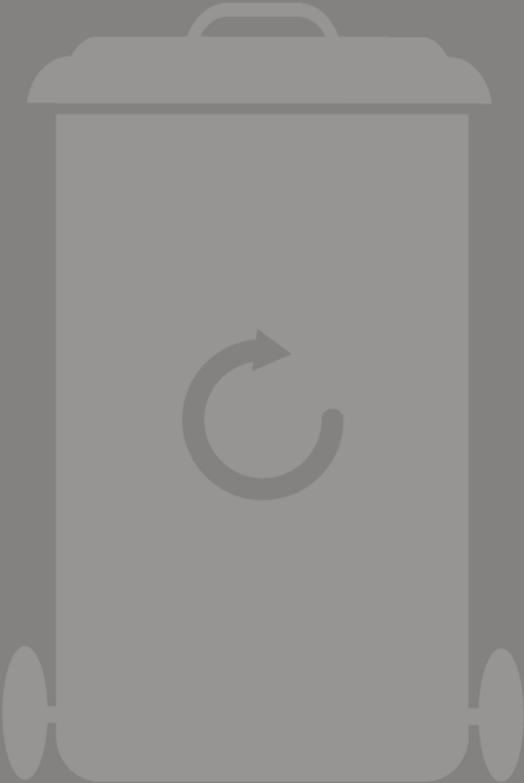
The *RRCEA* and Strategy establish ambitious goals and identify many important actions. If properly implemented, these will help move Ontario towards a zero-waste economy, and ultimately deliver a variety of environmental benefits.



Essential next steps.

**PART 6:
WILL THE ENVIRONMENT WIN? RECOMMENDATIONS**

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6.0 Turning Promise into Action

The new *RRCEA* and Strategy set out the groundwork to divert much more waste and move Ontario towards a zero-waste economy. The magnitude of this initiative should not be understated. **The introduction of the *RRCEA* is a significant landmark.** The MOECC worked hard with stakeholders to try to resolve many of the long-standing issues with the *WDA*. The environmental impacts of rampant consumption and waste are widespread and long-lasting. Building a circular economy, including well developed diversion activities, could address many of these issues and, if properly implemented, will be a win for the environment.

The most admirable, and ambitious, aspect of the Ontario government's new approach is the opportunity it creates for the MOECC to move beyond "waste diversion" to the larger vision of a circular economy. Forty years of experience have shown that waste cannot be effectively managed as a stand-alone issue of problems with landfills. The growing climate footprint of resource extraction and waste only adds to the urgency of a broader approach. The ECO is happy to see that the MOECC has identified cross-linkages among the *RRCEA*, the Strategy, the *Climate Change Mitigation and Low-carbon Economy Act, 2016*, and the province's Climate Change Action Plan.

While the *RRCEA* and Strategy hold great promise, **what matters, as always, is implementation.** Simultaneous adoption of both the *RRCEA* and the new climate law could strain the MOECC's resources, capacity and attention. Although the Strategy does include a general timeline, **the ECO recommends that the MOECC set deadlines for the actions identified in the Strategy.** Without clear deadlines, it is easy for important tasks to fall off priority lists, and difficult for the public to hold the ministry accountable. Such a work plan would assist both the MOECC and stakeholder groups to identify what activities require immediate focus and resources.

6.1 Priority Actions

Among the many worthy activities identified in the Strategy, a few stand out to the ECO as being particularly important. The ECO believes these items – set out below – are deserving of special priority because they are critical to laying a strong foundation upon which the later success of diversion programs depend, or because they offer opportunities for substantial improvements in diversion in the short-term. The ECO will be paying particularly close attention to each of these items through to the end of 2018, by which point we expect to see measurable progress.

6.1.1 Organic Diversion

If Ontario is serious about eliminating greenhouse gas emissions from waste, it will require extensive diversion of food and yard wastes. Maximizing organic diversion from landfills is central to reducing greenhouse gas emissions from waste, as well as minimizing the creation of leachate. In fact, organics diversion can have multiple climate benefits. As documented in the ECO's *Every Drop Counts* report, organic waste could be used to generate renewable natural gas, to displace fossil fuels now used to make power, to heat buildings and to fuel vehicles. And, if composted, organic waste can put organic matter (carbon) back into agricultural soil.¹³⁶ Accordingly, the ECO strongly supports the MOECC's development of an Organics Action Plan.

The ECO recommends that the MOECC adopt some form of disposal ban on food waste. Many leading waste reduction jurisdictions around the world already use disposal bans. For example, Nova Scotia, which has a per capita disposal rate 40% lower than any other province or territory in Canada, has banned organics (as well as most Blue Box recyclables, household electronics and other divertible materials) from landfills.¹³⁷

However, before implementing such a ban, Ontario must substantially increase its organic processing capacity.¹³⁸ One key obstacle to such expansion is the MOECC's slow, expensive and unpredictable approvals process. At present, proposed facilities

can wait years for a decision on an approval application. Instead, proposed operators should be reasonably confident that well-planned, appropriately-sited facilities will be approved within months, not years. Given the importance of organics diversion, **the ECO recommends that the MOECC make the process for approving anaerobic digestion and composting facilities fast and predictable, while still protecting public health and environmental interests.**

6.1.2 Getting Recycling Standards Right

Recycling standards determine what processes or outcomes qualify as “diversion” under the *RRCEA*. If they are too permissive, the quality of the recycled material may suffer (which is bad for the marketplace), and environmental benefits may be compromised. **Lax recycling standards make it difficult for companies using better, but more expensive, recycling processes to compete** (see the example of the proposed battery recycling discussed in Part 4.3.2).

The ECO recommends that the MOECC develop recycling standards that are clear, enforceable and provide a high level of environmental protection.

Such standards should incorporate objective, measurable criteria so they are easy to follow and easy to enforce. The standards must then be enforced.

6.1.3 IC&I Sectors Must Pull Their Weight

The IC&I sectors, including construction, retail and manufacturing, have played too small of a role in diversion for too long. Since these sectors generate far more waste and divert much less than residences, **Ontario cannot make substantial progress on its diversion goals without the IC&I sectors pulling their weight.** Moreover, the IC&I sectors are critical to the development of a circular economy, since they encompass businesses.

The Strategy identifies several initiatives to increase IC&I diversion, one of which is reviewing the 3Rs regulations that set out rules for source separation programs in some IC&I settings. Some other jurisdictions, such as Nova Scotia, have stronger source separation obligations for IC&I than Ontario, and such obligations are compatible with longer-term IC&I initiatives. **The ECO recommends that the MOECC expand and enforce source separation and diversion obligations for the IC&I sectors** (currently under Ontario Regulations 102/94, 103/94 and 104/94).

6.1.4 Learning From Our Mistakes

As this Special Report shows, many of the ambitions in the *Waste-Free Ontario Act* are not new. For decades, Ontario has tried to get Ontarians to reduce, reuse and recycle, and to create self-supporting funding models to keep waste out of landfill and litter. These decades of effort have produced both successes and failures, but it has remained stubbornly difficult to make profitable the reduction, reuse or recycling of most wastes, and the reuse of some collected materials. As a result, much waste policy has been bogged down in wrenching questions about why waste diversion costs so much, and who should pay for it. As time passes and staff change, some of this history may have been forgotten.

As the old saying goes, “those who do not learn from history are doomed to repeat it”. The ECO suspects that **many of the same economic issues could continue to challenge Ontario waste policy under the new Act.** To avoid repeating the same mistakes, **the ECO recommends that the MOECC document how new waste policies compare to those tried before, and what lessons have been learned from previous efforts.**

6.1.5 Driving the Circular Economy Across Government

Finally, the MOECC must not lose sight of its vision for transformative change through the circular economy. The ECO will be paying close attention to how the provincial government pursues this vision. While the Strategy identifies some useful initiatives,



the MOECC should also look for opportunities to support the promising circular economy-focused work of non-government organizations, collaboratives and private companies. For example, **the province must support self-sustaining markets for used materials.** Where such markets exist, they should be fostered; where such markets do not exist, regulatory interventions may be appropriate. **The ECO recommends that the MOECC make the ultimate goal of Ontario's circular economy policies the creation of profitable markets for all end-of-life materials.**

Market mechanisms that support circularity will be critical to Ontario's ultimate success, and will require cross-ministry coordination (i.e., through labour, education, fiscal, government and consumer services, and business policies). Accordingly, **the ECO recommends that the MOECC work with other ministries to integrate circular economy objectives into policy and practice across government.**

6.2 Summary of Recommendations

The ECO recommends that the Ministry of the Environment and Climate Change:

1. set deadlines for the actions identified in its *Strategy for a Waste Free Ontario*;
2. adopt some form of disposal ban on food waste;
3. make the process for approving anaerobic digestion and composting facilities fast and predictable, while protecting public health and environmental interests;
4. develop recycling standards that are clear, enforceable and provide a high level of environmental protection;
5. expand and enforce source separation and diversion obligations for the IC&I sectors;
6. document how new waste policies compare to those tried before, and what lessons have been earned from previous efforts;
7. make the ultimate goal of Ontario's circular economy policies the creation of profitable markets for all end-of-life materials; and
8. work with other ministries to integrate circular economy objectives into policy and practice across government.



ENDNOTES

1 In 2014, the most recent year for which Statistics Canada has complete numbers, total waste, including both waste disposed (9,165,299) and diverted (3,044,657), was 12,209,956 tonnes. Statistics Canada, *Materials diverted, by source, Canada, provinces and territories*, Table 153-0042 (Ottawa: SC, 2017), online:

<www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=1530042&tabMode=dataTable&srchLan=-1&p1=-1&p2=35>; and Statistics Canada, *Disposal of waste, by source, Canada, provinces and territories*, Table 153-0041 (Ottawa: SC, 2017), online:

2 The World Bank, *What a Waste: A Global Review of Solid Waste Management* (March 2012), at 80-83; online: https://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1334852610766/What_a_Waste2012_Final.pdf

3 In 2014, the most recent year for which Statistics Canada has complete numbers, Ontario generated 892 kg of waste per person. Note: Statistics Canada reports Ontario's per capita waste amount as 670 kg/person, however, this only includes *disposed* waste. To obtain the total per capita waste generated, we divided Ontario's total waste generated (disposed and diverted) of 12,209,956 tonnes (see endnote #1), and divided by Ontario's population on January 1, 2014 (13,685,200). Source: Statistics Canada, *Population by year, by province and territory (number)* (Ottawa: SC, 2017), online: <www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/demo02a-eng.htm>.

Ontario ranks 2nd best for per capita disposal rates against all other provinces (excluding the territories, for which no data was available). See: Statistics Canada, *Disposal and diversion of waste, by province and territory (waste disposal per capita)* (Ottawa: SC, 2017), online: <www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/envir32b-eng.htm>. However, Ontario's large population means it has an outsized impact. Total waste (disposed and diverted) in Canada in 2014 was 34,160,211, meaning Ontario's contribution of 12,209,956 (see endnote 1), makes up 35.7% of the national total.

4 The total amount disposed in Ontario in 2014 was 9,165,299. Source: Statistics Canada, *Disposal and diversion of waste, by province and territory (Total Waste Disposal for 2012 and 2014)* (Ottawa: 2016), online <www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/envir32a-eng.htm>.

5 Per Environment and Climate Change Canada, *National Inventory Report 1990-2015: Greenhouse Gas Sources and Sinks in Canada*, Part 2:

- total amount landfilled in Ontario in 2014 was 6,108,121 (Table A3-62 (Ottawa: 2017) at 204);

- total amount incinerated was 308,641 (Table A3-73 (Ottawa: 2017) at 190)
- total exported was 2,747,859 tonnes (Table A3-61 (Ottawa: 2017) at 189).

However, these numbers vary rather widely depending on the source. In 2016, the Ontario Waste Management Association (OWMA) released its first annual *State of Waste in Ontario: Landfill Report*. This report provided information from a survey of the Association's members, and concluded that Ontario landfills received 7.7 million tonnes of waste in 2014. This suggests that the Government of Canada may be significantly underestimating the amount of landfill waste disposed of in Ontario each year. Meanwhile, the MOECC reported to the ECO that an estimated 3.3 million tonnes were exported to the U.S. for disposal in 2015 (based on data from Michigan DEQ and NY State DEC).

6 Government of Ontario, *Landfill Standards: A Guideline on the Regulatory and Approval Requirements for New or Expanding Landfilling Sites*, (Toronto: January 2012), online: <http://dr6j45jk9xcmk.cloudfront.net/documents/1110/66-landfill-standards-en.pdf>.

7 Environment and Climate Change Canada, *National Inventory Report 1990-2015: Greenhouse Gas Sources and Sinks in Canada*, Part 3, Table A11-12 (Ottawa: 2017) at 58.

8 Environment and Climate Change Canada, *National Inventory Report 1990-2015: Greenhouse Gas Sources and Sinks in Canada*, Part 1, Section 1.5 "Methodologies and Data Sources (Ottawa: 2017) at 44-45.

9 Environment and Climate Change Canada, *National Inventory Report 1990-2015: Greenhouse Gas Sources and Sinks in Canada*, Part 2, Table A3-61 (Ottawa: 2017) at 189, reports that 2.75 million tonnes were exported in 2014. MOECC estimates that 3.3 million tonnes are exported to the US each year based on data from Michigan and New York.

10 This is based on the 6,108,121 tonnes of MSW landfilled in 2014 (Environment and Climate Change Canada, *National Inventory Report 1990-2015: Greenhouse Gas Sources and Sinks in Canada*, Part 2, Table A3-62 (Ottawa: 2017) at 190) plus an unknown, but minor contribution from wood waste landfills (the total amount of this waste for all of Canada in 2014 was 366,418 tonnes per Environment and Climate Change Canada, *National Inventory Report 1990-2015: Greenhouse Gas Sources and Sinks in Canada*, Part 2, Table A3-63 (Ottawa: 2017) at 191).

Regarding emissions allocation, see: Environment and Climate Change Canada, *National Inventory Report 1990-2015: Greenhouse Gas Sources and Sinks in Canada*, Part 3, Table A11-12 (Ottawa: 2017) at 58, and notes to Tables A3-62 and A3-63 at 190-191.

11 Ontario Waste Management Association, *State of Waste in Ontario: Landfill Report, First Annual Report* (February 24, 2016) at 9, online: <<http://www.owma.org/articles/first-annual-state-of-waste-in-ontario-landfill-report>>.

- 12** Regulation 347 under the *Environmental Protection Act* requires landfill gas collection and flaring (burning), or use, for operating landfills larger than 1.5 million cubic metres. Regulation 347 also requires implementation of specific landfill gas facilities by December 31, 2010. According to Ontario Waste Management Association, 39 Ontario landfills have such systems in place (information provided to the ECO, August 30, 2016).
- 13** Greenhouse gas emissions in Canada are measured in “carbon dioxide equivalent” units, which convert different types of greenhouse gases, such as methane, into one standard measure based on what concentration of carbon dioxide would have the same impact on the atmosphere as a given type and concentration of another particular greenhouse gas over a specific time period. Carbon dioxide equivalencies are based on the “global warming potential” of each gas relative to carbon dioxide.
- 14** Environmental Commissioner of Ontario, *Facing Climate Change*, Annual Greenhouse Gas Progress Report – 2016 (Toronto: ECO, December 2016) at 52.
- 15** See Figure 3, Chapter 3, in Environmental Commissioner of Ontario, *Facing Climate Change*, Annual Greenhouse Gas Progress Report – 2016 (Toronto: ECO, December 2016) at 53.
- 16** Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2016*. (Ottawa: 2016) at 32, online: <www.crtc.gc.ca/eng/publications/reports/policymonitoring/2016/cmr.htm>.
- 17** Recycle My Cell, News Release, “One Old Cell Phone in a Landfill is One Too Many” (April 16, 2014), online: <www.recyclemycell.ca/one-old-cell-phone-in-a-landfill-is-one-too-many/>.
- 18** David Nield, “Our smartphone addiction is costing the Earth”, *Tech Radar* (August 4, 2015), online: <www.techradar.com/news/mobile-phones/our-smartphone-addiction-is-costing-the-earth-1299378>.
- 19** Elizabeth Jones, “Cell Phones and the Environment”, *Greeniacs* (February 1, 2012), online: <www.greeniacs.com/GreeniacsArticles/Consumer-Products/Cell-Phones-and-the-Environment.html>.
- 20** Based on estimates that the total amount of plastic in cell phones manufactured in 2017 will be 336,000 metric tons (Michael Guta, “Use of Plastic in Cell Phones to Drive the Market to \$4.5B by 2017”, *Mobile Commerce Insider* (October 4, 2013), online: <www.mobilecommerceinsider.com/topics/mobilecommerceinsider/articles/355532-use-plastic-cell-phones-drive-market-45b-2017.htm>.), and that it takes roughly 0.4 gallons of crude oil (or 21 barrels/metric tonne) to make 1 pound of plastic (Michael Schirber, “The Chemistry of Life: The Plastic in Cars”, *Live Science* (May 26, 2009), online: <www.livescience.com/5449-chemistry-life-plastic-cars.html>.).
- 21** David Nield, “Our smartphone addiction is costing the Earth”, *Tech Radar* (August 4, 2015), online: <www.techradar.com/news/mobile-phones/our-smartphone-addiction-is-costing-the-earth-1299378>.
- 22** Matt Schiavenza, “China’s Dominance in Manufacturing – in One Chart”, *The Atlantic* (August 3, 2015), online: <www.theatlantic.com/china/archive/2013/08/china-dominance-in-manufacturing-in-one-chart/278366/>.
- 23** Elizabeth Jones, “Cell Phones and the Environment”, *Greeniacs* (February 1, 2012), online: <www.greeniacs.com/GreeniacsArticles/Consumer-Products/Cell-Phones-and-the-Environment.html>.
- 24** The human health consequences from this pollution are alarming in their own right, particularly given the unequal distribution of consequences against consumption. A recent study, profiled in *Nature*, found that 760,000 deaths a year “can be linked to consumer goods produced in one part of the world for consumption in another” from air pollution alone (see: ‘Transboundary health impacts of transported global air pollution and international trade’ in *Nature*, 543, 705–709, (30 March 2017)).
- 25** “Recycle My Cell 2015”, online: Recycle My Cell <www.recyclemycell.ca/wp-content/uploads/NATIONAL-2015-EN.png>.
- 26** “Copper production & environmental impact”, online: GreenSpec <www.greenspec.co.uk/building-design/copper-production-environmental-impact/>. [accessed April 26, 2017]
- 27** David Nield, “Our smartphone addiction is costing the Earth”, *Tech Radar* (August 4, 2015), online: <www.techradar.com/news/mobile-phones/our-smartphone-addiction-is-costing-the-earth-1299378>.
- 28** “Canada Consumer Spending 1961-2017”, online: Trading Economics <www.tradingeconomics.com/canada/consumer-spending> [accessed April 26, 2017]; Moneris, News Release, “Canadian consumer spending up 5.53 per cent in the second quarter of 2016” (July 19, 2016), online: <www.moneris.com/en/About-Moneris/News/Canadian-Consumer-Spending-2016-Q2>. And <http://www.macleans.ca/economy/money-economy/living-beyond-our-means/>.
- 29** For example: cellphones are replaced every 2.5 years (Recycle My Cell, News Release, “One Old Cell Phone in a Landfill is One Too Many” (April 16, 2014), online: <www.recyclemycell.ca/one-old-cell-phone-in-a-landfill-is-one-too-many/>); TV’s are replaced an estimated every 4-5 years (Ryan Lawler, “The incredible shrinking TV replacement cycle”, *Gigaom* (January 5, 2012), online: <gigaom.com/2012/01/05/tv-replacement-cycle/>); computers every 4.5 years: Antony Leather, “Most computers replaced after 4.5 years”, *Bit-tech* (May 12, 2011), online: <bit-tech.net/news/hardware/2011/05/12/most-computers-replaced-after-4-5-years/1>.



30 Shannon Whitehead, “5 Truths the Fast Fashion Industry Doesn’t Want You to Know”, *Huffington Post* (August 19, 2014), online: <www.huffingtonpost.com/shannon-whitehead/5-truths-the-fast-fashion_b_5690575.html>.

31 Sophia Harris, “Canadians piling up more garbage than ever before as disposables rule”, *CBC News* (September 30, 2015), online: <www.cbc.ca/news/business/canadians-piling-up-more-garbage-than-ever-before-as-disposables-rule-1.3248949>.

32 See Chapter 5 in the ECO’s 2015/2016 Energy Conservation Report – Conservation: Let’s Get Serious.

33 Although, the usual environmental laws should still apply to minimize releases of pollution.

34 Battery Council international, online: <http://batteryCouncil.org/?RecyclingStudy>

35 Environment Canada, *Battery Recycling in Canada 2009 Update*.

36 Environment Canada, *Battery Recycling in Canada 2009 Update*.

37 Single-use batteries are now collected under the *Municipal Hazardous or Special Waste Regulation*, O. Reg. 387/16, under the Waste Diversion Transition Act, 2016, as part of the Orange Drop program, <http://www.makethedrop.ca/what-is-orange-drop/>. There is also a voluntary industry-funded program for single-use and rechargeable batteries, <http://www.call2recycle.ca/ontario/>. Altogether, in 2015, the province recycled 33% of the available batteries (2,330 of an estimated 7,010 tonnes of single-use batteries). This was the highest collection rate in Canada. Source: <http://www.rawmaterials.com/news/article/curbside-battery-recycling-gives-a-jolt-to-ontario-recycling-rates>

38 See the Supplement to the ECO’s 2003/2004 Annual Report, page 183 that provides a detailed history.

39 Blue Boxes made their official debut in Kitchener in 1981. <http://stewardshipontario.ca/download/the-story-of-ontarios-blue-box/>

40 Although efforts in Ontario have largely focused on recycling, Ontario’s “3Rs” Regulations do include measures to focus on waste reduction: O. Reg. 102/93 designates organizations that are required to conduct a waste audit and develop waste reduction work plans, which must be updated annually, and which are intended to prioritize waste reduction before all else; and O. Reg. 104/94 requires major packaging users to conduct packaging audits and packaging reduction work plans. However, these regulations have been poorly enforced and have not been particularly effective. See: “60% Waste Diversion by 2008 – Pipe Dream of Reality?” in the ECOs 2005/2006 Annual Report, page 26; and also: “ICI Waste Reduction Committee”, online: Recycling Council of Ontario <www.rco.on.ca/ici-waste-reduction-committee>. [accessed on April 26, 2017]

41 These beverage regulations from the 1970s and 1980s, are still in force: Containers, RRO 1990, Reg 340; Disposable Containers for Milk, R.R.O. 1990, Regulation 344; Disposable Paper Containers for Milk, RRO 1990, Reg 345; and Refillable Containers for Carbonated Soft Drink, RRO 1990, Reg 357.

42 Among other things, the *EPA* and its regulations:

- regulate the approval and operation of waste disposal sites and waste management systems (including managing toxic substances like PCBs);
- prohibit littering; and
- authorize staff at the Ministry of the Environment and Climate Change to issue orders requiring people to clean up illegal waste.

43 The pharmaceuticals and sharps program is regulated under O. Reg. 298/12. For more on this program, see Part 5.7 of the ECO’s 2012/2013 Annual Report.

44 Parts of the Beer Store bottle deposit program are regulated under O. Reg. 17/07. The EPA also includes regulations relating to the bottle deposit program for carbonated soft drinks (Regulation 357) and requirements for recyclable container for milk (Regulations 345 and 344).

45 Section 1 of the WDA sets out the purpose of the Act

46 This approach gained popularity for several reasons, including that it is consistent with the “polluter pays” principle of environmental legislation, and because it partially addresses the financial disparity between disposal and recycling. EPR is also hoped to give producers an economic incentive to change their product and packaging design, to reduce waste creation and improve its end-of-use marketability.

47 Canadian Institute for Environmental Law and Policy, *An Introduction to Ontario’s Waste Diversion Act* (November 2008) at 2, online: <www.cielap.org/pdf/WDA_Introduction.pdf>.

48 Waste Diversion Ontario, *2012 Annual Report*, online: http://www.rpra.ca/Portals/0/Document_Folder/WDO_-_Annual_Report.pdf, pg. 4

49 “Municipal Hazardous or Special Waste Program & Plans”, online: Resource Productivity & Recovery Authority <rpra.ca/Programs/hazardous-special-waste>. [accessed April 26, 2017]. Currently, only two of the five materials in the Orange Drop program are managed by Stewardship Ontario (batteries & pressurized containers); the other three MHSW materials (antifreeze, oil containers and oil filters) are now being managed by the Automotive Materials Stewardship.

50 Two other applications for industry stewardships plans were rejected by WDO, one for used oil (submitted by the Ontario Used Oil Material Association, for a Used Oil Material Program Plan, July 2004), and one for batteries (Call2Recycle Canada submitted an Industry Stewardship Plan on June 26, 2013 to operate a recycling program for consumer single-use batteries in Ontario, on behalf of Ontario consumer battery stewards. WDO denied the program.).

RPRA provides a list of all Industry Stewardship Plans, online: <http://rpra.ca/Library/WDO-Historical/Programs-Plans/Industry-Stewardship-Plans>

51 For example, the majority of paint stewards preferred to operate a separate program through their own stewardship organization, Product Care. This both facilitated charging consumers an eco-fee and saved paint stewards money. Waste paint is cheaper to manage than other household hazardous wastes, because there is a market for low-cost blended paint. Much collected surplus paint can be blended and sold into this market, offsetting the cost of the program.

Similarly, SodaStream preferred to operate its own program for its branded CO₂ cylinders because the company had already operated a self-managed take-back program for several years. The company merely sought WDO to recognize its existing program, rather than be required to pay into Stewardship Ontario's general MHSW program.

52 Data comes from the following sources:

- Blue Box: 852,000 tonnes diverted and 64% diversion rate in 2015 (source: RPRA 2016 Annual Report)
- Organics: residential: 1 million tonnes diverted in 2015 (source: 2015 DataCall, RPRA), IC&I: 400,000 tonnes (source: 2cg study for MOECC, 2015), combined diversion rate 40% (source: 2cg study for MOECC, 2015)
- MHSW 20,000 tonnes collected in 2016; 76% collection rate (source: RPRA 2016 Annual Report)
- Used Tires 128,000 tonnes diverted; 79% diversion rate in 2016 (source: RPRA 2016 Annual Report)
- WEEE 62,000 tonnes collected in 2016. (source: RPRA 2016 Annual Report)

53 Hamilton Spectator, online: <https://www.thespec.com/news-story/5334852-25-years-ago-today-the-hagersville-tire-fire-that-burned-17-days/>

54 Sound Resource Management, May 2009

55 *Responsible Stewardship 2016*, The Beer Store, p. 6.

56 Canada's National Brewers, presentation to the ECO, May 16, 2017

57 Data from the Continuous Improvement Fund

58 For more on this, see: Environmental Commissioner of Ontario, "60% Waste Diversion by 2008 – Pipe Dream or Reality?" *Neglecting our Obligations*, Annual Report 2005/2006 (Toronto: ECO, 2006) at 26.

59 2,414,552 tonnes in 2004 and 3,044,657 tonnes in 2014. See: Statistics Canada, Materials diverted, by type, Canada, provinces and territories, Table 153-0043 (Ottawa: SC, 2017), online: www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=1530043&pattern=1530041..1530045&tabMode=dataTable&srchLan=-1&p1=-1&p2=-1.

60 According to Statistics Canada, the percentage of diverted waste as a portion of all waste in Ontario has grown by 5% between 2002 and 2012 (See CANSIM Tables 153-0041 and 153-0042). However, Ontario states that diversion rates have stagnated at 25% for the past decade. Ontario does not release their own disposal and diversion statistics so this figure cannot be directly verified or reconciled with Statistics Canada's numbers.

61 Diversion of plastics is considerably more expensive than diversion of other materials in the Blue Box, with a net diversion cost (collection + processing - material revenues) of \$723/tonne for HDPE and \$855/tonne for PET (based on 2012 data). Costs of recycling other plastic materials in the Blue Box reported are considerably higher: \$1,242/tonne for other plastics; \$1,861/tonne for plastic film; \$1,895/tonne for plastic laminates and \$2,255/tonne for polystyrene. Source: CIF Project #722 *Diversion Vs Net Cost Analysis For The Ontario Blue Box System* Report Submitted to Continuous Improvement Fund 29th August, 2014, Kelleher Environmental, p. 2. Online <http://thecif.ca/projects/documents/722-Final_Report.pdf>

62 Blue Box Cost Containment Options, Report to WDO Board from the Panel on Blue Box Cost Containment and the In-Kind Program, Sept 2015, page 11, http://www.rpra.ca/Portals/0/Document_Folder/Blue_Box_Cost_Containment_Panel_Final_Majority_Report.pdf

63 Maria Kelleher, "The Evolving Tonne of Recyclables", *Solid Waste Magazine* (December 2015/January 2016) at 12-15.

64 Stewardship Ontario, Summary Report – Research on Consumers' Attitudes Towards the Blue Box Program and Recycling, 2011. <https://stewardshipontario.ca/wp-content/uploads/2013/03/Blue-Box-eBook-Final.pdf> pg. 5

65 MOECC's 2013 *Waste Reduction Strategy* (page 8) states that paper and packaging together represent 45% of the 12 million tonnes of Ontario waste (for a total of 5.4 million tonnes of paper and packaging waste). The breakdown of the paper and packaging waste into residential and IC&I is based on Stewardship Ontario data (online: https://stewardshipontario.ca/wp-content/uploads/2015/09/2015_SO_Annual_Report.pdf, page 15), which states that, in 2014, the residential sector generated 1.36 million tonnes of paper and packaging waste (i.e., 25% of the total 5.4 million tonnes). This report also states that 65% of the residential blue box waste was diverted (pg. 16).

66 Recycling Today, Curt Harler, April 2004, "High Yield - Quality, not quantity, often vexes secondary fiber users seeking a high pulping yield". Toland, J. (2003) Developments in deinking: Rounding up some of the latest trends in the recovered paper sector. Pulp and Paper International, 45(4), 25. Papermaking Science and Technology, Book 7, Recycled Fiber and Deinking, Tappi Press.



67 Ontario Carton Expansion Project – Phase 2 Results, April 2014 ReclayStewardEdge. *Study On Carton Recycling From Pulping Gable-top & Aseptic Cartons Baled Together With Bulk Grade Recovered Paper Shipment From North America*, Prepared by PacificNet Holding Corporation April 29th, 2013.

68 Phase I covered Paints and Coatings, Solvents, Oil Filters, Oil Containers, Single Use Dry Cell Batteries, Antifreeze, Antifreeze Containers, Pressurized Containers, Fertilizers, Pesticides.

69 The Minister designated the following materials as Phase 2: all batteries (excluding lead acid batteries from vehicles); aerosol containers; portable fire extinguishers; fluorescent light bulbs and tubes (limited to generators of no more than 5kg/month); switches that contain mercury; mercury-containing measuring devices, and (from residential generators only) pharmaceuticals and sharps (including syringes).

70 The environmental handling charges (sometimes referred to as “eco-fees”) were not a tax (i.e., were not paid to government). These were fees that some stewards chose to charge to consumers to recoup their obligations to their IFO to cover the eventual disposal or recycling costs of end-of-life products and packaging. Stewards (producers and retailers) were free to absorb these costs or to pass them along to consumers, either visibly as an “eco-fee”, or built into the price of the product.

71 On July 21, 2010, the Minister of the Environment filed O. Reg. 298/10, which suspended the payment of fees on the products that result in Phase 2 and 3 MHSW. The suspension was made permanent by O. Reg. 396/10 on October 18, 2010. Stewardship Ontario was directed to continue existing operations for Phase 1 MHSW materials. <http://stewardshipontario.ca/stewards-orangedrop/orange-drop-regulations-plans/>

72 In July 2014, the Ministry of the Environment announced the end of the Phase 2 funding program as of September 30, 2014. <https://www.amo.on.ca/AMO-PDFs/Waste-Management/MHSW/Cancellation-of-Phase-2-MHSW-Program-2014-10-16.aspx>

73 All other remaining wastes that meet the definition of “Municipal Hazardous or Special Waste”, as set out in O. Reg. 542/06 were intended for inclusion in Phase 3.

74 <https://lop.parl.ca/Content/LOP/LegislativeSummaries/42/1/c238-e.pdf>

75 General breakdown is from MOECC’s 2013 Waste Reduction Strategy (page 8), with the exception of the paper and packaging, which was broke down into residential and IC&I, based on the following estimates:

- According to the MOECC’s 2013 Strategy, paper and packaging together represent 45% of the 12 million tonnes of Ontario waste, for a total of 5.4 million tonnes of paper and packaging waste.

- Of the 5.4 million tonnes of paper and packaging waste, 1.4 million tonnes (26%) is attributable to the residential sector (see https://stewardshipontario.ca/wp-content/uploads/2015/09/2015_SO_Annual_Report.pdf).

76 Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 30.

77 Section 11 of O. Reg. 101/94 (Recycling and Composting of Municipal Waste) under the *Environmental Protection Act* mandates municipalities with a population over 5,000 to establish, operate and maintain a leaf and yard waste system.

78 Ministry of the Environment and Climate Change, Discussion Paper: Addressing Food and Organic Waste in Ontario. May 2017. Pg.28 http://www.downloads.ene.gov.on.ca/envision/env_reg/er/documents/2017/013-0094_DiscussionPaper.pdf

79 RPRA 2017, Annual Report, 2015 Ontario Residential Diversion rates, online: http://rpra.ca/Portals/0/Document_Folder/2015%20Blue%20Box%20Program%20Cost%20and%20Revenue%20.pdf

80 In Ontario, in 2014, the IC&I and CRD sectors produced 55% (6,668,089 tonnes) of the overall waste in Ontario, with a diversion rate of only 15% (993,000 tonnes). By comparison, residential sector produced 45% (5,541,867 tonnes) of the waste, and diverted 37% (2,051,075 tonnes).

Source: Statistics Canada, Materials diverted, by source, Canada, provinces and territories, Table 153-0042 (Ottawa: SC, 2017), online:

<www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=1530042&tabMode=dataTable&srchLan=-1&p1=-1&p2=35>; and Statistics Canada, Disposal of waste, by source, Canada, provinces and territories, Table 153-0041 (Ottawa: SC, 2017), online:

<www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=1530041&tabMode=dataTable&srchLan=-1&p1=-1&p2=35>.

81 For more on this issue see “60% Waste Diversion by 2008 – Pipe Dream of Reality?” in the ECOs 2005/2006 Annual Report, page 26. See also: “ICI Waste Reduction Committee”, online: Recycling Council of Ontario <www.rco.on.ca/ici-waste-reduction-committee>. [accessed on April 26, 2017]

82 Ontario defines multi-residential housing as a form of Industrial, Commercial and Institutional (IC&I) property (section 10 of O. Reg. 103/94: Multi-Unit Residential Buildings) and therefore municipalities do not have a legal obligation to manage blue box materials from these facilities, unless the municipality already collects waste from these buildings (section 7(2)(a) of O. Reg. 101/94).

83 Program cost was the main issue; however, there were also other problems with the Blue Box program. See, for example, the 2013-04-22 Letter from WDO to Minister Bradley. WDO reported to the Minister that the Blue Box Program was threatened by significant problems, including:

1. Continually large increases in the costs for the total Blue Box program;
2. Significant changes to the products and materials in the Blue Box program;
3. Dramatic increased costs of processing newsprint and the corresponding fee obligation for paper stewards;
4. Unclear program cost methodologies and allocations, and whether they are still appropriate/accurate after 10 years of changes in the industry;
5. Inability of WDO to get access to the complete Blue Box costing methodology, data and allocations from Stewardship Ontario despite repeated requests;
6. Continual frustration voiced by key Blue Box stakeholders about not understanding Stewardship Ontario's methodology and why their costs are going up so dramatically; and
7. Significant impact of free-riders.

84 Full disclosure: Commissioner Saxe was counsel for the Association of Municipalities of Ontario in this arbitration.

85 AMO, *Municipalities' Report to WDO on Blue Box Funding* (2015), available online at http://rpra.ca/Portals/0/Document_Folder/Blue_Box_Cost_Containment_Municipal_Report_to_WDO_on_Blue_Box_Funding_FINAL_Amended.pdf. See chart on page 24 of this report, which compares the verified annual net costs incurred by municipal Blue Box programs to the total financial and in-kind support provided by stewards each year.

86 Municipalities further argued that even this amount understated the real impact of municipal Blue Box costs on municipal taxpayers. For example, municipalities were forced to accept the newspaper stewards' share as unwanted, high-priced advertising space, instead of cash; the "verified net cost" used in the calculation excluded many other costs that many municipal governments incurred to operate their Blue Box programs, including tens of millions in administrative costs. In addition, the payments were paid two years later, without interest or inflation to compensate for delay. Source: AMO, *Municipalities' Report to WDO on Blue Box Funding* (2015).

87 RPWCO EPR Project Phase 2: *Comparison of Ontario Blue Box Program Costs With Other Jurisdictions*, Kelleher Environmental and Love Environment Inc., February 2015 (pp. 2 and 19)

88 See: Holly Dillabough, "A wasted opportunity: Ontario's Waste Diversion Act fails to prioritize waste reduction", *Northern Policy Institute* (October 28, 2015), online: www.northernpolicy.ca/article/a-wasted-opportunity-ontario%E2%80%99s-waste-diversion-act-fails-to-prioritize-waste-reduction-1892.asp; and Canadian Institute for Environmental Law and Policy, *An Introduction to Ontario's Waste Diversion Act* (November 2008) at 1, 4, online: www.cielap.org/pdf/WDA_Introduction.pdf. This point is also acknowledged in Ministry of the Environment and Climate Change, *Draft Strategy for a Waste Free Ontario: Building the Circular Economy*, (November 2015) at 7, although the passage is not included in the final version of the Strategy released in February 2017.

89 Canadian Institute for Environmental Law and Policy, *An Introduction to Ontario's Waste Diversion Act* (November 2008), online: www.cielap.org/pdf/WDA_Introduction.pdf. The ECO also relied heavily on information provided in interviews with a number of different industry stakeholders.

90 See, for example, Environmental Commissioner of Ontario, "Waste Diversion in Ontario" in *Thinking Beyond the Here and Now*, Annual Report 2002/2003 (Toronto: ECO, 2003) at 79.

91 Environmental Registry Notice #011-3966 (2012), online: <http://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTEzNzI5&statusId=MTcwMzg>

92 Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 12-13.

93 Blue Box transition is to be completed by 2023. Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 13.

94 For more on the breakdown of how many municipalities provide services directly versus contract out, see: Corporate Policy Group LLP, *A Practical Pathway to Producer Responsibility for Paper Products and Packaging in Ontario* (Toronto: Corporate Policy Group LLP, 2016) at 5.

95 Preliminary Continuous Improvement Fund data suggests about \$70M in unamortized municipal assets as of 2016, and less than \$7M by 2025.

96 For more on this, see: Corporate Policy Group LLP, *A Practical Pathway to Producer Responsibility for Paper Products and Packaging in Ontario* (Toronto: Corporate Policy Group LLP, 2016) at 7. Based on information from the 2015 Datacall.

97 Municipalities that want to continue to offer curbside collection, perhaps because of existing assets and/or employees, must bid for and negotiate the work from stewards. Stewards will have the final word on how much they are willing to pay for the services, especially because municipalities will no longer be negotiating as a province-wide group. Smaller municipalities may be at a disadvantage in these negotiations, particularly after the closure of the Continuous Improvement Fund, which has offered municipalities a centre of knowledge and excellence on blue box data and best practices. Municipalities have paid for the fund with a small share of the Blue Box repayments they received from Stewardship Ontario. No comparable source of funding has been identified for after the transition period.

98 Letter from the Minister of the Environment and Climate Change, August 14, 2017, requesting that the Authority and Stewardship Ontario submit a proposal for an amended Blue Box Program; online: <http://rpra.ca/News-Updates/Blue-Box-Program-Amendment>



99 The letter contains an ambitious list of things to be accomplished by the new Blue Box Plan, including:

1. The new Plan is to “work... towards the circular economy by supporting reduction, reuse, recycling and reintegration of [Blue Box] materials into the economy.” For example, it should:

- expand Blue Box materials to include transport and convenience packaging;
- discourage stewards from using materials that are difficult to recycle and have low recovery rates;
- support waste reduction, and
- make what counts as “recycling” more stringent, so that collected materials are either:
 - o reused,
 - o used in the making of new products, packaging or other activities in end markets, or
 - o used as a nutrient for improving the quality of soil, agriculture or landscaping.

2. Municipalities may choose to either continue to operate their Blue Box program or to transfer that responsibility to Stewardship Ontario.

3. For municipalities that retain responsibility, the new Plan will define costs that are eligible for the current 50% cost sharing.

4. For municipalities that transfer responsibility:

- the new Plan will outline how and when responsibility will be transferred and “avoid stranded assets to the extent possible”;
- such municipalities will have the right to provide oversight of collection and recycling services on behalf of Stewardship Ontario;
- Stewardship Ontario must have a 75% overall diversion rate target within these municipalities, plus material-specific diversion targets; and
- newspaper collection and recycling shall not be at the cost of municipalities.

5. Transfers of responsibility must not affect Ontarians’ experience and access to Blue Box services, i.e., current levels of collection must be maintained, and multi-residential buildings must receive Blue Box collection. However, collection and management standards may be geographically based, i.e., they may be different in remote, rural and northern areas.

6. The Plan must not create barriers to competition in the second phase of the transition (i.e., when Stewardship Ontario gives way to individual producer responsibility).

100 Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 30.

101 Landfill Leachate Treatment Expert Website. *Leachate*. <http://leachate.co.uk/main/>. See also: Abd El-Salam, M.M. and G.I. Abu-Zuid. Impact of landfill leachate on the

groundwater quality: a case study in Egypt. *Journal of Advanced Research*. 2015 Jul; 6(4): 579-586; online: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4506963/>

102 Environmental Registry #013-0094, <http://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTMyMDk3&statusId=MjAwNTA3&language=en>

103 Landfills are responsible for 89.5% (7,700/8,600) of the waste sector’s emissions. Source: Environment and Climate Change Canada, report, *National Inventory Report 1990-2015: Greenhouse Gas Sources and Sinks in Canada*, Part 3, Table A11-12, p.58, 2017.

104 Landfills are responsible for 4.6% (7,700/166,000) of Ontario’s total reported emissions. Source: *Environment and Climate Change Canada, report, National Inventory Report 1990-2015: Greenhouse Gas Sources and Sinks in Canada*, Part 3, Table A11-12, p.58, 2017.

105 For example, Nova Scotia has successfully banned a number of materials from disposal, including: electronics, tires, newsprint, cardboard, organics, and many more. See: <http://novascotia.ca/nse/waste/banned.asp>

106 Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 10.

107 MOECC briefing to ECO staff, May 20, 2017

108 See, for example, The Guardian, “Is incineration holding back recycling?”, 29 August 2013, online: <http://www.theguardian.com/environment/2013/aug/29/incineration-recycling-europe-debate-trash>

109 Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 6.

110 Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 6.

111 While the recycling standards would be imposed on recyclers through the *Environmental Protection Act*, the *RRCEA* allows the Authority to require reports from recyclers and to inspect recyclers to verify adherence to recycling standards, recycling efficiency and disposition of recycled materials to end-markets.

112 Nonetheless, for the voluntary battery recycling that is not regulated under the *Waste Diversion Act, 2002*, Ontario batteries may still be “recycled” as aggregate slag.

113 For more on this flexibility, see: Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 37.

114 Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 14.

- 115** For example, the *RRCEA*: gives the Minister powers to require reviews of the Authority under circumstances where certain conditions are met (s.31); enables the Auditor General to conduct an audit of the Authority (s.43); and gives the Minister powers to appoint an Administrator in certain circumstances (e.g., fundamental failure to perform duties under the proposed legislation, bankruptcy) (s.54). These examples are highlighted in the *Draft Strategy for a Waste Free Ontario: Building the Circular Economy*. Ministry of the Environment and Climate Change. (December 2016) p. 14.
- 116** Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 15.
- 117** Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 16.
- 118** The MOECC acknowledged this challenge: “The province has gaps in knowledge and data regarding resource recovery and waste reduction throughout the product life cycle, including the complexity of end-of-life of products and packaging, the materials that require greater effort and the performance of sectors in recovering resources and reducing waste.” Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 17.
- 119** Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 17.
- 120** Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 10.
- 121** Voir par exemple Anderson, Mikael Skou, « An introductory note on the environmental economics of the circular economy », *Sustainability Science*, 2007, p. 1-2, en ligne. <https://www.environmental-expert.com/Files/6063/articles/15091/art12.pdf>; Neligan, Adriana, « Moving towards a Circular Economy: Europe between Ambitions and Reality, Contributions to the political debate by the Cologne Institute for Economic Research », *IW policy paper – 9/2016*, le 20 juin 2016, p. 5. <https://www.iwkoeln.de/en/studies/beitrag/adriana-neligan-moving-towards-a-circular-economy-europe-between-ambitions-and-reality-289257>; <https://www.greenbiz.com/article/defining-circular-economy-beyond-recycling-material-reuse>; <https://www.theguardian.com/sustainable-business/10-things-need-to-know-circular-economy>; <http://www.forbes.com/sites/valleyvoices/2015/01/20/the-circular-economy-great-idea-but-can-it-work/#669a2e553f6b>
- 122** Le Conference Board du Canada, *Opportunities for Ontario’s Waste: Economic Impacts of Waste Diversion Programs in North America*, mai 2014. http://www.conferenceboard.ca/press/newsrelease/14-05-29/the_value_of_garbage_greater_waste_diversion_would_boost_ontario_s_economy.aspx
- 123** Claudio, « Waste Couture: Environmental Impact of the Clothing Industry », *Environmental Health Perspectives*, septembre 2007, en ligne : <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1964887/>
- 124** Weber, « Combating textile waste », *Corporate Knights*, août 2016, en ligne. <http://www.corporateknights.com/channels/waste/combating-textile-waste-14709816/>; « Textiles are the next frontier in recycling for cities looking to cut waste », *CBC News*, le 9 mai 2016, en ligne. <http://www.cbc.ca/news/technology/textile-recycling-1.3569138>
- 125** Pierre-Louis, « This stuff melts your crappy fast fashion into fabric stronger than cotton », *Popular Science*, le 3 avril 2017, en ligne. <http://www.popsci.com/fast-fashion-recycle>
- 126** H&M : <http://www.refinery29.com/2016/09/124862/hm-close-the-loop-recycled-clothing>
Speedo : <https://www.greenbiz.com/article/speedo-dives-closed-loop-swimwear>
Adidas : <http://www.treehugger.com/sustainable-fashion/adidas-new-shoes-will-dissolve-your-sink.html>
- 127** Ville de Markham : <http://www.markham.ca/wps/portal/Markham/Residents/RecyclingWaste/CollectionServices/sa-textilerecycling/textilerecycling/>
- 128** Programme des Nations Unies pour l’environnement, *Circular Economy: An alternative model of economic development*, p. 1, en ligne. <http://www.unep.fr/shared/publications/pdf/DTIx0919xPA-circulareconomyEN.pdf>
- 129** Ellen MacArthur Foundation. <https://www.ellen-macarthurfoundation.org/circular-economy/building-blocks>
- 130** Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 16.
- 131** Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 27.
- 132** Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 32. This objective would also seem to be served by Action 13: Improve and establish environmental standards to provide for a level playing field and a strong foundation for markets (discussed on page 33).



133 Ministry of the Environment and Climate Change, *Strategy for a Waste Free Ontario: Building the Circular Economy* (Toronto: MOECC, 2017) at 35.

134 Circular Economy Innovation Lab. <http://circulareconomylab.com/about-ceil/>

135 OWMA, Disposal Bans White Paper, June 2013. <http://www.owma.org/articles/owmas-policy-paper-on-disposal-bans> page 4

136 See the ECO's "Putting Soil Health First: A Climate-Smart Strategy for Ontario" released in November, 2016

137 See: <http://novascotia.ca/nse/waste/banned.asp>.

138 According to the OWMA's 2016 *State of Waste in Ontario: Organics Report* (p.6), Ontario had an approved processing capacity of 2.3 million tonnes in 2014 (the most recent year numbers were available). Actual capacity is likely less than this due to on-the-ground operational constraints and limitations in the type of waste that different facilities can process. In 2014, Statistics Canada estimated that 1.1 million tonnes of waste was sent to Ontario compost facilities (Table 153-0043; <http://www5.statcan.gc.ca/cansim/a26?lang=eng&id=1530043>), while the OWMA found that that number was more likely about 1.4 million tonnes of organic waste (*State of Waste: Organics Report*, p.8). With an estimated 4 million tonnes of organic waste still going to landfill annually (OWMA, *Rethink Organic Waste*, October 2015, at 5), Ontario will have to at least double its capacity in order to manage all the organic material currently going to landfills.



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