



GTA

PARTNERS IN PROJECT GREEN

A PEARSON ECO-BUSINESS ZONE

PREVENTING AND DIVERTING PLASTIC WASTE FROM OUR WATERSHEDS

A Business Guide

A program of:



Toronto and Region
Conservation
Authority

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Executive Summary



Plastic waste is an important issue facing the watersheds in the Greater Toronto Area. Partners in Project Green supports local businesses and municipalities in navigating the current challenges and upcoming policy changes that may impact their operations. Toronto and Region Conservation Authority (TRCA) is responsible for managing and monitoring the watersheds in its jurisdiction by conducting activities such as operating water quality monitoring stations, shoreline cleanups, delivering educational sessions on microplastics and ecosystem health, and collaborating with external partners to maintain waterfronts.

Why is plastic waste important?

The recycling level of plastics has stalled and remains at under 10%,¹ which results in the vast majority of plastic waste being deposited in a landfill or the environment. In addition, low recycling rates promote high virgin plastics production, resulting in approximately 1.8 billion metric tonnes of greenhouse gas emissions annually.² Plastic waste pollution in the environment creates several environmental health effects, as well as human health effects which are not yet fully understood. The generation of single-use plastics has increased dramatically, including items like beverage bottles, food wrappers, and take-out containers. Ontario landfill space is expected to reach capacity by 2032,³ and 3,268 kilotonnes of plastic is discarded as waste annually.⁴ By improving our plastic waste management systems and investing in innovative solutions, the Federal Government anticipates we can reduce 1.8 million tonnes of greenhouse gas emissions each year and create 42,000 jobs across Canada.⁵ TRCA's mission

is to protect, conserve, and restore the watershed and natural resources; TRCA aims to ensure that all plastic material is managed responsibly and is not inadvertently entering our watersheds.

Managing Plastic Waste

Numerous initiatives are being developed to manage plastic waste. The Canadian government will be banning single-use plastics imminently. Ontario will be moving towards implementing Extended Producer Responsibility as part of the Blue Box Program transition. Several municipalities have implemented single-use plastic bylaws prohibiting the sale or use of certain items. Businesses are reducing their reliance on single-use plastic and designing products that consider recyclability and incorporate recycled content. Non-governmental organizations are collaborating on new projects that are directly cleaning up plastic waste found in water bodies. Progress is being made on managing and reducing plastic waste which will support the overall health of our watersheds.

This white paper is intended to provide knowledge and insight on plastic waste for the Partners in Project Green community, specifically targeting the industrial, commercial, and institutional sectors. This resource acts as an initial guide for sustainability professionals looking to take action on plastic waste management. The white paper addresses current and upcoming regulatory guidelines and initiatives, best practices, and plastic management strategies for the business community. Partners in Project Green and TRCA are uniquely positioned to play a leadership role in guiding businesses and municipalities on this important issue and positively impacting our watersheds for future generations.

Introduction



Our lives would not be the same without plastic; it is a versatile, durable, and cost-effective resource that is used extensively in virtually all sectors of our economy. Products that we use daily are made from plastic, and plastic is also a part of packaging and transporting these goods. Our fast-paced lifestyle has led to the creation of, and reliance on, single-use plastics to meet our needs. Unfortunately, plastic waste is entering our landfills and watersheds because end-of-life management of this valuable material has not kept up to the increasing use of plastics in the economy. In 2016, 29,000 tonnes of plastic waste entered Canada's natural environment due to mismanagement.⁶ With the increased generation of plastic waste in Canada and around the world, individuals and organizations across all sectors and geographical areas are calling for action.

Governments and businesses are listening and considering how to tackle this issue. Since 2017, all three levels of government in Canada have taken action to address and manage the plastic waste that is accumulating in our landfills, watersheds, and water bodies. For example, the federal government has implemented a ban on certain plastic products being sold to consumers.⁷ In Ontario, regulations are being developed by the provincial government that would require producers to be responsible for managing municipally generated materials at end-of-life. Businesses are beginning to address plastic waste by looking more closely at their procurement policies and incorporating the use of more sustainable materials in their products. Several large corporations within TRCA's jurisdiction have set ambitious goals to reach zero plastic waste within their operations. Although plastic still plays an important role in our lives, new solutions need to be developed to manage this resource properly at end-of-life.

About Partners in Project Green

Partners in Project Green was created by the TRCA and the Greater Toronto Airports Authority (GTAA) in 2008 to achieve watershed protection and aquatic ecosystem health within the industrial, commercial, and institutional (IC&I) lands around the Pearson eco-business zone. Businesses and municipalities are encouraged to engage with one another to set community targets and collaborate to develop solutions to environmental issues.⁸ Since that time, Partners in Project Green has proven to be a trusted leader to hundreds of businesses and has established close partnerships with government agencies at the municipal, provincial, and federal level. Partners in Project Green is well-positioned to work closely with its members to understand how plastics use within their business can align with government guidelines and investigate new approaches to improve management of plastic waste and reduce plastics use when feasible. As plastic waste impacts all aspects of businesses from product development to packaging, Partners in Project Green can support its members by presenting relevant information and resources related to current and upcoming government policies that may impact their operations, and providing access to best practices and programs that will help divert plastic waste from landfill or ensure it is recycled properly.

About Toronto and Region Conservation Authority (TRCA)

With more than 60 years of experience, TRCA is one of 36 Conservation Authorities in Ontario, created to safeguard and enhance the health and well-being of watershed communities through the protection and restoration of the natural environment and the ecological services the environment provides. More than five million people live within TRCA-managed watersheds, and many others work in and visit destinations across the jurisdiction. These nine watersheds, plus their collective Lake Ontario waterfront shorelines, span six upper-tier and 15 lower-tier municipalities. TRCA's mission is to protect, conserve, and restore natural resources and develop resilient communities through education and collaboration with its partners.⁹

How does plastic waste align with TRCA's strategy?

Several of TRCA's strategic directions identified in the 10-year strategic plan (2013–2022) align directly with plastic waste management, such as 'managing our regional water resources for current and future generations', 'rethinking greenspace to maximize its value', 'creating complete communities that integrate nature and the built environment', 'fostering sustainable citizenship', 'building partnerships and new business models', and 'gathering and sharing the best urban sustainability knowledge'.¹⁰

According to the Ontario provincial government, plastic waste represents 80 per cent of the litter collected along the Great Lakes shorelines.¹¹ With approximately 10,000 tonnes of plastic waste entering the Great Lakes annually,¹² TRCA plays an important role in understanding, monitoring, and managing plastic waste. Please see the table below for several activities being undertaken by TRCA staff related to plastics initiatives:

TRCA Team	Activities
Forestry Services and Nursery Production	<ul style="list-style-type: none"> Organizes multiple community clean-up events each year. These events collect and track materials found in watershed areas, weigh debris collected where possible, and separate out items that require separate processing such as cigarette butts. Clean-up events also educate participants on how plastic waste enters the environment and the types of materials that are deposited in our watersheds.
Education and Training	<ul style="list-style-type: none"> Develops and delivers webinars and resources focused on microplastics and ecosystem health that are delivered to a variety of audiences both in-person and online, such as students in schools or adults at events. Facilitates the exchange of material between businesses and non-profit organizations to divert plastic waste from landfill, support local communities, and move towards a circular economy.
Watershed Planning and Ecosystem Science	<ul style="list-style-type: none"> Supports academic research teams by providing access to watershed locations as part of regular monitoring and maintenance activities and shares data collected from its monitoring stations upon request. Maintains regular contact with provincial government departments to determine if any unique plastic debris has been collected within watersheds which may be tied to activities coming from local industrial or commercial facilities.
Government and Community Relations	<ul style="list-style-type: none"> Collaborates with PortsToronto and University of Toronto's Rochman Lab to support efforts in using the Seabin to regularly collect litter in Lake Ontario.¹³ Seabins capture floating debris including microplastics which helps reduce the volume of plastic waste in our watersheds.¹⁴ Manages the Toronto and Region Remedial Action Plan (RAP) which includes maintaining Toronto's waterfront through the development of a "floatables strategy" to remove floating debris (aligns with using Seabins)¹⁵ and improving aesthetics.

Table 1: Overview of TRCA activities related to plastics

Since the first synthetic plastic was invented in 1907,¹⁶ plastics have had a major impact on virtually all sectors of the economy. The term “plastic” was a name for synthetic polymers that could be easily manipulated into different forms as needed. The wide variety of plastics such as polystyrene, nylon, polyester, and polyethylene emerging in the decades after the Second World War became valuable material.

Plastic material is recognized as low-cost, durable, lightweight, and able to be used in many applications and products.¹⁷ Plastic material can be used in a variety of applications, including packaging, clothing, medical supplies, personal protective equipment, and construction material.¹⁸ There are seven common plastic resins, as described in the table below.

#1 PET	#2 HDPE	#3 PVC	#4 LDPE	#5 PP	#6 PS	#7 Other
Polyethylene terephthalate	High-density polyethylene	Polyvinyl chloride	Low-density polyethylene	Polypropylene	Polystyrene	Other
<ul style="list-style-type: none"> • Carpets • Cups • Jars • Textiles • Thermoforms • Water bottles 	<ul style="list-style-type: none"> • Detergent bottles • Drainpipes • Grocery bags • Milk jugs • Outdoor furniture 	<ul style="list-style-type: none"> • Pipes • Pool liners • Security packaging • Sheeting • Siding 	<ul style="list-style-type: none"> • Bread bags • Plastic wrap • Trash bags 	<ul style="list-style-type: none"> • Automotive parts • Cups • Hangers • Juice bottles • Straws • Twine 	<ul style="list-style-type: none"> • Cups • Keyboards • Refrigerator liners • To-go containers • Transportation packaging 	<ul style="list-style-type: none"> • PLA • Acrylic • Polycarbonate

Table 2: Types of plastic and their corresponding resin identification code.¹⁹

Plastic packaging protects goods during transportation and extends the shelf life of produce to prevent spoilage and food waste.²⁰

Plastic is lighter than packaging alternatives like glass, metal and paper, thus it requires less energy to produce and ship.²¹

The use of plastics in production has increased dramatically since the 1950s and is ubiquitous in modern day society.²² In Canada, plastic resin and plastic product manufacturing is estimated to total \$35 billion in sales annually which accounts for over five percent of Canadian manufacturing sector sales.²³ The demand for plastics continues to grow annually with almost every sector using this material within their operations.

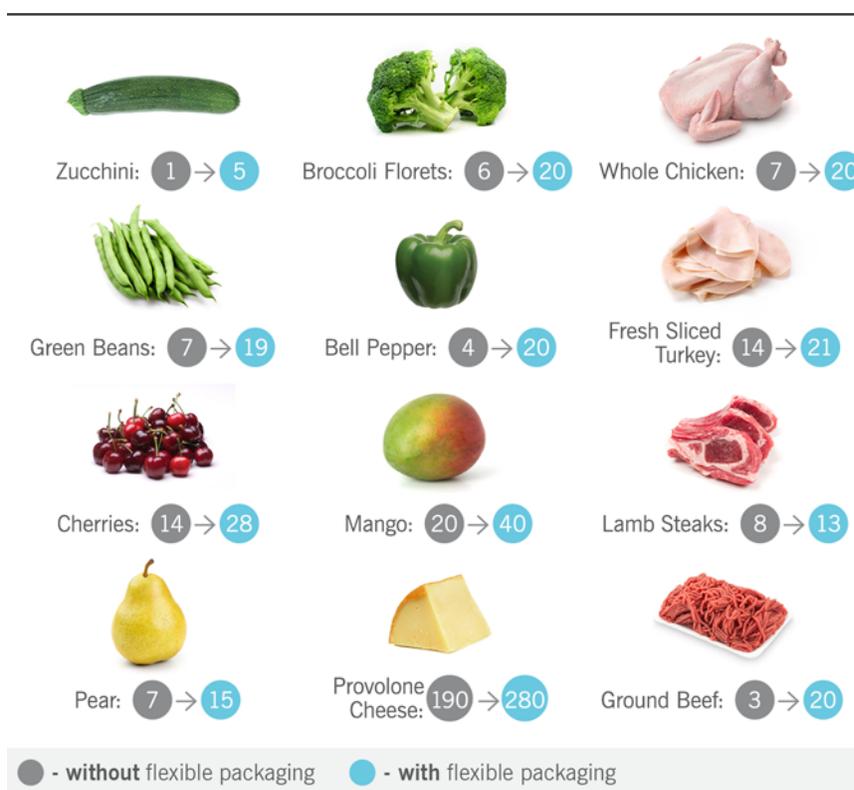


Figure 1: Comparison of the shelf life of selected grocery items without flexible packaging (in days) and with flexible packaging (in days). Adapted from “The Last Straw: Turning The Tide on Plastic Pollution in Canada”, House of Commons Canada.

About Plastic Waste



Recyclability of Plastics

Once plastic waste is disposed of, it remains in the environment and is slow to decompose.²⁴ Plastic has an estimated lifespan ranging from hundreds to thousands of years.²⁵ Since 1950, approximately 9 percent of plastic waste is recycled in Canada and this number remains consistent to this date, leaving a significant volume of plastic deposited in landfills or the environment.²⁶ With the majority of plastics not being recovered, this leads to an estimated \$7.8 billion in lost revenue²⁷ each year in Canada.²⁸ If current practices continue, unrecovered plastic could represent an estimated 11.1 billion by 2030.²⁹ In addition, failure to recycle plastic waste contributes to greenhouse gas emissions; recycling one tonne of plastic can prevent the generation of up to two tonnes of carbon pollution.³⁰ Plastic packaging has been shown to be the largest category of plastic waste in Canada.³¹

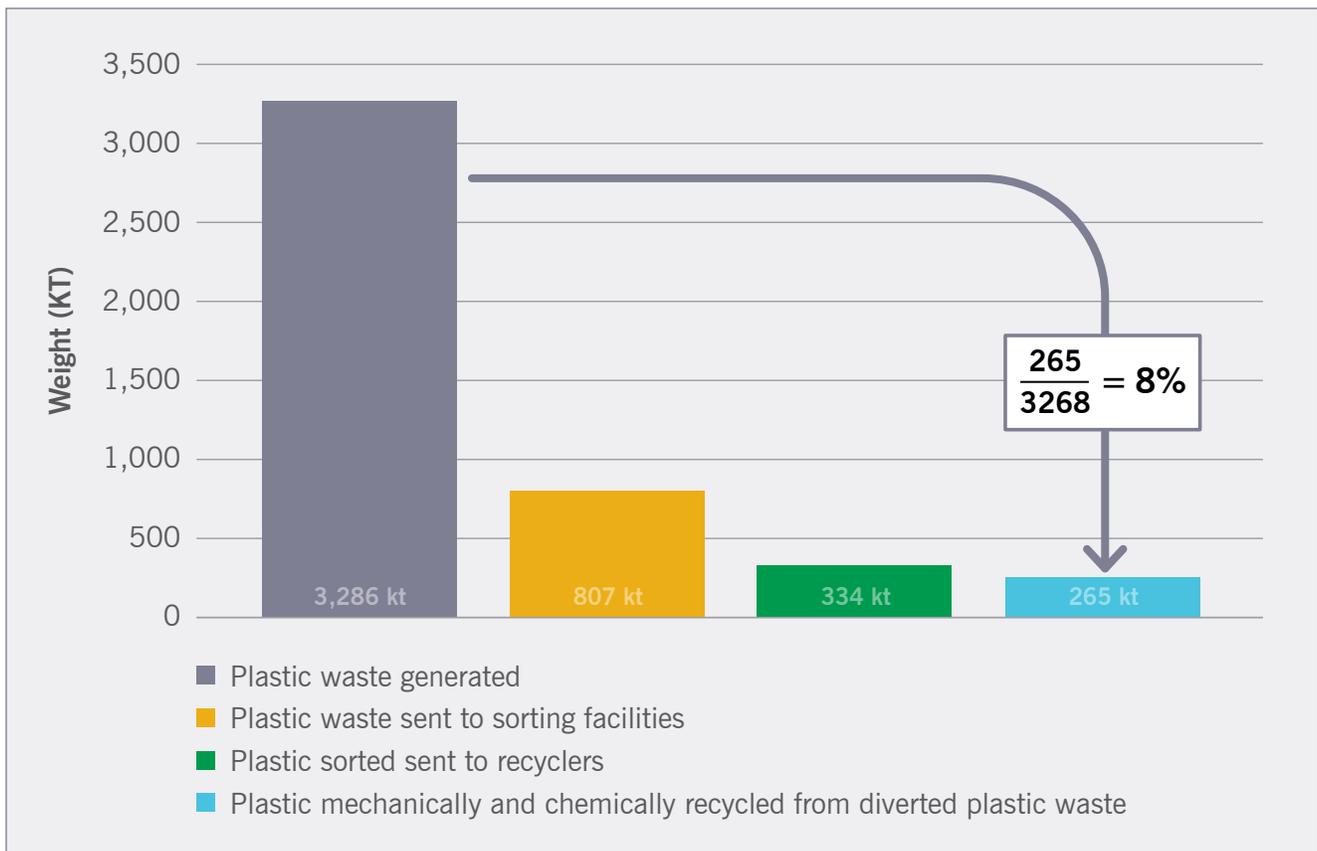


Figure 2: Plastic waste throughout the waste management lifecycle from generation to chemical recycling.³² Adapted from “Economic Study of the Canadian Plastic Industry, Markets and Waste”, Environment and Climate Change Canada.

In 2018, China implemented unprecedented import restrictions for recycling³³ to reduce contamination.³⁴ China's ban on the importation of certain recyclable material resulted in stockpiling Ontario's collected resources.³⁵ Faced with having to manage their own waste, local governments and waste generators were forced to consider the problem of contamination and dependence on international markets. Ontario is fortunate to have local plastic solution providers that reprocess, pelletize and sell the recycled content to manufacturers.³⁶

Pervasive Use of Single-use Plastics

In recent years, single-use plastic waste has received significant attention. Single-use plastic is a product or packaging that is designed to be disposed after one use.³⁷ Many countries rely on single-use items such as cigarette filters, beverage containers, shopping bags, food wrappers, straws, stir sticks, utensils, and take-out containers to meet the need for convenient and busy lifestyles.³⁸



Human Health

There have been research studies completed linking the impacts of plastics and the implications to human health. For example, chemicals such as persistent organic pollutants (POPs), trace metals, and flame retardants,³⁹ have been proven to be toxic to humans and can attach to litter circulating in the natural environment.⁴⁰ When humans inadvertently consume microplastics through the consumption of seafood, drinking water and sea salt,⁴¹ the POPs can be transferred. The long-term health implications of microplastic exposure are unclear, however some evidence suggests that exposure may lead to chronic inflammation and increased risk of neoplasia.⁴²

Discovery of Plastics in TRCA Watersheds

According to the federal government, single-use plastics make up the majority of macroplastics found on Canadian shorelines.⁴³ Macroplastics are pieces of plastic that are larger than 5 mm and microplastics are pieces of plastic that are less than or equal to 5 mm.⁴⁴ Based on statistics from Canadian shoreline cleanups, plastics have been the most collected material in the form of tiny plastic or foam pieces, beverage bottles, food wrappers, bottle caps, bags, straws and stir sticks, or foam materials.⁴⁵ When plastic is littered in the environment, the material eventually breaks down over time into smaller and smaller pieces,⁴⁶ which can enter our waterways and contaminate them. TRCA has been organizing shoreline cleanups each year since 2010 with the goal of educating participants about the impact of plastic waste in our watersheds and collecting thousands of pounds of litter found in the environment. Plastic waste in our watershed can harm fish and other wildlife through entanglement and consumption.⁴⁷ In addition, plastic pellets used to manufacture plastics are being found in the aquatic environments due to spillage during loading, transportation, and storage.⁴⁸

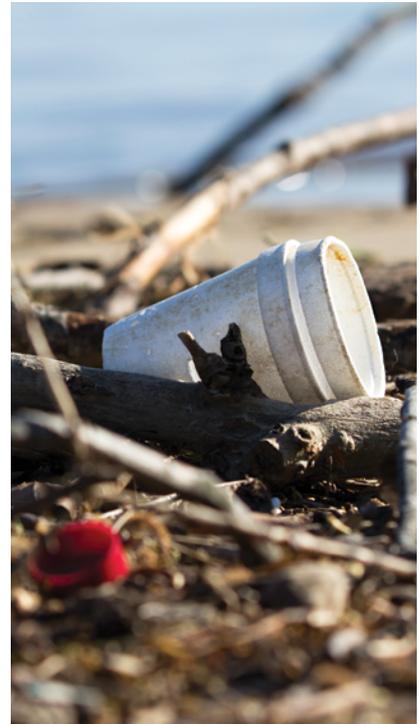


Figure 3: Plastic waste entry points into the aquatic environment⁴⁹

Lack of Landfill Space

The Ontario Waste Management Association estimates that Ontario landfill space is expected to be used up by the year 2032.⁵⁰ As landfills continue filling up, this leads to valuable land taken up that could otherwise be used for agricultural purposes. Plastic waste should be managed so that it can be diverted and reutilized as opposed to landfilled.

Regulatory Landscape



Various levels of government are implementing regulatory changes to both restrict plastic use and encourage a circular economy, creating risks and opportunities for businesses. The following sections outline various initiatives in place that focus on plastic waste at the federal, provincial, and municipal government levels.

Federal Level

The Canadian government works closely with provincial and municipal governments by funding pilot projects and activities to reduce overall waste and improve waste reduction policies across Canada as part of the Canadian Council of Ministers of the Environment.⁵¹ In recent years, there have been several initiatives focused on plastics. The following sections provide an overview of these actions.

Microbeads in Toiletries Regulations

The Microbeads in Toiletries Regulations were developed starting in June 2017 to prevent plastic microbeads from entering Canadian watersheds from household drains.⁵² Personal care products, including bath and body products, toothpaste, and cleansers containing plastic microbeads are included in these regulations and as of January 1, 2018, these items cannot be manufactured, imported, or sold in Canada. As part of these regulations, plastic microbeads with a size of 5 mm or less have been included in the List of Toxic Substances in Schedule 1 of the *Canadian Environmental Protection Act, 1999*.⁵³



Figure 4: Timeline of recent key federal initiatives on plastics

Ocean Plastics Charter

The Ocean Plastics Charter is a global commitment for governments, businesses, and organizations to take action towards addressing marine plastic pollution.⁵⁴ The Charter outlines a number of actions that can be taken to manage plastics efficiently, including sustainable design, production and end-use markets, developing collection and management infrastructure to recover and reuse plastics, education on sustainable lifestyles related to plastics, focusing on research, innovation and new technologies, and action towards addressing coastal and shoreline pollution.⁵⁵

Canada spearheaded the Ocean Plastic Charter under its G7 presidency and adopted the Charter in June 2018. The federal government continues to engage and encourage countries and organizations to endorse the Charter and aim towards reducing worldwide plastic waste. Current Partners in Project Green member, Unilever, is a partner involved in the Charter showing leadership on managing plastics.



Canadian Council of Ministers of the Environment (CCME) Strategy on Zero Plastic Waste and Action Plan

In November 2018, the Canadian Council of the Ministers of the Environment (a federal initiative to bring awareness at each provincial environmental ministry) agreed to work towards a goal of zero plastic waste, which led to the creation of the Strategy on Zero Plastic Waste to avoid plastics entering the environment through actions that can be taken by government, industry, and community stakeholders.⁵⁶ The Strategy focuses on preventing and collecting plastic waste and recovering the value from all plastics, and it helps ensure that everyone in Canada, including individuals, has a role in reaching zero plastic waste.⁵⁷ CCME has also released the Canada-Wide Action Plan on Zero Plastic Waste in two phases, with the first phase focused on five of the ten priority result areas identified (product design, single-use plastics, collection systems, markets, and recycling capacity).⁵⁸ The second phase released in 2020 focuses on the remaining five priority result areas (consumer awareness, aquatic activities, research and monitoring, clean-up, and global action).⁵⁹ Partners in Project Green was involved in the workshops for Phase 1 and 2 of the plan, and participated in a panel discussion with Pollution Probe and University of Toronto, which was moderated by the Council of the Great Lakes Region.





Single-use Plastics Ban and Extended Producer Responsibility

As part of the federal government's actions to reduce plastic waste, a significant step included the announcement in 2019 of banning single-use plastics starting in 2021. Along with this action, Canada will be taking steps to reduce plastic pollution by working with jurisdictions to introduce standards for businesses that produce and use plastic products and ensure they are responsible for managing their waste (also known as Extended Producer Responsibility).⁶⁰ In October 2020, the Canadian government announced its plan to ban six items (plastic bags, straws, cutlery, stir sticks, six-pack rings, and food service containers made of difficult-to-recycle plastics such as polystyrene and black plastic) that have been identified as typically not recycled and where there are alternative options available.⁶¹ Along with this announcement, the government conducted a multi-stakeholder consultation and published a discussion paper open for public feedback looking at improvements to recover and recycle more plastics by the end of 2021.⁶²

Canada's Plastics Science Agenda

The Government of Canada's Plastics Science Agenda (CaPSA) prioritizes key research investments such as finding plastics in the environment, learning about and preventing potential effects on the environment, wildlife and human health, and continuing towards sustainable production, recycling and recovery.⁶³ The CaPSA helps Canadian researchers and funders understand what is needed by serving as a plan towards zero plastic waste

alongside the CCME Strategy on Zero Plastic Waste and Action Plan and the Ocean Plastics Charter.

The Chemistry Industry Association of Canada (CIAC) is focused on responsible product design and production through working towards reducing and eliminating plastic waste in the environment. The CIAC is working with Partners in Project Green member EnviroPod to pilot new technology at a member site to collect plastic debris that would have otherwise migrated to the storm drain.⁶⁴

Funding Opportunities

Based on the various initiatives undertaken by the Canadian government related to plastics, some recent funding opportunities are available. The Innovative Solutions Canada program launched multiple new Plastics Challenges, calling on Canadian innovators to develop sustainable solutions in areas including plastic packaging, textiles and microfibers, microplastics in ship greywater, and monitoring microplastics in the marine environment.⁶⁵ The Natural Sciences and Engineering Research Council of Canada launched Plastics Science for a Cleaner Future which provides funding for projects increasing research capacity to improve our understanding of plastic pollution and its impacts, and develop new research to align with Federal policies related to plastic pollution.⁶⁶

In addition, the Zero Plastic Waste Initiative provides funding to groups who have proposed projects that help increase collection, improve the value of recovered products, and reduce and remove plastic pollution in Canada.⁶⁷ Projects that receive funding must contribute to the Ocean Plastics Charter and the CCME Strategy on Zero Plastic Waste.

Provincial Level

At the provincial government level, Ontario is responsible for developing waste reduction and diversion policies and programs and monitoring waste management facilities.⁶⁸ The Government of Ontario has worked on several initiatives that address plastic waste since 2018. There are also several organizations that have been actively involved in this area and have developed some key actions and recommendations related to plastics. Several key dates and outcomes are summarized in the figure below.



Figure 5: Timeline of recent key provincial initiatives on plastics

Made-in-Ontario Environment Plan

This plan was released on November 29, 2018 and provides information on protecting Ontario’s air, land, and water, reducing greenhouse gas emissions, and preventing and reducing waste.⁶⁹ According to the report, each Ontario resident creates almost one tonne of waste each year and there is a stalled diversion rate below 30%.⁷⁰ The plan identifies several actions for reducing plastic waste, including developing a plastics strategy in consultation with other jurisdictions, creating recycling and labeling standards for plastics to lower recycling costs in the province, and ensuring the Great Lakes are included in agreements and charters dealing with plastic waste.⁷¹

Extended Producer Responsibility – Blue Box Transition

The Made-in-Ontario Environment Plan recommended making producers responsible for the plastic waste generated from their products and packaging, which is the basis of Extended Producer Responsibility. The Ontario provincial government has proposed a regulation under the Resource Recovery and Circular Economy Act, 2016 to make producers responsible for Blue Box programs.⁷² Consultations for these changes occurred between October and December 2020 and the final regulations are pending. While these regulations target material generated from residential locations, the Ontario government has communicated that IC&I regulations will follow shortly.⁷³

“Ontario recognizes that a large proportion of waste is generated by the industrial, commercial, and institutional (IC&I) sector. Separately from this proposed blue box regulation, Ontario intends to move forward to reform the IC&I waste framework in the coming months. A key aspect will be to align, where possible, with the proposed blue box regulation in the types of materials collected for recycling. The goals of a reform of the IC&I waste framework could include: maintain provincial direction to IC&I establishments to reduce and divert waste, improve overall diversion in the IC&I sector, reduce and minimize burden to IC&I establishments, support verified outcomes and modernized compliance.”⁷⁴



The Special Advisor on Recycling and Plastic Waste compiled a report on the Blue Box transition which identified key issues such as setting a timeline for the transition, developing a standard list of acceptable materials for all Ontario residents and locations, and encouraging more diversion from the landfill by ensuring that all materials collected in the Blue Box get reused or recycled, and are not deposited in the landfill.⁷⁵ Ontario was the first jurisdiction to develop and operate a curbside recycling program, where municipalities pay half of the program costs, and producers pay the remaining half.⁷⁶ The transition to producer responsibility will help ensure the Blue Box program runs more efficiently, reusing and repurposing materials, and working towards reducing overall waste.

Day of Action on Litter

In 2020, a Provincial Day of Action on Litter was declared on the second Tuesday of May each year in Ontario.⁷⁷ This action helps contribute to the goal of reducing the volume of waste going to landfills by educating residents about how waste impacts the environment and encouraging individuals to take action at home and in the community by following tips to reduce overall waste. With an estimated 10,000 tonnes of plastic waste being deposited in Ontario's lakes and rivers each year,⁷⁸ this initiative originally involved organizing cleanup events across the province. While the COVID-19 pandemic has made these large organized events infeasible, the focus was shifted to an online social media campaign to distribute key messages on waste reduction.

Regulations 102–104

An important component of Ontario's waste management regulatory framework is *Regulation 102 to Regulation 104* under the *Environmental Protection Act, R.S.O. 1990, c. E. 19*. *Regulation 102* requires some of the IC&I sector to complete waste audits and waste reduction workplans.⁷⁹ *Regulation 103* requires some of the IC&I sector to source separate their material for waste diversion.⁸⁰ Finally, *Regulation 104* requires some of the IC&I sector that produce packaging to complete packaging audits and packaging waste reduction workplans to encourage waste minimization.⁸¹ All three of these regulations influence plastic waste generation and diversion.



Municipal Level

At the municipal government level, each municipality is responsible for managing their own residential waste. This includes developing and operating an integrated solid waste management system for collection and recycling, determining which items (including specific plastic products) are acceptable in their recycling stream, and educating residents on reducing overall waste.⁸² Municipalities must determine if there is a facility that can sort and separate the different material types, and if there is an acceptable market for certain types of plastics, which will allow residents to add in-demand items to the recycling bin. However, neighboring municipalities may have different rules as to which plastics are acceptable in the recycling bin, leading to confusion and non-compliance. As the Ontario Blue Box program transitions to full Extended Producer Responsibility under the proposed regulations, a standard list of items under a common collection program, including plastics, will be outlined for collection across all Ontario municipalities, reducing confusion and potentially increasing plastic diversion rates.⁸³

Single-use Bans

One action a municipality can implement is a single-use plastic ban bylaw. Several municipalities across Canada have implemented or are developing bans on specific single-use plastic items. Until the federal government bans all single-use plastics, municipalities can consult and develop their own bylaws that will help reduce the volume of plastics entering the landfill and environment. Please see the table below for a sample of jurisdictions that have implemented bans:

Municipality/Province	Details on Ban
Vancouver, British Columbia	Foam cups and foam take-out containers were banned as of January 1, 2020 ⁸⁴
Devon, Alberta	Implemented the <i>Single-Use Shopping Bag Bylaw</i> in 2010 ⁸⁵
Prince Albert, Saskatchewan	Bylaw Number 33-2019 enacted on July 1, 2020 to ban plastic bags from retail stores ⁸⁶
Thompson, Manitoba	Bylaw Number 1839-2010 prohibits the sale or free distribution of single-use plastic bags within the city ⁸⁷
Fort Frances, Ontario	Bylaw Number 11/20 bans stores from distributing plastic bags as of January 1, 2021 ⁸⁸
Markham, Ontario	Curbside ban of non-food related packaging Styrofoam began in October 2020 ⁸⁹
Montreal, Quebec	Bylaw 16-051 prohibits plastic bags from being distributed as of January 1, 2018 ⁹⁰
Prince Edward Island	The <i>Plastic Bag Reduction Act</i> was enacted on July 1, 2019 that prohibits businesses from distributing plastic bags to customers ⁹¹
Nova Scotia	The Plastic Bags Reduction Act came into effect on October 30, 2020 that reduces the use of plastic bags and other single-use products ⁹²
Newfoundland & Labrador	The provincial government banned single-use plastic bags as of October 1, 2020 ⁹³

Table 3: List of several jurisdictions with implemented single-use plastic bans



TRCA Jurisdiction

Plastic waste initiatives from municipalities and regional governments within TRCA's jurisdiction are summarized in the sections below.

City of Toronto

The City of Toronto has been developing a Single-Use & Takeaway Item Reduction Strategy (SUTI) to reduce these items and work towards the goal of overall waste reduction.⁹⁴ Two phases of public consultations occurred between 2018-2019 which aimed to gather feedback on the priority items to target, how to target these items, and the proposed timelines to implement actions.

Phase 1 of consultations resulted in most participants supporting the reduction of these items, encouraging reusable items instead of disposable items, and developing approaches to reduce these items in the City.⁹⁵ As part of both phases, the City took into consideration accessibility requirements regarding single-use or takeaway items that are still necessary to ensure equity amongst all residents. A number of approaches were considered in Phase 2 of consultations including a by-request or ask-first bylaw (items distributed upon request), a fee bylaw (charging per single-use item distributed), and a ban bylaw (bans businesses from distributing or using specific polystyrene items).⁹⁶ Single-use items identified include eating utensils, straws, plastic and paper bags, beverage cups, and polystyrene food takeaway containers and cups.⁹⁷

The City of Toronto's SUTI Reduction Strategy was put on hold in 2020 as the City focused on its emergency response to COVID-19. The City of Toronto is monitoring the status of actions being taken globally that relate to voluntary and mandatory measures to reduce waste resulting from single-use items. Once consultation results and final SUTI Reduction Strategy recommendations are presented to Toronto City Council, planning will be underway to implement those actions as early as mid-late 2021.

York Region

York Region's revised SM4RT Living Plan endorsed by council in 2020 includes three major objectives with actions to achieve the objectives.⁹⁸ From 2020–2022, plans include working with local municipalities to develop a voluntary approach to address single-use plastics and packaging by implementing an 'ask-first' program with businesses and an education program with residents. It also includes reviewing internal practices to reduce or eliminate single-use items at Regional and or local municipal facilities. In 2022, an exploration of bans or by-laws are planned after a voluntary approach has been tested and evaluated.⁹⁹

In the meantime, York Region promotes a Plastic Bag Take-Back Program to address this issue and encourage residents to bring plastic bags back to participating retailers to be recycled, reducing the number of bags that are disposed of. Plastic bags that are collected from this program are made into new plastic bags, patio furniture, and park benches.¹⁰⁰

Local municipalities in York Region are also taking action to address single-use plastics and packaging. City of Markham's Single-Use Reduction Strategy outlines a phased approach to reduce the environmental impact of single-use items.¹⁰¹ Phase 1 includes a review of internal practices and public events to reduce or eliminate single-use plastic items such as cups, stir sticks, straws, cutlery, plates and plastic bags; a promotion and education campaign to raise awareness of single-use item issues and demonstrate ways the public can reduce usage, and a curbside ban of non-food related packaging Styrofoam which began in October 2020.¹⁰²

In 2019, Town of Aurora council endorsed direction that an Offer-First policy be implemented at all Town facilities and Town run special events, offering plastic straws to customers rather than serving them automatically; that Council support the Federal and Provincial Governments' waste initiatives regarding single-use plastics and packaging, and that staff be directed to report back to Council with an update on the results of the Offer-First policy initiative after one year.¹⁰³

In 2020, the City of Richmond Hill Council endorsed a motion to develop and implement a corporate policy to reduce the use of single-use plastics and increase waste diversion at City facilities, functions, and events. Also approved was a public education campaign focused on raising awareness about options to reduce single-use plastics as well as a program to recognize local businesses that are taking steps to reduce the use of single-use plastics through voluntary initiatives in partnership with York Region.¹⁰⁴

Peel Region

In Peel Region, Regional Council approved a motion requesting the Federal Government develop a national strategy that addresses plastic pollution in 2018.¹⁰⁵ In 2019, the Waste Management Strategic Advisory Committee indicated the Region's support for an Ontario-specific single-use plastic strategy and having Regional staff participate in these discussions with other municipal and provincial partners.¹⁰⁶

In 2020, Regional Council approved a motion to support the Federal Government's proposal to ban harmful single-use plastic items; include minimum recycled content performance standards for single-use plastics, and modernize composting certification standards for compostable products and packages to be in line with municipal organics processing operations.¹⁰⁷ Region of Peel staff are actively engaged in discussion with the provincial and federal governments on this file, and Region of Peel has made a commitment to reduce single-use plastics within its internal operations, implementing several actions since 2018.

Durham Region

Durham Region began reducing single-use plastics from the cafeteria services in the Regional Headquarters building in 2019. To reduce single-use plastics, the Region has completed several actions, such as installing water filling stations, procuring reusable containers and compostable straws, and discontinuing the sale of bottled water in the Regional Headquarters cafeteria.¹⁰⁸

The Municipality of Clarington, Town of Whitby and Town of Ajax have passed resolutions to reduce the prevalence of single-use plastics in their communities.¹⁰⁹ The three municipalities are focusing their efforts on reduction or elimination of single-use plastics in municipal facilities.¹¹⁰ Single-use plastic items have been reduced or eliminated from townhalls and efforts are underway to reduce single-use plastic items where possible from local arenas, libraries, other facilities and events.¹¹¹

Durham Region has declared support for a provincial and a federal single-use plastic strategy and have had regional staff participate in these discussions with other municipal and provincial partners. For the last decade, Durham Region has been successfully running a plastic bag takeback program. During Waste Reduction Week 2019, the Regional Headquarters in Whitby was surrounded by bags of single-use plastics as part of a public display. This display resulted in the Region receiving the Municipal Waste Association's P&E Silver Award representing one-third of the 22,000 plastic bottles collected in the Region's Blue Box program each day.¹¹²

Non-governmental Organizations

Several non-governmental organizations have played important roles in addressing plastic waste in the Toronto Region and beyond. A selection of these organizations are summarized in the following sections.

Great Canadian Shoreline Cleanup

This national program is run by Ocean Wise and WWF Canada who work together to plan thousands of cleanups across the country, and have recruited almost one million volunteers throughout the years to organize and participate in these cleanups.¹¹³ There are many resources available from this program for a variety of audiences, such as schools, workplaces, or community groups.¹¹⁴ Stakeholders host a local cleanup in their area, with concurrent events occurring at shorelines across Canada.

Council of the Great Lakes Region

The Council of the Great Lakes Region (CGLR) is a Partners in Project Green channel member organization that works towards enhancing regional collaboration in the Great Lakes as it relates to economic development, environmental protection, and individual well-being. The organization has played a leading role in a number of plastics-related initiatives, including The Great Lakes Plastics Forum,¹¹⁵ the Great Lakes Plastic Cleanup,¹¹⁶ and the Ontario Materials Marketplace.¹¹⁷ The Great Lakes Plastics Forum was held on October 11, 2018 in partnership with Pollution Probe, and addressed plastic waste in the Great Lakes region.¹¹⁸ The Great Lakes Plastic Cleanup was launched on August 25, 2020 by founding partners Boating Ontario, the Council of the Great Lakes Region, Pollution Probe, PortsToronto and the U of T Trash Team, and involves the deployment of innovative capture technology to remove plastic and other debris at marinas across the Great Lakes. Waste that is collected through the program will be analyzed and valuable plastics will be recovered and redirected to the recycling system or reused. The Ontario Materials Marketplace was launched on August 26, 2020 to

allow businesses in the IC&I sector to find new life for challenging waste materials including plastic. Participants list available materials to be reused or repurposed by other organizations in an online marketplace platform.¹¹⁹

Pollution Probe

Pollution Probe has been actively involved in waste prevention since its inception in 1969. More recently, the organization convened the Great Lakes Plastic Forum in 2018, in partnership with the Council of the Great Lakes Region,¹²⁰ is a founding partner in the Great Lakes Plastic Cleanup,¹²¹ and is continuing to develop the Ontario Materials Marketplace.¹²² Pollution Probe acted as local co-host for the CCME's Toronto workshop to inform Phase 2 of the Canada-wide Action Plan on Zero Plastic Waste, released in 2020. The organization also signed a Memorandum of Understanding with the Toronto Zoo to advance common objectives, including a transition to a circular economy to reduce plastic waste.¹²³ Partners in Project Green is collaborating with Pollution Probe on an initiative to tackle plastic waste in the IC&I sector. The initiative will create opportunities for the development of pilot projects to implement solutions to plastic waste challenges within the operations of multiple sectors. Pollution Probe has been a Partners in Project Green channel member since 2018.

Recycling Council of Ontario

Recycling Council of Ontario launched the Plastic Action Centre, Canada's first national resource for knowledge on plastic waste. The Plastic Action Centre is an online platform that educates users about plastics, makes peer-to-peer connections, and facilitates information exchange with a focus on taking action. The platform provides free tools and resources, facts and figures, market developments, business efforts, regulatory advances, and policy initiatives, as well as ongoing domestic and international media coverage.¹²⁴ Recycling Council of Ontario has been a Partners in Project Green channel member since 2016.

Why are plastics an important consideration for businesses?



For businesses, plastics are often an essential component of their operations, be it from the plastic used in the machinery to produce the product, the product itself, or the packaging. Plastics are often used during the packaging process; finished products are typically placed onto large shipping pallets and wrapped in plastic or surrounded by polystyrene blocks to protect the products during transportation, and they may also be placed in plastic packaging that is brought to store shelves where consumers purchase the product. The following figure depicts where plastic waste is generated across Canadian industry sectors in 2016.

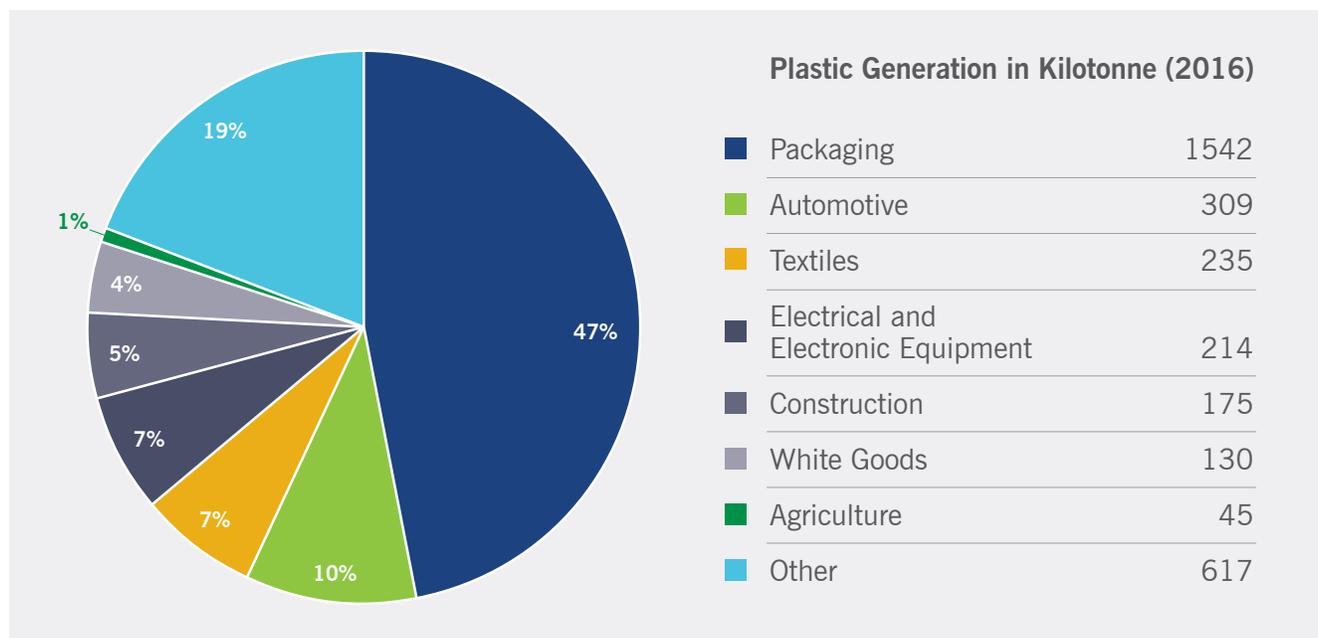


Figure 6: Plastic waste generation mix on a mass basis across Canadian industry sectors (2016)¹²⁵

Plastics are attractive for packaging and transport purposes as they are lightweight and durable, easy to manipulate into a form that works best for a business, and are often cost-effective compared to other materials. Plastics also play an essential role in maintaining the quality of food products. During the COVID-19 pandemic, plastics have been used to manufacture Personal Protective Equipment for healthcare workers, distribute sanitizing products to consumers, and provide citizens with meals packed in disposable containers from restaurants operating take-out services.¹²⁶ Given the reliance on plastics, the Canadian plastics sector is connected to 93,000 jobs and contributes \$28 billion annually to the economy.¹²⁷ Many Toronto region businesses use plastics as part of their manufacturing or operational processes and Partners in Project Green is well suited to provide support to these members as additional guidelines regarding plastics become implemented in the near future.

How can businesses manage their use of plastics?



Businesses play a central role in the use and management of plastics, and now have an opportunity to become leaders in managing and reducing their reliance on plastics that cannot be reused or recycled. Plastic waste reduction and diversion is of great interest to the business community. In 2020, Partners in Project Green surveyed 23 organizations that were pursuing waste management planning. Eighty-three per cent indicated they would be reviewing how they managed their plastic waste in the next one to three years. In addition, 87 per cent indicated they would be reviewing their single-use items strategy. There are many opportunities for the business community to tackle how they manage their plastic waste. To do so, many organizations follow a model similar to the one shown in the figure below.

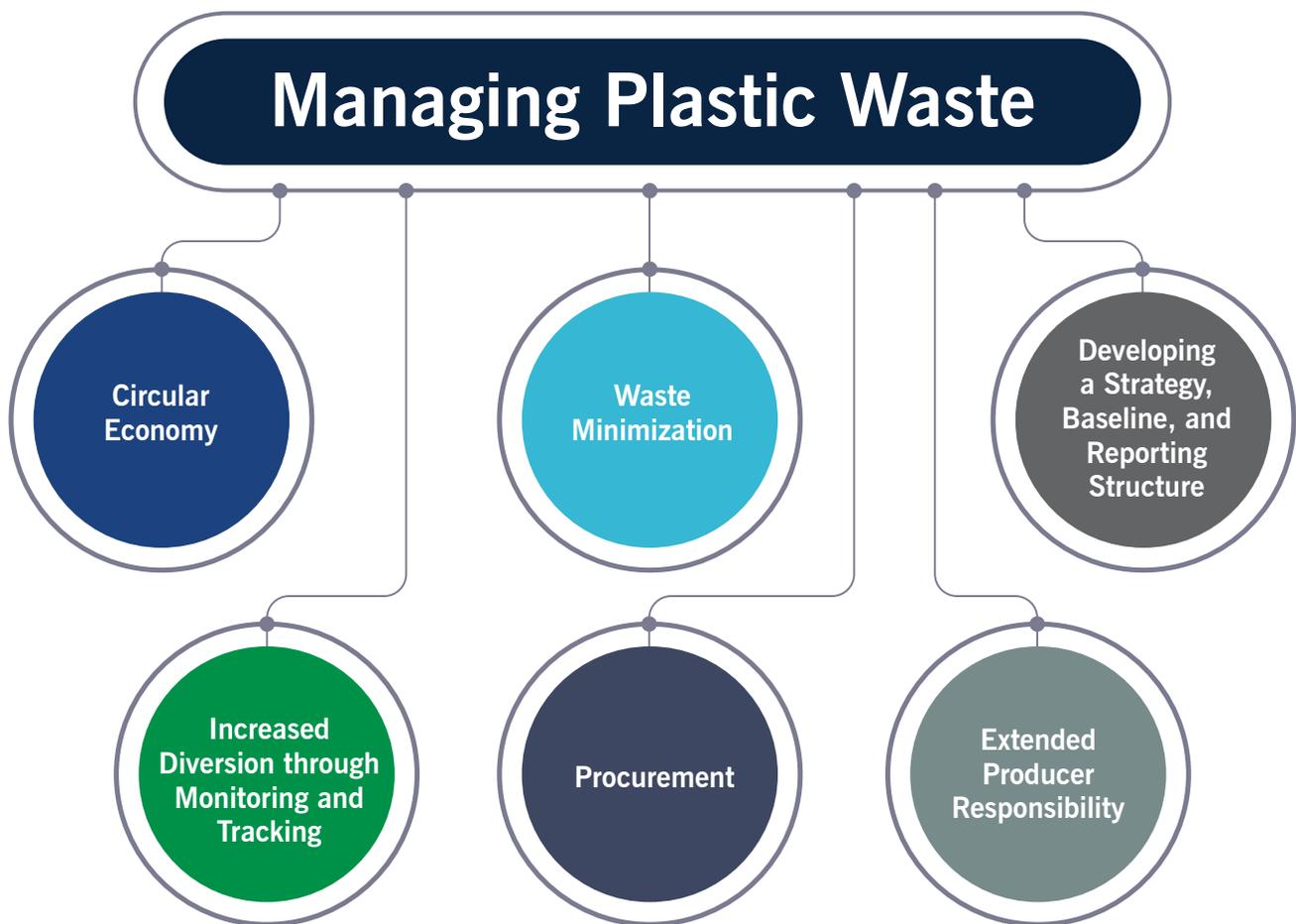


Figure 7: How can businesses manage their plastic waste?

Circular Economy

There are many ways businesses can take action to properly manage their plastic waste. Partners in Project Green recommends utilizing the Ontario provincial government’s Circular Economy framework to help determine how to prioritize plastic waste management.

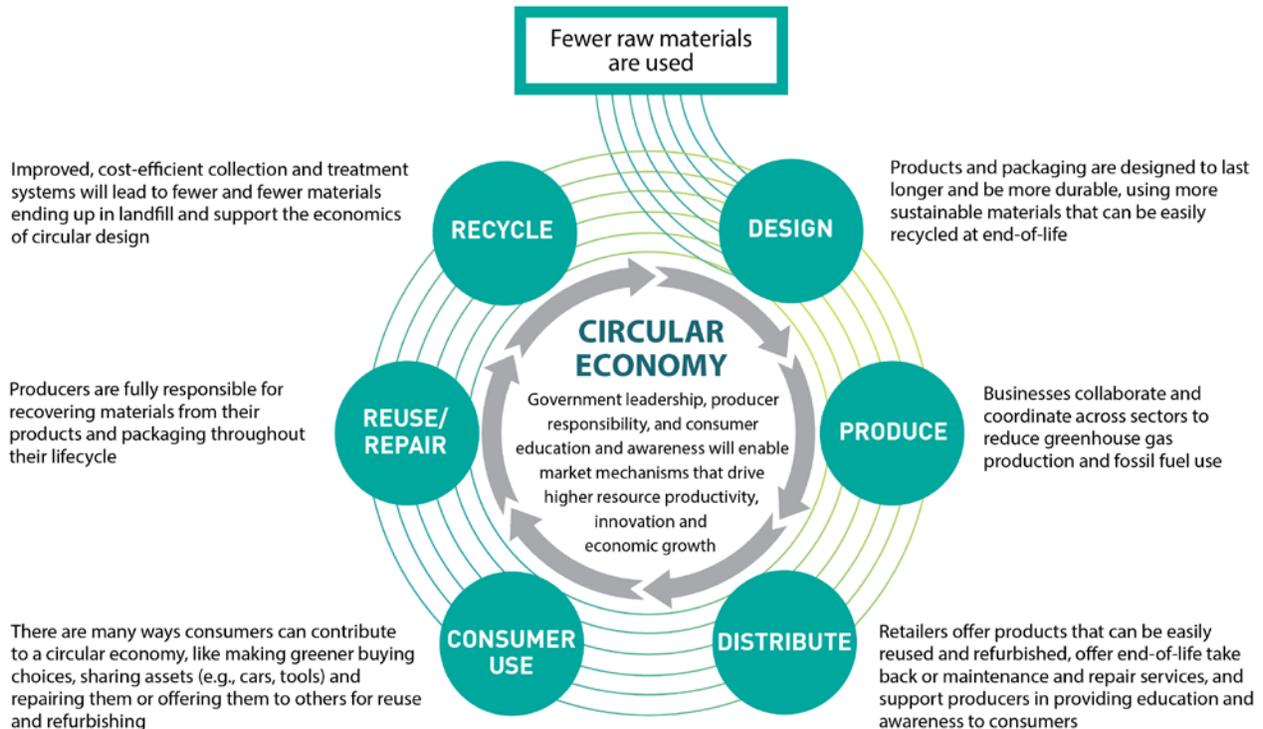


Figure 8: Ontario provincial government’s Circular Economy framework, from “Strategy for a Waste-Free Ontario: Building the Circular Economy.”¹²⁸ Image courtesy of the Ministry of the Environment, Conservation and Parks (MOECC).

In addition, businesses are also beginning to recognize and work towards implementing circular economy concepts into their operations. Since the most important component of a circular economy comes from the design stage—which allows organizations to rethink and reuse components instead of simply disposing them after one use—businesses can design products that have a smaller environmental footprint.¹²⁹

One of the main priorities of any business is to reduce operational costs to the greatest extent possible. Many businesses have signed contracts with waste management companies to collect waste generated, sometimes daily. By analyzing the entire supply chain and various points of generation within a facility such as office, warehouse, outdoor spaces, food service, retail areas, manufacturing, construction, housing, and hospitality,¹³⁰ businesses can identify where waste is coming from and solutions can be developed to prevent this waste from being created in the first place. By completing this task, businesses can improve operational efficiency and reduce potential resource costs and operational costs by obviating some waste collection trips.

In a circular economy, the goal is to eliminate waste and maximize the value of materials by improving the design of products, minimizing the use of raw materials, and prolonging the life of materials through resource recovery.¹³¹



Waste Minimization

When considering waste minimization, organizations should rethink their products and packaging design to identify areas for reduction and reuse. One solution is to develop a plastics use inventory baseline and use resource flow mapping to identify any plastic components that create little or no value in the production process. Elimination of these components (or substitution with an alternative) will decrease the volume of plastic waste being disposed. Generating less waste will reduce the required frequency for waste collection, reducing costs and contributing to plastic waste reduction goals.

Developing a Strategy, Baseline, and Reporting Structure

To improve your diversion rate, it is helpful to develop a waste management target and an environmental strategy. In addition, it helps to set baselines and a reporting structure to evaluate your year-over-year improvements. Waste management certification programs, like 3RCertified¹³² and True Zero Waste,¹³³ can help your organization with this task. If you are organizing an event, consider using the Treasury Board of Canada Secretariat's Guidance for the Reduction of Plastic Waste in Meetings and Events.¹³⁴ For plastic specific resources, the Ellen MacArthur Foundation has developed a variety of resources that help organizations tackle plastic waste reduction, reuse, and recycling.¹³⁵

More companies are becoming aware of their impact on the environment and are conducting internal waste audits of their plastic use, releasing corporate sustainability reports that identify their current plastic waste diversion rates and their long-term goals. For example, Partners in Project Green member Unilever has outlined commitments regarding plastics, including collecting more plastic packaging than they are distributing, designing all plastic packaging to be reusable, recyclable or compostable, and reducing the amount of new plastic used in packaging by half, all by 2025.¹³⁶ Toronto Pearson has set a 72 per cent waste diversion rate target each year and are investigating alternatives to single-use plastics for public areas of the airport.¹³⁷ Other Partners in Project Green members and businesses across Canada have outlined timelines within the next five to 20 years to analyze how their operations can contribute to the reduction in plastics pollution and virgin production.





Increased Diversion through Monitoring and Tracking

After developing a strategy that outlines long-term goals and targets, it is important for organizations to monitor and track their progress towards zero waste. Waste management certification programs provide a simple way to monitor and track year-over-year change. Organizations may opt to publicly report their progress to encourage transparency and accountability.

Procurement

An important component of a plastic waste reduction strategy is the evaluation of all vendor contracts and a review of existing procurement processes with a view to purchasing products with greater recyclability. When considering procurement changes, it is important to ensure that your waste service providers can accept any new material at end-of-life. For example, if you are considering changing your plastic cutlery to compostable cutlery, ensure that your waste service provider can accept and reprocess this material; in many cases, compostable single-use items cannot be composted in Ontario systems.¹³⁸

Extended Producer Responsibility

With Ontario moving toward implementing Extended Producer Responsibility as a solution to managing plastic waste, businesses should consider creating products and packaging with materials that can be easily collected and recycled.¹³⁹

This may include utilizing and prioritizing plastics that can be recycled easily, such as #1 PET (Polyethylene Terephthalate) and #2 HDPE (High Density Polyethylene) and avoiding plastics that are more challenging to recycle, such as #6 PS (Polystyrene) and #7 PC (Polycarbonates).¹⁴⁰ Since most plastics are not currently recycled, businesses also have an opportunity to pivot away from using hard-to-recycle plastics. Partners in Project Green can support businesses looking for solution providers who can collect and manage their plastic waste properly or identify other organizations who can find reuse options or end markets for the material.

Extended Producer Responsibility requires businesses, manufacturers, and producers to manage the waste generated by their products and packaging through the recovery, reuse and recycling process.¹⁴¹

How does Partners in Project Green support its members and partners in addressing issues related to plastics?

Partners in Project Green has been actively involved in developing programs, providing feedback on government consultations, and supporting its municipal partners and business members on plastics-related issues over the past decade since its founding in 2008. Several Partners in Project Green members such as Unilever, Toronto Zoo, Maple Leaf, Air Canada, Longo's, Pollution Probe, Council of the Great Lakes Region, Recycling Council of Ontario, and EnviroPod have already taken recent actions on reducing their use of plastic or collecting plastic waste in our environment.

In the Partners in Project Green 2019-2023 strategic refresh, one of the identified highlights includes expanding programming within the Waste Management performance area to include single-use plastics based on member requests and policy changes occurring within this period.¹⁴² Partners in Project Green will align our programming with recent and upcoming government actions focused on managing and reducing plastic waste to support the business community and government stakeholders on this emerging issue. As policymakers continue to focus attention on plastic waste, businesses will need support to understand how they can alter their operations to meet these new guidelines and support a circular economy on plastics.

Plastic Waste Innovation Challenge

Working with Pollution Probe, Partners in Project Green is currently developing an initiative with the goal of creating solutions to support increased plastic waste diversion from industrial operations. The challenge will be delivered in a hackathon format with participants from different industrial backgrounds working together to develop solutions to plastic waste. The main outcomes from the challenge will be multi-sectoral collaboration, conceptualizing creative and realistic solutions, and will potentially lead to the development of pilot implementation projects. The initiative will be summarized in a report designed to help inform consultations regarding plastic waste and moving towards a circular economy. In addition, media attention highlighting the implementation of successful solutions can lead to greater visibility of positive outcomes that can build additional capacity and knowledge for businesses to take action to further reduce plastic waste.

Waste Management and Water Stewardship Performance Areas

The generation of plastic waste in our watersheds applies to two of Partners in Project Green's performance areas; Waste Management and Water Stewardship. Given the importance of plastic waste, Partners in Project Green will continue to prioritize plastics as a key material of concern. Partners in Project Green has prioritized plastics through the following initiatives; this white paper, the Plastic Waste Innovation Challenge, the Material Exchange, the People Power Challenge, the PPG Connect 2020 virtual event ("Managing the Plastics Lifecycle – Getting to Zero Plastic Waste")¹⁴³ and a Green Economy Webinar outlining two pilot studies focused on microplastic diversion.¹⁴⁴ Material Exchange provides the opportunity for organizations to outline any plastic (or other) material they have available that they would like to provide to another group for reuse purposes. If the material cannot be reused by others, Partners in Project Green has a directory of businesses who can provide a solution to effectively recycle the plastic material.

Next Steps



Plastic waste is an important environmental issue that will require sustained action in the coming years from individuals, businesses, and governments. Partners in Project Green and TRCA are collaborating with partners from all levels of government, industry groups, businesses, and community organizations to generate solutions on plastic waste. We are providing feedback in policy consultations, sharing data and samples taken from watersheds, and educating residents and businesses about plastics through public and industry events.

As part of Partners in Project Green's Strategic Refresh 2019–2023, plastic waste found in our watersheds has been identified as a priority issue to address by focusing on two strategic approaches: preventing waste from entering the environment and supporting the reduction and recovery of resource materials.¹⁴⁵ Partners in Project Green's Waste Management and Water Stewardship programs will continue to support businesses and municipalities in managing plastic waste within the IC&I sector leading to reduced costs and improving our natural environment.

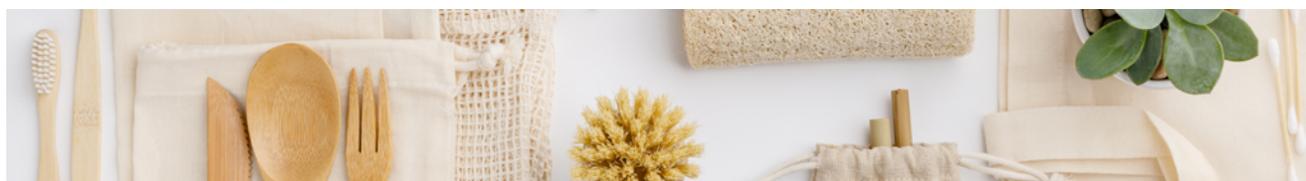
Progress on the plastic waste front is being made by all levels of government, businesses, NGOs, and individuals:

Governments	Businesses	NGOs	Individuals
<ul style="list-style-type: none">• Canada is banning single-use plastics starting in 2021.• Ontario is moving towards Extended Producer Responsibility.• Multiple municipalities are working towards a circular economy and some have banned single-use plastics.¹⁴⁶• Researchers are developing innovative solutions to plastics that can be applied across all industries.	<ul style="list-style-type: none">• Businesses are considering recyclability when procuring products and packaging.• New markets are being identified to ensure plastics are deemed valuable, as it currently costs less to create new plastic material than recycle it in many cases.¹⁴⁷	<ul style="list-style-type: none">• NGOs continue to promote proper plastic management and are organizing clean-ups to help protect our natural environment.	<ul style="list-style-type: none">• Individuals are taking action to reduce plastic waste generation and ensure it is properly managed at end-of-life.

Partners in Project Green will continue to support the IC&I sectors in the Toronto region. Outlined below are a few ways that your organization can start to take action to minimize plastic waste:

For Individual employees ¹⁴⁸	
Initial Actions	Advanced Actions
<ul style="list-style-type: none"> • Use reusable products like mugs, food containers, shopping bags, and reusable packaging • Refuse cutlery, straws and individual packets when ordering food for delivery or take-out if you don't need it • Put a lid on your waste and recycling bin to stop litter from being blown away or scattered by animals • Throw your cigarette butts in the garbage or designated bins • Support businesses that are actively reducing their plastic footprint 	<ul style="list-style-type: none"> • Learn about what can be recycled or composted in your municipality, school, or work • Purchase plastic products that are recyclable in your municipality, school, or work • Consider the waste hierarchy (reusability, repairability and recyclability) when purchasing durable goods that contain plastic • Wash and reuse plastic containers and resealable plastic bags • Organize or join a cleanup in your neighborhood • Install a laundry filter to capture microfibers before they enter the watershed¹⁴⁹
For businesses, organizations, and institutions ¹⁵⁰	
Initial Actions	Advanced Actions
<ul style="list-style-type: none"> • Participate in one of TRCA's plastic diversion programs • Implement a waste diversion program in your facilities and operations that includes plastic recycling utilizing programs like Material Exchange¹⁵¹ • Commit to reducing single-use plastic waste in your operations through a policy or ban • Commit to reducing and diverting plastic waste in your operations • Support local plastic waste reduction projects and research • Provide training to your employees to help them sort their waste properly and reduce plastic waste • Lead or join a clean-up in your community • Install grates to prevent litter from entering the stormwater system 	<ul style="list-style-type: none"> • Endorse the Ocean Plastics Charter¹⁵² • Package your products in reusable packaging, utilizing services like Loop store¹⁵³ • Make, buy, or sell reusable products or environmentally-sound alternatives • Consider your organization's acceptance criteria when procuring new resources • Incorporate procurement into end-of-life management to close the loop and encourage plastic recycling • Develop circular economy products that consider end-of-life management • Join or lead initiatives to reduce plastic spills and releases such as Operation Clean Sweep¹⁵⁴ • Make a public declaration to support plastic waste minimization by joining the Plastic Pact¹⁵⁵

Table 4: How individuals and organizations can take action to reduce and divert plastic waste



Useful Websites, Tools, and Resources



Author	Resource	URL
Canadian Council of Ministers of the Environment	Canada-Wide Action Plan on Zero Plastic Waste Phase 1	https://www.ccme.ca/files/Resources/waste/plastics/1289_CCME%20Canada-wide%20Action%20Plan%20on%20Zero%20Plastic%20Waste_EN_June%2027-19.pdf
	Canada-Wide Action Plan on Zero Plastic Waste Phase 2	https://www.ccme.ca/files/Resources/waste/plastics/CCME%20Phase%202%20Action%20Plan_EN%20-%20external-Secured.pdf
	Strategy on Zero Plastic Waste	https://www.ccme.ca/files/Resources/waste/plastics/STRATEGY%20ON%20ZERO%20PLASTIC%20WASTE.pdf
CSA Group	A Roadmap to Support the Circularity and Recycling of Plastics in Canada – Technical Standards, Regulations and Research	https://www.csagroup.org/wp-content/uploads/CSA-Group-Research-Roadmap-to-Support-Circularity-and-Recycling.pdf
Ellen MacArthur Foundation	New Plastics Economy, A circular economy for plastic in which it never becomes waste	https://www.ellenmacarthurfoundation.org/our-work/activities/new-plastics-economy
Environment and Climate Change Canada	A proposed integrated management approach to plastic products to prevent waste and pollution: discussion paper	https://www.canada.ca/content/dam/eccc/documents/pdf/cepa/proposed-approach-plastic-management-eng.pdf
	Economic Study of the Canadian Plastic Industry, Markets and Waste	http://publications.gc.ca/collections/collection_2019/eccc/En4-366-1-2019-eng.pdf
Environment and Climate Change Canada and Health Canada	Science Assessment of Plastic Pollution	https://www.canada.ca/content/dam/eccc/documents/pdf/pded/plastic-pollution/Science-assessment-plastic-pollution.pdf

Government of Canada	Ocean Plastics Charter	https://www.canada.ca/en/environment-climate-change/services/managing-reducing-waste/international-commitments/ocean-plastics-charter.html
Green Business Certification Inc	True Zero Waste	https://true.gbci.org/
House of Commons	The Last Straw: Turning the Tide on Plastic Pollution in Canada, Report of the Standing Committee on Environment and Sustainable Development	https://www.ourcommons.ca/Content/Committee/421/ENVI/Reports/RP10583500/envirp21/envirp21-e.pdf
Ministry of the Environment, Conservation and Parks	Reducing Litter and Waste in Our Communities: Discussion Paper	https://prod-environmental-registry.s3.amazonaws.com/2019-03/Reducing%20Litter%20and%20Waste%20in%20Our%20Communities%20Discussion%20Paper_0.pdf
Natural Sciences and Engineering Research Council of Canada	Plastics science for a cleaner future	https://www.nserc-crsng.gc.ca/professors-professeurs/rpp-pp/plastics-plastiques_eng.asp
Plastics Action Centre	Canadian Plastic Recyclers Director June 2020	https://plasticactioncentre.ca/wp-content/uploads/2020/07/Canadian-Plastic-Recyclers-Directory-June-2020.xlsx
Recycling Council of Ontario	3RCertified	https://3rcertified.ca/
Treasury Board of Canada Secretariat	Guidance for the Reduction of Plastic Waste in Meetings and Events	https://www.canada.ca/en/treasury-board-secretariat/services/innovation/greening-government/guidance-reduction-plastic-waste-meetings-events.html
United Nations Environment	Single-use Plastics: A roadmap for sustainability, Fact-sheet for Policymakers	https://wedocs.unep.org/bitstream/handle/20.500.11822/25523/singleUsePlastic_sustainability_factsheet_EN.pdf
Waste Reduction Week in Canada	Plastic Facts Poster	https://rco.on.ca/plasticwaste/#iLightbox[2960293b760c6c20652]/0

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