Circular Economy Road Map

Phase 2 Report

City of Toronto

May 26, 2025

TORONTO

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1. Executive Summary

The City of Toronto (the City) is committed to developing multiple strategies to address its growing landfill waste challenge, going beyond recycling to rethink how products, buildings — even cities — are designed and used from the beginning to extend their useful life for as long as possible. This multi-faceted approach will show how Toronto's residents, businesses, and the City can take practical steps to think differently about waste, helping us reduce waste, address climate change, save money, spark innovation, and create jobs.

Overview

The City's Circular Economy Road Map Strategy and Implementation Plan (the Circular Economy Road Map) is one such strategy under development, based on innovative circular economy approaches. It builds on several prior and related initiatives, such as the *Baselining for a Circular Toronto* study (the *Baselining Study*), *TransformTO Net Zero Strategy*, and *Long-Term Waste Management Strategy*, towards the aspirational goal of becoming the first circular city in Ontario. The final Circular Economy Road Map will be a City-wide document that guides every Division. Ultimately, the Circular Economy Road Map will help enable the City to achieve its desired circular goals and outcomes as well as related ambitions in terms of decarbonization, preservation of ecosystems and biodiversity, economic prosperity, and social well-being, while simultaneously addressing historical inequities and Toronto's recovery from the COVID-19 pandemic.

The term "circular economy" refers to a society-wide approach to production and consumption that aims to eliminate landfill waste and maximize resources by recovering as much as possible from used products. It is a system where materials never become waste — instead, they remain in circulation through processes like redesign, reduction, reuse, repair, refurbishment, remanufacturing, repurposing, recycling, and recovery.[1]

A circular economy goes well beyond traditional recycling or waste collection. It involves the innovative design of products and places, material efficiency, regenerative practices, and sustainable consumption. It also includes minimizing carbon emissions and other adverse environmental impacts to preserve and strengthen the resilience of natural systems.

Purpose of Phase 2 Report

There are four phases of the City's Circular Economy Road Map project, which are described in Section 2. This report provides an overview of the activities and outcomes of Phase 2: Issues and Opportunity Identification (the *Phase 2 Report*). It describes the current state of key sectors, including high-level visualizations of current state factors; documents findings from engagement with City Divisions, industry, the public, and Indigenous organizations; outlines challenges to implementing circularity in Toronto, which were identified from the activities to date. This *Phase 2*

[1] World Economic Forum (May 2022). 'The circular economy: how it can lead us on a path to real change', available at: https://www.weforum.org/agenda/2022/05/the-circular-economy-how-it-can-be-a-path-to-real-change/

Report follows the previously released *Circular Economy Road Map Phase 1 Report* (the *Phase 1 Report)* that should be referenced for additional background and context.

About this Document

This document is organized into seven sections:

1. The executive summary
2. An overview of the work completed to date on the Circular Economy Road Map project
3. A current state assessment and corresponding visualizations
4. A summary of key findings from engagement activities
5. An analysis of current state challenges and barriers surfaced during Phase 2
6. An overview of next steps that describe how the Phase 2 research and engagement will inform subsequent phases of the project

2. Project Overview

The Circular Economy Road Map will be a 10-year strategy to identify feasible circular solutions and actions that the public, community-wide actors, industry, and the City can take to enhance circularity across Toronto. The Circular Economy Road Map will identify resource requirements, social outcomes, partnership opportunities, and recommendations for long-term measurement and sustainment tools to help Toronto reach its circular potential.

This work is an inter-divisional initiative that is co-led by the City's Environment, Climate & Forestry Division and Solid Waste Management Services Division.

Project Scope

To support its transition towards a circular economy, the City conducted a research project called *Baselining for a Circular Toronto* (the *Baselining Study*) in 2022. In addition to a community-wide focus, the *Baselining Study* identified three target sectors that could significantly enhance circularity in Toronto: the construction sector, food system sector, and waste management sector (herein referred to as the "target sectors"). These target sectors are the focus areas for the Circular Economy Road Map.

The *Baselining Study* also established a baseline level of circularity in Toronto by analyzing specific material flows in each of the target sectors. It identified opportunities for advancing circular economy practices and proposed a vision for a circular Toronto. Additionally, the *Baselining Study* set forth initial goals and indicators for each target sector and at a community-wide level, aiming to guide and evaluate the City's progress towards circularity. This work marked a key milestone in Toronto's journey toward a more sustainable and circular economy. The Circular Economy Road Map will further refine the goals and indicators proposed in the *Baselining Study* and advance the community-wide opportunities into specific program and policy interventions that the City and/or other actors can implement.

To assist in developing the Circular Economy Road Map, definitions for community-wide elements and the three target sectors were created, as well as a set of preliminary levers to classify potential opportunities for increasing circularity. These definitions were developed by leveraging existing terminology from the *Baselining Study*, insights gathered from interested parties in Phases 1 and 2, and research conducted on leading practices from other jurisdictions**.** The definitions below may be further refined to reflect findings from Phases 3 and 4.

Community-wide

The City cannot move towards a truly circular economy by itself. The transition will require collaboration both within and outside of the formal boundaries of Toronto. "Community-wide" elements of the Circular Economy Road Map refer to the overarching goals, indicators, opportunities, and initiatives that impact Toronto as a diverse community, including impacts on broader civil society, culture, community, businesses, and other levels of government. These factors are sector agnostic and intended to reflect the role that all interested parties can play to achieve positive social, economic, and environmental outcomes for the wider community. "Community-wide" also covers general consumption behaviours and perceptions of waste and circularity.

"Community-wide" content throughout this report is labelled this way to designate aspects of the Circular Economy Road Map that relate to broad behavioural changes and other societal factors not captured in the target sectors.

Target Sectors

Construction

In the scope of this project, "construction" involves the comprehensive set of activities related to the financing, planning, design, procurement, building, renovation, maintenance, deconstruction, and demolition of buildings and infrastructure in Toronto. This term also seeks to capture the broader transportation and storage of construction-related materials, as well as elements related to the interior of buildings, such as furnishings.[2] "Construction" includes the value chain of both City-owned buildings and infrastructure and those not owned or managed by the City.

Food System

In the scope of this project, the "food system" includes the range of elements related to the domestic production, processing, manufacturing, transportation, import, export, retail and service, consumption, rescue/upcycling, and re-distribution of food and beverages. It encompasses areas where the City has limited control — such as international imports or the domestic agriculture sector — as well as areas where it has more influence, such as local food and beverage retail, events, food distribution, and procurement for City-run services.[3] The "food system" includes food packaging, small-scale composting, and byproducts of food waste (compost).

Waste Management

In the scope of this project, the "waste management" sector refers to the collection, transportation, treatment (sorting and processing), reuse, recovery, and final disposal of material solid waste in Toronto. This definition includes both City-operated municipal solid waste services and privately managed waste streams and services. The "waste management" sector includes residential, construction and demolition, Industrial, Commercial and Institutional (ICI), and other waste (e.g., park, litter, events) within Toronto.

Levers

In the scope of this project, "levers" refer to the initial categorization of potential initiatives, programs, actions, policies, tools, incentives, and other opportunities to enhance circularity in Toronto. The list below presents the definition of specific levers developed during Phase 2. These categories and associated definitions were developed based on the *Baselining Study*, engagement in Phases 1 and 2, and research from other jurisdictions and thought leadership. The preliminary levers presented below will be used to explore circular opportunities in Phase 3.

[2] For the purposes of this project, construction-related materials that are sent to a landfill, such as during construction or demolition, are considered to have left the construction value chain. These end-of-life elements of the construction sector are addressed in the waste management sector definition.

[3] For the purposes of this project, food is deemed to have exited the food system sector once it enters the general waste stream. The end-of-life elements of food are addressed in the waste management sector definition.

- **Education & Awareness**: Develop and facilitate educational initiatives and/or awareness-building related to mitigating waste across the value chain.
- **Collaboration & Partnerships**: Facilitate collaboration and partnership opportunities across all interested parties, including levels of government, industry, and residents, to support a transition to the circular economy.
- **Policy & Regulatory Initiatives**: Develop specific policies and/or regulations to address challenges or barriers to circular practices.
- **Economic Incentives**: Reward organizations or residents that implement circular practices.
- **City Management & Operations**: Incorporate circular practices into elements of City-owned operations and planning, including urban planning, asset management, and public procurement.
- **Innovation & Technology**: Develop and implement innovative, technology-based approaches to reduce waste and increase circular practices.

Project Workplan & Methodology

The workplan for developing the Circular Economy Road Map consists of four project phases:

- Phase 1 – Goal Setting
- Phase 2 – Issues and Opportunity Identification
- Phase 3 – Options Analysis
- Phase 4 – Develop Strategy, Implementation, and Monitoring Plan

Phase 1

Phase 1 took place between April and September 2024. The objective of this phase was to validate prior work by the City, including the *Baselining Study*. This involved inviting the participation of interested Toronto residents, businesses, and other actors engaged in the circular economy with the aim of refining the City's future-state circular vision and goals. Phase 1 involved:

- Holding a series of preliminary engagement activities with interested parties related to the circular economy in Toronto.
- Developing a draft set of guiding principles, goals, and indicators to help shape the development of the Circular Economy Road Map.
- Drafting a compelling circular economy change story that conveys to key interested parties that there is a need for the city to shift to a more circular economy.

For more information, refer to the *Phase 1 Report*.

Phase 2

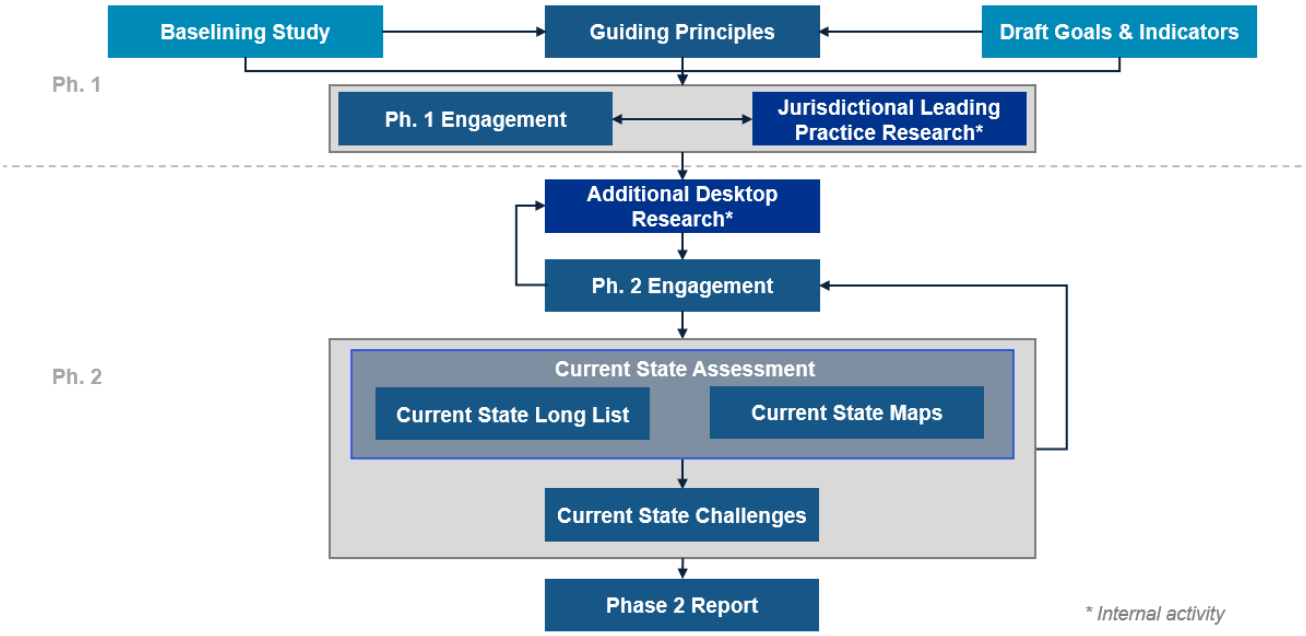
Phase 2 took place between September 2024 and January 2025 and focused on identifying current issues and opportunities across the target sectors. Phase 2 involved:

- **Current State Assessment:** Preparing sector-specific current state assessments to identify and analyze the specific factors that influence consumption and waste across the three target sectors. (Detailed in Section 3).
- **Engagement:** Completing comprehensive engagement sessions with interested parties within City Divisions, as well as industry, Indigenous businesses and organizations, community organizations, and residents. (Detailed in Section 4 of this document and Appendix A).
- **Current State Challenges:** Evaluating the current challenges faced in Toronto to effectively articulate the existing barriers to achieving a circular economy (Detailed in Section 5).

Interdependencies of Phase 1 and Phase 2 Activities

The figure below illustrates how activities and outputs from each phase inform different elements of the project (Figure 1).

Figure 1: Interdependencies of Phase 1 and Phase 2 activities



The objective is to continuously build upon the research and findings from preceding phases and incorporate those learnings into subsequent work. The final Circular Economy Road Map will reflect the extensive research done in all four phases of the project.

Phases 3 & 4

An overview of Phases 3 and 4 is provided in the Next Steps section of this report.

3. Current State Assessment

Overview

The objective of the current state assessment is to identify and analyze specific factors that influence consumption and waste across the target sectors in Toronto.

The current state assessment comprises two parts: (i) a list of factors influencing waste and consumption and (ii) current state maps that illustrate the most significant elements. The section below outlines the methodology and key takeaways of the current state assessment.

Approach and Methodology

The current state assessment involved identifying (i) who influences waste (i.e., the actors), (ii) how waste is influenced (i.e., the specific factors), and (iii) where in the value chain it exists (e.g., predominantly upstream, downstream, or across the value chain).

The assessment focused on identifying the actors who influence waste in the target sectors. These actors were categorized into the following groups: federal government, provincial government, municipal government, industry actors, community organizations, and individual residents. Actors were identified through findings from Phase 1 research and engagement sessions and further refined by Phase 2 desktop research.

The assessment next examined the factors that influence waste in the target sectors, such as regulations or policies, strategies, initiatives, market forces, and behaviours, and then mapping these factors to the relevant actors. For example, the Ontario Building Code Act would be mapped to the provincial government. This was informed by desktop research on the tools, initiatives, and common practices used by each actor to influence waste.

Finally, the assessment mapped the specific factors to their approximate location in the value chain, including those that are predominantly "upstream" [4], "downstream", or cover activities "across the value chain". The "across the value chain" category was included because many factors are comprehensive and impact several aspects of the value chain. This means they do not fit neatly within a categorization of "upstream" or "downstream". For example, the Government of Canada's Safe Food for Canadians Act is applicable across the value chain, because it influences food import, production, sales, consumption, re-distribution and waste. Other factors influence a specific location, such as the Province of Ontario's Building Materials Evaluation Commission, which primarily affects the upstream components of the construction value chain (e.g., project planning and design).

Table 1 outlines example upstream and downstream value chain components across the target sectors.

[4] As described in Section 2, the waste management sector refers to the collection, transportation, treatment (sorting and processing), reuse and recovery, and final disposal of material solid waste in Toronto. This sector's value chain occurs downstream of consumption and has no upstream value chain components.

Table 1: Example Upstream and Downstream Value Chain Components

	Waste Management	Food System	Construction
Upstream	• *N/A*[1]	• Food import • Domestic production • Food processing & manufacturing • Food packaging • Marketing & sales • Retail & food services	• Financing • Project planning & design • Procurement & materials
Downstream	• Collection & Transport • Sorting, Dismantling & Processing • Recycling & Resource Recovery • Re-use • Disposal • Across System	• Re-Distribution • Waste	• Deconstruction • Demolition • Waste

[1] This sector's value chain occurs downstream of consumption and has no upstream value chain components.

To illustrate visually the current state assessment, current state maps were developed for each of the target sectors. The maps are embedded within each of the following sections of the report for the Food System (Figure 2), Construction (Figure 3), and Waste Management (Figure 4) sectors. The maps include a summary of the key challenges and barriers to circularity that were identified for each sector through the analysis of the current state assessment and findings from engagement activities. A list of these challenges and barriers can be found in Section 5.

Findings

Key findings from the current state assessment are presented below for each target sector and are grouped by actor. Over 200 factors that influence waste and consumption in Toronto were identified. Further analyses and insights from interested parties on the effectiveness and impact of the factors on waste are included in Section 4. Within this section, although "across the value chain" may encompass both upstream and downstream components, factors that predominantly influence the upstream and downstream components are also discussed individually.

Food System

The current state map to visualize the factors influencing waste in the food system sector is presented in Figure 2.

Federal Government

Within the food value chain of the Toronto food system, the upstream component is where the federal government has the most influence. This influence on upstream components, including food and beverage production, import, and distribution, is exerted through regulations, policies, and initiatives that are intended to ensure that Canadians have access to safe, nutritious, and affordable food. Examples of these programs include the Local Food Infrastructure Fund, which provides

funding for locally driven projects working to improve food security, and the Food Policy for Canada, which prioritizes sustainable food practices and strengthening connections within food systems. Food packaging is also influenced by upstream federal initiatives, such as the recycling content and labelling rules for plastic.

While the federal government has a pronounced impact on the upstream components of the food system value chain, it has fewer initiatives that influence downstream components, such as diversion and food rescue. One initiative that does impact downstream components is the Surplus Food Rescue Program, which provided funding to redirect and mitigate food waste in response to the COVID-19 pandemic.

Federal government initiatives that affect the entire food system value chain focus on food safety. Examples include important legislative and regulatory measures like the national requirements for date markings, the Food and Drugs Act, and the Safe Food for Canadians Act.

Provincial Government

A primary tool used by the provincial government to exercise influence upstream is the Resource Recovery and Circular Economy Act, which has made producers fully accountable and financially responsible for disposal of their product's packaging.

The provincial government also influences the downstream aspects of the food system. The primary influence is through regulatory and policy initiatives that target both food waste and food redistribution (see Figure 2), such as the Safe Food Donation Reference. The community food program donation tax credit for farmers is a funding initiative that provides tax rebates for producers who donate surplus food to charity.

The provincial government influences activities across the food value chain through three key policies. The first is Ontario Food and Organic Waste Policy Statement which provides direction to ministers, municipalities and the private sector on reducing food. The second is the Food Safety and Quality Act, which ensures the safety and quality of food products by establishing mandatory standards and licensing requirements. Additionally, O.Reg. 493/17, known as the Food Premises regulation, specifies the requirements for the operation and maintenance of food establishments in Ontario. These strict health and safety standards can, however, inadvertently lead to increased food waste

Municipal Government

The City has a limited influence on the upstream component of the food system value chain compared to its stronger influences downstream. This limitation is largely because most of the food consumed in Toronto is not produced within the city. Many initiatives aimed at improving the upstream value chain are voluntary and community-driven, such as the Community Garden program. Furthermore, the City's GrowTO plan outlines strategies for developing urban agriculture within its boundaries. Over time, these initiatives may enhance the City's influence on upstream food production.

Most of the City's downstream influence is through strategies and voluntary initiatives rather than mandatory regulations or policies. City initiatives often focus on providing guidelines for businesses, such as the Guidelines for Safe Handling of Reusable Cups and Food Containers, and promoting

responsible food behaviours among individuals, such as the Signs and Posters the City provides for Business to Support Reusable Cups & Containers.

The City has several initiatives that impact the food system across the value chain. This includes the Circular Food Innovators Fund, a pilot funding initiative to support small businesses in implementing reuse systems, and Toronto's Food Charter, which outlines the City's objectives for equitable access to safe and nutritious food. The Single-Use and Takeaway Items Bylaw also impacts the entire value chain by requiring retail businesses to reduce the amount of takeaway and single-use items. Additionally, the City's ongoing collaboration with organizations and government partners, including the National Zero Waste Council, shapes the food systems value chain in Toronto.

Industry

Industry exerts influence throughout the entire value chain. Industry actors in the food system include distributors, manufacturers, processors, and retailers. This group has a large influence on food waste produced in Toronto. The City of Toronto estimates that while 2,094,500 tonnes of food are available within Toronto annually, only 1,836,800 reach households and food service, indicating 257,700 tonnes of lost food waste during distribution, processing, and retail.[5]

Upstream industry initiatives include retailers selling "imperfect" or "ugly" produce at a discounted rate. Market forces have a significant influence on upstream food waste production, including aesthetic preferences for food; overproduction, inaccurate demand forecasts and cancelled orders; and food spoiling in transport due to process inefficiencies.

Several industry initiatives focus on the downstream value chain, primarily addressing waste management and the redistribution of surplus food. Most of these initiatives are led by small- and medium-sized enterprises that are adopting circular business models. Examples include businesses that specialize in food upcycling and providers of reusable packaging.

There are only a few industry factors that influence the entire food system value chain. Examples include the education of workers on proper food handling practices, as well as aesthetic preferences and grading standards.

Community Organizations

Community organizations, such as non-profits, advocacy groups, and educational institutions, also have a large influence on both the upstream and downstream aspects of the value chain.

For the upstream aspects, community organizations play a role in influencing the behaviour of individuals through community-based education and events. As an example of a community organization, educational institutions are a key actor in the food value chain because they consume significant amounts of food and also lead food waste education programs. Additionally, religious institutions and community events can both produce food waste and convene community food-based programs that help prevent food waste. Community organizations further enhance education and awareness of the circular economy in Toronto through initiatives such as Circular Economy Month and the associated Food Waste Pledge.

[5] Baselining Study

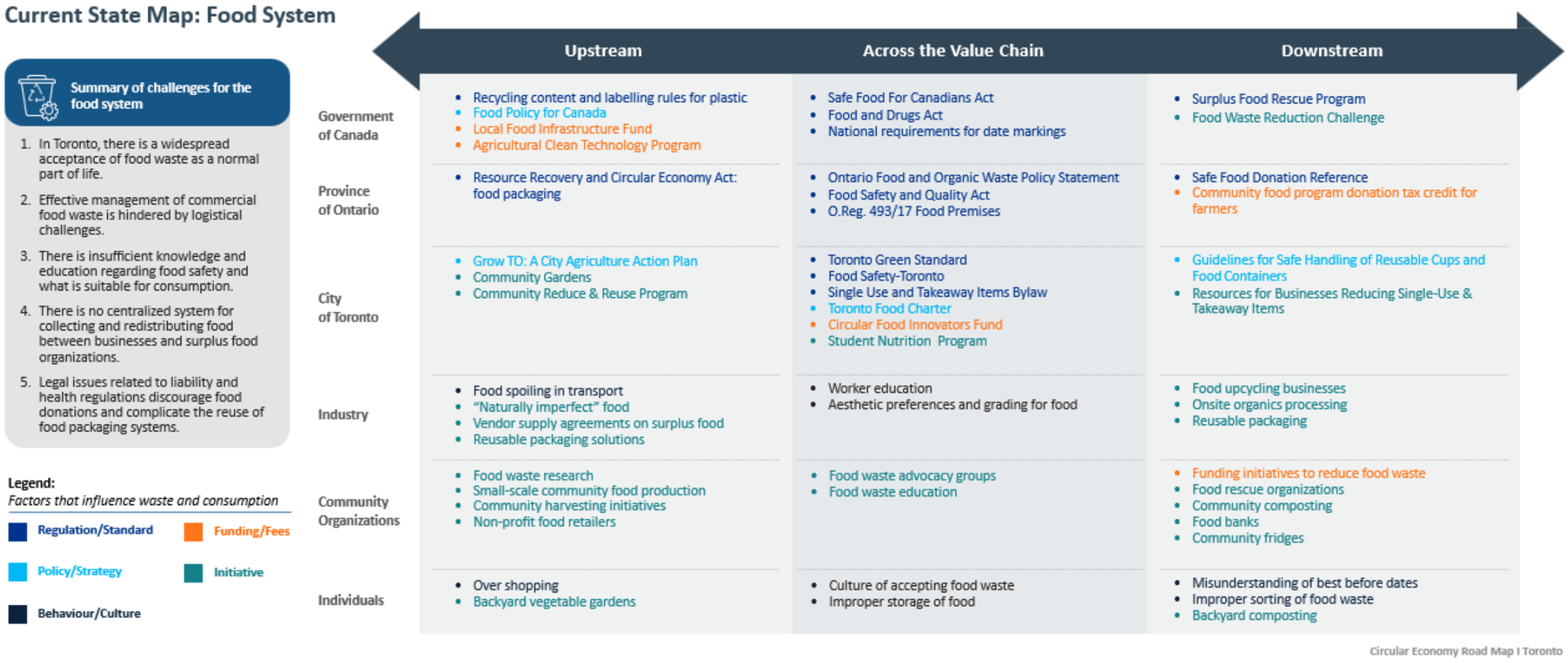
Downstream, community organizations play a crucial role in reducing waste by capturing and redistributing surplus food. This includes initiatives such as food rescue organizations, food banks, and community fridges. Additionally, these organizations can provide essential funding for projects aimed at minimizing food waste and supporting community-wide composting efforts.

Individuals

Individuals influence food waste in both positive and negative ways. For example, individual behaviours have a significant influence on food waste, such as over-shopping, improper storage, and a lack of understanding of best-before dates. Upstream and downstream initiatives at the individual level include backyard vegetable, fruit, and herb gardens, and backyard composting. Backyard composting initiatives are responsible for the processing of 19,300 tones of organic waste, or roughly one-seventh of the total food waste composted in Toronto annually.[6] Additionally, many individuals donate food to various community organizations (e.g., food banks, community fridges). Individuals also undertake small-scale household initiatives like canning soon-to-be-expired produce or using food scraps in recipes, among other initiatives to reduce food waste.

[6] Baselining Study

Figure 2: Current State Map – Food System



Construction

The current state map to visualize the factors influencing waste in the construction sector is presented in Figure 3.

Federal Government

The federal government oversees several initiatives and guidelines that impact the construction sector value chain. One initiative that influences the upstream component is the Green Construction through Wood (GCWood) Program that invests in construction projects that utilize innovative wood-based building technologies and developed guidelines and strategies to support the reduction and recycling of construction and demolition waste across Canada. The government also has a handful of funding programs that impact waste in the construction sector, including the Green Municipal Fund and the Green and Inclusive Community Buildings program.

Downstream, to mitigate its own environmental impact, the federal government has implemented the Greening Government Strategy, which includes commitments to reduce construction and demolition waste in its own projects.

Across the value chain, the National Building Code of Canada provides guidance on best practices for the design, construction, alteration, and demolition of buildings. This Code significantly influences mandatory provincial building regulations, such as the *Ontario Building Code Act, 1992*. The Canada Green Buildings Strategy outlines the government's vision for transforming the buildings sector to achieve net-zero emissions and improve resiliency against climate change. This includes supporting circular construction methods such as modular buildings. The federal government also supports initiatives that align with circular principles by overseeing the EcoAction Community Funding Program, which offers grants to community organizations addressing environmental issues. Additionally, several federal initiatives, including the National Building Code of Canada and the Federal Sustainable Development Strategy, are anticipated to be updated to consider embodied carbon and may incorporate more explicit references to circularity, linking circularity to broader environmental impacts.

Provincial Government

The Building Materials Evaluation Commission (BMEC) influences the upstream component of the construction value chain. The BMEC is a regulatory body under the provincial government that conducts research on innovative construction materials and advocates for modifications to the Ontario Building Code. The findings from BMEC's research have a direct impact on the types of materials that are used and disposed of by Toronto's construction industry.

The provincial government has influence downstream through regulations that govern construction site waste management plans and audits. This is discussed further in the Waste Management section below.

The province also has a number of policies and pieces of legislation that influence the entire construction sector value chain, including the *Ontario Building Code Act, 1992* and the *More Homes Built Faster Act, 2022*. The *Ontario Building Code Act, 1992* aims to promote public safety by

establishing uniform building standards, which directly affect building design, construction, and demolition. This in turn has impacts on circularity throughout the value chain in terms of how materials are sourced, used, and discarded. The *More Homes Built Faster Act, 2022,* was established in response to the demand for more housing and impacts permitting, planning, and construction practices throughout the province. The *More Homes for Everyone Act, 2022* was introduced to increase the supply of affordable homes across the province. This included adjustments to the development process, and incentivizing development, which impacts building design and construction. Additionally, the Provincial Planning Statement, 2024 impacts land use policies and improves the flexibility in development approvals, which shapes the broader construction landscape and the incorporation of circular practices into construction.

Municipal Government

The City influences circularity upstream in the value chain primarily through policies, regulations, and bylaws, such as the Toronto Accessibility Design Guidelines, as well as funding programs. Of the identified funding opportunities supported by the City of Toronto, the majority target the City's own construction projects, such as the Green Debenture Program. The Toronto Green Standard Development Charge Refund Program is one example of a limited number of programs that provide financial support to industry.

The City's Toronto Heritage Register targets the downstream aspects of the construction sector. The Register identifies the cultural heritage value in existing buildings, with specific preservation requirements for designated heritage properties.

The City has also taken action to preserve the existing housing supply and ensure they are climate resilient. The City's Taking Action on Tower Renewal (TATR) and High-Rise Retrofit Improvement Support Program (Hi-RIS) help to finance retrofits in older apartment buildings, which increase energy efficiency and reduce greenhouse gas emissions while improving tenant comfort.

The City is working to divert waste from City-owned projects and private developments across the value chain. Through the Toronto Green Standard, the City has established waste management requirements for residential development; Industrial, Commercial, and Institutional developments; and City Agency, Corporation and Division-owned facilities. The standard includes mandatory minimum requirements for all buildings regarding construction waste management and waste collection, and storage. It also includes voluntary measures for building material reuse and the sourcing of raw materials (mandatory for City-owned facilities). The Municipal Code Chapter 363, Building Construction and Demolition, requires demolition permit applications to include details on the nature of waste generated during demolition and the how the waste will be disposed. The City's Transform TO Net Zero Strategy and Net Zero Existing Buildings Strategy support the City's transition to a net-zero built environment, which include waste management components.

Industry

Within the construction value chain, upstream is where industry has the greatest impact on construction waste through incorporation of circular principles into design elements. This includes aspects such as design for deconstruction, design for disassembly, and design for adaptability. Certifications for circular materials and project lifecycle certifications increase uptake of circular materials in construction. Additional upstream design elements include prefabrication, modular, and mass timber construction.

The primary initiative in the construction industry that focuses on the downstream segment of the value chain is businesses that specialize in deconstruction. These businesses divert waste by carefully removing construction materials from buildings so that they can be preserved and repurposed for other construction projects.

The construction industry has several factors that impact waste generation across the value chain. The primary factor is awareness raising, which includes professional organizations enhancing awareness of circularity in construction by certifying secondary materials, as seen with the World Steel Association, and advocating for better construction practices, as done by the Toronto Construction Association. Marketplaces for secondary materials also impact construction waste across the value chain by rescuing deconstructed materials and then reintroducing them back into the upstream aspects of design and construction. Furthermore, organizational commitments to achieving net-zero emissions help minimize downstream waste by promoting the use of low-carbon building materials.

Community

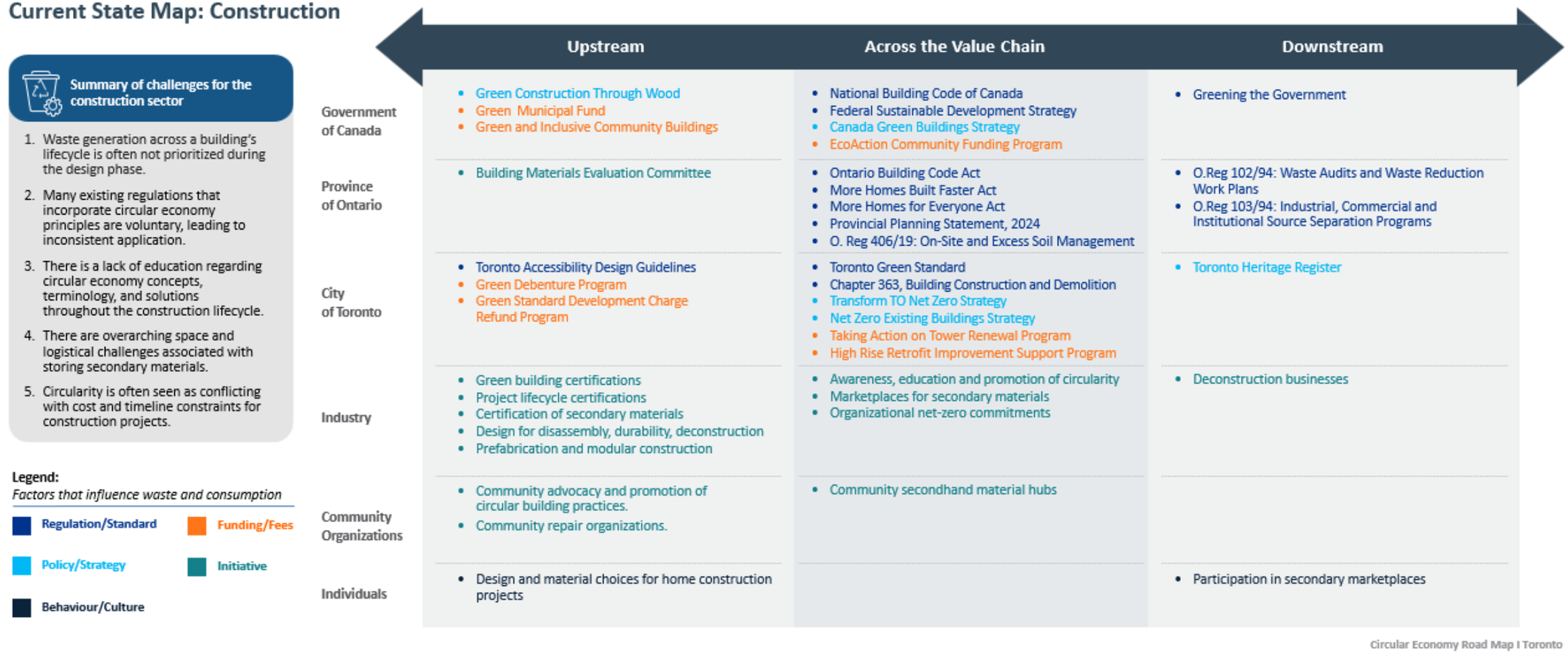
Community-led organizations primarily impact the upstream aspects of the construction industry. This is done through community advocacy, where organizations promote the advantages of increased circularity in the construction sector. Additionally, community repair organizations like Repair Cafés support the community in facilitating repair and reducing construction waste generation.

Across the value chain, community organizations are essential in facilitating circular initiatives that benefit both individuals and the industry. For instance, organizations like Habitat for Humanity ReStore help divert surplus construction materials from landfills by reselling and donating them. Community facilitated secondary markets, including online marketplaces, also play a crucial role in facilitating exchange of surplus construction materials.

Individuals

Individuals have limited influence on construction sector waste. Most individual influence is exercised through design and material choices for personal projects such as renovations. For example, individuals have may negative perceptions of the performance of secondary materials or elect to change the design of projects after materials have already been ordered. Although individuals can participate in and support circular construction practices through community-facilitated, non-profit, or industry supported secondary markets, it can be challenging for individuals to rely on these markets for secondary materials due to inconsistent availability.

Figure 3: Current State Map – Construction



Waste Management

The current state map to visualize the factors influencing waste in the waste management sector is presented in Figure 4.

Federal Government

The federal government has influence across the broader Canadian waste landscape, which in turn affects waste management in Toronto. The government has established several key strategies that incorporate waste reduction goals and impact the entire value chain, including the Federal Sustainable Development Strategy (2022–2026), the Greening Government Strategy and Canada's Zero Plastic Waste Agenda.

The Zero Plastic Waste Agenda, building on the framework of the Oceans Plastic Charter and the Canada-wide Strategy on Zero Plastic Waste and Action Plan, outlines a number of actions to "better prevent, reduce, reuse, recover, capture and clean up plastic waste and pollution in Canada". This includes the creation of the Federal Plastics Registry.

In addition, Canada is a signatory to a number of international agreements that impact the value chain, including the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and is an active participate in the finalization of a Global Plastics Treaty.

A downstream funding initiative is the Canadian Plastic Innovation Challenges. These "challenges" provide funding opportunities to small- and medium-sized enterprises to develop innovative approaches to advancing reuse and improving the collection and/or sorting of plastic film and flexible packaging.

Provincial Government

The provincial government's influence spans across the value chain. Most provincial legislation, regulations, and policies related to waste management are covered in either the Resource Recovery and Circular Economy Act (RRCEA) or the Environmental Protection Act.

The RRCEA is the more recent statute and identifies the provincial interest to reduce waste and increase resource recovery. It establishes a framework that allows the province to assign the responsibility for the collection, processing, and recovery of waste materials to the producers of these materials. This would include the responsibility for all associated costs. The types of waste materials subject to this Extended Producer Responsibility (EPR) framework are defined by regulations under the RRCEA. Through these regulations, producers are also responsible for maximizing the recycling and recovery of the materials they produce and must meet provincial recovery targets.

There are currently five regulations under the RRCEA that define materials to be managed by producers. These include the Blue Box regulation (O.Reg. 391/21), which shifts responsibility for the recycling of packaging and packaging-like products from municipal governments to the producers of these materials, including the 96,000 tonnes of blue bin materials that the City previously collected annually. Other waste materials have been made the responsibility of their producers under the Electrical and Electronic Equipment (O.Reg. 522/20), Batteries (O.Reg. 30/20.), Tires (O.Reg. 225/18), and Hazardous and Special Products (O.Reg. 449/21) regulations.

The RRCEA also established the Resource Productivity and Recover Authority (RPRA), which has the mandate to oversee and enforce the province's circular economy legislation and regulations. To help it accomplish this task, the Administrative Penalties regulation provides the RPRA with the ability to issue administrative penalties for non-compliance with the RRCEA and its regulations.

Implementation of the RRCEA and the transition to EPR is ongoing. There are other waste streams that could be considered for inclusion in new regulations. The RRCEA does not include any regulations that cover waste generated by the ICI sector (e.g., shopping malls, office buildings, hospitals). However, there are some limited recycling requirements for the ICI sector detailed in the Industrial, Commercial and Institutional Source Separation Programs regulation (O.Reg. 103/94) under the Environmental Protection Act.

Provincial government policies that target downstream aspects of the waste management sector include the Waste Audits and Waste Reduction Work Plans regulation (O.Reg. 102/94) and the Packaging Audits and Packaging Reduction Work Plans regulation (O.Reg. 104/94), both under the Environmental Protection Act.

Municipal Government

The City's primary influence on waste management is as a waste management service provider. The City is responsible for collecting, processing, composting, and disposing of waste from single-family households, approximately 50% (from 2022 stats) of multi-residential buildings, and some non-residential sources such as schools, City facilities, charities, institutions, and small commercial establishments. The City also collects waste from parks, street scape litter bins, and special events. It is responsible for the processing of 909,000 tonnes of solid waste annually or 44% of the total waste produced in the Toronto economy.[7] Beyond the waste management services provided by the City, the City also implements various policies and bylaws that govern its waste management services. Key examples of such bylaws include the Residential and Commercial Collection, Solid Waste Fees, and the Waste Transfer & Landfill bylaws. The Long-term Waste Management Strategy sets the broader waste strategy and objectives for the City.

The City promotes individual behaviour change through initiatives like the Waste Wizard, Community Environment Days, and Community Reduce and Reuse Programs, which enhance public participation in resource recovery and waste reduction.

Industry

Private waste management businesses in Toronto are responsible for the collection, transport, and processing of 1,168,100 tonnes of waste annually in Toronto, or 56% of the City's total waste[8].

As identified in the food and construction sectors, there are businesses within the waste sector working to increase the level of circularity. These include traditional waste management businesses as well as second-hand stores and digital marketplaces that extend of life of consumer products. Industry factors also include newer business models such as zero-waste and bulk purchase stores and companies selling post-consumer products as feedstock.

[7] Baselining Study
[8] Baselining Study

The current state assessment identified several relevant market forces, such as short product lifespans with limited repair options, shortages of recycled materials, and the high cost of waste diversion that hinder circularity efforts in waste management. Traditional linear materials and disposal are often less expensive than waste mitigation or diversion because of the established infrastructure and reduced complexity. Market forces identified also emphasize the need for circularity. For example, the increased demand for critical minerals and metals may require businesses to consider the collection and reuse of post-consumer materials.

The surrounding infrastructure for waste management also influences circular practices. While there are persistent challenges, such as geographical barriers and insufficient transportation infrastructure, there is also increasing access to software and technology that can track waste and make waste management more efficient.

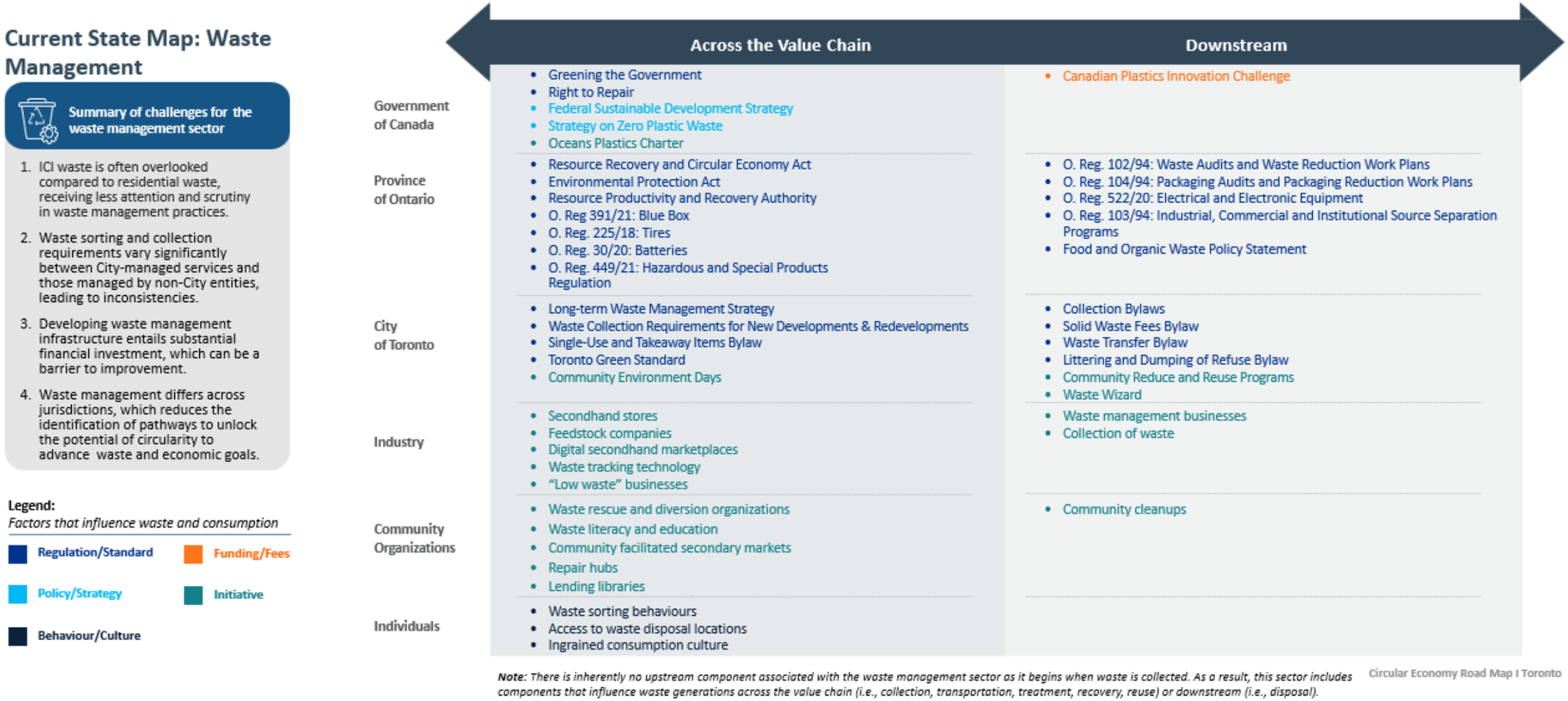
Community

Toronto has several community initiatives that directly impact waste generation. Community organizations contribute to waste diversion through waste rescue organizations, repair hubs, lending libraries, and community-facilitated secondary markets. Community actors also influence the level of awareness and education on the circular economy. Waste literacy and educational programs, such as the University of Toronto Trash Team, work to build awareness of individuals across Toronto to help encourage responsible waste behaviours.

Individual

Individuals are the primary users of the City's waste management services and interact with the sector primarily during the collection of waste. As a result, the ability of individuals to access waste services and correctly sort waste is a primary driver of the amount of waste that is sent to landfill. Example factors include inconvenient waste disposal locations, which decrease the likelihood of a consumer properly disposing of certain types of waste (e.g., hazardous waste or e-waste), and inconsistent waste disposal practices across home, work, and public spaces, which create confusion and barriers to proper waste sorting.

Figure 4: Current State Map – Waste Management



4. Engagement on the Current State of Waste

Overview

Engagement in Phase 2 validated and enhanced the findings from Phase 1, while deepening the understanding of the current factors influencing waste within the target sectors in Toronto. This involved undertaking structured engagement activities with various interested parties, including the public (through the Circular Economy Road Map's Community Advisory Committee (CAC)), industry representatives, City Divisions, and Indigenous organizations. Engagement activities were used to validate preliminary findings from the current state assessment, identify challenges and opportunities to advancing circularity within each sector and Toronto more broadly, and discuss initial levers the City could use to address these challenges. Findings from engagement activities were used to finalize the current state assessment and are embedded into the current state challenges.

Approach & Segmentation

In Phase 2, over 150 individuals participated in a total of 30 hours of engagement. Participants were segmented into several groups, including residents, industry representatives, members from City Divisions, and representatives of Indigenous organizations. The content and structure of each session is described below. The consolidated key takeaways from the engagement activities are documented in the Key Findings and Themes section.

Industry

Industry engagement consisted of a virtual workshop for each of the three sectors, as well as a sector-agnostic session. These workshops included over 80 participants representing a mix of local businesses, large corporations, community organizations, and non-profits, among others. During these sessions, participants discussed the factors that influence waste in Toronto, specifically within the target sectors. Additionally, participants provided insight on the challenges and opportunities to addressing waste within their sector and discussed potential levers the City could use to address these challenges.

An overview of industry representatives is included in Appendix A.

City Divisions

During Phase 2, two distinct groups of City representatives were engaged.

First, three two-hour workshops were held for representatives whose Divisions impact waste internally through City operations or externally in the wider Toronto economy. Each workshop focused on the current state assessment of a specific target sector, allowing representatives to discuss how their Division contributes to or influences waste through its operations or mandates. Over 65 Divisional representatives participated in these sessions.

Additionally, smaller, targeted sessions were held with representatives from the Interdivisional Planning Table (IPT), one of two governance teams established for the Circular Economy Road Map. The goal of these sessions was to explore in greater detail how their specific Division may influence waste. Participants were asked about the policies and procedures in place and how these might influence waste both in City operations and externally. A total of seven engagement sessions were conducted.

Public

The public was engaged through the CAC which consists of 25 individuals representing the diverse demographics of Toronto. The CAC's purpose is to foster discussions and ideas on the circular economy among Toronto's varied communities, ensuring ongoing engagement with representatives from equity-deserving and historically marginalized groups.

In Phase 2, the CAC was engaged through a three-hour workshop. Members were tasked with validating the findings from Phase 1 and providing insights on the current state of waste across the target sectors. The CAC also provided feedback on how the City can better communicate the transformation being proposed on circularity in the Circular Economy Road Map through a “change story”. They also participated in an activity aimed at understanding how residents of Toronto impact waste. Specifically, this activity presented a “repair or replace” scenario and walked through the factors that influence participants’ decisions regarding repair, reuse, or disposal.

Indigenous Organizations

Indigenous peoples have been practicing what the City is now referring to as circularity since time immemorial and the City recognizes that Indigenous perspectives are crucial to ensuring that the Circular Economy Road Map reflects the diverse experiences of our community. Representatives from seven Indigenous organizations were consulted to gather their perspectives on the Circular Economy Road Map and to build upon the insights gained from Phase 1. These representatives participated in one-on-one calls to share their unique viewpoints regarding the circular economy.

The discussions focused on the role of Indigenous peoples in an existing and emerging circular economy in Toronto, along with the challenges and opportunities associated with increasing circularity in Toronto. It also explored how to incorporate Traditional Knowledge into potential circular solutions, as well as how to build successful and long-lasting collaboration and partnerships between the City and Indigenous peoples in the context of this project and the broader circular economy.

An overview of the Indigenous organizations engaged is included in Appendix A.

Key Findings & Themes

The key findings and themes from engagement with interested parties are categorized by sector, community-wide, public, and Indigenous. The sector-focused and community-wide findings combine takeaways from sessions with industry and City Divisions. The findings from engagement with the public and Indigenous organizations are outlined separately below. These findings build on the outcomes of the current state assessment and provide further analysis on the influence and impact of the actors and factors on waste and consumption in Toronto.

Food System

Engagement with industry participants and representatives from City Divisions both validated the findings from the current state assessment and revealed several key barriers to food waste reduction, such as insufficient resources (including funding, staffing, and infrastructure), lack of awareness, and logistical challenges.

The current state assessment identified that there is limited government funding programs aimed at reducing waste in the food system at the municipal or provincial levels. Participants in engagement sessions indicated that existing incentives, such as the Circular Food Innovators Fund or community food program donation tax credit for farmers, are insufficient to shift industry and consumer behaviour and that additional incentives for waste reduction in the food system are a major opportunity for the City.

Engagement confirmed that there are several organizations and community initiatives in Toronto that redistribute surplus food from restaurants, retailers, and other sources. Participants highlighted, however, that many of these organizations and community initiatives (e.g., Food Banks) are often under resourced, which can impact their ability to scale their operations and services. Some community initiatives, including community kitchens, are closing due to insufficient funding and rising costs. Insufficient funding was also one of the major challenges that participants identified with the City's current food waste mitigation initiatives, such as the City's Urban Harvest Program and Community Composting Program.

The lack of public awareness is another challenge identified that hinders the effectiveness of the City's food waste initiatives. The current state assessment identified that individual behaviour influences food waste and participants noted that more work is needed to fundamentally shift our collective behaviour towards more circular practices. Participants suggested the City could increase its efforts to shift behaviour by increasing consumer awareness of the problems associated with food waste and existing waste diversion initiatives. Participants noted that developing educational initiatives is one of the most effective ways to drive change related to food waste.

Participants also noted that opportunities to shift behaviour and reduce food waste must be tailored to community-specific needs, highlighting the important role that the City can play in supporting local, grassroots initiatives through its various outreach channels. The City may be able to leverage its existing collaborative initiatives, such as the Love Food Hate Waste campaign, to support this local work.

Engagement identified that there is also a need to build awareness among industry actors. Industry participants felt there is a lack of guidance on surplus food re-distribution practices and highlighted that additional support is required to reduce reputational and legal concerns associated with food re-distribution. The current state assessment identified that the province protects donors from liability through the Donation of Food Act, 1994 and provides guidance through the Reference Document for Safe Food Donation. However, awareness of these policies is limited as restaurants and retailers remain hesitant to donate surplus food due to concerns of legal and reputational repercussions. Collaborative work with other levels of government may be a critical lever to build awareness of existing policies and facilitate food donation. Participants also suggested that the City may be able to play a role in connecting those with surplus food to those who can distribute it.

Logistical challenges pose significant hurdles to donation and food recovery, particularly in storing and transporting surplus food. When there is sufficient infrastructure, it is possible to effectively reduce food waste. The logistical challenges associated with food storage and expiry should be carefully considered when identifying potential opportunities for the City to mitigate food waste.

Engagement confirmed that the City is limited in its ability to influence food production. Participants noted that most jurisdictional authority related to the upstream food value chain lies with federal or provincial governments and agencies. The current state assessment identified a limited number of municipal policies directly targeting food waste downstream. While this represents an opportunity for the City to expand regulatory initiatives, participants indicated mixed effectiveness of existing policies at the provincial and federal levels. Participants noted that some policies have not yet made the progress intended to reduce waste. Additionally, participants stressed the importance of enforceability across policy measures. For example, some participants indicated that there is a general lack of enforcement of the Ontario Food and Organic Waste Policy Statement and any adherence to policies is inconsistent, which impacts its ability to effectively reduce food waste.

Construction

Engagement revealed that there is a perception that circular practices in construction are not economically viable, and there is a lack of sufficient economic incentives in Toronto to overcome this barrier. This confirms the finding of the current state assessment, which noted minimal government funding initiatives targeting circular construction. Of existing funding opportunities, the majority, such as the EcoAction Community Funding Program or the Green Debenture Program, target the City's own construction projects or non-profits, rather than industry. Even in the City's own projects where there are mandatory waste diversion requirements from the Toronto Green Standard, participants noted it can be challenging for Divisions to adequately resource the additional work needed to meet these waste management standards. Additionally, City programs like the Taking Action on Tower Renewal (TATR) and High-Rise Retrofit Improvement Support Program (Hi-RIS) provide funding for retrofits of existing apartment buildings in Toronto. Overall, participants emphasized that incentivization is a key driver to encourage action.

There was also broad-based consensus among participants that the City has a role to play in investing in and modelling best practices for construction waste reduction. The scale of City operations provides an opportunity to pilot circular construction practices within its own projects. In doing so, the City can assess the financial impacts of these circular processes. If pilot projects demonstrate success, they can serve as proof of concept to persuade stakeholders to implement these practices on a larger scale. Engagement identified a lack of consensus around which Division within the City would be responsible for establishing and enforcing construction waste management policies and requirements. While it is important for the City to model these practices, governance for these initiatives within the City will need to be established. Participants also noted the importance of the City's role in recognizing other organizations that are developing and implementing similar initiatives.

In addition to financial barriers, there is a lack of a circular construction ecosystem, such as markets for secondary material and reuse partnerships, which further hinders the business case for circularity. While the current state assessment identified that there are community-led organizations collecting and redistributing secondary materials, engagement participants noted that there are gaps in communication and logistics between industry and these community-led organizations.

These coordination challenges hinder the efficacy and scale of some of these community-led initiatives.

In addition to coordination challenges, engagement identified insufficient infrastructure (i.e., lack of storage space, transportation difficulties) and the disconnect between project planning and deconstruction as barriers to the preservation and use of secondary materials. Participants suggested the City could provide a centralized location that is low cost that companies could use to store and process rescued materials.

While there was some discussion regarding the extent to which policies and regulations influencing construction waste are enforced, participants generally agreed that waste diversion and reduction occur when explicitly required, such as under the *Ontario Building Code Act, 1992*. Voluntary standards, such as CSA Z782 Design for Disassembly and Adaptability in Buildings, were identified in the current state assessment. However, participants noted voluntary standards are often less effective at influencing behaviour when compared to mandatory requirements. Despite this consideration, workshop attendees expressed concerns about developing restrictive City bylaws for waste reduction, as they could increase costs for businesses, as well as City-led and City-supported developments.

Engagement highlighted that Toronto may be limited in its ability to establish new innovative requirements for construction and demolition within the city. All new bylaws and regulations would need to align with the *Ontario Building Code Act, 1992* as written. Additionally, construction involves the movement of materials across geographies and jurisdictions, with most of the raw materials used for construction projects originating outside of Toronto, and all the waste being disposed of outside of Toronto. Municipal factors that mitigate construction waste may be ineffective if they do not consider the broader construction landscape that is beyond the City's geographical and jurisdictional boundaries. This suggests some of the City's greatest opportunities to influence waste involve collaboration with other levels of government.

While the current state assessment identified existing initiatives to incorporate circularity into construction practices, such as design for disassembly and deconstruction businesses, engagement participants highlighted that this work is done voluntarily and for the purpose of demonstration projects and pilots. Engagement confirmed there is not widespread adoption of these initiatives in Toronto.

Attendees repeatedly identified the opportunity for increasing the awareness education of actors across the construction value chain. The current state assessment identified a limited number of ongoing initiatives targeting education on circularity, primarily led by community actors, professional associations, and standard-setting organizations. There is an opportunity for the City to work with these organizations to promote these initiatives and increase awareness.

Waste Management

The waste management sector in Toronto is complex, with numerous interested parties and complicated divisions of authority between different levels of government. The current state assessment identified that waste management is regulated across all three levels of government and influenced by international requirements, including the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and the Ocean Plastics Charter. Participants confirmed that international regulations related to product development and waste management impact Toronto's waste sector.

Engagement participants noted that the highly regulated nature of the sector presents an opportunity since it is easier to incorporate circularity into existing policy and regulatory processes. While the sector is highly regulated, the majority of policies often reinforce linear processes through focusing on the collection and management of waste, as opposed to upstream reduction and waste diversion. Engagement participants also noted that the efficacy of policies across levels of government is hindered by ineffective performance metrics and insufficient funding for enforcement. There was consensus among participants that the existing policy context is not enabling of a recovery and reuse economy.

The current state assessment determined there are a limited number of funding initiatives, policies, and regulations to contribute to broader material recovery and circularity. Participants emphasized there are insufficient incentives for waste management providers to increase waste diversion practices. There need to be broader economy-wide shifts to ensure that the cost of waste mitigation and diversion is equal to or lower than the cost of waste disposal. Necessary enabling factors include the development of robust markets for secondary materials and connections between organizations with surplus resources and organizations that can use the additional materials.

Engagement representatives reiterated that is important to carefully note how the Province's Extended Producer Responsibility (EPR) regulations could impact the waste management sector. Representatives highlighted that there is ongoing implementation challenges related to oversight and jurisdiction of specific materials, which may complicate the City's ability to influence the waste management sector at this time. For example, some materials streams are now designated under provincial regulations and enforced by the enforced by the Resource Productivity and Recovery Authority (RPRA). Other material streams, such as ICI waste, have shared responsibility between jurisdictions. Representatives reinforced that the province's jurisdiction and oversight of these materials and the resulting implementation challenges must be carefully considered when developing Toronto's Circular Economy Road Map.

The complexity of the sector and the heavy influence of societal factors emphasize the need for collaborative initiatives and for the City to work in partnership with other levels of government, industry, and community organizations to incorporate circularity into the waste management sector. Participants highlighted the need for a nationally coordinated effort in order to reduce barriers and improve efficiencies.

Participants highlighted the importance of education of actors across the value chain in influencing waste. The current state assessment identified a selection of government initiatives, primarily at the municipal level, to educate consumers on waste behaviours. Still, participants highlighted that there is an opportunity for the City to form partnerships to enhance the level of education for consumers and other actors on the current state of the waste system (e.g., proper waste sorting) and opportunities to enhance circularity.

The City has a role to play in facilitating the distribution of surplus resources, particularly those from its own operations. City Divisions often operate in isolation, with many Divisions unaware of the initiatives related to waste and circularity that are being pursued by other Divisions. This results in inefficiencies and undermines the effectiveness of current policies. Additionally, where diversion or other circular elements are actively being addressed, it is often because a specific individual has taken an interest in the opportunity as opposed to standard policies and procedures. This increases the barriers to scaling circularity and makes it challenging to track ongoing circular initiatives since it is often on an ad hoc basis. There is a significant opportunity for the City to develop and promote

practices that reduce waste. In all these initiatives, it is important for the City to view incentivization and education as a key driver for encouraging action.

Community-Wide

The current state assessment identified that societal acceptance of waste is a key factor in waste generation. Industry and City Divisions confirmed this finding and emphasized that it is important to consider the role of the media and marketing in promoting mass consumerism and thereby contributing to waste. Consumer behaviour, as informed by this culture, has a significant influence on waste; however, the current state assessment identified a lack of factors from the federal or provincial governments specifically designed to shift broad consumer behaviour. Most work targeting individual behaviour is coordinated by the municipal government and local community organizations. There is a consumer-oriented culture in Canada and changing this culture is a long-term effort and requires the building of consensus across actors.

Participants, in alignment with the findings of the current state assessment, commented on the significant number of community and individual initiatives designed to support waste mitigation (e.g., repair hubs, second-hand markets, etc.). Participants commented, however, that there is often a lack of funding to ensure that these initiatives achieve their objectives.

Engagement also identified that waste management and circularity considerations need to be incorporated into the design stage of products to be most effective. The current state assessment, however, identified a limited number of factors across industry, government, and community that target the design of products and buildings. Most upstream factors targeted processes and procedures to increase waste diversion, with limited focus on enhancing product design to decrease waste generation. Upstream factors identified targeting design, such as the Building Materials Evaluation Commission in the provincial government, may have an opportunity to incorporate circularity but are not actively doing so. There is an opportunity for the City to collaborate with other actors already working in the upstream components of sectors to impact waste management downstream.

Public

Members from the CAC explained that to effectively communicate the concepts of circularity and sustainability, it is essential to use clear and simple language that resonates with all audiences. Providing practical examples that illustrate both short- and long-term benefits can enhance understanding and engagement. It is equally important to involve all segments of society — residents, businesses, government, and Indigenous communities — in this dialogue. Such engagement fosters a sense of shared responsibility and ensures that the advantages of circularity are accessible to diverse groups within the community.

Members were asked to consider their own thought process when deciding between repairing or replacing an item. Cultural, economic, and habitual factors were noted to significantly influence the decision to repair and maintain an item or dispose of it in favor of a new product. For example, family traditions, sentimental value, and environmental concerns can encourage repair behaviours, but barriers such as cost, lack of time, and difficulty in accessing resources can often lead to replacement. Limited access to affordable repair resources and infrastructure can hinder sustainable behaviours. To promote a culture of repair, it is crucial to understand and leverage these cultural, generational, and economic contexts, designing interventions that resonate with

various communities. Expanding local repair options, especially culturally specific programs, and making them more accessible can significantly contribute to fostering sustainable practices within the community.

Additionally, a significant shift in the perception of waste is necessary; it should be viewed not as a problem but as a valuable resource. This transformation requires an emphasis on innovation, reuse, repair, and regeneration, which are vital for promoting economic growth and sustainability. Improved product quality will also be crucial in cultivating a circular mindset, where products are not regarded as disposable. Members articulated that adopting a systemic and culturally grounded approach to circularity that builds on existing practices and leverages Toronto's cultural diversity and Indigenous knowledge will be imperative in guiding effective policies and solutions. By framing Toronto as a leader in circularity, we can highlight the urgency of addressing environmental challenges such as landfill capacity, biodiversity loss, and climate change, while simultaneously inspiring collective action.

Indigenous Organizations

Key findings and themes from engagement with Indigenous organizations are outlined below.

Indigenous principles, particularly the Seventh Generation Principle, emphasize sustainability and long-term planning, which resonate deeply with the ideals of a circular economy. This principle encourages individuals and communities to consider the impact of their actions on the seventh generation to come, fostering a mindset that prioritizes environmental respect and stewardship. Such an approach aligns closely with the circular economy's focus on minimizing waste and maximizing resource use, creating a sustainable framework that benefits both current and future generations.

Central to Indigenous values is the commitment to leave the land in a better condition for future generations. This holistic approach to environmental management mirrors the goals of the circular economy, which seeks to create systems that are regenerative and restorative. Integrating Indigenous values into environmental practices, can cultivate a more sustainable future that honors the interconnectedness of all living things and the ecosystems they inhabit.

However, Indigenous businesses often encounter unique challenges that hinder their participation in emerging industries. Barriers such as limited access to financing, capital, and specialized qualifications can impede their growth and integration into the broader economy. To address these challenges, initiatives that focus on training programs, partnerships, and financial support are essential. Providing resources and opportunities, can empower Indigenous communities to thrive economically while contributing to sustainable practices.

Job training, leadership development, and economic inclusion strategies are crucial for supporting sustainable growth within Indigenous communities. Recognizing their inherent alignment with environmental stewardship, these strategies can help cultivate a workforce that is equipped to engage in sustainable practices. Investing in the development of skills and leadership within these communities, can foster a culture of sustainability that benefits both the environment and the economy.

Participants in discussions around sustainability have highlighted the importance of incorporating Indigenous knowledge systems into city policies and sustainability practices. These systems, which

emphasize ecological and place-based values, can significantly enrich circular economy efforts and promote environmental stewardship. However, there are varying perspectives on how much Indigenous knowledge should be shared and integrated into mainstream policy. Some advocated for protecting Indigenous knowledge from over-exposure, while others see value in its integration. This dialogue is essential for finding a balance that respects Indigenous traditions while promoting sustainability.

Moreover, participants stressed the need for more accessible waste disposal programs, and long-term support for Indigenous-led projects. Implementing these recommendations is vital for enabling Indigenous communities to fully engage in circular economy initiatives. Supporting their efforts, can enhance their role in promoting sustainable practices and ensure that their voices are heard in the conversation about environmental stewardship.

Tools such as design thinking and asset-based community development align well with Indigenous values, fostering community consensus and ownership over solutions. These approaches encourage collaboration and creativity, allowing communities to leverage their unique strengths and resources. Utilizing these tools, can build more resilient and sustainable communities that reflect the needs and aspirations of Indigenous peoples.

Building partnerships with Indigenous communities requires a foundation of trust, patience, and respect for their knowledge and practices. A step-by-step approach to relationship-building is essential, as rushed formal partnerships can undermine genuine collaboration. Taking the time to understand and appreciate Indigenous perspectives, can foster meaningful connections that lead to successful partnerships and shared goals in sustainability.

5. Current State Challenges

Overview

A significant portion of the current state assessment and engagement with interested parties involved the identification of challenges and barriers to implementing circularity. This section provides an overview of the current state challenges, including the approach for their identification. These challenges will serve as the foundation for the identification of circular options as part of subsequent phases of work (Phase 3).

Approach & Methodology

The development of key challenges began with the validation of barriers to circularity identified as part of Phase 1 consultations and desktop research. Initial barriers were verified and refined through the current state assessment and Phase 2 engagement sessions assessment to produce a refined set of challenges.

Challenges are categorized according to each of the target sectors, with an additional community-wide categorization to address challenges that are sector-agnostic and affect Toronto more broadly. Challenges were further developed to include descriptors of the underlying issues, impact, and potential levers that could address the challenges.

Challenges Identified

Twenty-seven (27) distinct challenges are listed in Table 2, below.

Table 2: Challenges and Barriers to Circularity

#	Challenge Identified	Description	Impact	Levers
	Community-Wide			
1	**There is an inconsistent understanding of circular economy principles and terminology among interested parties.**	• Awareness of circular economy principles varies. Some parties engaged had a foundational understanding of circular principles, whereas others had a low understanding.	• Not understanding principles and base concepts of circularity may restrict the ability of interested parties to understand and action any proposed circular initiatives. It also means that any proposed initiatives may need to have an educational component or include sufficient context to ensure that all affected parties are at the same level of understanding.	• Education & Awareness
2	**There is a lack of coordination between actors across the value chain.**	• There is a lack of coordination between actors across the value chain of all three sectors in Toronto. For instance, between those who have surplus resources (i.e., restaurants) and those who could use it directly or re-distribute it (i.e., food re-distribution organizations).	• The lack of coordination of actors means that resources that could be re-purposed are sent to waste.	• Collaboration & Partnerships • Policy & Regulatory Initiatives
3	**Waste disposal is more economical than waste diversion or mitigation due to limited profitability of resource recovery.**	• Across all sectors in Toronto, it is far less expensive to create and dispose of waste than it is to divert or mitigate it.	• Unless diversion is made mandatory, sending something to landfill or to waste becomes the default option as it is the least expensive option. For any alternative to sending waste to a landfill, such as diversion or mitigation strategies, it must be cost-effective to be considered a viable option.	• Policy & Regulatory Initiatives • Economic Incentives

#	Challenge Identified	Description	Impact	Levers
4	**There is a lack of available data to track circularity across all three sectors.**	• Data availability, quality, and standards to support measuring circularity (e.g., type of waste) are lacking across all three sectors in Toronto.	• This limits visibility into waste collected across sectors. • The inability to effectively measure waste makes it challenging to target the problem and create solutions.	• Collaboration & Partnership
5	**There are few examples of circular practices being effectively implemented at scale.**	• A lack of successful pilots of circularity makes it challenging to convince people of the benefits and feasibility of circular practices.	• Poor perception of the viability of circular revenue models leads to limited uptake by the private sector.	• Education & Awareness • City Management & Operations
6	**The City has limited direct influence over federal and provincial policies and regulations that impact circularity.**	• Jurisdictional oversight is a challenge across all three sectors. For example, a large proportion of waste generated in Toronto is handled/processed outside of the City's jurisdiction, the provincial building codes have a significant influence on the construction sector, and most of the food production occurs out of the City's geographical boundaries. • There is also a lack of coordinated response across the jurisdictions to address challenges related to waste and the circular economy.	• The City's ability to develop policies and regulations that support circular practices is limited in certain sectors, therefore collaboration with other levels of government is needed to create change in these areas.	• Collaboration & Partnership • Policy & Regulatory Initiatives
7	**There are several barriers to establishing effective secondary marketplaces.**	• Secondary markets face challenges and barriers, including establishing consistent sourcing of secondary materials, distribution channels, storage and space, and consistent demand.	• Logistical barriers can be expensive and time-consuming and often require collaboration across the value chain. • This presents a barrier to those interested in developing circular initiatives, and limits supply, demand, and the ability to scale circular solutions across sectors.	• Collaboration & Partnership • Economic Incentives • Policy & Regulatory Initiatives • City Management & Operations

#	Challenge Identified	Description	Impact	Levers
8	**There is a lack of focus on reducing waste upstream.**	• Current public and private initiatives to mitigate waste focus heavily on diverting waste from landfill versus preventing waste from the source. • Waste upstream is typically caused by a variety of interconnected factors within the entire system. Addressing this issue is often more complex than managing waste diversion downstream.	• As upstream waste makes up a significant portion of the total waste generated, failing to address upstream waste makes it challenging to reduce the total amount of waste generated.	• Education & Awareness • Collaboration & Partnerships • Policy & Regulatory Initiatives • Economic Incentives • City Management & Operations • Innovation & Technology
9	**There are limited economic incentives or funding programs for circular initiatives.**	• Economic incentives and other forms of government and private sector funding generally do not focus on waste and circularity.	• This lack of economic incentives will maintain “business as usual”. • This increases the impact of cost barriers to circularity and makes it challenging for organizations to innovate and create circular solutions.	• Economic Incentives
	Food System			
10	**There are logistical challenges associated with commercial food waste.**	• Commercial-level food waste (i.e., restaurants and retailers) presents unique challenges related to sorting, storage at the original facility, and transportation for redistribution.	• These challenges increase the cost of food waste rescue, leading to an increase in surplus food going to waste.	• Economic Incentives • City Management & Operations • Collaboration & Partnership
11	**There is insufficient knowledge and education regarding the safety and suitability of food for consumption.**	• Consumer knowledge of how to interpret best-before dates is limited and often misinformed. • There is a perception that less-aesthetic products or produce are not suitable for consumption or sale.	• Food waste is generated prematurely in situations where there is a lack of education on what is viable for consumption.	• Education & Awareness

#	Challenge Identified	Description	Impact	Levers
12	**The food industry is confronted with a mix of operational challenges and market pressures that contribute to a continuous cycle of food waste.**	• There are many competing factors in the food industry (e.g., operational practices, consumer expectations around product aesthetics, regulatory compliance, etc.) that contribute to the cycle of food waste within the food industry.	• The complex nature of the food systems requires coordinated efforts across the value chain, including production, retail, and consumer levels to mitigate waste effectively. Thus, it may be easier to create food waste versus integrating solutions for mitigation.	• Collaboration & Partnerships • Policy & Regulatory Initiatives
13	**A consistent and centralized network does not exist to facilitate food collection and redistribution between businesses and surplus food redistribution organizations.**	• Organizations do not have a centralized method for sourcing, collecting, and redistributing food, and thus it is often done on an ad-hoc basis for private sector organizations.	• The lack of partnerships and channels for redistribution can lead to inconsistent supply chains which causes good food to go to waste without an identified end market. • The costs of donation and disposal rest at the end of the value chain – often borne by charities.	• Collaboration & Partnerships • City Management & Operations
14	**There are challenges associated with scaling the implementation of food packaging reuse systems.**	• Alternative options to traditional packaging face several perceived barriers, including costs and logistics, and may not be aligned with consumer needs.	• There is limited commercial incentive to create a reverse logistics supply chain which limits circular actions for companies.	• Collaboration & Partnerships • Education & Awareness
15	**There is an inconsistent supply of surplus food for upcycling businesses.**	• Food upcycling businesses require a consistent supply of surplus food to create consistent products. However, there is a lack of a consistent supply of surplus food to serve as an input.	• The inconsistent supply of inputs for upcycling serves as a barrier to establishing and scaling food upcycling businesses.	• Collaboration & Partnerships • Economic Incentives

#	Challenge Identified	Description	Impact	Levers
16	**There is a perception of potential liability, health requirements, and other legal restrictions that reduces food donations.**	• Organizations that have surplus food may face several restrictions that limit their ability to donate it. These restrictions can include health regulations regarding food safety and potential liability issues related to donated food, among other factors.	• The restrictions on donations, as well as the potential liability related to donation, may restrict organizations from donating surplus food which may result in food prematurely going to waste.	• Policy & Regulatory initiatives
	Construction			
17	**Waste generation across a building's lifecycle is often not a high priority when buildings are being designed.**	• Waste generation and mitigation across a building's lifecycle is not typically a high priority when buildings are being designed.	• Incorporating waste mitigation into the design stage makes it easier for buildings to consider how circular building principles such as design for disassembly could be incorporated. • If waste generation is not considered at the design stage, it is often more challenging to incorporate circular principles once the building has been developed.	• Education & Awareness • Policy & Regulatory Initiatives
18	**Many existing regulations that include circular principles are voluntary in nature.**	• Existing regulations that have the potential to influence circular building practices in Toronto are often voluntary in nature or not regularly enforced.	• Voluntary or unenforced regulations are less effective than mandatory regulations. As a result, construction waste mitigation initiatives are not implemented as consistently as they would be if they were required, which leads to an increase in waste.	• Policy & Regulatory Initiatives
19	**There is a lack of education on circular economy principles, terminology, and solutions across the construction lifecycle.**	• Circular solutions for the construction industry are not yet mainstream in Toronto, and can be confusing and/or inaccessible, especially for architects, designers, sub-contractors, and tenants.	• Lack of education leads to circular economy principles and concepts not being incorporated into the ideation, design, and procurement phases of construction projects.	• Education & Awareness

#	Challenge Identified	Description	Impact	Levers
20	**There is limited space to store deconstructed materials for reuse.**	• Space to store excess materials and deconstructed materials for reuse is often limited on construction sites. • Finding large spaces for warehousing is challenging in a dense and expensive City like Toronto.	• Most excess materials need to be transported elsewhere to be properly processed. • It becomes more favourable to dispose of the demolished or deconstructed material. • Transporting material for reuse can increase costs and environmental impact.	• Collaboration & Partnership • City Management & Operations
21	**Standards or codes for the reuse of construction materials are underdeveloped and/or non-existent.**	• The current industry and regulatory focus is on demolition and not deconstruction, repurposing existing buildings, recycling, or reusing materials.	• The reuse of construction materials is often not supported due to the perceived lesser health and safety standards of secondary materials and the challenges of certifying materials for reuse which creates barriers to adoption.	• Collaboration & Partnership • Innovation & Technology • Policy & Regulatory Initiatives
22	**Circularity is perceived to be at odds with cost and timeline constraints**	• Construction projects often have to stick to a tight timelines and budgets to ensure financial viability, with little room to implement innovative initiatives related to circularity.	• This cost and timeline factors in development projects restricts the ability of the construction sector to implement circular practices, as circular practices are typically perceived as increasing costs and timelines.	• Education & Awareness • Economic Incentives

#	Challenge Identified	Description	Impact	Levers
	Waste Management			
23	**Industrial, Commercial, and Institutional (ICI) waste does not receive the same level of attention and scrutiny as waste produced by residents or consumers.**	• ICI waste represents a large portion of the waste generated in Toronto but waste reduction efforts are generally focused on waste generated by residents and consumers. • Despite the relative lack of attention from reduction efforts, ICI waste is a large portion (~41%[9]) of the city's total waste.	• The lack of scrutiny and understanding of ICI waste hinders the development of effective waste reduction initiatives, as it is a significant component of Toronto's total waste landscape. • By primarily focusing on residential waste, there is a risk of overlooking critical drivers of waste generation, which ultimately limits the effectiveness of waste management strategies in the city.	• Education & Awareness • Collaboration & Partnerships
24	**There is limited regional capacity for processing organic waste.**	• There is limited capacity for processing organic waste at City-owned facilities and challenges exist for the City to expand the anaerobic digestion processing capacity.	• The limited capacity for anaerobic digestion means that the City is missing opportunities for resource recovery and waste diversion.	• Innovation & Technology • Policy & Regulatory initiatives
25	**Residential waste sorting and collection requirements differ between City-managed services and non-City services.**	• The City services single-family and multi-residential residences, however many multi-residential buildings are serviced by private waste management companies and may have different waste sorting and collection requirements. • Management of organic waste and recyclables is often different in public versus privately held waste streams.	• This inconsistency can create challenges for residents and as a result, residents may inadvertently contaminate organic waste, recyclables and/or dispose of it unnecessarily, leading to increased waste in landfills.	• Education & Awareness • Collaboration & Partnerships

[9] Baselining Study

#	Challenge Identified	Description	Impact	Levers
26	**The development of waste management infrastructure has a significant financial cost.**	• Development and implementation of new waste management infrastructure to handle new waste streams can be very expensive. This is a significant barrier, especially for public sector waste management such as the City.	• The high costs associated with waste management infrastructure can prevent the establishment of such facilities. As a result, more waste is generated because materials that could have been diverted from landfills are not.	• Policy & Regulatory Initiatives • Economic Incentives
27	**There is a lack of cohesive waste management approach across jurisdictions.**	• Waste management practices and requirements differ across jurisdictions. For example, what might be able to be diverted in one city in Ontario might not be able to be diverted in Toronto. • This impacts the way in which consumers approach waste management, as well as impacting how products are designed.	• The conflicting approach across jurisdictions makes it challenging to develop effective policies for waste management.	• Collaboration & Partnerships • Policies & Regulatory Initiatives

Preliminary Options Identification

Based on the challenges identified above, a preliminary list of actions to overcome these challenges was compiled. These included ideas brought forward during Phase 1 and Phase 2 engagement activities with internal and external interested parties. To fill in gaps where interested parties did not propose potential solutions, desktop research was conducted in the form of a jurisdictional scan. More than 100 municipal jurisdictions and approximately 75 other levels of government have disclosed circular economy plans. For example, benchmarks in North America include Montreal, Cleveland, and San Francisco; benchmarks in Europe include London, Amsterdam, and Copenhagen; and benchmarks in Asia-Pacific include Australia, Tokyo, and Singapore. This jurisdictional research provided useful insight into policy frameworks, regulatory mechanisms, and market interventions that could be explored in Toronto.

This preliminary list of options will be further developed in Phase 3. Engagement with interested parties will refine this list and additional context will be added for each short-listed opportunity, including resourcing requirements, ease of implementation, anticipated magnitude and type of impact, etc. This future work will also consider which opportunities the City can action independently, and which opportunities will require partnerships with other economic actors for implementation.

6. Next Steps

Phases 3 and 4 of the Circular Economy Road Map involve the following key activities:

- The development of a long list of opportunities and initiatives to include in the 10-year Circular Economy Road Map, including an emphasis on upstream opportunities that target waste avoidance (Phase 3).
- The development of a decision-making framework to prioritize a refined list of opportunities and initiatives (Phase 3).
- Gathering additional feedback on opportunities and initiatives for the Circular Economy Road Map through engagement with internal City Divisions and external interested parties across Toronto (Phase 3).
- The development of a 10-year strategic Road Map and implementation and monitoring plan to guide the City's transition towards a circular economy (Phase 4).
- A final change story and strategic plan to communicate how all interested parties can help implement the Circular Economy Road Map and remain engaged (Phase 4).

Each component of the work involves additional consultation and engagement with interested parties, as well as additional supporting research. Through ongoing engagement with interested parties, the City hopes to:

- raise awareness about the benefits of circularity;
- build new and strengthen existing relationships;
- learn from traditional Indigenous knowledges;
- identify and empower circular champions; and
- identify collaboration opportunities across different economic actors (including all levels of government) to support the circular transition.

The City recognizes the link between what it is trying to achieve and Indigenous Ways of Knowing. Inviting engagement and feedback from interested Indigenous peoples and organizations is a core part of the Circular Economy Road Map. The City is engaging Indigenous communities and organizations on an ongoing basis as part of this work. The City will work towards ensuring that the final Circular Economy Road Map encompasses Indigenous perspectives and input.

Transitioning to a circular economy is not something that can be done in silos – it is a group effort that will require significant collaboration with all parties involved. The City of Toronto is committed to working with its residents, businesses, and communities to ensure a fair and just transition that benefits all. For additional information on the City's journey to circularity, and to get involved, refer to the City's circular economy website.

Appendix A – Engagement Details

Industry and Indigenous Business Interested Party Engagement

Table A.1: Construction Workshop Interested Parties

Construction Interested Parties – November 12th, 2024		
Aecon Group Inc.	Adaptis	Mantle Developments
PCL Construction	TARBA	Dream
Kenaidan	Carbon Leadership Forum (CLF)	Mattamy Homes
Home Depot	Purpose Building Canada	WSP
Circular Economy Leadership Canada	Multiplex	SvN Architects + Planners
CSA Group	MJMA	Oxford Property
Bird	Lafarge	

Table A.2: Food System Sector Workshop Interested Parties

Food SystemSector Interested Parties – November 14th, 2024		
Rumbella	Ontario Restaurant Hotel and Motel Association	Suppli
Evergreen	Ontario Food Terminal	Karma Co-operative Inc.
Daily Bread Food Bank	Black Creek Farm	North York Harvest Food Bank
Restaurants Canada	Marketcity TO	
Toronto Urban Growers	Sobeys	

Table A.3: Waste Management Sector Workshop Interested Parties

Waste Management Sector Interested Parties – November 19th, 2024		
Wasteco	Carton Council of Canada	Retail Council of Canada
Waste Management	Walker Industries	CSA Group
Urban Jacks	Innovative Waste Solutions	Quantum Lifecycle Partners
GFL Environmental Inc.	IKEA	Circulr
Furniture Bank	RLG Systems Canada	TRCA
Convertus Group	Bruized	Viking Recycling
AET Group	Inwit	Ice River Springs
Material Exchange (Partners in Project Green)	Strategy Corp	EFS-Plastics
Municipal Waste Association	Muuse	Suppli

Table A.4: Industry-Agnostic Workshop Interest Groups

Industry-gnostic Interested Parties – November 21st, 2024		
Oceana	Seneca Polytechnic	Scarborough Zero Waste
Quantum Lifecycle Partners	Access Alliance (Bicycle Repair Hubs)	Brand Voice
Rise to Zero	C40 Thriving Cities Initiative	We R Circular
StopPlastics	Reusable Toronto	Network for Business Sustainability - Ivey Business School
Creative Reuse Toronto	Shift Circular	Green Standards
George Brown College	Impact Zero	Etobicoke Climate Action

Table A.5: Indigenous Business Interested Parties

Indigenous Business Interested Parties – Between October 10th and October 20th, 2024		
Simply Indigenous	Canadian Council for Indigenous Business (CCIB)	Okwaho Equal Source
Urban Farm – Toronto Metropolitan University	Two Row Architects	Smoke Architecture
Staff Shop		