

BASELINING FOR A CIRCULAR TORONTO

HIGHLIGHTS

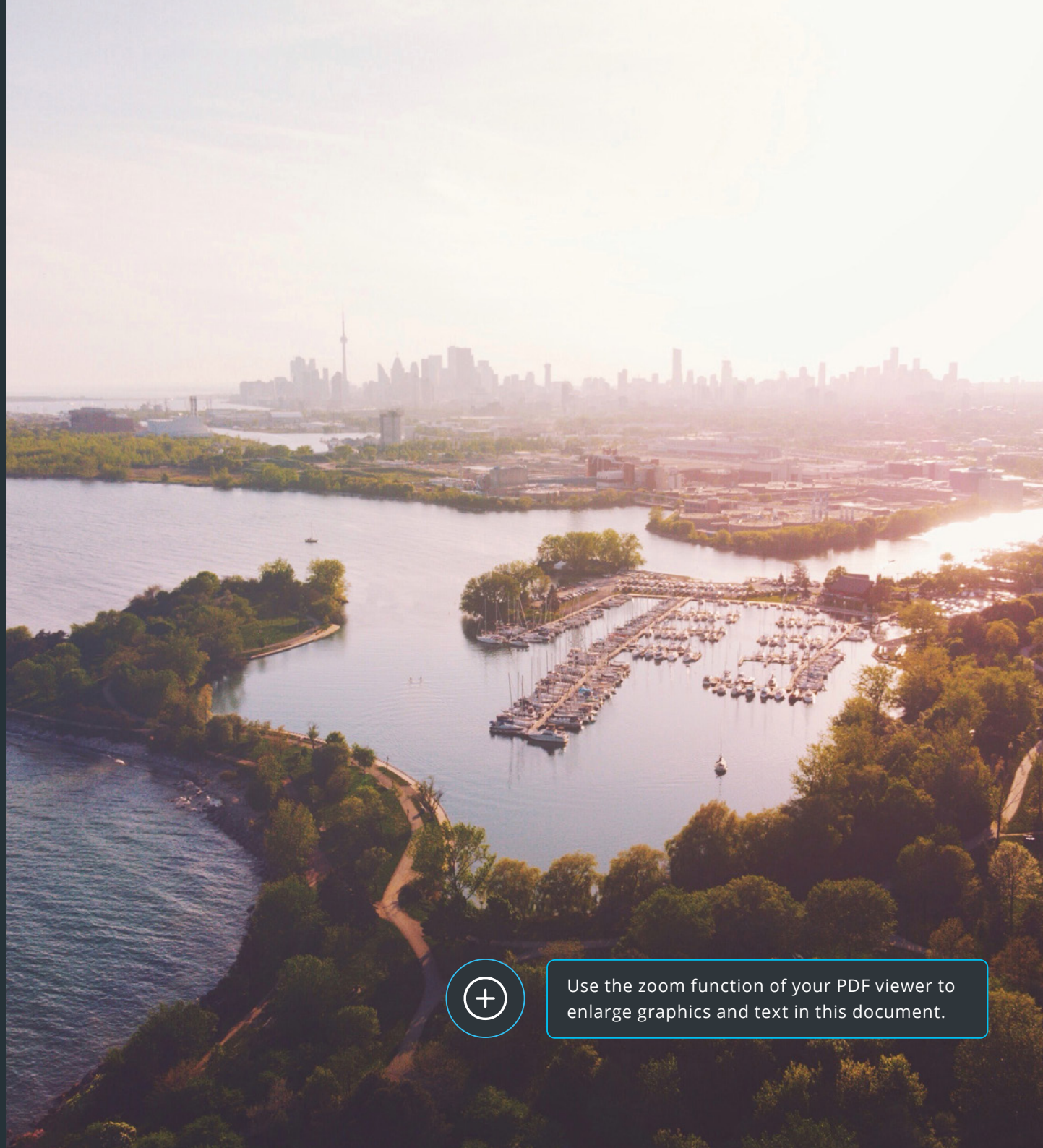
Exploring directions for Toronto's
transition to a circular economy

February 2022



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WHAT IS A CIRCULAR ECONOMY?

People rely on the land, biodiversity and resources of the planet to power, house, feed and hydrate our communities, and to dispose of our waste.

Instead of taking from the planet, a circular economy approach challenges us to be part of the planet—to take less, to use better, and to make sure our economies and our choices support the natural environment we rely on.

Moving away from a take, make, and dispose economy, a circular economy is a way of designing, producing, and consuming that reduces waste and makes the most of the resources we have. In a circular economy, economic and human activity supports the health of the natural environment and contributes to thriving, sustainable and equitable communities.



THE
CIRCULAR
ECONOMY
**OPPOR-
TUNITY**



MAKING FEWER AND
BETTER PRODUCTS
THAT LAST LONGER
AND CREATE VALUE



BOOSTING
ECONOMIC
PERFORMANCE



ENSURING
EQUITABLE
ACCESS TO
SHARED LOCAL
RESOURCES



PROMOTING GOOD
QUALITY JOBS AND
LOCAL ECONOMIC
DEVELOPMENT



ENCOURAGING
GREEN BUSINESS
INNOVATION



MAKING LESS
WASTE, WHICH
SAVES MONEY
AND HELPS
THE PLANET



STRENGTHENING
THE RESILIENCE
OF CITY
SERVICES AND
INFRASTRUCTURE



REDUCING GREENHOUSE
GAS EMISSIONS AND
PRESERVING ECOSYSTEMS

BASELINING FOR A CIRCULAR TORONTO

As centres of human activity, cities can play a key role in the transition toward a circular economy. In circular cities, businesses, government and the public work together to embody circular principles tailored to the area's unique local cultures, economy, and ecosystem.

The City of Toronto is actively working towards becoming a circular city. The *Baselining for a Circular Toronto* study is one of the first of its kind in Canada. By mapping how resources like metals, fossil fuels and biomass move through the city, it was possible to understand the current state of circularity. From this, specific areas of opportunity for advancing a circular economy were identified within key sectors and a vision for what a circular Toronto could look like was proposed. The project kicked off in January 2020 and will inform the development of a circular economy road map for the city.

Achieving a circular Toronto will require more than just analysis. Collaboration and partnerships between various local stakeholders will be key to successful change. **Everyone has a role to play in a circular economy.**

Nathan Phillips Square
Photo by Tiago Louvize,
February 2020



A VISION FOR A CIRCULAR TORONTO

REGENERATIVE URBAN FOOD SYSTEMS

that protect and restore natural ecosystems, while preserving soil, air and water quality.

MORE EFFICIENT RESOURCE MANAGEMENT SYSTEMS

where waste from one industry is reused by another.

CREATIVE DESIGN FOR THE BUILT ENVIRONMENT

to create long-lasting, adaptable and modular buildings and infrastructure that are easier to maintain and repurpose.

AN ENVIRONMENT THAT ENABLES EMISSIONS REDUCTION

by combining the circular economy with other climate strategies.

A CIRCULAR SOCIETY

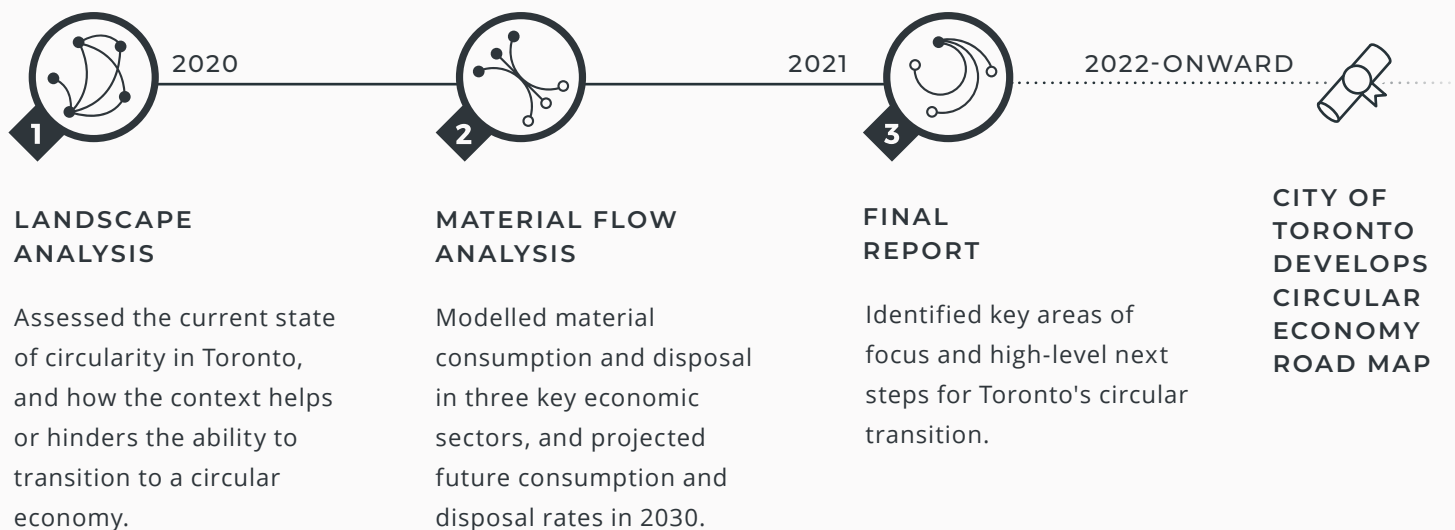
that connects people, creates jobs and respects the planet.

A CIRCULAR CITY OF TORONTO LEADING THE WAY

by engaging, incentivizing, managing, and setting an enabling regulatory framework.

THE PROJECT IN CONTEXT

PHASES OF THE BASELINING FOR A CIRCULAR TORONTO STUDY



WHAT DID WE LEARN?

LANDSCAPE ANALYSIS

LOCAL INITIATIVE ANALYSIS

There are many opportunities for innovative private sector and community partnerships to build a circular city that amplifies connections among stakeholders.

88 LOCAL BUSINESS & COMMUNITY-LED INITIATIVES

are already operating in the circular economy space in Toronto.



HOUSEHOLD EXPENDITURE ANALYSIS

TRANSPORTATION
IS THE EXPENDITURE
WITH THE **HIGHEST**
CARBON FOOTPRINT
FOR MOST
HOUSEHOLDS

Circular strategies have the potential to make a positive impact where Torontonians spend most of their money:



34%
housing



17%
transportation



13%
food



7

Photo by Jules Trinh,
Repair Café Toronto

LANDSCAPE ANALYSIS



THE CITY OF TORONTO

has embraced circular economy thinking and has adopted policies and strategies that support a shift to circularity in Toronto's economy.

POLICY ANALYSIS

The City's powers to determine

HOW LAND AND ENERGY ARE USED

are key levers for moving toward circularity.

In other areas where the City may encounter

JURISDICTIONAL LIMITATIONS,

different orders of government can set circular policies and regulations that unlock circular potential and remove the barriers to circular actions.

SOCIO-ECONOMIC ANALYSIS

The technology sector has the potential to accelerate a circular Toronto. With a growth of 84.6% between 2014 and 2019, this sector could support more circular resource use in the city and better data management through the development of digital products and solutions.

Industrial, commercial and institutional (IC&I) organizations make approximately:

1.5
TIMES THE AMOUNT OF WASTE

as Ontario households.

83%
OF THIS WASTE IS SENT TO LANDFILL.



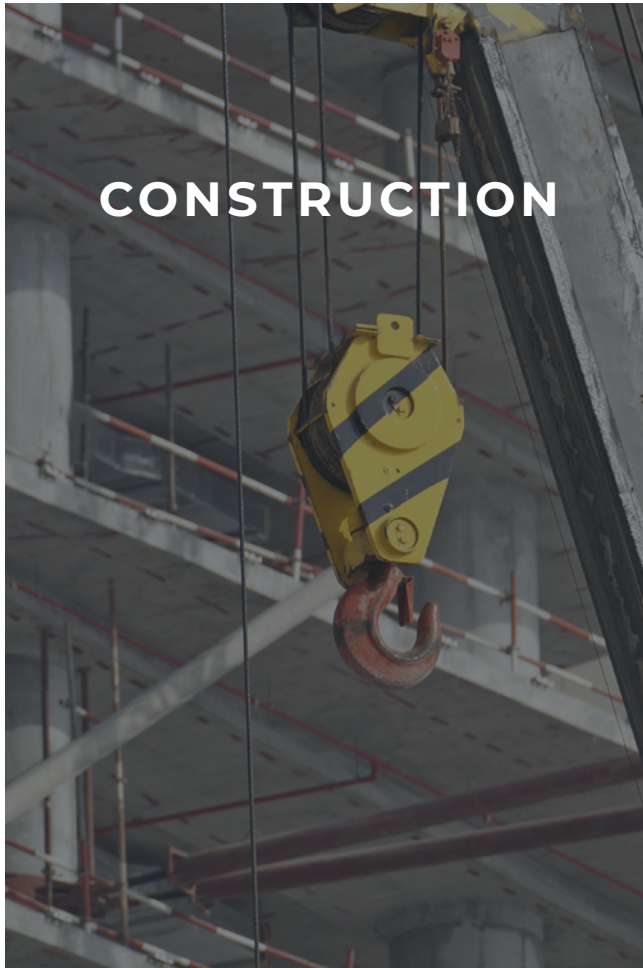
LANDSCAPE ANALYSIS

THREE SECTORS PRESENTED
GREAT **OPPORTUNITIES** FOR
CIRCULAR ECONOMY IMPACT:

WASTE MANAGEMENT



CONSTRUCTION



FOOD SYSTEM



WHAT DID WE LEARN? MATERIAL FLOW ANALYSIS

A material flow analysis is a way of visualizing how resources are consumed, processed and disposed of in the economy.

It helps point out problems in our linear economy where circular economy interventions can make a positive impact.

Toronto's economy uses large amounts of materials and natural resources each year, and is therefore having a big impact on the environment.

Data gaps make it difficult to paint a comprehensive picture of consumption and disposal in Toronto's economy.

Toronto's economy sends a large amount of material to landfill each year, meaning that valuable resources are being lost in the linear economy.

The City of Toronto is responsible for managing less than half of the waste produced in Toronto.

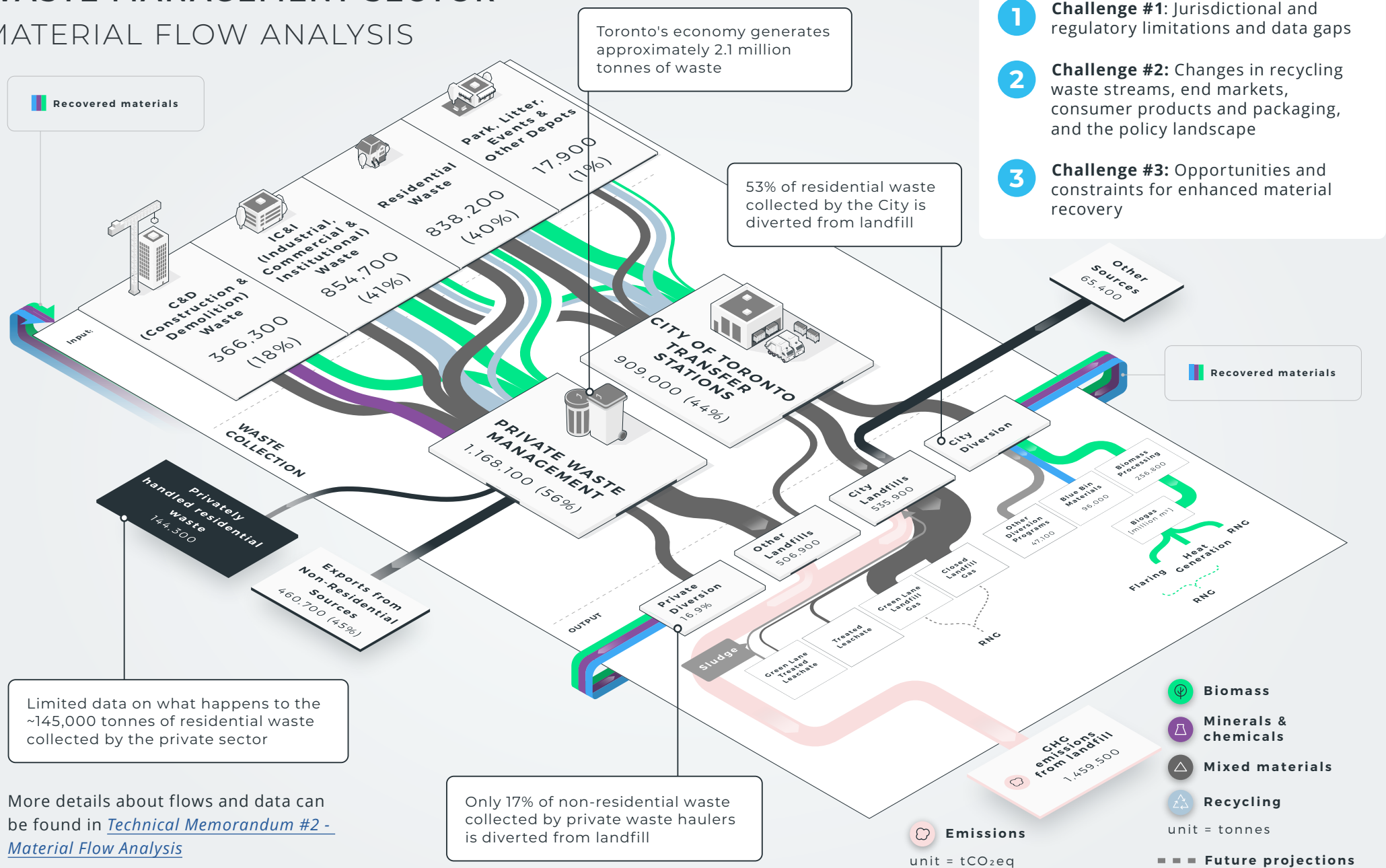
New ways of sharing information and collaborating between the public and private sectors will be necessary to shift from linear thinking to circular opportunity.

Based on expected economic and population growth in Toronto, material consumption and waste generation are expected to increase continuously in each key sector if no action is taken.



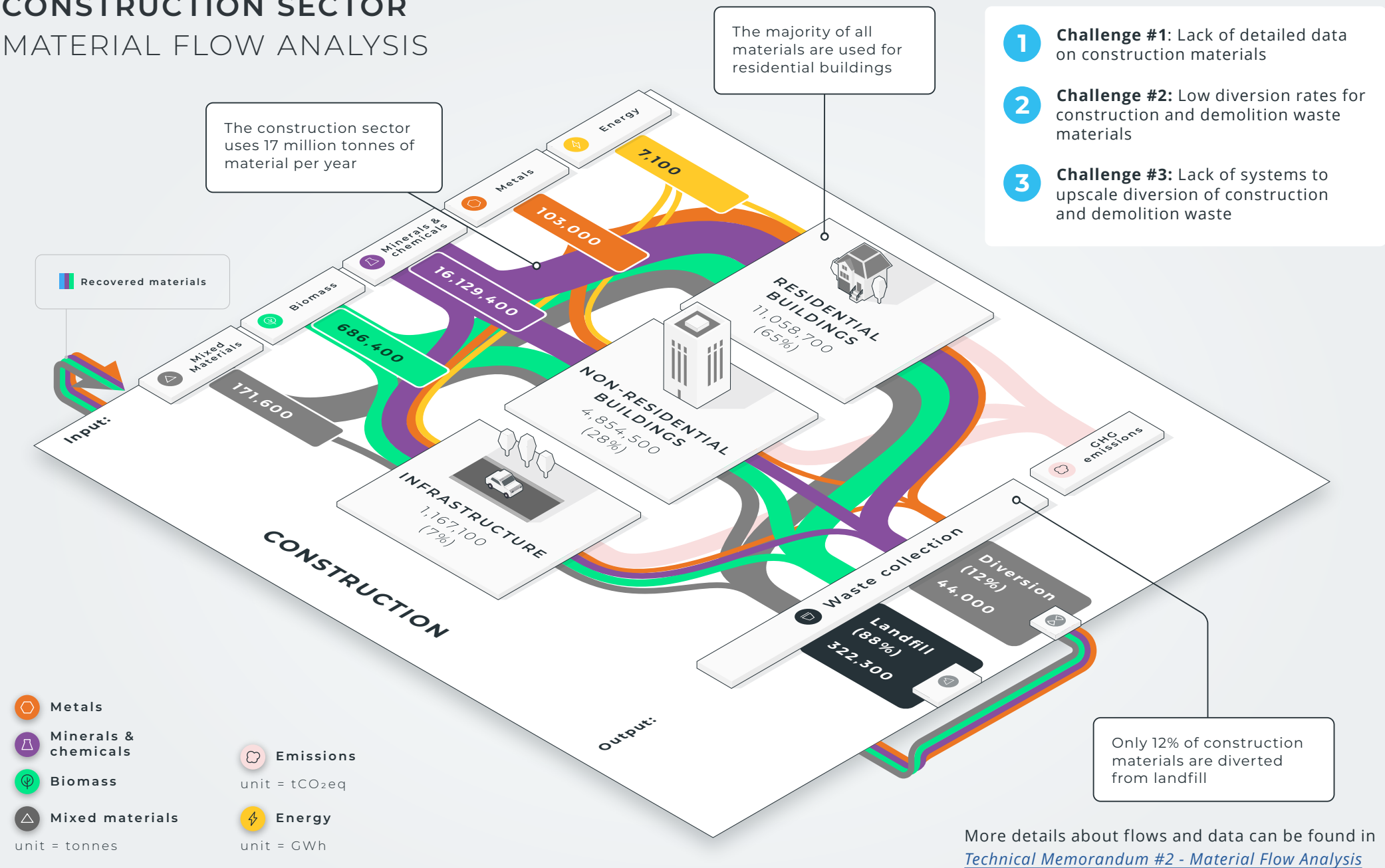
WASTE MANAGEMENT SECTOR

MATERIAL FLOW ANALYSIS



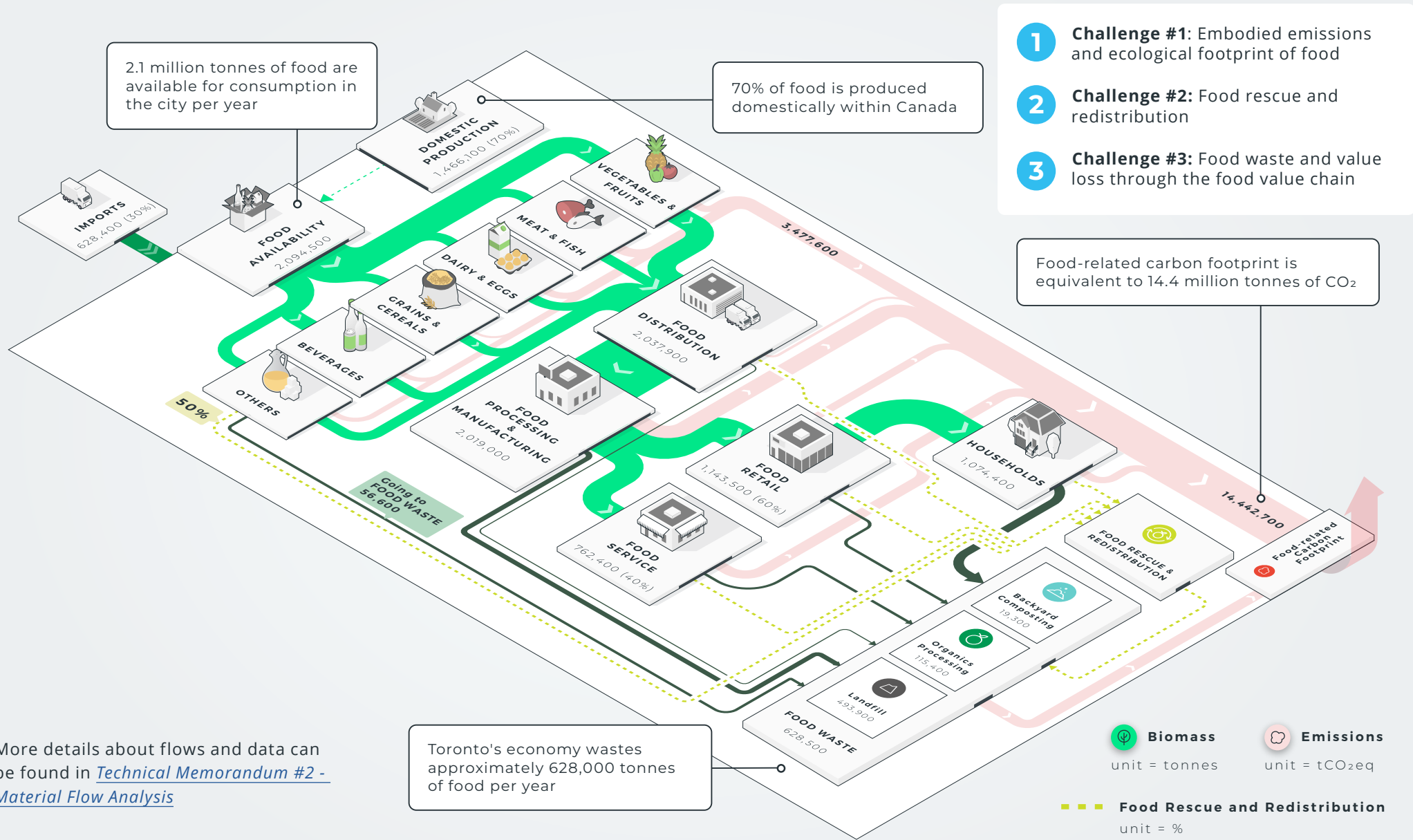
CONSTRUCTION SECTOR

MATERIAL FLOW ANALYSIS



FOOD SYSTEM

MATERIAL FLOW ANALYSIS



WHAT DID WE LEARN?

BUSINESS-
AS-USUAL
ANALYSIS

IF NO FURTHER ACTION IS
TAKEN, BY 2030, BASED ON
BASIC POPULATION AND
GROWTH INDICATORS:



WASTE GENERATION
COULD BE AS HIGH AS:



738,000 TONNES
per year from the
food system



2.5 MILLION TONNES
per year from
households and
businesses



MATERIAL CONSUMPTION
COULD BE AS HIGH AS:



400,000 TONNES
per year from
construction and
demolition



1.6 MILLION TONNES
per year for the
food system



18 MILLION TONNES
per year for the
construction sector

MOVING TOWARD A CIRCULAR TORONTO: CIRCULAR GOALS

Turning the circular Toronto vision into a reality will require clearly set goals and targets for all economic actors and new forms of collaboration.

Local communities, governments and businesses can work collectively to achieve the following circular goals.

The goals and indicators proposed by this project are not an exhaustive list, but rather an indication of the direction in which stakeholders can align to accelerate Toronto's transition toward circularity.

COMMUNITY-WIDE CIRCULAR GOALS

1. Toronto reduces its overall material consumption
2. Toronto is a leader in attracting and supporting businesses that contribute to the circular economy
3. Toronto sustains a robust ecosystem of reuse, repair and donation



CONSTRUCTION CIRCULAR GOALS

1. Toronto develops a future-proof built environment aligned with circular economy principles
2. Toronto increases the quantity and quality of data on construction and demolition materials to recover as many materials embedded in its building stock as possible
3. Toronto promotes high-value recycling and material recovery of construction and demolition waste



WASTE MANAGEMENT CIRCULAR GOALS

1. Toronto minimizes waste generation
2. Toronto stimulates a thriving market for secondary materials
3. Toronto improves the transparency, accessibility and verifiability of waste data throughout the city




FOOD SYSTEM CIRCULAR GOALS


1. Toronto promotes healthy and culturally appropriate food for all, sourced as locally as possible, and as sustainably produced, processed, packaged and distributed as possible
2. Toronto minimizes avoidable food waste through food rescue and redistribution to interested partners and/or residents
3. Toronto promotes food waste avoidance




HOW TO MEASURE PROGRESS: CIRCULAR INDICATORS

 GOALS	COMMUNITY-WIDE INDICATORS		
Toronto reduces its overall material consumption	Total annual material consumption per capita	Number of City of Toronto procurements that include circular principles in the purchasing of goods, services and works	Number of local businesses and charities/community groups adopting circular economy strategies or business models
Toronto is a leader in attracting and supporting businesses that contribute to the circular economy	Percentage of businesses in Toronto that apply circular principles	Percentage of Toronto's labour force working in the circular economy	Total investments in research and development projects related to a circular economy
Toronto sustains a robust ecosystem of reuse, repair and donation	Tonnes of materials repaired, reused, recovered and/or upcycled by community-based activities	Number of charities, initiatives and organizations focused on donation and/or sharing	Percentage of neighbourhoods with a tool library or repair hub

HOW TO MEASURE PROGRESS: CIRCULAR INDICATORS

 GOALS	CONSTRUCTION INDICATORS		
Toronto develops a future-proof built environment aligned with circular economy principles	Number of public and private construction projects that include circular criteria within procurement processes	Proportion of new construction projects that integrate principles of the circular economy in their development plans (from design to waste management plans)	Number of C&D waste recovery and recycling processors in the region (including salvage and scrap yards accepting C&D waste and equipment)
Toronto increases the quantity and quality of data on construction and demolition (C&D) materials to recover as many materials embedded in its building stock as possible	Total waste generation from C&D activities	Percentage of buildings with a publicly accessible material passport	Embodied carbon per building material type
Toronto promotes high-value recycling and material recovery of C&D waste	Percentage of construction waste utilized as a material input for new construction and/or other uses	Recovery rate of demolition waste as material input for new construction and/or other uses	Total amount of aggregate and excess soil disposed of in landfill

HOW TO MEASURE PROGRESS: CIRCULAR INDICATORS

 GOALS	FOOD SYSTEM INDICATORS		
Toronto promotes healthy food for all, sourced as regionally as possible, and as sustainably produced, processed, packaged and distributed as possible	Percentage of food that is farmed sustainably and within Toronto's bioregion	Percentage of low-carbon, locally sourced, seasonally and culturally appropriate products in publicly procured food	Total food from regenerative urban production (e.g. indoor and vertical farming, community gardens, etc.)
Toronto minimizes avoidable food waste through food rescue and redistribution to interested partners and/or residents	Percentage of food retail and food service businesses participating in food rescue and redistribution programs	Number of food rescue and redistribution initiatives in Toronto	Number of households making food donations
Toronto promotes food waste avoidance	Total annual amount of food waste generated by all economic actors	Percentage of food perishable products in compliance with Canadian Food Inspection Agency's food labelling modernization initiative	Percentage of total industrial, commercial and institutional establishments and residential dwellings participating in organic waste diversion programs

HOW TO MEASURE PROGRESS: CIRCULAR INDICATORS



GOALS

WASTE MANAGEMENT INDICATORS

Toronto minimizes waste generation

Total amount of waste produced by residential, industrial, commercial and institutional, as well as construction and demolition sources

Percentage increase in organic waste recovery from residential and industrial, commercial and institutional sources

Contribution of greenhouse gas emissions in the waste sector

Toronto stimulates a thriving market for secondary materials

Percentage of recycled non-residential waste

Percentage of construction and demolition waste that is prepared for reuse, recycling or subject to material recovery

Number of City of Toronto procurements that allow or require use of secondary materials as a criterion

Toronto improves the transparency, accessibility and verifiability of waste data throughout the city

Percentage of registered private sector waste contractors that report on the relative amount and composition of waste they manage each year

Number of waste audits conducted for industrial, commercial and institutional establishments serviced by City of Toronto waste management system

Total amount of landfill waste from Toronto sources that is exported by private sector haulers

ROLE OF THE CITY AND PARTNERS



CIVIL SOCIETY

- **Individuals** can reduce overconsumption and drive demand for circular products and services.
- **Civil society organizations** can support a more equitable transition through participation in decision-making.
- **Social partners**, such as trade and labour unions, can represent the interests of workers and employers during the transition.
- **Standards authorities** can establish international circular metrics and indicators to measure progress toward the circular economy.



BUSINESSES

Companies can unlock the potential of circular finance and business models and prioritize innovative design and production, finding new ways to access, use and reuse materials.



EDUCATION & RESEARCH INSTITUTES

Institutes and professional accreditation bodies can drive knowledge creation and equip workers with the skills required for a just circular transition.



PROVINCIAL & FEDERAL GOVERNMENTS

Governments can work together to create the enabling conditions for businesses, industry, and communities to embark on a circular transition.

INDIGENOUS COMMUNITIES & EQUITY DESERVING GROUPS

Transitioning toward a circular Toronto is an opportunity to make space for different perspectives and ways of knowing and to address historical and systemic injustices. This will be necessary to create a more resilient, inclusive future. To this end, the City can continue to explore ways to work with and learn from Indigenous Peoples (as Rights Holders) and equity-deserving communities in the circular transition, including by removing barriers to participation.

CITY OF TORONTO

The City of Toronto can play a leading role in the transition toward a more circular economy by creating an environment in which circular innovation can flourish by:

- **Mobilizing** stakeholders around circular goals
- **Educating** and improving the understanding of opportunities for circularity, including through City services and business processes
- **Managing** the City's assets in a circular way, including through circular procurement
- **Incentivizing** and regulating Toronto's circular business ecosystem

NEXT STEPS

Baselining for a Circular Toronto set the foundation to understand Toronto's current linear economy and proposes a vision for a circular Toronto. The next step will require turning these insights into actions to realize Toronto's full circular potential.

The circular goals and vision proposed in this study are just the starting point. We need to come together to refine this vision and find creative ways to work together to make a circular Toronto a reality.

