Zero Waste **Economic Transformation Lab**

Rebuilding the ROYAL CITY

An exploration into diverting construction, demolition and renovation waste and constructing the circular-built environment in Guelph-Wellington

The Guelph-Wellington construction industry and regulators face interlinked climate and affordability crises and numerous challenges to build net-zero, resilient, circular, and affordable homes and buildings. Globally, resource demand is expected to double, Canadian landfills are overflowing with construction, renovation, and demolition (CRD) waste, while Ontario is set to run out of landfill space. Today, because of cheap landfills, low-cost virgin materials, and limited policy support, most CRD materials end up in landfill. A number of interventions can help increase the circularity of CRD materials through deconstruction, source separation, materials reuse, and the design and operation of circular buildings.

Global resource use set to double

The building sector is responsible for 40% of global resource use and the consumption of raw materials is set to nearly double by 2060. Meanwhile, the global buildings and construction sector accounted for 37% of carbon emissions in 2020.

Future projected global resource use

Source: CCME 2019

Source: OMWA, 2021

Global buildings and construction emissions



Source: UNEP, 2020` Construction waste and carbon pollution in Canada

In Canada, 3.4 million tonnes of CRD materials are sent to landfill annually and only about 0.6 MT (16%) of CRD materials are recycled or reused. In 2019, the building sector accounted for 12.5% of Canada's total GHG emissions, primarily from burning fossil fuels for heating (18% with electricity included). When the impact of construction, materials and waste is included, the number is much larger.





Ontario's shrinking landfill capacity

Ontario is one of the lowest cost provinces for landfill tipping fees, while also next door to even cheaper jurisdictions in the United States. As a result, 27% of Ontario waste is landfilled in the US. In Ontario, over 60% of Ontario's waste is disposed of in seven landfills, while Ontario's current landfills are projected to reach capacity in 10 to 15 years, depending on the availability of US exports.



Expanding the local circular building ecosystem

The circular built environment has many facets related to the design, operation, deconstruction, reuse, and diversion of building materials. In Guelph and Ontario more broadly, diverting CRD waste from landfill has a clearer and easier path forward. Changing the way buildings are designed is more complex but would have



\Plumbing /

Map content and design by Raphael Lopoukhine

environment in Guelph- Wellington.

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OPPORTUNITIES

There are numerous challenges in moving circularity forward in the built environment, especially when looking at its maturity compared to efforts to bolster energy efficiency or resiliency. There are far fewer standards, regulations, incentives, practitioners, associations, policy communities, training opportunities, pilots, certifications, start-ups, corporate leaders, and more.

While there are lots of challenges, there are also many potential opportunities that can help increase diversion, deconstruction materials reuse, and the development of circular buildings in Guelph/Wellington.

Below is not a to-do-list; it's a list of opportunities that reflect the experience of other jurisdictions, builds on solutions from related policy disciplines, and fills gaps identified in our stakeholder research.

Provide financial incentives

- Explore reducing the tipping fee for clean segregated CRD materials and eliminating the contamination penalty to incentivize more CRD recycling at the City of Guelph facility.
- Pilot grants and loans to support home renovation waste diversion as part of proposed city-run energy efficiency programs.

Update policy

- Re-examine a cost-recovery framework in the municipal waste industry to include a holistic analysis accounting for externalities and
- Leverage a quality-based selection process for the public procurement of architectural and engineering consulting services to create opportunities for high performance and circular buildings in Guelph-Wellington.

the economic potential of a regional circular economy

- Explore updating the demolition bylaw to require or incentivize deconstruction, source separation, and recycling of building materials before a certain age (e.g. 1950) to capture the most value based on local building types, materials used and frequency of demolition.
- Study engineering data from existing case studies to inform the piloting of procurement provisions for recycled content in municipal roads and buildings.

Shift operations

- Provide supporting labour and infrastructure to encourage clean loads, such as piloting city-owned segregated CRD bins service. Got a small reno, we'll pick it up!
- Leverage behavioural analysis to redesign City Waste Resources Innovation Centre signage and advertising of CRD recycling. By putting human behaviour at the centre of the approach, it can help nudge the public and private sector from information to action.
- Explore phasing in a zero waste objective for new and renovated city buildings and the deconstruction of municipal buildings. Municipal leadership can help foster new businesses, strengthen supply chains, and embolden private sector participation.
- Building off of municipal leadership, develop a coalition of regional corporate leaders in the building industry to phase in zero waste in their operations, similar to Total Resource Use and Efficiency (TRUE) certification.
- Explore incorporating embodied carbon consideration into property management analyses (impacting materials choices and demolition and construction activities) and circularity into building operations (e.g. use of product as service, product-life extension, and circular supplies) to increase sustainability of city buildings

Develop standards

- Understand how various Ontario municipalities have incentivized green building standards for new mid- and high-rise and city-owned developments and explore setting targets for diversion, deconstruction, design for durability/deconstruction, and the use of circular building products (e.g. reclaimed/recycled materials). *
- Explore working with private sector building certification organizations to incorporate circular building design methodologies into existing certifications, training, and advocacy.

Create market demand

- Offer free promotion through city channels (e.g. section on building permit application portal) for CRD businesses that support zero-waste construction objectives (e.g. waste haulers that source-separate).
- Explore issuing a Zero Waste Construction Guide for residents that highlights recycling options in the area and CRD companies committed
- to low-waste construction practices. Offer residents lawn signs indicating to neighbours that they're commit-ted to a "Low Carbon, Zero Waste Renovation" as part of development approvals that meet particular diversion requirements.
- Explore developing a city-supported upcycling and deconstruction hub. The hub would be space to process materials back into reusable building materials and upcycled into new products. It would be a one-stop-shop to incubate new businesses and provide experiential learning and ready-to-use reclaimed materials.

Advocate and collaborate

- Collaborate with the provincial government to expand the reach of O.Reg 103/94 Industrial, Commercial And Institutional Source Separation Programs to include more sites and to require recycling.
- Develop support for a landfill ban on clean wood and concrete. Bans are used in other jurisdictions to increase diversion and recycling of specific products.
- Participate in the process to develop building standards, guidelines and code changes to support the use of reclaimed and recycled content building materials.
- Collaborate with other municipalities and private-sector partners to explore how municipalities can improve data collection and usage in the built environment especially for smaller and rural municipalities.
- Advocate to the provincial government to provide collected data from private waste facilities as part of the private facilities' Environmental
- Compliance Approval reporting requirements.
- Advocate for the updating of Ministry of Transportation highway specifications to increase the use of recycled asphalt and concrete aggregate.

* Green standards may no loner be available because of recent provincial changes.

Guelph WELLINGTON COUNTY