

Plastic Waste in Canada:

A daunting economic and environmental threat or an opportunity for sustainable public procurement?

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The unsustainable management of plastic waste negatively impacts our ecosystems, with only 9 per cent of plastic waste recycled back into the economy since 1950.

Canada's current plastic waste management system proves to be a lost economic opportunity — 86 per cent of plastic waste goes to landfills, representing a loss of nearly CAD 8 billion, which is expected to increase to over CAD 11 billion by 2030.

To work toward a circular economy and address environmental pollution as well as economic inefficiencies, Canada must conduct an integrated assessment of waste management infrastructure. This will serve to evaluate environmental, social and economic impacts of waste infrastructure solutions in addition to risks that threaten their effectiveness and financial performance. Our SAVi methodology can assist with this exercise.

Canada is facing a growing plastic waste challenge, and calls to action on plastic waste reduction have gained traction over the past years. Most recently, the Recycling Council of Ontario, a global leader in waste reduction and recycling, hosted a Circular Procurement Summit to raise awareness of how circular procurement can play a role in addressing Canada's waste problem. The summit highlighted that it is high time for Canada to shift from a linear to a circular economy to deal with, among other issues, the increasing demands for better plastic waste management.

What Is Canada's Plastic Waste Challenge?

We use plastics every day: it is found in our electronics, we package our food in it, construction elements are born from it, children's toys are built with it, and more. An increase in plastic dependency has fuelled global production of plastic resins and fibres, growing at a compound rate of 8.4 per cent annually (Geyer et al., 2017).¹

¹ Geyer, R., Jambeck, J.R., & Law, K.L. (2017). Production, use, and fate of all plastics ever made. *Science Advances* 3(7). Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5517107/>



However, currently plastics are not kept in closed-loop systems. This means most plastic material produced ends up in landfills after its designated lifetime. Since 1950, a mere 9 per cent of plastic waste was recycled back into the economy, whereas 12 per cent had been incinerated and 79 per cent discarded (Geyer et al., 2017).² Plastic waste management thus far has been unsustainable, and the world faces a growing problem.

Conventional plastic waste management contributes to climate change, the effects of which are felt across the globe. Plastics are made of monomers derived from fossil hydrocarbons. When plastics are incinerated, greenhouse gases (GHGs) and other toxic chemicals like dioxins and polychlorinated biphenyls are released into the atmosphere (Verma et al., 2016).³ Plastic waste that ends up in landfills also emits large amounts of GHGs—such as methane—into the atmosphere, if these facilities are not equipped with landfill gas capturing technologies. In 2016, the waste sector was responsible for 2.6 per cent of Canada’s GHG emissions, with 2,400 landfills emitting 13 Mt CO₂-eq (Wilkins, 2017; Environment and Climate Change Canada, 2018).^{4,5}

Poor plastic waste management in Canada contributes to environmental pollution and economic inefficiencies. The country deposits 86 per cent of plastic waste in landfills, and incinerates another 4 per cent, while only 9 per cent is recycled (Environment and Climate Change Canada, 2019).⁶ The country also exports a fair amount of plastic waste; in fact, 3.89 million tonnes was exported between 1988 and 2016 (Lewis & Hayes, 2019).⁷ This represents not only a lost economic opportunity for Canada but also displaces environmental challenges and health threats to countries that may recognize the economic opportunity but often have less stringent environmental regulations. Such waste-importing countries tend to be emerging economies in Asia, such as China, Malaysia and India.

However, environmental pollution in and outside of Canada is not the only consequence of Canada’s plastic waste problem. In 2016 alone, the unrecovered plastic materials represented a lost opportunity of CAD 7.8 billion to the Canadian economy, a loss expected to increase to CAD 11.1 billion in 2030 under a business-as-usual scenario (Environment and Climate Change Canada, 2019).⁸ Plastic resins and plastic products, on the other hand, accounted for more than 5 per cent of the sales in the Canadian manufacturing sector in 2016, amounting to CAD 35 billion (Environment and Climate Change Canada, 2019).⁹ To overcome this economic inefficiency, we need to shake up the Canadian market and economy so the appetite for plastics in Canada may feed itself.

How Can Public Procurement Help?

The Canadian government has responded to this waste problem with a series of recycling policies, action plans and studies. The Canadian Council of Ministers of the Environment (CCME) launched a Canada-wide strategy on zero plastic waste in November 2018. On June 27, 2019, the ministers met again and successfully released their first phase of the zero plastic waste implementation plans (CCME, 2019).¹⁰ The plans prioritize

² Geyer et al. (2017).

³ Verma, R., Vinoda, K. S., Papireddy, M., & Gowda, A.N.S. (2016). Toxic pollutants from plastic waste – A review. *Procedia Environmental Sciences* 35, 701–708. Retrieved from https://www.sciencedirect.com/science/article/pii/S187802961630158X/pdf?md5=e087b48838ca6a3cb946ab891ee2621f&pid=1-s2.0-S187802961630158X-main.pdf&_valck=1

⁴ Wilkins, C. (2017). Canada’s dirty secret. *Canadian Geographic*. Retrieved from <https://www.canadiangeographic.ca/article/canadas-dirty-secret>

⁵ Environment and Climate Change Canada. (2018). *National Inventory Report 1990–2016: Greenhouse gas sources and sinks in Canada*. Retrieved from <https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/emissions-inventories-reporting/nir-executive-summary/National%20Inventory%20Report%20Executive%20Summary%202018.pdf>

⁶ Environment and Climate Change Canada. (2019). *Economic study of the Canadian plastic industry, markets and waste*. Environment and Climate Change Canada. Retrieved from http://publications.gc.ca/collections/collection_2019/eccc/En4-366-1-2019-eng.pdf

⁷ Lewis, J. & Hayes, M. (2019). Reduce, reuse, recycle, rejected: Why Canada’s recycling industry is in crisis mode. *The Globe and Mail*. Retrieved from <https://www.theglobeandmail.com/canada/article-wish-cycling-canadas-recycling-industry-in-crisis-mode/>

⁸ Environment and Climate Change Canada (2019).

⁹ Environment and Climate Change Canada (2019).

¹⁰ Canadian Council of Ministers of the Environment (CCME). (2019). *Canada-wide Action Plan on Zero Plastic Waste Phase 1*. Retrieved from https://www.ccme.ca/files/Resources/waste/plastics/1289_CCME%20Canada-wide%20Action%20Plan%20on%20Zero%20Plastic%20Waste_EN_June%2027-19.pdf



the implementation of extended-producer responsibility (EPR) schemes to support a circular economy. Earlier in June 2019, Prime Minister Justin Trudeau also announced a national ban of single-use plastics in Canada by 2021 (BBC News, 2019).¹¹

Nonetheless, Canada must address its plastic waste problem in two ways as it transitions to a circular economy:

1. Reducing demand for conventional, virgin plastics
2. Expanding waste management capacity by deploying sustainable waste infrastructure to handle current volumes sustainably

Both strategies can be fostered through one public sector instrument: public procurement.

To implement the waste reduction targets, public procurement plays an important role in creating opportunities for municipalities and their capacities to realize the new circular economy. Various stages of the public procurement cycle can be tweaked to reduce the generation of plastic waste. This ranges from prioritizing recyclable products as well as products with remanufactured or refurbished elements, through defining specifications that encourage the use of plastic substitutes, to favouring holistic business models that complement product delivery by waste reduction services during the use and end-of-life phases.

Beyond tenders for circular goods and services, the public sector will need to invest in appropriate infrastructure to divert waste streams and create feedback mechanisms to “close the loops” for the circular economy. But the question remains how to identify waste management infrastructure solutions that are sustainable and customized to the Canadian context.

How Do We Achieve Sustainable Waste Management Infrastructure in Canada?

Canada’s long-standing waste infrastructure is dominated by landfills. On the other hand, waste export was a common practice over decades. Both strategies encourage end-disposal instead of waste reduction or reuse and recycling of diverse waste streams. On top of that, Canada’s large and dispersed regions have their own political and economic challenges in implementing the circular economy in the waste industry. The recent waste import ban in China, who was once the largest global customer for plastic waste,¹² as well as increasingly stricter waste import regulations in Southeast Asia,¹³ uncover negative implications of Canada’s linear economy and domestic capacity constraints in the waste management sector. It is high time to implement local waste management solutions.

These challenges require an integrated assessment of waste management options. Such assessment has to consider environmental, social and economic impacts of waste infrastructure in addition to risks that threaten its performance. Recognizing the importance of sustainability in waste management, IISD is currently expanding the [Sustainable Asset Valuation \(SAVi\)](#) methodology to cover waste infrastructure.

The finalized waste model of the proven SAVi methodology will be capable of integrating externalities and risks into financial performance assessments to compare project alternatives. This will help policy-makers, infrastructure planners and investors appreciate and select the most sustainable waste management infrastructure for plastic waste and beyond.

As Canada advances its plastic waste reduction strategies, we will continue to advocate for implementing sustainable solutions along the way. Here’s to a cleaner, less wasteful future.

¹¹ BBC News. (2019). *Canada to ban single-use plastics as early as 2021*. BBC News US & Canada. Retrieved from <https://www.bbc.com/news/world-us-canada-48477087>

¹² Hook, L. & Reed, J. (2018). Why the world’s recycling system stopped working. *Financial Times*. Retrieved from <https://www.ft.com/content/360e2524-d71a-11e8-a854-33d6f82e62f8>

¹³ Ellis-Petersen, H. (2019). Philippines ships 69 containers of rubbish back to Canada. *The Guardian*. Retrieved from <https://www.theguardian.com/world/2019/may/31/philippines-puts-69-containers-of-rubbish-on-boat-back-to-canada>

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ABOUT SAVI

SAVi is a simulation service that helps governments and investors value the risks and externalities that affect the performance of infrastructure projects.

The distinctive features of SAVi are:

- **Valuation:** SAVi values, in financial terms, the material environmental, social and economic risks and externalities of infrastructure projects. These variables are ignored in traditional financial analyses.
- **Simulation:** SAVi combines the results of systems thinking and system dynamics simulation with project finance modelling. We engage with asset owners to identify the risks material to their infrastructure projects and then design appropriate simulation scenarios.
- **Customization:** SAVi is customized to individual infrastructure projects.

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