



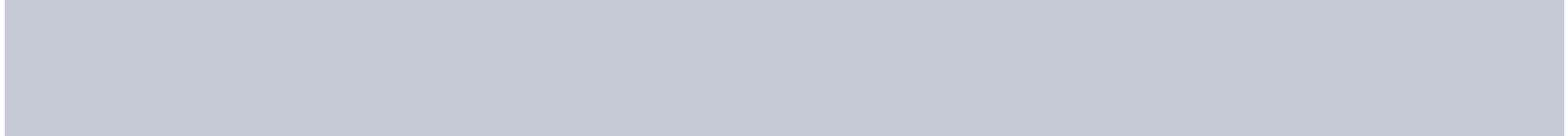
DESIGNING FOR COMPOSTABILITY IN CANADA

Packaging and the Circular Economy: A Case Study on Compostables in Canada

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PRODUCT DESIGN &
PACKAGING WORKING GROUP



Front page and page 5, photo credit: BSIbio

Executive Summary

The National Zero Waste Council (Council) Product Design & Packaging Working Group (PDP) seeks to prevent and reduce waste in products and packaging. To this goal, the PDP commissioned a survey amongst stakeholders in the compostable packaging industry, from the raw material suppliers to users and compost manufacturing facilities. The framework for the study was designed and implemented to better understand the enablers and barriers to compostable packaging finding its intended end-of-life, fulfilling its potential to contribute to a circular economy.

The survey assesses how compost manufacturing infrastructure, public policies, private programs, economics and general perceptions can impact compostable packaging recovery. This report shares the results of a case study across the value chain for certified compostable food packaging in Canada.

What is the Circular Economy?

Looking beyond the current "take, make and dispose" extractive industrial model, the circular economy is restorative and regenerative by design. Relying on system-wide innovation, it aims to redefine products and services to design waste out, while minimizing negative impacts. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural and social capital.

- ELLEN MACARTHUR FOUNDATION

RESULTS OVERVIEW

In total, over 150 stakeholders were engaged during the consultation process, with 52 stakeholders responding to the survey in full via phone interview, in-person, or online. The consultation identified important enablers and barriers to the recovery of compostable packaging. Enablers to the recovery of compostable packaging identified include the suitability of fibre-based compostable packaging to be recovered in a wide range of composting processes, and the increasing presence of organic waste bans and compost manufacturing. The social drive for circular economies and zero waste was identified as a motivating factor in the use of compostable packaging. Stakeholders described how partnerships between producers, users, and compost manufacturers can enhance the likelihood of compostable packaging being recovered and composted.

Certified compostable packaging is increasingly common in the food packaging market. With an increased focus on organic waste diversion across Canada, certified compostable packaging has circular economy potential that is not being realized across the country.

A key barrier to the expanded use of certified compostable packaging identified by participants is the discrepancy between the compostability messaging associated with compostable packaging materials and their varied acceptance in compost manufacturing facilities. This has created disconnect between users who believe they are doing the right thing by including compostable packaging into their organics stream/bin and the actual practices of solid waste managers and compost manufacturers who are not accepting this packaging. This situation arises because the existing compost manufacturing technology and infrastructure does not align with operating requirements that makes modern compostable packaging materials “compostable.” Stakeholders across the value chain also described a lack of communication between packaging and compost manufacturing sectors as a barrier to recovering the value of compostable packaging.

Third-party compostability certification was noted as an enabler for identification of products lab-tested to disintegrate safely in a compost manufacturing environment. Compostability certification and the use of standardized marks was highlighted by many stakeholders as an essential measure to aid in effectively recovering compostables. However, participants across sectors, including certifying bodies, indicated that current third-party compostability certification programs and processes do not ensure recovery and acceptance in all current compost manufacturing facilities due to the wide variation of real-world operating conditions at each facility.

Overall, stakeholders indicated that a wide variety of certified compostable food packaging are being accepted at compost manufacturing facilities at some locations in Canada, but this is not universal. One challenge is that the technology and materials used in producing certified compostable food packaging is advancing at a rate that exceeds the change in technology used at compost manufacturing facilities. The full report and accompanying appendices provide a more detailed account of these results and other outcomes, such as potential areas to improve the recovery of compostable packaging.

Introduction

Certified compostable packaging is increasingly common in the food packaging market. With an increased focus on organic waste diversion across Canada, certified compostable packaging has circular economy potential that is not being realized across the country. Certified compostable food packaging (shortened to 'compostable packaging' throughout the report) is a sector of packaging designed to be composted: Remanufactured for use in landscaping, agriculture and land applications.

The factors contributing to recovery of certified compostable food packaging are multi-faceted, as explored in the NZWC's 2015 report *Designing for Compostability in Canada*. Meanwhile, the compostable packaging industry is growing, and more innovative materials meant for composting are reaching the market every year. The producers of compostable packaging, users of the packaging, and managers of the resulting waste streams all have a stake in understanding how the circular economy potential of compostable packaging can be met. The survey framework provides the structure to conduct a multi-stakeholder consultation assessing which aspects of existing infrastructure and technology, public policies, private programs, economics, and perceptions enable or create barriers for the successful recovery of certified compostable food packaging in Canada.



Study Overview

USE OF TERMINOLOGY

In this study, the terms certified compostable, certified compostable food packaging, and compostable packaging are used interchangeably to refer to both a) complex compostable packaging that has had third-party certification for its ability to compost, such as coffee pods, coffee cups, and cutlery, and b) plant fibre-based packaging that is commonly accepted to break down adequately in compost manufacturing facilities, such as napkins and paper plates. This study considers all types of compostable packaging intended to be in contact with food and designed to be recoverable in compost manufacturing, including certified compostable plastic bags and certified compostable food ware (e.g. clamshells, coffee cups, cold cups, utensils, and napkins).

SCOPE OF THE CASE STUDY ON COMPOSTABLE PACKAGING

A complete circular economy approach typically involves looking at the full life cycle of a product, starting with raw material sources. Circular economy analyses will also consider whether the result of recycling or composting is put to beneficial use. However, the scope of this case study is limited to assessing the factors influencing the recovery of compostable packaging. Recovery, or the lack of, can be a crucial bottleneck to packaging reaching its circular economy potential. Furthermore, this study focuses on the recovery of compostable packaging and its potential to flow through centralized compost manufacturing facilities, whether aerobic composting or anaerobic digestion.

METHOD OF ASSESSMENT

The study framework for certified compostable food packaging was executed in two stages (1) background research, and (2) multi-stakeholder consultation. Both stages involved assessing how facility infrastructure and packaging technology, public and private programs and policies, economics, and general perceptions influence the circular economy potential of compostable packaging being met, or not. The background research informed the design of custom questionnaires used in the consultation.

Consultation methods included an in-person roundtable, webinar, phone interviews, and online surveys tailored to nine sectors that have a stake in the production, use, and recovery of compostable packaging. A simple diagram to show the distribution of stakeholder groups along the compostable packaging life cycle is shown below (Figure 1). In total, over 150 stakeholders were engaged during the consultation process, with 52 stakeholders responding to the survey in full via phone interview, in-person, or online.

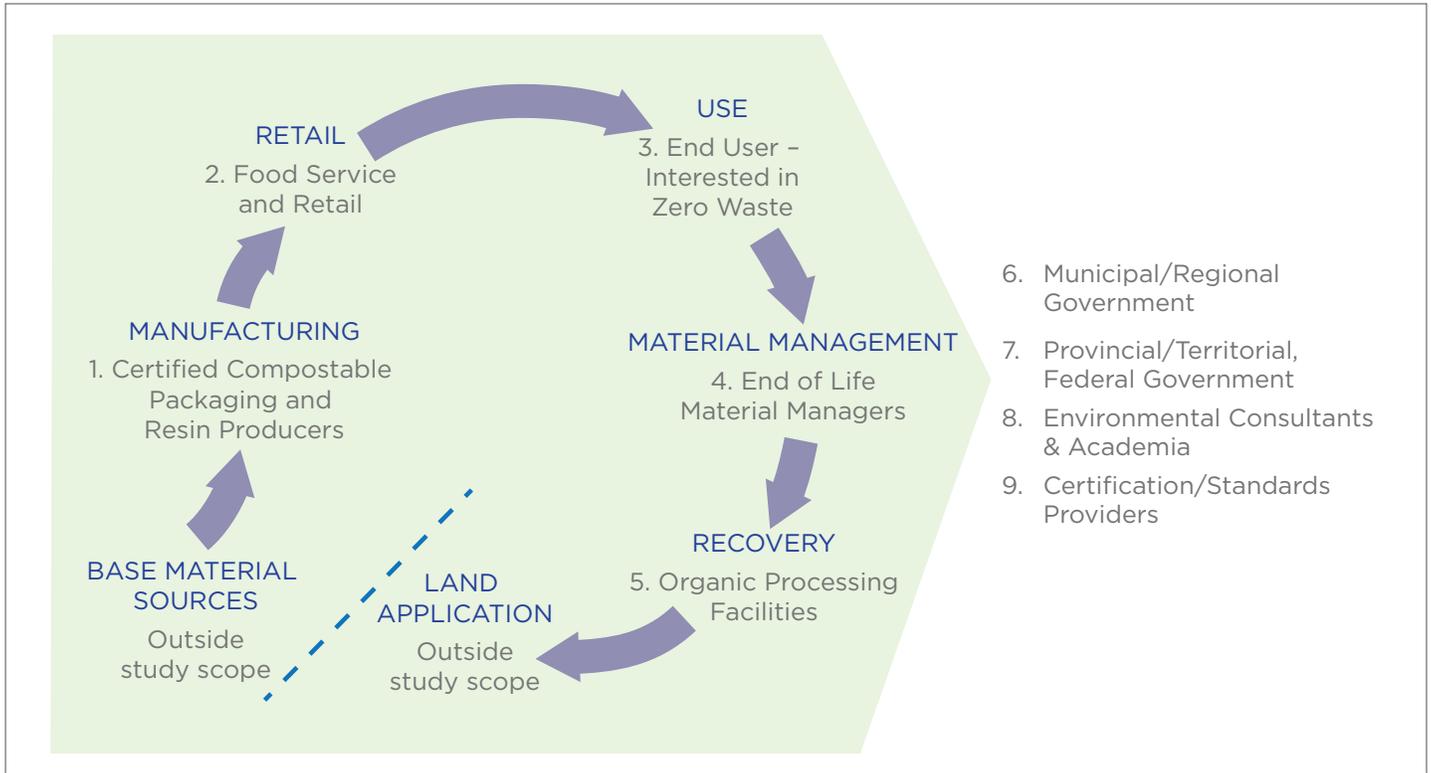


FIGURE 1 Stakeholder groups consulted in the case study on certified compostable food packaging. Note that the base materials for modern certified compostable packaging have both biological and synthetic origins.

NOTES ON REPRESENTATION

As the study focused primarily on large-scale centralized compost manufacturing capacity, municipalities and regions with populations over 100,000 individuals were considered as being more likely to have relevant experience with compostable packaging. Rural and lower-population regions,

including Indigenous communities, while important to the future of wide scale organics processing in Canada, are not well represented in the results. As collaboration on the topic of compostable packaging expands, it will be vital to incorporate meaningful engagement from these more rural communities.

Results

As presented in the introduction, the questionnaires used in the consultation focused on the many factors impact the capacity to use and recover certified compostable food packaging. The results disclosed here are grouped under four categories, and outcomes are aggregated across all sectors participating in the consultation, with notable differences between sectors provided. The detailed results of the consultation, which provide more explicit breakdowns by sector, are available upon request in an appendix to this report. The views and opinions expressed in this report from the stakeholder survey do not necessarily reflect the views, opinions or positions of the authors nor the National Zero Waste Council.

PACKAGING TECHNOLOGY & FACILITY INFRASTRUCTURE

The first category refers to the technology involved in designing and producing packaging and the infrastructure (and embedded technology) of the centralized compost manufacturing facility. Sectors directly involved in funding and managing compost manufacturing facilities were even split between the public and private representatives.

The consultation asked respondents to rank whether packaging technology and facility infrastructure was an enabler or a barrier to the recovery of certified compostable packaging.

Technology and infrastructure enablers identified by stakeholders

- The packaging industry noted that their products can be processed in a wide variety of compost manufacturing facilities including both aerobic composting and anaerobic digestion.
- Soiled paper food packaging products are generally accepted at compost manufacturing facilities, where they exist.
- A growing interest in organics processing across Canada is resulting in a quickly expanding compost manufacturing industry.

Technology and infrastructure barriers identified by stakeholders

- A significant proportion of representatives from local and provincial levels of government, compostable certification agencies, the food and packaging industries, as well as environmental consultants and private sector material management businesses identified the non-alignment between new compostable packaging design and what is accepted at compost manufacturing facilities across Canada as a significant barrier to recovering compostable packaging on a national level.
- Minor differences between the stated conditions for composting of packaging and in conditions within a compost manufacturing facility can result in differences in acceptance across facilities.
- Processing limits at one facility in a region had the potential to set reduced material acceptance standards for a region despite higher material acceptance at other local facilities.

- This variation in what compostable packaging is accepted at different facilities creates confusion in educating end users. The markets for certified compostable products spans jurisdictions in Canada, so variations in facility infrastructure is preventing the recovery of what is a compostable material.
- The packaging industry and municipal sector noted that the rate of innovation in compostable packaging materials, and the requirements to compost products made from these materials, is moving faster than the time it takes to construct or upgrade the technology or infrastructure at centralized processing facilities.
- Specific facility conditions were identified as not ideal or not able to process all types of compostable packaging, including:
 - It was identified that regardless of facility type, having operating conditions which differ significantly from the conditions used for certifying compostable packaging (e.g. cycle time, temperature, moisture level, oxygen availability) can prevent acceptance and thus recovery.
 - Any facilities producing certified organic compost are not permitted, under current certification standards, to accept compostable plastics as a feedstock — this was noted by consultants and the compost manufacturing industry.
 - Importantly material managers, including local governments, operating compost manufacturing facilities, as well as provincial government representatives noted that in some processes, even if compostable packaging is being received as a part of the organics stream, it is being screened out prior to processing, and sent to landfill—thus not fulfilling circular economy objectives. This is because screening protocols are established to pull conventional packaging out that will contaminate the end product: compost. The screening process often does not distinguish between compostable and conventional packaging.
- Inconsistency in labeling of compostables causes confusion and difficulty identifying and sorting at processing facilities, creating a barrier to acceptance at such facilities.
- Lack of communication between the packaging and compost manufacturing industries was identified as a major barrier to acceptance, understanding and harmonization.
- Nine per cent of municipal respondents indicated that they either had no curbside organics collection program, or provided leaf and yard waste collection only. This lack of centralized collection system for food waste was indicated to preclude the recovery of compostable packaging for compost manufacturing.
- One municipality identified that their open windrow facilities cannot accept food scraps due to two factors: the required decomposition conditions (e.g. temperature and moisture) and the risk of attracting wildlife with food waste. So if they don't accept food waste, they will not accept compostable packaging.
- Two other stakeholders, one from consultants/academia sector and the other from local government, indicated that the odour problems associated with facilities accepting food scraps can prevent the creation of centralized compost manufacturing facilities.

PUBLIC & PRIVATE POLICIES

Although addressed separately in the questionnaires, the responses showed a lot of interplay between public and private policies so the results have been aggregated for this report.

Policy and program enablers identified by stakeholders

- Access to curbside organic waste collection programs encourages organic waste recovery, which in turn can enable compostable packaging recovery.
- Organic material bans from landfill were mentioned across most sectors as an enabling driver for the development of centralized processing facilities and municipal curbside programs that accept food scraps that enable compostable packaging recovery.
- Having curbside programs that collect organic waste is an important precursor to recovering compostable food waste packaging, although responses showed that the presence of curbside collection and processing facilities does not guarantee recovery of compostable packaging for composting.
- Private and public acceptance policies were widely noted as either an enabler or barrier to recovery depending on whether compostable packaging is accepted.
- One respondent from the compostable packaging industry indicated that compostable packaging — particularly certified compostable bin liners— can aid in organics waste recovery.
- Extended Producer Responsibility (EPR) stewardship programs were brought up by material managers, municipalities, provinces, and the packaging industry as a potential avenue to provide financial incentives or funding for greater acceptance of compostable packaging. EPR was also noted as a tool for potentially increasing

responsibility and encouraging more sustainable product creation.

- Community groups, municipalities, and packaging providers placed an emphasis on the importance of partnerships and local initiatives to enable recovery.
- Some participants mentioned that Ontario and Québec¹ have recently published strategies for managing organics and other residual materials which take a proactive and enabling approach to compostable packaging.

Policy and program barriers identified by stakeholders

- The program most-often identified as a barrier to recovering packaging was organics processing programs that do not accept compostable packaging. (More detail on why compostable packaging may not be accepted at all compost manufacturing facilities are available in the section on packaging technology and facility infrastructure.)
- Environmental consultants and academics highlighted the lack of harmonization as a barrier to compostable packaging recovery. Other sectors including local governments and the packaging industry identified the lack of harmonization as a cause of confusion for the end user. Harmonization referred to both practices within and between the compost manufacturing and packaging industry as well as government policy.
- Government participants noted that organic waste landfill bans are not easily enforced.
- Some government stakeholders noted that solid waste management plans tend to be more high-

¹ Specifically, Ontario's Proposed Food and Organic Waste Framework for Ontario and Québec's Policy for Residual Materials.

level and deal with organics diversion as a broad area of interest, usually without the level of detail for considering compostable packaging diversion.

- In terms of private certification policies and programs for compostable packaging, many stakeholders from government and materials management sectors revealed that compostability certification does not reflect all (or most) varied real-world conditions in terms of retention time, humidity, and temperature profiles.
- Several stakeholders from various sectors agreed that there is a lack of regulatory oversight and enforcement for the labeling and marketing of compostable packaging, which leads to “green washing” and miscommunications that can be barriers to proper recovery.
- Representatives of local governments reported that the investment in the systems and existing facilities to collect organics is substantial. In addition to the investment in land and the actual facilities, there is the cost of pre-processing equipment, operations and hauling. Therefore the business case for altering or expanding investment in organic processing facilities to ensure the proper recovery of compostable packaging is weak at best. In this stakeholder engagement process local governments represent just over half of the entities responsible for the funding and management of centralized composting facilities.
- Stakeholders noted that where the cost of landfill disposal of organics is lower than the cost to compost organics, organics diversion is undermined. This occurs within Canada, particularly along the border with the US. Organics bans by Canadian jurisdictions can be undermined by haulers transporting solid waste, including organics, to lower-cost landfills in the US.
- One facility operator noted that if compostable packaging is accepted at a facility and does not break down sufficiently under their processing conditions (e.g., time, temperature, humidity), residual material may be left in the end product. This risks contamination of compost and customer dissatisfaction and becomes a barrier by some facilities to accept compostable packaging.
- Stakeholders indicated that the nature of compostable packaging can sometimes lead to increased operating or processing costs. For example, compostable bags can be shredded and may then may be caught in equipment leading to higher maintenance costs. Another example would be the need to increase the length of the cycle time in processing; this also leads to an increase in costs.

ECONOMICS

The Economics category refers to the costs associated with the use or recovery of compostable packaging, and how these enabled or created barriers to recovery.

Economic enablers identified by stakeholders

- Stakeholders noted that when the cost landfill disposal is higher than diversion to centralized compost manufacturing facilities, this drives the diversion of food scraps from landfills. This creates an essential condition for the recovery of compostable packaging but only if there is local acceptance of compostable packaging at the composting manufacturing facilities.

Economic barriers identified by stakeholders

- The food service industry pointed to the higher cost of compostable packaging relative to conventional packaging options as a barrier to using compostable packaging.

PERCEPTIONS

Perceptions around compostable packaging play a role at each stage of the value chain, and were highly variable both within and between sectors. For some compostable packaging is seen as a 'green alternative' to conventional packaging while others perceive it as essentially an example of 'green washing' and a burden/contaminant in compost manufacturing.

Across the entire response set, there was a trend towards considering perception as an enabler, although in each sector between a third to half of the respondents identified perception as a potential barrier, or both a barrier and an enabler.

Mixed responses from consultation with stakeholders

Whether perception was seen as an enabler or barrier depended on whose perception was being considered. In general, respondents believed that while the general public had a very positive view towards compostable packaging, they were unfamiliar with the complexities of the recovery system. In contrast, respondents reported the perceptions of facility operators and municipalities handling organics streams that do not accept compostable packaging as an obvious barrier to recovery.

Perception enablers identified by stakeholders

- The social drive among end users for 'zero waste' and a 'circular economy' promotes a positive, enabling perspective for the use and recovery of compostable packaging for individual retail and commercial food service. This was noted across sectors as an enabling factor.
- It is recognized that when a facility is able to effectively recover compostable packaging within a region, regional perception of the circular economy potential of compostable packaging is substantiated.

Perception barriers identified by stakeholders

- The roundtable revealed that there are misconceptions at every stage of the value chain, from the packaging industry not realizing the diversity of the facilities within the composting industry, to government staff not being knowledgeable that science based, national and international certifications exist for compostable packaging.
- Respondents indicated that end users tend to trust in the compostability claims of packaging, this leads them to put certified compostable packaging in the organics streams which will not accept packaging materials or putting uncertified packaging in organics streams the packaging cannot effectively be broken-down.
- Many stakeholders across sectors noted that when a processing facility sees that compostable packaging is not breaking down within their designated operating conditions, it can create a negative perception or attitude towards all compostable packaging.
- Across sectors there is confusion about compostable packaging and how it should be handled in the waste stream due to the lack of consistent appearance or markers for compostable packaging.
- One stakeholder noted that compostable packaging cannot be distinguished from its conventional counterparts. This can make it difficult for facility operators dealing with large volumes to distinguish between the two. The result is either non-acceptance of these compostable products or the screened removal of compostable packaging along with its conventional lookalike. Both options precludes the recovery of certified compostable material.

Discussion

SPECTRUM OF COMPOST MANUFACTURING TECHNOLOGIES AND MATERIAL ACCEPTANCE

Complicating the issue of material acceptance is the wide spectrum of packaging material. Of the municipalities consulted which have compost manufacturing facilities taking food scraps, 23% accept fibre compostable packaging only, 19% accept no compostable packaging, 14% accept all certified compostable packaging, and 44% expressed a range between accepting fibre to accepting all certified compostable packaging. The packaging industry did not fully appreciate the varying capabilities of composting manufacturing facilities across Canada. In fact, they expressed their surprise during the consultation roundtable.

The consultation results were consistent with background research on the compostability of modern compostable packaging. Typically, low-temperature, low to medium moisture systems, take a longer time to process certified compostable packaging. If a given facility's cycle time is shorter than the conditions required, the facility may not readily accept these materials. Indeed, existing North American certifications (e.g. BPI and BNQ) for compostable products are meant to simulate only centralized industrial, aerobic compost manufacturing facilities. Compostable products themselves have not been designed for small-scale or backyard composting, nor for anaerobic digestion. The National Zero Waste Council's 2015 *Can I Compost That? A Materials and Acceptance Guide* provides more information on which general operating conditions are required for different types of compostable packaging.

Stakeholders reported that only facilities which accept food scraps have the potential to be receiving compostable packaging; in other words, compostable packaging is not a concern or consideration for facilities accepting only leaf and yard waste, since compostable packaging typically only accompanies food waste.

OPPORTUNITIES IDENTIFIED

Respondents were invited to provide suggestions that could improve the likelihood of compostable packaging to be recovered in Canada. The feedback received related both to compostable packaging, and to the overall support and growth of a robust compost manufacturing industry (which compostable packaging will rely on long-term to be recovered). The table below summarizes exclusively responses provided by stakeholders consulted.

OPPORTUNITY IDENTIFIED	DETAILS
UNIFORMITY AND HARMONIZATION	<p>Increasing uniformity of compostable packaging, compost manufacturing facilities, and policies could enhance recovery of compostable packaging.</p> <ul style="list-style-type: none"> • The packaging and food service industries preferred harmonization of policies regarding the acceptance of compostable packaging within and across regions. This makes economic sense when selling to a national market. Policies include provincial standards, bans, or directives for managing compostable packaging. • End users, the food service industry, material managers and local governments involved in the consultation suggest that the conditions for composting compostable packaging should be standardized. • The packaging industry and certifiers recommend there be a repeatable and consistent operating framework for all compost manufacturing facilities. • Certifiers suggested there be clear regulation that bans the sale and use of non-compostable packaging and encourages use of certifiable compostable packaging. • Municipalities and end of life managers identified the need to be able to visually identify certified compostable packaging and to distinguish it from conventional packaging. • An end of life manager suggested focusing efforts on making existing plastics that come in contact with food and contaminate the organics stream (e.g. produce stickers) compostable, as opposed to focusing on compostable items such as cutlery.
SOLVE THE TECHNOLOGICAL MISMATCH	<p>The mismatch between compostable product design and existing processing facilities is a barrier to the circular economy potential of compostable packaging.</p> <ul style="list-style-type: none"> • Many representatives from the government sector, end of life managers, the food industry, and certifiers identified the need for compostable products that break down in “real life” facilities and existing facility conditions as opposed to unique or ideal conditions. • In specific, stakeholders from several sectors identified the need for compostable materials to breakdown more quickly to match existing processing times or cycles. • A certifier suggested the development of compostability standards should be approved by those involved in ‘end of life’ management. • A certifier also suggested that new facility operating/design standards should be embraced by composting packaging sector. Similarly, a municipal stakeholder indicated the need for full processing facilities that can compost certified compostable food ware.

OPPORTUNITY IDENTIFIED	DETAILS
LEVERAGE EXTENDED PRODUCER RESPONSIBILITY / STEWARDSHIP	<p>Extended Producer Responsibility and Stewardship Programs could be leveraged to address economic concerns.</p> <ul style="list-style-type: none"> • Municipalities and end of life managers highlighted the potential of EPR programs and stewardship fees to include compostable packaging and enable research and infrastructure development to augment recovery of compostable packaging. • Government stakeholders identified the potential to better utilize existing EPR legislation, such as that exists in British Columbia, be applied to paper-based compostable packaging. • Beyond EPR, stakeholders from certification, consulting, and academia world noted opportunities for structuring public policy and programs in a way that plans for desired future directions. An example would be the <i>Proposed Food and Organic Waste Framework for Ontario</i>.²
EDUCATION	<p>Confusion about what is compostable and inconsistency in practices across jurisdictions act as barriers to the circular economy potential of compostable packaging—effective education could address this barrier.</p> <ul style="list-style-type: none"> • Provincial/Territorial governments and certifiers noted the opportunity for education on compostable materials and packaging to improve participation and positive engagement in local programs. • Likewise, environmental consultants and academics suggested the use of clear continuous communication to public on the facts of what is a compostable package initiative. For example, “This certified compostable product is not currently accepted because...”

² http://www.downloads.ene.gov.on.ca/envision/env_reg/er/documents/2017/013-1814_Framework.pdf

OPPORTUNITY IDENTIFIED	DETAILS
FINANCIAL INCENTIVES	<p>Economic incentives could be used to encourage the use and recovery of compostable packaging.</p> <ul style="list-style-type: none"> • Government stakeholders indicated that financial incentives could be used to enable the recovery of compostable packaging. • Similarly, the food service industry suggested tax breaks to organizations that use compostable packaging as well as grants to create the composting manufacturing facilities and expanding processing capacity. • A stakeholder from the environmental consultant sector suggested removing financial barriers for diversion and increasing barriers for disposal. This was echoed by a food service industry representative who indicated that the government should make it financially difficult to not reduce waste or financially viable to create more recyclable packaging. • Certifiers proposed the use of full life cost accounting that incorporates life-cycle perspective could make the environmentally friendly options more affordable than conventional packaging. • End of life managers suggest the makers of compostable packaging must be willing to make investments to ensure recovery. Other stakeholders indicated that these types of Extended Producer Responsibility (EPR) programs could be helpful to promote recovery.
ELIMINATE ITEMS	<p>Eliminating certain items from the waste stream could increase general acceptance of compostable packaging.</p> <ul style="list-style-type: none"> • Municipal stakeholders proposed eliminating compostable plastics and only including fibre-based products as the sole certified compostable option. • Certifiers suggested eliminating non-certified compostable items and an academic recommended banning oxo-degradables. • An end of life manager advised against the production of compostable plastic clamshells as they can contaminate the recycling stream.

Conclusion

Overall, the consultation results highlight the complexities associated with compostable packaging reaching its circular economy potential uniformly across Canada.

One significant finding was the understanding that compostable packaging often becomes a consideration for policy and infrastructure only after centralized large-scale facilities for processing food scraps are in place. However, while the development of compost manufacturing infrastructure is growing throughout much of Canada, the capability of these facilities to handle certified compostable packaging varies. The ability to process compostable packaging is currently outpaced by both the volume of food waste and the expanding diversity of compostable packaging. This discrepancy creates barriers to the recovery of compostable packaging.

The indirect drivers for compostable packaging recovery include the existence of common objectives across all sectors to move towards zero waste and the increasing diversion of recoverable materials from landfills. Unfortunately, compostable packaging does not meet its circular economy potential due to the non-alignment between packaging technology embedded in certified compostable packaging and the existing compost manufacturing facility infrastructure. The situation has created confusion in the marketplace and is a barrier to the effective recovery of compostable packaging.

As noted by several stakeholders, future work to improve compostable packaging meeting its circular economy potential should focus on enhancing the communication channels between the compostable packaging industry and compost manufacturers. The aim of this communication should be increase the uniformity among compostable packaging in alignment with the common technologies used in compost manufacturing. In addition, the policies guiding organics diversion and centralized composting should be harmonized across Canada. This will result in new material standards and labeling of compostable packaging, clear messaging that can be used in market education and communications, and the emergence of extended producer responsibility policies in relation to compostable packaging.

Complimentary appendices to this report, which are available upon request include:

Appendix A – Short Guide to Applying the Assessment Framework for Packaging Recoverability

Appendix B – Detailed Consultation Results by Sector

Thank you to the consultants responsible for the preparation, implementation and reporting on the consultation framework and case study: Emily McGill (WholeWorld) and Jillian Treadwell. Thanks also to the Working Group for their contributions to the study and reporting. Members of the PDP Working Group include: Susanna Carson (BSIbio Packaging Solutions and BESICS, Co-chair), Colin Isaacs (CIALGroup, Co-chair), Allen Jensen (Metro Vancouver), Rachel Morier (PAC and PAC Next), Isaul Lopez (BASF), Jeanette Hanna (BASF), Julian Radlein (SymbiAudit), Tyler Pronyk (A&W), and Shannon Betts (Halifax Regional Municipality).

About the National Zero Waste Council

The National Zero Waste Council (NZWC) was founded by Metro Vancouver in collaboration with the Federation of Canadian Municipalities as a leadership initiative bringing together governments, businesses and non-governmental organizations to advance a waste prevention agenda in Canada. A collaborative approach is essential to advancing waste prevention and a transition to a circular economy.

The objective of a circular economy is to “*keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life.*”³ The ultimate or ideal ability of a product to work in a circular economy can be considered its **circular economy potential**; many types of packaging have a circular economy potential that is not fully being met.

³ WRAP UK. (2017). *WRAP and the Circular Economy*. <http://www.wrap.org.uk/about-us/about/wrap-and-circular-economy>

The NZWC’s Product Design & Packaging Working Group considers the relationship between the design of products and their end-of-life. Previous projects include the *Design Portfolio: Celebrating Canadian design for waste prevention and systems thinking*, the underlying *Key Principles for Waste Prevention and Systems-Thinking*, promoting these principles in webinars and presentations across the nation, and the publication series and info graphic *Can I compost that? Designing for Compostability in Canada*. These resources are located on the NZWC website at www.nzwc.ca/focus/design. This compostable packaging assessment framework is designed to explore, through multi-stakeholder consultation, how technology and infrastructure, policies, programs, economic conditions, and perceptions impact the recoverability of packaging. For questions about this study, please contact the NZWC Secretariat or the working group through the NZWC website.

