



Reuse in Canada Landscape Scan: Understanding Opportunities to Advance Reuse Systems

Final Report

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About the National Zero Waste Council

The National Zero Waste Council, an initiative of Metro Vancouver, is leading Canada's transition to a circular economy by bringing together governments, businesses and NGOs to advance a waste prevention agenda that maximizes economic opportunities for the benefit of all Canadians.

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1. Background

1.1 Definition of Reuse

Available definitions for “reuse” were identified from a variety of organizations including Zero Waste Europe, the International Organization for Standardisation (ISO), the U.S. Environmental Protection Agency, the Ellen MacArthur Foundation, the Organisation for Economic Co-operation and Development (OECD), the Circular Economy Practitioner Guide, Terracycle, the U.S. Chamber of Commerce Foundation, the European Commission, the Circular City Funding Guide and Design News. Based upon these existing definitions, the following definition of “reuse” has been developed:

Reuse – Any operation by which a product, component or material is used again for the same purpose that it was originally manufactured for and in its original form, without significant modifications or enhancements before being used again. Small adjustments, minor repairs, testing and cleaning of components may be necessary to prepare for the next reuse and this can be referred to as being repaired or refurbished.

The definition of “reusable packaging” that has recently been developed by the Sustainable Packaging Coalition is as follows:

Reusable Packaging - Packaging that allows either the business or the consumer to put the same type of purchased product back into the original packaging, is designed to be returnable and/or refillable, is free of chemicals of concern, and accomplishes a minimum number of reuses by being part of a system that enables reuse.

Supplementary explanations of terms that were contained in the definition of “reusable packaging” that were developed by the Sustainable Packaging Coalition are as follows:

Type: A category of products. For example, liquid personal care products, which can be poured back into a durable bottle when it is empty.

Designed to be: Reusability must be an intentional design choice on the part of the brand, rather than a consumer choosing to repurpose single-use packaging for other uses.

Free of chemicals of concern: The material used should not contain harmful chemical, physical, biological, or radiological substances that will pose a threat to human health or the environment.

Minimum number of reuses: While there is no single minimum number of reuses that is appropriate across all product categories, the carbon footprint of reuse is highly dependent on this metric. Achieving some minimum

number of reuses in practice is vital for meeting the environmental goals of reusable packaging.

System that enables reuse: This refers to supporting elements that encourage packaging to be successfully reused, refilled, and/or returned, such as refills, dispensers, collection programs, deposits, container tracking, apps, etc.

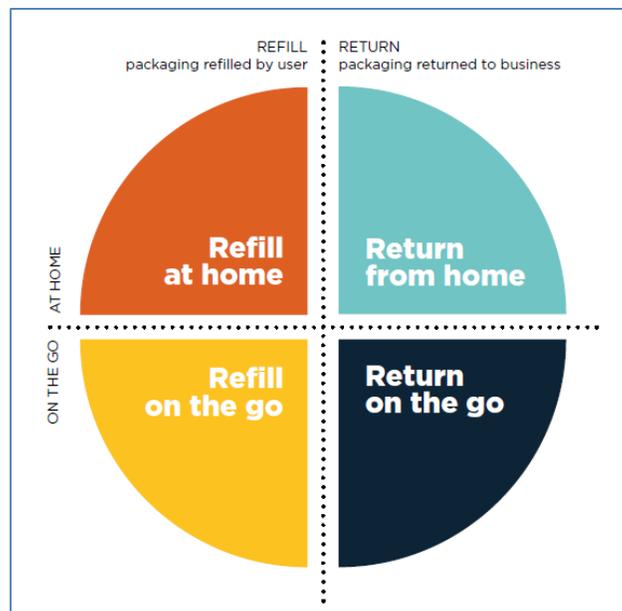
The Sustainable Packaging Coalition also established separate definitions for the two types of reusable packaging, specifically “refillable packaging” and “returnable packaging”:

Refillable Packaging - Packaging that is designed to be owned and refilled by consumers with separately-purchased product or through dispenser systems.

Returnable Packaging - Packaging that is part of a system that provides for the collection and refill of the package by a business. Customers send the packaging back to the business, which in turn puts new products into the empty packaging. In this system, packaging is treated as a business asset.

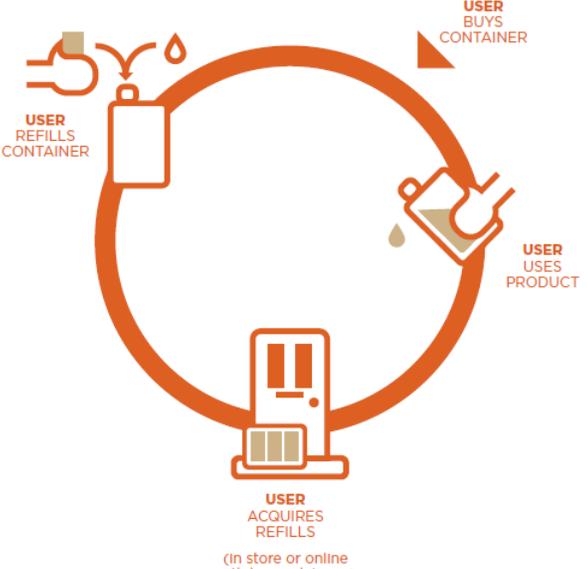
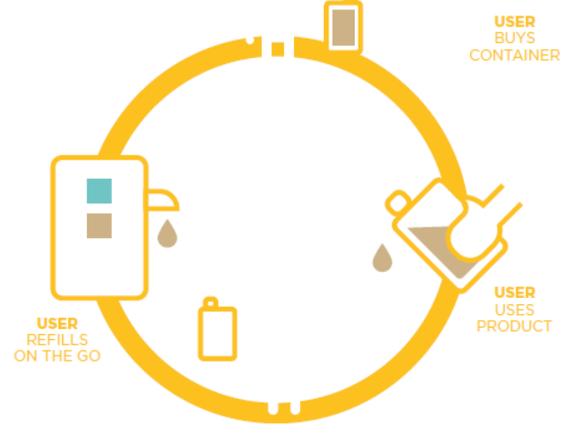
1.2 Different Models of Reuse

Based upon work by the Ellen MacArthur Foundation, there are four business-to-consumer reuse models that differ in terms of packaging ‘ownership’ and the requirement for the user to leave home to refill/return the packaging. These reuse models are summarized in the figure below and described in detail in the table on the following page.



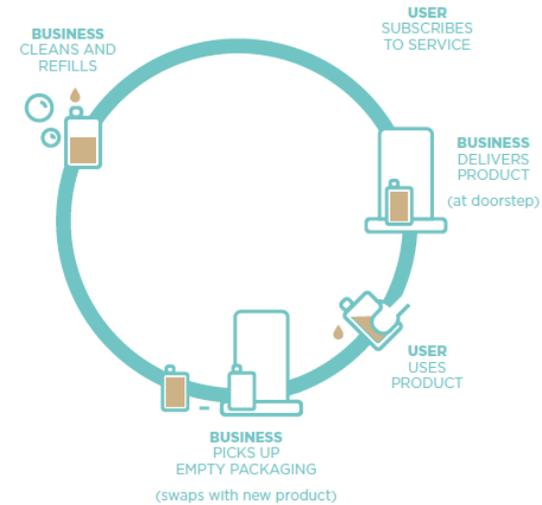
Source: Ellen MacArthur Foundation (2020), *Reuse Rethinking Packaging*.

Table 1: Examples of the Main Reuse Business Models

<p>Refill at Home</p> <ul style="list-style-type: none"> • Consumers refill their reusable container at home (e.g., with refills delivered through a subscription service). Refill at home can work in both traditional and online retail. The model works particularly well for e-commerce as there is no competition for shelf space from products sold in standard packaging. • Current examples include: (i) e-commerce for compact refill products that are used at home or in office buildings on a regular basis (e.g. beverages, home care, and personal care products); and (ii) traditional retail outlets for standard-sized (non-compact) refills (e.g. for home care and personal care products). • Benefits include: (i) businesses can reduce transportation and packaging costs by supplying products as refills, concentrates, tablets, etc. (ii) users can benefit as refills can be cheaper to buy and easier to carry and/or store, compared to products sold in standard packaging; (iii) users' individual needs can be accommodated with refill systems that allow them to mix flavours, add a desired fragrance or personalise the main packaging; (iv) businesses can improve brand loyalty through refill subscriptions delivered directly to users; and (v) users can benefit from higher convenience with automatic reordering. 	
<p>Refill on the Go</p> <ul style="list-style-type: none"> • Requires a physical store or dispensing point, which makes it better suited to traditional retail outlets and urban environments. In low-income markets, the model can accommodate customers' needs for small quantities at affordable prices without relying on single-use sachets. • Current examples include: (i) traditional retail outlets for products like beverages, cooking essentials, personal care, and home care; and (ii) coffee shops and water fountains. • Benefits include: (i) users' individual needs can be accommodated with dispensing systems that allow them to choose desired quantities and personalise content; (ii) businesses can obtain user intelligence through dispensing systems that recognise the user and collect data on preferences; (iii) businesses can reduce transportation and packaging costs by supplying products as concentrates to be mixed with water on the spot in the dispensing machine; and (iv) users can benefit from improved access to products if dispensing systems are mobile or placed in public spaces. 	

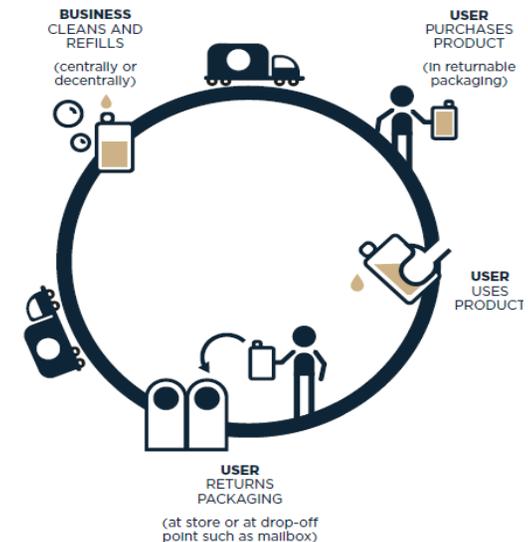
Return from Home

- Is suitable for e-commerce as the pickup of empty packaging can be combined with the delivery of new products. It is particularly well suited for urban areas with reduced travel distances between deliveries.
- Current examples include e-commerce for products such as groceries, meal delivery, personal care, home care, and beauty.
- Benefits include: (i) users can get a better experience through improved functionality and/or aesthetics of the packaging; (ii) businesses can improve brand loyalty by incentivising the return of the packaging through deposit and reward schemes; (iii) businesses can optimise operations through the standardisation of packaging or shared logistics and cleaning facilities across brands, sectors or wider networks (e.g. in combination with a third-party packaging/service provider); (iv) businesses can improve brand loyalty and obtain user insights through subscription to auto-replenishment services; and (v) users don't need to worry about keeping track of stock and reordering in a subscription service.



Return on the Go

- Widely applicable as it can substitute most single-use packaging without changing the fundamental purchase situation.
- Current examples include: (i) traditional retail outlets for beverages where the model has been proven to work at scale in several geographies (e.g. Latin America, Japan, and Europe); (ii) cities and events for products on-the-go such as takeaway coffee, beverages, and food.
- Benefits include: (i) businesses can improve brand loyalty by incentivising the return of the packaging through deposit and reward schemes; (ii) businesses can optimise operations through the standardisation of packaging or shared drop-off points, logistics, and cleaning facilities across brands, sectors or wider networks (e.g., in combination with a third-party packaging/service provider); (iii) users can benefit from improved convenience as a higher density of drop-off points can be obtained through network collaboration; (iv) businesses can gather intelligence via smart packaging and drop-off points that recognise the user and collect data on preferences; and (v) users can have a better experience through improved functionality and/or aesthetics of the packaging.



Source: Ellen MacArthur Foundation (2020), *Reuse Rethinking Packaging*.

1.3 Cross-cutting Barriers to Reuse

There are a number of cross-cutting barriers to reuse that impact several or all of the products analyzed in this report. While product-specific barriers are discussed in their respective chapters in this report, the cross-cutting barriers are identified and described in this section. These barriers cover all of the main participants within the reuse business model – consumers, manufacturers (brand owners), retailers and governments.

1.3.1 Consumer Barriers

Convenience - A significant barrier for reuse business models is overcoming the convenience provided by the use of single-use plastics, whereby products are purchased at nearby stores and the empty containers simply placed in the recycling or disposal bin within their residence. Convenience affects the acceptance of reusable packaging systems by consumers, including delivery (e.g. weight), the ease of use (e.g. in the case of refilling), home management, and the return of used packaging, as well as return opportunities (e.g. in-store, pick up).¹ Reuse models can be more complicated than the single-use packaging alternative, for instance involving bringing empty containers to stores to refill, using refilling machines which some people may find difficult, sending back empty containers through the mail, transferring components of empty containers (e.g. pump) to new containers, and even the risk of the unavailability of refills. Reuse/refill systems must aim to match the convenience of single-use packaging options.

Affordability – Changing consumer shopping habits from the traditional single-use to the reuse model will be more difficult if a cost penalty is associated with making this switch. This includes the first cost of a parent dispenser in a refill system.² Therefore it is important to have the reuse products be less expensive or on par with single-use products that are available.³ There have been examples of bad pricing policy by retailers or manufacturers (resulting in equal or higher costs for a reusable system). In the past, pricing strategies have not always reduced the retail price of, for instance, refills. Even price premiums for refills or reusable packaging systems have been found, assuming that sustainable-conscious consumers are willing to pay extra. These pricing strategies negatively affect the introduction of reuse packaging options. For the general public, the ‘feel-good factor’ is not enough, and hence a financial incentive may be important to change consumers to switch to a reusable packaging system.⁴ Certain companies have acknowledged this

¹ Coelho, P.M. et. al. (2020), *Sustainability of Reusable Packaging - Current Situation and Trends*, published in *Resources, Conservation & Recycling*.

² Ibid.

³ Asda (undated), *Asda Opens Sustainability Store*.

⁴ Coelho, P.M. et. al. (2020), *Sustainability of Reusable Packaging - Current Situation and Trends*, published in *Resources, Conservation & Recycling*.

importance, for instance Asda in the United Kingdom has made a national price promise that loose and unwrapped products will not cost more than the wrapped equivalents.⁵

Consumer Awareness and Education – The general consensus is that education is key to consumer acceptance of non-single-use packaging. Reuse is a more difficult concept for consumers to envision, requiring consumers to move away from the way they currently handle packaging. For instance, consumers accidentally throwing out reusable packaging or forgetting to bring it along to the store are very common issues. There is also a general lack of awareness that packaging can be refilled.⁶ In addition, consumers generally have limited understanding to distinguish and rate the impacts of packaging concepts, which makes it hard for consumers to make an informed choice.⁷ Therefore widespread consumer awareness and education is needed to demonstrate/communicate to consumers the benefit of the reuse system (e.g. environmental savings, cost savings) and to get consumers used to the circular model. The entire supply chain (i.e., packaging designers, manufacturers, marketers, retailers) need to be involved and work together to achieve a higher level of consumer awareness and education.⁸

Overcoming Traditional Consumer Shopping Habits - Preliminary surveys with hundreds of adults in the United Kingdom have found that while two-thirds of these individuals would consider using refillable products, there are still widespread concerns about the perceived cost, the perceived time and effort and a general apprehension with trying something new. Therefore, deeply ingrained consumer shopping habits will need to be changed in order to see the reuse model adopted at scale. The reuse way of shopping needs to become a habit, however it is a totally new way of shopping requiring new behaviours at home and instore.⁹

Packaging Safety - A potential barrier is consumer concern about packaging safety, especially in the context of COVID-19 and its aftermath.¹⁰ Consumers may be concerned that reuse packaging (e.g., product hygiene associated with bulk dispensing) is not as sanitary as the single-use alternative, especially given the reliance on single-use plastics (at the expense of reusable products) during the pandemic.¹¹

⁵ Asda (undated), *Asda Opens Sustainability Store*.

⁶ Corbin, T. (2022), *Use, Clean, Repeat – Category Focus – Reusable/Refillable*, published in Packaging News.

⁷ Coelho, P.M. et. al. (2020), *Sustainability of Reusable Packaging - Current Situation and Trends*, published in *Resources, Conservation & Recycling*.

⁸ Matusow, J. (2022), *Making the ‘Eco-Transition’ – An In-Depth Look at the Challenges, Opportunities, and Solutions for Sustainable Packaging*, published in *Beauty Packaging*.

⁹ George, S. (2020), *Asda and Unilever Partner with WRAP to Help Make Refillable Packaging More Popular*.

¹⁰ World Economic Forum (2021), *Future of Reusable Consumption Models – Platform for Shaping the Future of Consumption*.

¹¹ National Zero Waste Council, (2021), *Opportunities for Reusables in Retail Settings During the COVID-19 Pandemic in Canada*.

1.3.2 Manufacturer/Brand Owner Barriers

Changing Supply Chains/Business Models – One of the biggest barriers to implementing reusable packaging is the change from the standard (one-way) business practices and the restructuring of the business model. The new business model requires the development of new (reverse) logistics, product designs, investments in new production steps or even complete lines, as well as communication strategies to optimize the impact of the systems. This requires reorganizing supply chains to ensure that packaging is available and returned through better management of distribution, returns, brand recognition and loyalty, as well as stocks.¹²

Financial Viability - A lack of scaled precedents (so far) makes business cases difficult to develop for the reuse model, so stakeholders (especially retailers) are reluctant to make these investments.¹³ In addition, the upfront investment to establish a new reusable packaging system is a barrier to manufacturers (brand owners).¹⁴

Brand Differentiation - Industry-wide packaging standardization, using shared infrastructure, is often identified as an essential means of achieving scale for reuse systems. However, such standardization can come at the cost of brand differentiation. Generating designs and processes for scalable infrastructure that allows for sufficient levels of differentiation is a critical barrier to address.¹⁵

Return Rates and Turn-Around Times – These factors affect the efficiency and effectiveness of the reuse system. As an example, the return rates for returnable packaging items, such as crates and pallets, are a major issue for many companies. The use of pooling systems to enable sufficient supply is possible, but may require a degree of standardization. In global supply chains, customs handling of empty refillable containers has shown to be an issue (e.g., of intermediate bulk containers), resulting in unnecessary handling costs and delays.¹⁶

Focus on Recycling - There has been a global preoccupation with improved recycling including designing consumer packaging which facilitates recycling. This has limited the collective capacity to envision, and implement, viable reuse/refill solutions.¹⁷

¹² Coelho, P.M. et. al. (2020), *Sustainability of Reusable Packaging - Current Situation and Trends*, published in *Resources, Conservation & Recycling*.

¹³ World Economic Forum (2021), *Future of Reusable Consumption Models – Platform for Shaping the Future of Consumption*.

¹⁴ Coelho, P.M. et. al. (2020), *Sustainability of Reusable Packaging - Current Situation and Trends*, published in *Resources, Conservation & Recycling*.

¹⁵ World Economic Forum (2021), *Future of Reusable Consumption Models – Platform for Shaping the Future of Consumption*.

¹⁶ Coelho, P.M. et. al. (2020), *Sustainability of Reusable Packaging - Current Situation and Trends*, published in *Resources, Conservation & Recycling*.

¹⁷ MacDonald, A. (2022), *Reusable Packaging Blog: Part Two - Envisioning Reuse/Refill at Scale: a Framework to Assess Viability*.

1.3.3 Retailer Barriers

For retailers, the additional space and hygiene requirements for receiving and storing reusable containers, or for dispensers, may be a barrier. Furthermore, the need for maintenance and cleaning of dispensers is an added activity and hence barrier within current retail concepts, which may also introduce risks and liabilities (e.g., due to contamination or spoiling through improper use or cleaning of bulk dispensers).¹⁸

1.3.4 Government Barriers

Incentive Misalignment: Many municipal systems reward high levels of recycling, as opposed to outright waste reduction. Since elevated levels of reuse – and, therefore, reductions in single-use waste – would likely bring down recycling rates somewhat, this incentive structure could actually serve as a disincentive to the development of reuse processes.

Lack of Standardized Tools: There is currently a lack of standardized metrics and tools for understanding the economic, environmental and social benefits of reuse.

¹⁸ Coelho, P.M. et. al. (2020), *Sustainability of Reusable Packaging - Current Situation and Trends*, published in *Resources, Conservation & Recycling*.

1.4 Structure of the Report

There are ten additional chapters in this report. Chapter 2 provides summaries of the main learnings extracted from chapters 3 – 7. Chapters 3 – 7 each address one specific type of product/material category with respect to its reuse. The remaining chapters are as follows:

- Chapter 2 – Summary of Key Sectoral Learnings
- Chapter 3 – Food Packaging
- Chapter 4 – Personal Care and Household Care Product Packaging
- Chapter 5 – Textiles (Apparel and Carpet)
- Chapter 6 – Construction, Renovation and Demolition Materials
- Chapter 7 – Electronic Equipment
- Chapter 8 – Household Goods/Appliances

Each of the sectoral chapters addresses the following issues with respect to the reuse of the product/material: (i) current state in Canada; (ii) policies, regulations, programs and infrastructure that enable or support reuse systems across Canada; (iii) key initiatives, policies or infrastructure in other jurisdictions; and (iv) gaps and barriers to advancing reusable systems across Canada.

Chapter 9 (Other Identified Examples of Established Reuse Systems) simply describes some of the other reuse systems that were identified during the course of the research that fall outside the six products/materials outlined above. Chapter 10 (Conclusions and Recommendations) outlines the key findings from the research during this study and identifies potential work that could be conducted by the Reuse Working Group established by the National Zero Waste Council. Finally, Chapter 11 (Bibliography) lists the literature sources that are referenced in this Final Report.

2. Summary of Key Sectoral Learnings

2.1 Introduction

This summary highlights some of the key points conveyed within chapters 2-7 of this report – namely those focused on specific product-types or sectors. Due to the extensive scope of the report, and the significant differences between sectors described within the report, key learnings are summarized here without background or context. As a result, and it is recommended that readers without a strong background in reuse utilize the sectoral chapters of this report to extract necessary background and context to the key learnings below.

2.2 Food Packaging

The food and beverage application segment accounted for over 51.5% of the plastic packaging market in 2021 and represented the highest consumption of plastics within any plastic packaging segment by a significant margin.¹⁹ If the goals of reuse and the circular economy include reducing plastic production/consumption then food packaging must be considered a primary target for action. The analysis of reuse opportunities in food packaging was conducted across 3 sub-categories, namely: (i) retail; (ii) hotels, restaurants and cafes (HoReCa); and (iii) events and specific controlled environments. Each of these segments presents different challenges and different opportunities.

- Reusable food packaging models rely on cleaning/sanitation infrastructure so that containers can be safely reused. As it currently stands, there is a lack of container cleaning infrastructure in some locations. One pilot reusable container program operating in Ontario through a major retailer sent reusable packaging to the United States for cleaning due to a lack of local infrastructure.²⁰
 - One way to manage the issue of businesses needing to build their own cleaning infrastructure is to have third parties manage the provision, collection, and cleaning of the reusable food packaging (or cups). In this system the third party can involve several local businesses within a reuse system in order to leverage economies of scale at a centralized cleaning facility. In this situation, a standardised system increases logistics efficiency, environmental performance, and streamlines processes.²¹

¹⁹ Grand View Research, (2022), *Plastic Packaging Market Size, Share & Trends Analysis Report By Product (Rigid, Flexible), By Technology (Injection Molding, Extrusion, Blow Molding, Thermoforming), By Application (Food & Beverage), And Segment Forecasts, 2022 – 2030*.

²⁰ Scout Environmental (undated), *State of Reuse and Refill in Canada and Recommendations*.

²¹ Circular Economy Portugal, (2021), *Making the Business Case for Packaging Reuse Systems*.

- Refilleries are a retail model whereby certain products are sold via dispensing devices and consumers use their own containers to store/carry their product. While there have been larger businesses that have been using a refillery (or partial refillery) model for a long time (such as Bulk Barn) the model still represents a vanishingly small fraction of retail food purchasing in Canada.
- Greater opportunities have been identified within business to business (B2B) transactions compared to business to consumer (B2C) due to reduced consumer preference concerns, reduced marketing concerns (leading to higher degrees of possible standardization), and the fact that different units of the same business often ship items to one another –meaning closed-loop systems where reuse initiatives are easier to implement. Additionally, as B2B transactions are less-likely to involve the final use of the food product (as they are focused on tertiary or secondary packaging and transport as opposed to display/purchase/consumption) hygiene concerns are also reduced.
- Specific controlled environments such as schools, university campuses, food courts in malls, and other clearly demarcated areas with one or multiple HoReCa businesses within a single space, are able to more easily take advantage of simplified logistics for reusable food packaging and should be considered strong candidates for policy interventions.
- In addition to the policies above, the Government of Chile’s current draft EPR regulation incentivises reusable packaging by excluding it from the EPR obligation and allowing producers switching to reusable packaging to apply to receive a discount on the amount they will need to pay to Producer Responsibility Organisations. This type of approach was not mirrored in any other identified jurisdictions.
- Some jurisdictions are banning certain single-use plastic packaging while simultaneously encouraging reusable packaging or instituting reusable packaging requirements – which would prevent establishments from simply finding other materials from which to make single-use food packaging options.

2.3 Personal Care and Household Care Product Packaging

Personal care and household care products can include oral care, skin care, sun care, hair care, cosmetics, body care, perfumes, laundry detergent, dishwashing liquid, bathroom cleaners, floor cleaners and many other products. Personal and household care products represent the second largest application for plastic packaging globally (after food and beverages), with an estimated 19% of the global plastic packaging market in 2021.²²

- Many of these products contain a significant amount of water (over 90% for many cleaning products). Some of the newer reuse-focused businesses in this space ship a

²² Grandview Research (2020), *Plastic Packaging Market Size, Share & Trends Analysis Report By Product (Rigid, Flexible), By Technology (Injection Molding, Extrusion, Blow Molding, Thermoforming), By Application (Food & Beverage), And Segment Forecasts, 2022 – 2030*.

concentrate to customers – allowing customers to add their own water. Expanding this model to include refilleries (and to encourage grocery-stores to adopt refillery strategies for this type of product) represents a significant opportunity to displace large packaging and reduce GHG emissions associated with shipping (and shipping costs).

- Given the importance of plastics as a packaging material for both of these market segments, these applications provide a significant opportunity to reduce single-use end-of-life packaging waste through broader adoption of reuse platforms. In addition, these segments have seen a large number of Canadian reuse business models developed recently, such as Rocky Mountain Soap, The Unscented Company, Myni, and Earth Brand.
- Governments acknowledge that reuse should be an important part of their overall waste reduction strategy but haven't set specific targets on reuse, have not considered reuse during the development of EPR programs, and are often not actively looking at ways to incorporate reuse into waste-management systems that have been developed with a strong focus on recycling.
- Hepi Circle is selling products in refillable containers (bottles or boxes) in 1,000 local kiosks within 4 districts in the Surabaya and Gresik area in Indonesia. The same bottle is used across all of the local stores and products, facilitating scale, increasing efficiency, and reducing costs. Hepi Circle's success is evidence that standardization is a key factor in determining how well a reuse system will fare. When considering household cleaning products and certain personal care products that can be sold in concentrate form or otherwise utilize reusable packaging, policymakers should be considering how to interface with industry and retail stakeholders to establish standards specific to each product type in order to allow for efficiencies and scaling in reuse models.

2.4 Textiles (Apparel and Carpet)

Textiles can refer to a wide range of materials and end-use applications, however this report focuses on the reuse of two textile categories that represent a very high percentage of the overall annual textile demand in Canada, specifically apparel and carpets.

- Carpet tiles are far more likely to be reusable than rolled carpeting due to the fact that many of the carpet tiles in a room do not have to be cut to a certain shape to fit a specific room, and because they are generally built for commercial settings and are thus far stronger and more durable than rolled carpet. An intervention point for NZWC could be investigating opportunities to include carpet tile removal/reuse requirements in government procurements and to raise the possibility of reusing carpet tiles from commercial spaces as an element of ESG requirements for private businesses.
- Major apparel brands are increasingly looking to implement resale models for used clothing – and yet still represents a very small fraction (well under <5%) of apparel collection for reuse in Canada (dominated by charities and thrift stores). A recent

survey of industry executives running resale programs for their brands indicated that 88% of retail executives find that these programs help to drive revenue²³ – which indicates that they may expand and may be resistant to being cut during hard economic periods (in fact these programs may represent a strong growth area during harder economic periods). Identifying effective intervention points to assist or encourage the expansion of these programs could be a project for the NZWC to consider.

- As required under the *Waste Framework Directive* in the European Union, several member states (and other countries separately) are using market-based incentives to make repairing products more economically attractive. Making products last longer via repair is an important element of reuse, and strengthening Canada’s garment repair/remanufacturing/craft sector could be a strong way to drive small-business employment and encourage reuse.
- Tax breaks or exemptions for certain types of businesses have been one of the main “carrot”-type policies adopted in European nations to help drive reuse. For example, one of the instruments identified reduces taxes on any small businesses whose activities lead to reuse of a product.
- EPR programs are being rolled out or developed across Europe to help and finance separate collection systems for textiles and garments that are required under the *Waste Framework Directive* by January 1st, 2025. If a textile EPR program was rolled out in Canada its development could be aided by strong background research, and conducting that research with reuse in mind may help to further developing an understanding of Canada’s current used apparel collection infrastructure, understanding the supporting mechanisms (such as landfill bans for textiles) that could support demand for more separate collection, and then identifying where/how further investments can be made to support the development of collection infrastructure that leads to actual local reuse could be activities that the NZWC could undertake that would support the eventual development of EPR for textiles via better identifying how funds would be best utilized.

²³ Retail Leader website, (2022), *Resale Report: Factors Driving Market Growth*.

2.5 Construction, Renovation, and Demolition Materials

Construction, renovation, and demolition (CRD) wastes are very rarely reused in Canada or elsewhere. Construction materials are in general being used for the first time, as opposed to being ‘reused’ and renovation materials are often being replaced because they are old, worn, or otherwise unsuitable for use. Demolition activities do not often leave materials in a condition where they are amenable to reuse. The main reuse opportunities identified within this sector begin via mandating deconstruction over demolition.

- Deconstruction policies provide an opportunity for reuse via the provision of useable materials, but additional policies are required to ensure that these materials actually get reused:
 - Jurisdictions implementing deconstruction policies have indicated that they have little or no visibility on what happens to reusable materials after they are donated, and are not certain that they are always reused. Policymakers indicated that ensuring the actual reuse of materials remains a major barrier – architects and builders need just-in-time materials of standard sizes and types for their builds – which is not a model amenable to reusing varied materials that arrive irregularly from deconstruction activities.
 - Two models for advancing the reuse of materials from deconstruction (beyond donation to charities) were identified: (i) an ‘upcycling’ center in cooperation with tradespeople, craftspeople, architects, schools, artists, etc. where materials from deconstruction can be provided to the center for use in various upcycling activities and for training/apprenticeship purposes (e.g., Project RE); and (ii) an online marketplace model (surplus/reuse exchange) where materials are catalogued, stored and advertised online for resale – the municipality of San Francisco is working with a company called ‘Rheaply’ to create an online marketplace for their materials from deconstruction activities.
- Some jurisdictions have opted to support reuse and resale not simply through deconstruction requirements but also through supporting businesses that sell materials salvaged from reconstruction for the purposes of reuse, or through providing incentives to purchasers of used/upcycled materials.
- Deconstruction requirements that focus on weight % of diverted or recycled/reused materials can be gamed through focusing on high-weight materials such as concrete and wood (grinding concrete for aggregate, chipping wood for wood chips). This can often result in very little actual reuse. Reuse of certain materials should be specified through an instrument like a deconstruction survey.
- Reuse from CRD activities can be especially challenging because so many stakeholders need to be involved. An entire ecosystem must exist for any individual element of the system to work. For example, if deconstruction is commonly practiced, but there is no outlet for deconstructed material to be reused, then limited reuse will occur and the deconstructed material may go to landfill. An ecosystem of deconstruction experts,

participating waste haulers, charities/upcyclers, and businesses willing to utilize used materials must all exist for reuse from CRD activities to become accepted practice.

2.6 Electronic Equipment

Current management programs for the diversion of waste electrical and electronic equipment (WEEE) from landfills are heavily focused on recycling as opposed to reuse. As some of these programs (especially EPR programs) are well-established in Canada and elsewhere, very limited reuse of WEEE has been identified. For example:

- United States (California) – *Laws that reward recycling more than reuse can inadvertently discourage the latter. In California, recyclers are not reimbursed for reuse, so reusable units are mostly diverted for recycling.*²⁴
- United Kingdom – *Producers, local authorities and recyclers have little or no incentive to re-use products over recycling them. The Government must increase the incentives for re-use so that all parties benefit from further re-use, in particularly making re-use evidence worth more than recycling evidence.*²⁵

One means for supporting the reuse of electrical equipment is to allow tax credits for donations of serviceable devices (as was described for the CNIB's Phone it Forward Program). In this manner, holders of used electrical equipment have a monetary incentive to seek out reuse programs rather than to submit the equipment to a program that may otherwise recycle it. Aside from this, encouraging existing EPR programs to consider or account for reuse within their metrics (potentially prioritizing reuse as more valuable than recycling) could be a primary method through which the reuse of WEEE could be further encouraged.

2.7 Household Goods/Appliances

These categories include small and large appliances, household and office furniture, various housewares and media. There is significant infrastructure in Canada to support the reuse of various household goods/appliances that includes the donation of these items for reuse as well as the resale of these items to for-profit stores that will in turn sell these goods to new users. As with many of the other sectors covered in this report, the policies and actions of the provinces and territories are almost exclusively focused on waste management and materials recycling, which indicates that reuse has not been very

²⁴ Knowledge at Wharton, *How U.S. Laws Do (and Don't) Support E-Recycling and Reuse* (<https://knowledge.wharton.upenn.edu/article/how-u-s-laws-do-and-dont-support-e-recycling-and-reuse/>).

²⁵ U.K. House of Commons Environmental Audit Committee, *Electronic Waste and the Circular Economy*, First Report of Session 2019–21, HC 220 (<https://committees.parliament.uk/publications/3675/documents/35777/default/>).

prevalent, to date, within the policy framework of government agencies in Canada.²⁶ An exception to this in Canada is Quebec's EPR program:

- Québec's *Regulation Respecting the Recovery and Reclamation of Products by Enterprises* (RRRPE) was adopted in 2011. The RRRPE was amended in 2019 to add a category for household appliances and air conditioners which establishes different diversion targets for a range of products beginning in 2024 for some products and 2026 for others, increasing by 5% per year until reaching a ceiling ranging from 70% to 90% depending upon the product. The RRRPE also requires EPR programs to consider reuse before recycling for electronics, batteries and household appliances.

Aside from examining Quebec's EPR program for appliances, electronics, batteries and household appliances, several other policies were useful to consider:

- The city of Vienna, Austria started the Reparaturbon as a pilot in 2020 as a way to promote repair and support local businesses. Through the scheme, 50% of repair costs were subsidized by the city, capped at €100. Over 35,000 items were repaired through the scheme. Now a national repair bonus, which started in April, 2022 will adopt the same approach focusing on e-waste.
- In 2019, France adopted a law regulating the mandatory display of clear information for consumers on the reparability of electrical and electronic equipment. The objective of the index is to encourage consumers to choose more repairable products, and manufacturers to improve the reparability of their products.
- In Canada, Producer Responsibility Organizations (PRO) often might not examine white goods before transporting them from the collection site for recycling. Some PRO organizations have stated that financially, there is no incentive to look for functioning products. Potential reuse organizations and actors who might have the incentive to separate and prepare products for reuse are often denied access in practice. This leads to difficulty in accessing sufficient volumes of good used appliances. The economic case for white goods reuse is strong, but economy of scale is a factor, with constant supply of the right material a necessity to ensure an adequate level of throughput for maintaining viability.
- The move away from solid wood and metal furniture to cheaper plastic, chipboard and medium-density fibreboard reduces the potential for a successful second life since products are often insufficiently robust to be moved easily. In addition, products are often not designed for disassembly and reassembly, or reconfiguration.

²⁶ Interview with The Salvation Army (October 5th, 2022).

3. Food Packaging

3.1 Introduction

The food and beverage application segment accounted for over 51.5% of the plastic packaging market in 2021 and represented the highest consumption of plastics within any plastic packaging segment by a significant margin.²⁷ If the goals of reuse and the circular economy include reducing plastic production/consumption then food packaging must be considered a primary target for action. This sector could be considered as a focus area for the working group given the large volumes of plastic involved, how far advanced the sector is, and the resulting potential impacts. A number of reuse business models have been developed recently that reflect changing technology, consumer habits, and reverse logistics platforms.

Food packaging can be complex, and can take several forms depending upon whether it is food packaging used by the consumer or used in business to business (B2B) movements before sales to the consumer. Both the type of packaging and the systems required to collect and process the packaging also depend upon whether it is distributed from a retail location (such as grocery store), a hotel/restaurant/café (HoReCa), or a large event (such as a concert or festival). Due to this complexity, some basic information on packaging types and concepts that apply to reusable food packaging return logistics overall (instead of specifically to retail or HoReCa) are described below.

Packaging Types and Concepts:^{28/29}

In order to discuss specifics on food packaging, it is useful to first understand the following definitions.

- Tertiary packaging, such as plastic wrapping and wood boxes, is used to assist in transportation – in the regular retail model this packaging is never seen by the consumer that purchases their groceries off of store shelves and is only seen by those staff that unload pallets from trucks in the back room.
- Secondary packaging is the boxes produced to carry primary packaging to retailers, for example, a grocery store will receive a pallet (wrapped in tertiary packaging) that has many cases of macaroni and cheese (each of which contains 12 individual boxes). The retailer will unpack these cases of 12 and place the individual boxes onto their shelving

²⁷ Grand View Research, (2022), *Plastic Packaging Market Size, Share & Trends Analysis Report By Product (Rigid, Flexible), By Technology (Injection Molding, Extrusion, Blow Molding, Thermoforming), By Application (Food & Beverage), And Segment Forecasts, 2022 – 2030.*

²⁸ Saeder et al., (2020), *Reuse Principle for Primary Packaging Circularity in the Food System*

²⁹ Circular Economy Portugal, (2021), *Making the Business Case for Packaging Reuse Systems.*

for sale. Secondary packaging can be used in high amounts and are largely homogenous materials.

- Primary packaging are the individual boxes of macaroni and cheese purchased by the consumer and taken home – this packaging is often not homogenous.

Regardless of how packaging is used, there are a number of factors that can impact how effective and environmentally sensible the reuse system is. Some of these overall indicators include:³⁰

- “Number of reuse cycles - the benefits of a reuse packaging system can only be realised if the reusable packaging is maintained in the system for as long as possible. The higher the number of uses the lower the costs and the lower the environmental impact of the production of the packaging. Therefore, materials used in the packaging should be durable and ensure the quality of reuse so that number of uses can be maximized.
- Return rate and losses - when the return rate is low, or the number of damaged recipients is high, the environmental impact of the reuse system increases. Systems must ensure that packaging is correctly returned, and users have incentives to do it.
- Transportation distances - from the point of supply to the point of consumption. The longer the transport distances to return packaging in the reusable system, the higher the environmental impact associated with the reuse system. Shorter distances tend to favour reusable packaging. Environmental impact can be lowered when using clean energy in vehicles.³¹
- Scale - the more units are processed through a system, the higher the efficiencies and the lower the unit cost across all phases (production, transportation, cleaning). More efficient processes generally offer higher environmental benefits.
- Standardisation - can also play a big role in achieving scale and driving efficiencies by improving interoperability, reducing investment costs in design of systems, and fostering quicker penetration of reusable packaging systems resulting in less risk for businesses.”

3.2 Current State in Canada

The reuse of certain types of food packaging – especially bottles for beverages – is very mature and well-developed in Canada. Aside from these well-supported and long-term deposit/return systems for certain beverage containers, food packaging reuse in Canada is not well developed or widely practiced. Two companies in Canada were identified that offer reusable zero waste meal kits – namely Crisper in Toronto and Fresh Prep in

³⁰ Ibid.

³¹ Recycling systems also have transportation requirements, as plastics will need to be moved from collection, through sortation facilities, and finally to recycling facilities before they can be reused in the production of new products.

Vancouver. Similarly, a number of businesses focusing on the provision of reusable food packaging to restaurants and retail locations have entered the market, including businesses such as Loop, Friendlier, and Sharewares. Additionally, refilleries are becoming more common and there are many small locations that use a refillable bulk-dispenser model as opposed to the traditional food packaging model used at most grocery stores. Deposit/return for beverage containers, reusable zero waste meal kits, third-party reusable packaging businesses, and refilleries are discussed below.

Deposit/Return Systems for Beverage Containers

Deposit/return systems for various types of beverage containers (and polycarbonate water bottles for water dispensers) are common across Canada and have been in place for a long time. This includes alcoholic beverage containers in Ontario (via the Beer Store), the SARCAN systems in Saskatchewan, and the beverage container and recycling program in Nova Scotia. Some of these programs collect both refillable and non-refillable containers (for recycling) and find routes that ensure either recycling or reuse for all containers covered by the program. These programs are often paid for via extended producer responsibility (EPR) programs, meaning that industry is paying to manage their own waste. A full listing of programs can be found at the following website: <https://www.bottlebill.org/index.php/current-and-proposed-laws/canada/compare-all-provinces>.

Deposit/return systems for beverage bottles in Canada can vary a great deal, and detailed data on their funding and outcomes by packaging type (recycled packaging versus refilled packaging) are not always available. Additionally, the programs often cover different types of packaging and exist in different jurisdictions (with different existing waste collection/management/cleaning infrastructure) and are therefore difficult to compare in a manner that would yield useful conclusions without extensive research. Extracting learnings from a comprehensive comparison of these programs could yield useful information and could be considered a current knowledge gap.

Reusable Zero Waste Meal Kits

These meal kits are similar to many of the other meal kit options on the market, except that they provide and collect reusable packaging. Crisper is a subscription-based service, which allows the company to easily pick up reusable packaging when they drop off new meal kits during regularly scheduled deliveries. Fresh Prep has subscription options available, but also allows users to pause deliveries or put off getting more meal kits delivered for a while. In this eventuality, users are able to request a free pick-up of their reusable components via their website. It should be noted that both of these companies are relatively local (one services Toronto and area, the other Vancouver and area) and therefore concerns regarding picking up reusable packaging over long distances are decreased. These two businesses are

strong examples of what is possible in packaging reuse when companies think locally and creatively.

Third-Party Reusable Food Packaging Companies

Several companies were identified in Canada that provide reusable packaging to retailers or to HoReCa establishments, retrieve and clean the packaging from consumers, and provide the packaging back to businesses afterwards for reuse. In the case of retail locations, businesses such as Loop provide their reusable packaging for online purchases, where consumers get their groceries delivered. After the consumers take delivery of their purchases, they use the shipping labels that came with their groceries to return their reusable packaging to Loop – which cleans the packaging and returns it to the retailer for the next delivery. As it currently stands, this model is somewhat held back by the lack of container cleaning infrastructure in some locations, with packaging delivered to consumers in Ontario being sent to the United States for cleaning due to a lack of local infrastructure.³²

Companies that provide their reusable packaging to HoReCa locations in Canada include companies like Sharewares and Friendlier. These businesses operate on a similar model to Loop but are often more local, and provide their reusable packaging directly to a range of nearby HoReCa locations.

Refilleries

Refilleries sell bulk products to customers who fill their own reused and sometimes repurposed containers (some refilleries also offer a deposit/return model). This significantly cuts down on the use of single-use packaging. While there have been larger businesses that have been using a refillery (or partial refillery) model for a long time (such as Bulk Barn) the model still represents a vanishingly small fraction of retail food purchasing in Canada. A recent report (2021)³³ lists over 100 refilleries in Canada, but some sources indicate that there are over 15,000 grocery stores in Canada at this time³⁴ – and the refilleries are unlikely to represent larger locations. Not all products are amenable to be sold in a refillery, as individual packaging can in certain situations be important for sanitary/safety purposes. While some refilleries sell food, or have an element of the business that may be food focused, the most common product categories found in refilleries are generally not food, and are shown in the table below.

³² Scout Environmental (undated), *State of Reuse and Refill in Canada and Recommendations*.

³³ Scout Environmental, (2021), *A Guide to Opening a Running a Bulk-Reuse Refillery in Canada*.

³⁴ Statista website, *Number of Grocery Stores in Canada by Employment Size 2021*.

Table 2: Common Items Sold in Canadian Refilleries

Body wash	Bubble bath and soak	Shampoo and conditioner
Dry shampoo	Hair gel	Face and hair oil
Facial toner	Micellar water	Face wash and scrub
Face and body lotion	Face serum	Face mask
Makeup remover	Makeup, e.g., powder, eyeshadow, foundation, lip balms	
Nail polish remover	Shaving cream	Aftershave
Beard oil	Deodorant	Foot scrub
Toothpaste	Mouthwash	Handwash
Baby powder	Hand sanitizer	Multi-purpose
Cleaning solution	Glass cleaner	Dish detergent
Dishwasher tablets	Toilet bowl cleaner	Laundry detergent
Fabric softener	Stain remover	Pet shampoo
Pet odor-control cleaner	Room spray	Windshield washer fluid
Drinking water		

Source: Scout Environmental, (2021), *A Guide to Opening and Running a Bulk-Reuse Refillery in Canada*.

3.3 Policies, Regulations, Programs and Infrastructure that Enable or Support Reuse Systems across Canada

This section describes policies, regulations, programs and infrastructure that enable or support reuse systems across Canada. As described in the section above, deposit/return arrangements for reusable bottle programs are often funded via EPR programs, and are well-developed across Canada (though are not always focused on reuse). Within this section, the following is discussed: (i) the City of Vancouver Single Use Reduction Strategy; (ii) the York Region Integrated Waste Management Program; (iii) City of Victoria Single Use Reduction Strategy; (iv) the City of Toronto’s Strategy to Reduce Single-Use and Takeaway Items; and (v) Return-It’s Pilot for reusable packaging collection infrastructure.

City of Vancouver Single Use Reduction Strategy³⁵

Vancouver’s Single Use Reduction Strategy has centered around bans on certain single use items, a ‘by request’ requirement for other single-use items, and extra charges on certain single use items. This has thus far included bans on foam cups and takeout containers, plastic straws and shopping bags, a ‘by request’ requirement on single-use utensils, and a

³⁵ City of Vancouver website, *Single-Use Item Reduction Strategy*.

\$0.25 fee on single-use cups. The Single-Use Reduction Strategy is part of Vancouver’s Zero Waste 2040 plan.

York Region Integrated Waste Management Program³⁶

The Plan, also known as the “SM4RT Living Plan”, contains a circular economy initiatives fund for non-profits advancing a circular economy, curbside giveaway days where residents can give away reusable items within their communities, a “lendery” where residents can borrow household items and return them to be lent out to others (thereby reducing single-use consumption), and repair cafes (free repair events where volunteer fixers repair items and reduce demand for new items). Additionally, the York Region Plan includes directions for residents on how to reduce single-use item consumption. The Plan has already executed a survey for residents regarding single-use items and York Region plans to leverage this survey to prepare more actions to reduce single-use item consumption.

City of Victoria Single Use Reduction Strategy³⁷

The City of Victoria conducted a survey on single-use items and is currently developing a bylaw based on the consultation findings. The bylaw will include the following regulations:

- requiring food ware accessories such as utensils, stir sticks and straws to be distributed by request;
- requiring that businesses use only reusable products for dine-in services; and
- mandatory fee of \$0.25 on disposable cups and containers.

They have also developed a sustainable takeout guide (product and purchasing guidelines for Victoria’s Food Service Businesses) that is available on their website in three languages and contains a sustainable takeout packaging supplier list.

City of Toronto - Reducing Single-Use & Takeaway Items³⁸

Reducing single-use and takeaway items are part of the City of Toronto’s Long Term Waste Management Strategy that was adopted by City Council in July of 2016. The city has held extensive consultations with residents regarding their willingness to support measures such as a ‘by request’ policy on utensils and straws, a ban on foam food containers and cups, a fee for single-use hot drink cups, and other measures via two separate rounds of consultations. At this time, Toronto is implementing Stage 1 of their strategy, which are voluntary measures that encourage businesses to adopt ‘ask first/by request’ approaches for certain single-use items, accepting reusable takeout cups, and

³⁶ Government of York Region website, *Integrated Waste Management Master Plan*.

³⁷ City of Victoria Website, *Single-Use Items*.

³⁸ City of Toronto Website, *Reducing Single-Use & Takeaway Items*

incentives and recognition for businesses that voluntarily adopt these measures. Phase 2 measures are expected to include more concrete requirements, and are being considered while the results of Toronto’s most recent round of consultations are being studied.

Return-It’s Reusable Packaging Infrastructure Pilot³⁹

The program – called *Return-It to Reuse It and Recycle It* – is in partnership with Tim Hortons, Starbucks, A&W Canada, McDonald’s Canada, the City of Vancouver, Metro Vancouver and Merlin Plastics. “Managed by Return-It, the 6-month pilot program seeks to evaluate and determine the viability of a broader, permanent program in the City of Vancouver and other locations. Return-It will collect and process single-use cups and test additional recycling opportunities for the component materials. For reusable cups, Return-It will wash, sanitize and return the cups to each participating brand for redistribution to customers. Once the pilot wraps up, results will be analyzed to evaluate a scalable solution for a cups program that is convenient for customers.”⁴⁰

Return-It is setting up collection stations for both single-use cups and reusable cups. “For reusable cups, consumers will scan a QR code on the cup then place it in a slot marked for reusables. Each participating brand will offer consumers a method for signing up for their reusable cup program. Cups that are washed and repacked by Return-It will be returned to each brand and put back into circulation.”⁴¹ Collection stations are placed all across Vancouver, and can be located via the Return-It website. Many Tim Hortons locations in Vancouver will also accept the reusable cups for return. A collection station is pictured below.

³⁹ Return-It Website, *Return-It Launches Recycling Pilot for Single-Use & Reusable Cups in Vancouver*

⁴⁰ Ibid.

⁴¹ Ibid.

Figure 1: Return-It Collection Station



Source: Return-It Website, *Return-It Launches Recycling Pilot for Single-Use & Reusable Cups in Vancouver*

3.4 Key Initiatives, Policies or Infrastructure in Other Jurisdictions

This section contains information on the current initiatives, policies, or other infrastructure in place in other jurisdictions that were identified during the study. Due to the high number of initiatives in place internationally in the food packaging space, this study will not be able to cover or otherwise list all of the policies that exist. Instead, the initiatives and infrastructure section below will provide a broad overview of how various initiatives for certain aspects of the food packaging space function and list examples of these initiatives. Finally, the policies section will list policies in other jurisdictions that support reusable packaging.

3.4.1 Initiatives and Infrastructure

This section is split into 3 sub-sections, namely: (i) retail; (ii) HoReCa; and (iii) events and specific controlled environments. Within each of the sections below, there will a general description of the different opportunities for reuse identified, which will include general descriptions of how these reuse opportunities function.

3.4.1.1 Retail

Reuse opportunities are available within the retail sector in both business to business (B2B) transactions and in business-to-customer (B2C) transactions. Greater opportunities have been identified within B2B transactions due to reduced consumer preference concerns, reduced marketing concerns (leading to higher degrees of possible standardization), and the fact that different units of the same business often ship items to one another –meaning closed-loop systems where reuse initiatives are easier to implement. Additionally, as B2B transactions are less-likely to involve the final use of the food product (as they are focused on tertiary or secondary packaging and transport as opposed to display/purchase/consumption) hygiene concerns are also reduced. The following two sub-sections will describe B2B and B2C opportunities for reuse in the retail sector and provide some examples of successful initiatives outside of Canada. Online purchases from retailers will be included within the B2C section below.

3.4.1.1.1 Retail B2B Initiatives

Businesses have been reusing tertiary packaging for decades, with items such as pallets, bulk containers/bins/totes, and boxes being reused for the purpose of transporting items both within a specific company and when transporting items to other companies (for example, from a food production business to a retailer). Given that this section of the report is focused on food packaging, many of these reusable packaging systems are not relevant (as items such as pallets are used to move many different products across many industries as opposed to food specifically). However, some efforts in the space of pallets and bulk containers have been specific to foods, and there have been some more recent B2B efforts focused on the transportation of food products specifically.

Ghirardelli Chocolates (from California) has introduced reusable totes to replace cardboard boxes for internal distribution. Assuming a 5-year life of the totes, the company expected to save \$1.95 Million, due to reduced waste management costs.^{42/43} Ghirardelli had been spending \$520,000 a year on 580,000 cardboard boxes for internal distribution. These boxes would get soiled with use and so were thrown in the trash—resulting in an additional \$2,700 spent on disposal. Switching to reusable totes required a substantial initial investment but saved costs moving forward. It should also be noted that the Ghirardelli facility bulk buys their sugar and cocoa to cut costs and increase efficiency – so deliveries are taken via tanker truck and deposited directly into onsite silos.⁴⁴

Another example of B2B reusable food packaging is Euro Pool Group,⁴⁵ which leases pallets and crates for the European food supply chain. With over 150 service centres around

⁴² Coelho, (2020), *Sustainability of Reusable Packaging—Current Situation and Trends*.

⁴³ Stopwaste.org website, (2007), *Ghirardelli Chocolate Company*.

⁴⁴ Ibid.

⁴⁵ Coelho et. Al, (2020), *Sustainability of Reusable Packaging – Current Situation and Trends*.

Europe, the company has recently introduced a train connection from Rotterdam to Valencia to transport fruits and vegetables and the return of empty crates and pallets. Euro Pool Group also offers return service for some of their customers, taking crates, pallets, but also beer bottles, and other materials that are either returned to the producers (in case of beer bottles for example) or taken to recyclers (e.g., paper and plastic). The B2B company has been analyzing how to enter the e-commerce sector for its food supply chain clients. Standardization of reusable packaging for e-commerce is essential to introduce reusable packaging at scale, as was done for pallets and crates in the past. This would make logistics more efficient for companies and carriers, and also facilitate automation.⁴⁶

IFCO is an example of a business that manufactures foldable reusable packaging containers (RPCs) that launched in the 1990s and has established an RPC pooling system (that they have named the IFCO SmartCycle) that allows RPCs to be used across the entire B2B food supply chain (including being used to display produce at retail establishments) before returning to IFCO and being washed for reuse. They deliver folded and stacked boxes to growers and packers at the beginning of a fresh food supply chain, who use the standard-sized/stackable plastic boxes to package their goods before they are sent to retail distribution centers. At the retail distribution centers, the packaging is good for use at automated warehouses due to their standardized size, durability, and strength. The boxes are then sent to retailers where they can be used to display the merchandise for sale (staff do not have to unpack boxes and pack up shelves, they just put the boxes full of produce directly onto the shelves). After the boxes are emptied, they are folded up and stacked onto pallets and sent back to IFCO – who will take the boxes, clean them (and recycle/repair damaged boxes) before returning clean boxes to growers and packers.⁴⁷ The boxes have trackers within them and the IFCO inventory management system can keep track of which boxes came from which businesses.

Retail B2B Food Packaging Key Points

- Linked/pooled supply chains already established for reusable pallets and other B2B transportation packaging (largely tertiary packaging)
- Opportunities in reusable secondary packaging for internal movements (Ghirardelli – closed loop) or for outsourced secondary packaging (IFCO/Euro Pool – across the supply chain)
- B2B reusable packaging concepts are generally easier to implement than B2C due to reduced consumer preference/marketing concerns, reduced hygiene concerns (in some cases due to non-contact with the product), and the existing closed-loop systems.

⁴⁶ Ibid.

⁴⁷ IFCO website, *IFCO Smartcycle™ - A Circular Approach*.

3.4.1.1.2 Retail B2C Initiatives

Reusable food packaging in the B2C space is considerably more difficult to implement compared to B2B models – where some reusable tertiary packaging has been in common use for decades. “Historically, deposit systems for bottles and other containers represent the major B2C experience with reusable packaging, e.g. beer (although some brewers increasingly offer single-use glass bottles and cans), (carbonated) soft drinks and spring water (especially in those countries that regulate the use of single-use containers, such as Denmark and Germany), and dairy.”⁴⁸ These systems are often required via regulation through an EPR model and are already common in Canada (they are therefore discussed in the ‘Current State in Canada’ section of this chapter). Other reusable food packaging efforts in the B2C space have to overcome several more obstacles than their B2B counterparts (which will be covered in more detail within the barriers section of this chapter) such as:

- stringent hygiene requirements in the face of interactions with a high number of customers and associated liabilities;
- marketing and branding preferences;
- spillage, wastage, or increased chance of theft depending upon how the system works; and
- consumer-preference for single-use packaging and skepticism regarding reusable models and sanitation.

The main retail B2C reusable food packaging models that have been identified include:

- online retail such as Loop, Jarr and Liviri Fresh – where groceries are ordered, sent to the customers via reusable containers, which are picked up and returned to the organization at the time of the next order or otherwise shipped back to the online retailer for cleaning and reuse;
- bulk dispensers and “refilleries” which are present in Canada and therefore discussed in the ‘Current State in Canada’ section earlier in this chapter; and
- a more technologically enabled and updated version of the “refillery” concept developed in the Czech Republic by a company called MIWA.

The online models are relatively self-explanatory, the Loop model (which started in the United States) is now being piloted by Loblaw's in Canada.^{49/50} Loop, a circular shipping platform, launched in May 2019, works as subscription-based e-commerce for major brands such as Unilever, Nestlé, Proctor and Gamble, amongst others. The ownership of the packaging is retained by the brand, being, therefore, of the brands' interest to make the packaging as resistant and durable as possible. After home delivery and use by the consumer, the packaging is picked up, cleaned and refilled by Loop before being resold

⁴⁸ Coelho, (2020), *Sustainability of Reusable Packaging—Current Situation and Trends*

⁴⁹ Loblaw's website, *Say Hello to Loop and Goodbye to Plastic Waste*.

⁵⁰ Scout Environmental (undated), *State of Reuse and Refill in Canada and Recommendations*.

(customers request an empty container pickup).⁵¹ Liviri Fresh (U.S.) is another company offering a similar service. They provide their own insulated reusable boxes developed especially for the delivery of food, maintaining food quality at the consumer's door for hours.⁵²

B2C Retail Food Packaging – Online Retailers Key Points

- requires both delivery and pickup and is therefore currently expensive and limited to certain high-value products
- The Loop pilot in Canada sends recovered reusable packaging to the United States for sterilization because of the lack of cleaning/reuse infrastructure in Canada and the high capital costs associated with their establishment

Technology is rapidly being used to enable the reuse of containers both within the HoReCa sector and the retail B2C sector. MIWA is a company based in the Czech Republic that uses parent dispensing within grocery stores and takes the responsibility for cleaning and manipulating the food out of the hands of retailers. The dispensers are sealed by the producer, cleaned and reassembled by MiWA. The containers can be registered in a mobile app, which allows the consumer to pay for the product, and to obtain information such as the expiration date and its traceability to the producer.⁵³ MIWA is currently partnered with Nestlé, and has plans for 20 pilots of reuse models by 2025 for Nescafé and Purina One cat food in three Nestlé shops in Switzerland.⁵⁴ The parent dispenser model in combination with light retail packaging has also been used (with less technological involvement) by many other retailers and brands (some of whom will provide retail locations with branded dispensing equipment – especially prevalent for coffee). Key points for this model will be covered in the refilleries section under ‘Current State in Canada’, and it remains to be seen if the sanitary and technological advantages shown via the MIWA system will have significant consumer advantages over traditional refillery models.

3.4.1.2 Take-Out (Hotels, Restaurants, and Cafes HoReCa)

“This sector uses a variety of single-use containers (mainly cups, trays, bowls) to package different food and beverage types, in order to avoid the use of tableware which needs to be washed (saving costs and effort). The environmental impacts of these items are most significant during the initial phase of (resource) extraction and production and, at the end stage (disposal) since this packaging is used for a short period of time and, afterwards,

⁵¹ Coelho (2020), *Sustainability of Reusable Packaging—Current Situation and Trends*

⁵² Ibid.

⁵³ Ibid.

⁵⁴ Ellen MacArthur Foundation (2022), *The Global Commitment - 2021 Progress Report*.

generally, sent to landfill, incineration or littered.”⁵⁵ The remainder of this section will discuss the following main themes of operationalizing the reuse of food packaging in the HoReCa sector: (i) current models for HoReCa reusable food packaging systems; (ii) requirements for HoReCa sector food packaging design; (iii) logistics; and (iv) incentives to return.

Models and Awareness

There are currently two main models through which HoReCa utilize reusable containers. The first of these models is where “Reuse businesses are responsible for both the packaging and managing and operating services such as washing and transportation/distribution logistics. Reusable packaging (e.g., cups and food containers) is owned by an external third party (reuse-as-a-service provider) who leases the packaging to a network of HoReCa businesses. Due to the proximity element of this sector, this system offers an opportunity to small businesses to thrive in a new economy focused on local solutions for local actors and local users. There is also another model in which the reusable packaging is owned by the HoReCa businesses, making them responsible for managing the system. However, due to limitations of space and washing capacity (reusable packaging usually takes up more space than single-use options) and, especially for take-away only businesses such as food trucks and kiosks, this model may not be suitable for all businesses.”⁵⁶

Aside from choosing a model, the next major challenge in implementing a reusable food packaging system (whether it is for takeout food, within a restaurant that traditionally uses single-use, or for reusable coffee cups) is for their customers to be aware that reusable packaging is an option. This can be accomplished through signage, through staff training and customer interactions, and through having options within any online or in-person point of sale systems that provide customers with a clear option to select reusable instead of single-use.⁵⁷ Ideally, a combination of these tactics would allow consumers to be aware of their options long before point of sale so that their decision would be made before they placed their order. Additionally, having the reusable packaging stacked somewhere visible would allow the consumer to understand what type of packaging they are getting and (if higher quality reusable packaging is provided) could act as an incentive for choosing reusable. Additionally, in order for consumers to participate in the program it should be relatively frictionless. The Sustainable Packaging Coalition notes that although having customers sign up for an app may help with tracking or understanding logistics/supply challenges, it can also add friction to the experience and potentially reduce participation.⁵⁸

⁵⁵ Circular Economy Portugal, (2021), *Making the Business Case for Packaging Reuse Systems*.

⁵⁶ Ibid.

⁵⁷ Closed Loop Partners, (2021), *Bring Reusable Packaging Systems to Life – Lessons Learned from Testing Reusable Cups*.

⁵⁸ Sustainable Packaging Coalition, (2022), *Understanding Goals and Assumptions in Order to Design a More Successful Reusable Packaging Program*.

Overall, it is also important to remember that consumers are now faced with many choices, and often make product decisions based on the amount of time something takes to do or how ‘frictionless’ an experience is. For example, while an app or a membership program may allow a company to track valuable metrics, many consumers are unwilling to sign up for yet more subscription services or join even more services/manage even more passwords and accounts. Therefore, a membership or subscription may make sense for some consumers but turn other consumers off. The Sustainable Packaging Coalition produced the following chart indicating reuse behaviours that add friction and reuse behaviours that remove friction.

Figure 2: Reuse Behaviours that Add or Subtract Friction

	Examples of reuse behaviors that may add friction	Examples of ways reuse may remove friction
Before purchase	<ul style="list-style-type: none"> Bring empty container to store or retail location Create an account on an app or website to purchase products or pay a deposit 	<ul style="list-style-type: none"> Less decision fatigue as a result of more limited selection Smaller amount of product to buy (e.g. refill insert rather than entire item)
Ordering/Paying	<ul style="list-style-type: none"> Pay separately for a container you keep Purchase on a platform or website different from other avenues of shopping Get a weight (tare) on empty container Pay a deposit on a container you need to return 	<ul style="list-style-type: none"> Receive a discount for participating in the reusable system Pre-weighed packaging that eliminates having to weigh (tare) a container Buy product at a lower cost Pay with packaging features (e.g. RFID codes) / “packaging as a wallet”
In the home / Use phase	<ul style="list-style-type: none"> Store returnable secondary packaging until it needs to be returned Store empty returnable primary packaging until it is returned Dissolve a product / finish “making” the product Communicate to household / remember that the packaging is not single-use (i.e. should be saved) 	<ul style="list-style-type: none"> Store product in the purchased container; don’t need to repackage
Done with product / End of life	<ul style="list-style-type: none"> Schedule a pick-up of the returnable container Clean primary packaging Return packaging to store/drop-off point or mail it back Dispose of reusable packaging at its end-of-life 	<ul style="list-style-type: none"> No need to dispose of packaging (e.g. put it in the bin, take it to the curb)

Source: Sustainable Packaging Coalition, (2022), *Guidance for Reusable Packaging*.

Reusable Food Packaging Design

Another issue that HoReCa establishments must address after they have made a decision on whether or not to own their food packaging or utilize a third-party vendor to manage the supply/logistics/collection/washing is the actual design of the food packaging itself.

The main criteria for the functional performance of reusable packaging to be used in HoReCa are: (i) leak proof for transportability; (ii) formats and sizes should be standardised and suitable for specific types of food (e.g., soup, pizza, hamburgers); (iii) easily washable and stackable (allowing for sufficient airflow between packaging to prevent mould formation). “Packaging should also be heat resistant to allow for warming up and washing at high temperature, have a separate universal lid and be firm.”⁵⁹

If a third party is managing the packaging (or a pool-system of some type has otherwise been established amongst a number of establishments) than standardizing the packaging so that it can easily be stacked during collection for ease of transport and cleaning/drying is also critical to designing functional reusable packaging for the HoReCa sector.

“Reusable containers must also comply with national food safety legislation and/or international regulation such as hazard analysis critical control point (HACCP), regarding food contact materials, but also the handling and storage of dirty containers, in order to be safe for food and drink consumption. It should be made of materials that are proven not to leach chemicals into food, even with very hot drinks.”⁶⁰

As mentioned earlier, considering how the cups or plates etc. will be stacked and placed in the store location/used by the staff is also very important, the stocking/use of the of the packaging within the retail space must be convenient and must not negatively impact workflow or efficiency. The packaging must be stackable so that enough of the packaging can fit into the retail space effectively.⁶¹

Logistics and Point of Sale/Return⁶²

One of the most challenging aspects of food packaging reuse is implementing efficient logistics when it comes to collection, sorting, washing, and returning adequate stock to HoReCa establishments each day. They specific logistical challenges associated with reusable food packaging in the HoReCa sector depend somewhat upon the food packaging ownership model.

⁵⁹ Circular Economy Portugal, (2021), *Making the Business Case for Packaging Reuse Systems*.

⁶⁰ Ibid.

⁶¹ Closed Loop Partners, (2021), *Bring Reusable Packaging Systems to Life – Lessons Learned from Testing Reusable Cups*.

⁶² Circular Economy Portugal, (2021), *Making the Business Case for Packaging Reuse Systems*.

For HoReCa establishments that opt to own their own packaging and operate their own reuse systems, challenges can include the development of a new reverse logistics system which involves changing or adjusting the existing value chain and operational processes, increasing complexity and requiring businesses to assume new functions that they may not have experience with. One of the bigger challenges involved in implementing this type of a system is the availability of suitable (and fast/high volume) cleaning facilities for reusable packaging. If the business has been operating primarily using single-use containers, then managing both the reverse logistics systems as well as operating a satisfactory cleaning system for a high volume of packaging can be daunting, or simply not possible depending upon the volume of cleaning required and the amount of space available to the business in question.

Another option is to have a third party manage the provision, collection, and cleaning of the reusable food packaging (or cups). In this system the third party will need to manage the creation of the reverse logistics system – but can involve several local businesses within the system in order to leverage economies of scale at a centralized cleaning facility. In this situation, a standardised system increases logistics efficiency, environmental performance, and streamlines processes such as to program the packaging weight on a scale of those businesses selling food by weight.⁶³

In both cases, used packaging should be picked up for washing as soon as possible to prevent mould in dirty/used packaging, in order not to take too much valuable space inside businesses, and to keep pooling volumes low. The distance travelled to pick up and clean containers should be minimised through smart logistical systems and planning. An app/website owned by the service provider can also be offered to display the network of partnering businesses and drop-off points (as an option as opposed to a requirement for participation).⁶⁴

Some important considerations for point of sale (POS), point of return, and pickup/delivery include:⁶⁵

- “POS – how do customers pay for the system, needs to be easy, convenient, and help with tracking (number of containers out, containers required, who has them for charging late fees, etc.). Customers need to be able to select ‘reusable’ option when paying and the people serving the food/beverage need to know that when packaging their order.
- Point of return:
 - Critical to success of program
 - Location (along convenient routes/locations frequented by customers, findable via app etc., located at location of purchase as well)

⁶³ Ibid.

⁶⁴ Ibid.

⁶⁵ Closed Loop Partners, (2021), *Bring Reusable Packaging Systems to Life – Lessons Learned from Testing Reusable Cups*.

- Hygiene is critical, without it customers do not trust the system. Contactless and must account for residual liquids.
- Security – must ensure that the cups or POR are not stolen;
- Consumer confidence in the return being successful – some sort of a notification or beep indicating it has been returned
- Ergonomics/accessibility should be considered
- Pick Up and Delivery:
 - Retailers must be protected to increase participation – consistent supply and minimal business disruption required;
 - Decisions must be made in tandem with business partners;
 - Daily pick-up at minimum unless business site is where washing occurs;
 - RFID scanning or other similar methods for drop-off and pick up to track inventory – must ensure business partners have adequate clean supply – additionally having a transparent tracking system can improve traceability and provide data on how often packaging needs to be replaced etc.
 - Efficient pick-up and delivery routes should be investigated, role of small driverless electric vehicles in dense urban settings to be determined.”

Incentives to Return⁶⁶

Consumers will often choose the most convenient option – and therefore if there is no incentive to return reusable packaging and doing so is not convenient, some consumers may opt to either keep the packaging or dispose of it instead of returning it. How different HoReCa businesses incentivize reusable packaging return will depend on the type of business, the type of packaging (higher quality packaging may require stronger return incentives), local policies, and individual choices of business owners. It should be noted that all incentives to return can be supported via technological means including RFID chips and QR codes for tracking of returned packaging, more efficient logistics, planning, and the tracking of packaging that needs to be replaced.

Some of the ways businesses have incentivized return in other jurisdictions include:

- requiring the consumer to pay a deposit which only gets returned when the packaging is returned;
- the company can utilize credit card information (if the deposit/return system is effectively electronically tracked) to charge a small fee per day (or after a set number of days) if the packaging is not returned, which allows consistent customers or customers who frequent an area near the establishment (perhaps near their work) to return the packaging when it is convenient without incurring a high cost;
- some companies may choose to use a subscription model along with their reusable packaging which charges monthly instead of charging a deposit – this subscription

⁶⁶ Circular Economy Portugal, (2021), *Making the Business Case for Packaging Reuse Systems*.

model would make tracking cup use easier (associated with an account) and therefore a user could essentially “keep” 1 cup but get charged either a penalty or a full cost if they keep multiple cups at one time – for example.

Limited research suggests that the deposit a customer is comfortable with paying will depend upon the quality of the packaging – meaning that there is no single answer for a correct amount to charge for a deposit or non-return fee. One identified study suggested that a one-time or rolling penalty for non-return is more likely to inspire program participation than an up-front deposit, but this information was not reported in a wide range of studies and reusable food packaging in the HoReCa is still in its infancy.⁶⁷ It is also reported that approximately two-thirds of consumers prefer a pay per use model for reusable packaging return, while only one-third (heavier regular users) preferred a subscription model.⁶⁸

3.4.1.3 Events and Specific Controlled Environments

Specific controlled environments such as schools, university campuses, food courts in malls, and other clearly demarcated areas with one or multiple HoReCa businesses within a single space, are able to more easily take advantage of simplified logistics for reusable food packaging. For the purposes of this study, we are considering these locations to be “specific controlled environments.” In the sense of being a controlled environment at a specific location, these “specific controlled environments” share a great deal in common with events such as concerts and festivals. In these events, participants must pay a price to enter and then must remain on the grounds for the duration of the event and generally have well-organized opportunities for the disposal of waste before leaving event grounds. Both of these scenarios provide somewhat captive areas for reuse systems to operate in – along with simplifying logistics/control advantages for reusable food packaging.

Spaces like university campuses or mall food courts have the opportunity to standardize packaging (several establishments all in one self-contained area) in order to take advantage of singular disposal systems. Within the food court or university campus, there could be strategically placed receptacles for used or dirty reusable packaging, this would provide participants with convenient methods to deposit their reusable containers that would be on par with current trash disposal options in regards to convenience within these venues. Given a sensible incentive system, there would be little reason for participants to remove the reusable packaging from these areas – just as there is little incentive to take trash home instead of using garbage receptacles.

⁶⁷ Closed Loop Partners, (2021), *Bring Reusable Packaging Systems to Life – Lessons Learned from Testing Reusable Cups*.

⁶⁸ Ibid.

“Many events (Woodford Festival, Caloundra Festival, North Stradbroke Festival, Noosa Food and Wine Festival, QLD Parliament are local examples) have used refillable cups for alcohol, soft drinks and water. The system involves attendees being provided with a refillable (reusable plastic) cup on entry. This could be for a refundable charge (recommended) or for free. No drinks provided from event bars can be served without attendees presenting their refillable cup. These can be replaced with clean ones should the attendee prefer.”⁶⁹

The similarities between these models could conceivably also be leveraged for smaller community events – especially if a community organization undertakes events that use food packaging on a regular basis. The community group/event/commercial operator could keep the equipment (which could include all the cutlery/crockery, the tables, urns, buckets, washing up liquid etc.). This equipment would all need to be stored when not in use. As a result, there would be an upper limit on event size due to the impracticality of storing thousands of items.⁷⁰ Smaller community events could also conceivably take advantage of other models or third-party vendors for the provision of reusable food packaging. Literature indicated some of the following ideas:

- third party vendor or community organization could set a fee for the use of this service to the event organiser/vendor who would likely be scaled up depending on the size of the event and the number of wash up stations required;
- the fee can be somewhat offset if the event agrees for an NGO/charity to be the beneficiaries of all beverage containers collected on the day;
- the NGO/charity provides washing up services and could additionally take gold coin donations from the public for the washing up station;
- local government (town council) can help promote this initiative as it reduces waste and supports council waste reduction policies/costs; and/or
- the event (or their vendors) will also save money through reduced need for disposable items (an average coffee cup with lid costs 10 cents each) plus they will pay less for their waste.”⁷¹

3.4.2 Policies

Overall, most of the policies implemented in other jurisdictions to support reusable food packaging can be fit into the following policy categories:

- bans on certain single-use packaging;
- reusable container requirements (usually minimum percentage of total containers must be reusable);

⁶⁹ Boomerang Alliance, (2019), *Brief on Refillables and Reusables*.

⁷⁰ Ibid.

⁷¹ Ibid.

- charging additional fees for environmentally harmful items such as single-use (Welsh government, City of Vancouver single-use cup fee); and
- drinking water fountain requirements or promotion – app development and installation of more fountains.

In addition to the policies above, the Government of Chile’s current draft EPR regulation incentivises reusable packaging by excluding it from the EPR obligation and allowing producers switching to reusable packaging to apply to receive a discount on the amount they will need to pay to Producer Responsibility Organisations. This type of approach was not mirrored in any other identified jurisdictions.

3.4.2.1 Bans on Certain Single-Use Packaging

Many of the bans identified during the study were not on food-packaging specifically, but on single-use-plastics more broadly. However, some of these bans broadly banned a number of different products including some food packaging – which may encourage the use of reusable food packaging via limiting other available options. Ban-type measures are likely best utilized when supported via efforts to encourage reusable packaging.

- In Chile, the government is going through the approval process for a law that will limit the delivery of single-use products in restaurants, coffee shops, hotels, and other outlets, promoting reuse and certification of single-use plastics and the regulation of single-use plastic bottles.⁷²
- As of July 1st, 2022, India intended to ban single-use plastic plates, cups, glasses, cutlery, trays, stirrers, plastic sticks and packing films around sweets, cards, and cigarettes.⁷³
- Kenya banned single-use plastic bags in 2017 and, this June, prohibited visitors from taking single-use plastics such as water bottles and disposable plates into national parks, forests, beaches, and conservation areas.⁷⁴
- Zimbabwe – introduced a ban on polystyrene food containers in 2017, with fines of between \$30 to \$5,000 for anyone breaking the rules.⁷⁵
- In São Paulo, Brazil, the recent publication of the Municipal Climate Action Plan (PlanClima SP) sets out a goal to promote the adoption of reusable packaging and sees reuse as a part of its circularity goals. São Paulo has also signed the New Plastics Economy Global Commitment and has since introduced legislation to phase out single-use and problematic plastic packaging – such as banning plastic straws and the supply of plastic cups, cutlery, and plates in food service.

⁷² Ellen MacArthur Foundation (2022), *The Global Commitment - 2021 Progress Report*.

⁷³ Ibid.

⁷⁴ World Economic Forum, (2020), *As Canada Bans Bags and More, this is what’s Happening with Single-Use Plastics Around the World*.

⁷⁵ Ibid.

- European Parliament and the European Council adopted the Directive 2019/904 on the reduction of the impact of certain plastic products on the environment, mostly known as the Directive on Single-Use Plastics. Article 5 of the Directive (“Restrictions on placing on the market”), imposes bans amongst several items: cutlery (forks, knives, spoons, chopsticks); plates; straws (except for medical use); beverage stirrers; food containers made of expanded polystyrene used typically in take-away and delivery services; beverage containers made of expanded polystyrene, including their caps and lids and cups for beverages made of expanded polystyrene, including their covers and lids cannot be placed on the market from July 3rd 2021.⁷⁶
- Canada’s Single-use Plastics Prohibition Regulations come into force on December 20th, 2022.⁷⁷ The Regulations prohibit the manufacture, import, and sale of 6 categories of single-use plastics: (i) checkout bags; (ii) cutlery; (iii) foodservice ware designed for serving or transporting food or beverage that is ready to be consumed and that contains certain substances; (iv) ring carriers; (v) stir sticks; and (vi) straws. Not all of these items are prohibited at the same time, instead the Regulations phase in the prohibitions between December 20th, 2022 and December 20th, 2025.

3.4.2.2 Reusable Container Requirements

Reusable container requirements can take several forms. In some cases, simple targets are passed, as shown in the table below.

Table 3: Countries Setting Refill Targets for Containers and Packaging

Country	Refill/Reuse Type and Target	Date
Chile	30% of beverage containers sold in supermarkets	2024
Austria	25% of all beverage containers	2025
France	10% of all packaging	2027
Portugal	30% of all packaging	2030

Source: Environmental Defence Canada, (2022), *Reusing packaging and containers: key to getting to Zero Plastic Pollution*

⁷⁶ Circular Economy Portugal, (2021), *Making the Business Case for Packaging Reuse Systems*.

⁷⁷ Government of Canada Website, *Single-use Plastics Prohibition Regulations - Overview*

Many nations have backed these targets with more concrete requirements. Often, specific establishments are being required to provide certain products in returnable or reusable packaging, or festivals or events are required to use entirely reusable packaging. In other cases, mandatory deposits will be required on new types of food packaging or certain type of establishments will be prohibited from using single-use packaging for food distribution or sales. Many of these requirements are listed below.^{78/79/80}

- Chile plans to roll out a single-use plastics law to make it mandatory for supermarkets and other marketers to offer a minimum of 30% of beverages in returnable bottles, as well as for e-commerce sales from 2024 onwards.
- Chile also introduced a plastic regulation bill in August 2021 that sets out new provisions, including: (i) prohibiting the distribution of single-use products by food establishments and only allowing single-use for delivery/takeout if they are non-plastic or certified compostable plastics; (ii) encouraging reuse for beverages - beverage retailers must make consumers aware of the importance of refillable bottles and must display, sell, and receive the refillable bottles back.
- Copenhagen is planning to establish test zones for reusable take-away packaging in areas of the city with most take-away activities, with three test zones for containers planned in 2021. For major events held in municipal owned areas, Copenhagen aims to achieve 100% reusable cups or packaging from the national deposit return scheme by 2024.
- As of 2022, Portugal will oblige businesses in the hotel sector to keep tap water and sanitised glasses available to customers for consumption on site. From 2023, drinks consumed on-site will have to be provided in reusable format, when such formats are available on the market and vendors selling ready-to-eat meals and bulk products will have to accept reusable containers brought by customers.
- In France the Law Against Waste and for a Circular Economy (AGEC, 2020) requires: (i) retail stores with footprints greater than 400 square meters must ensure that clean, reusable containers are available to customers; (ii) beginning in 2023, all food establishments need to provide reusable crockery for meals on-site; and (iii) establishments open to the public will be required to be equipped with at least one drinking water fountain accessible to the public.
- In January 2021, the German Federal Cabinet passed an amendment to the German Packaging Act (2019), which is intended to prevent or reduce the impact of packaging waste on the environment. From 2022, there will be a mandatory deposit on all non-returnable plastic beverage bottles. From 2023, restaurants, bistros and cafes must offer reusable containers for their takeaway products, which cannot be more expensive than the product in the disposable packaging. A partial exemption applies to certain small businesses.

⁷⁸ Ellen MacArthur Foundation (2022), *The Global Commitment - 2021 Progress Report*.

⁷⁹ Ellen MacArthur Foundation (2021), *The Global Commitment - 2020 Progress Report*.

⁸⁰ Ellen MacArthur Foundation (2020), *New Plastics Economy – 2019 Progress Report*.

- In Navarra, Spain, a regional law introduced in 2018 requires businesses in the hotel, retail, and catering sectors to serve 80% of beer, 70% of soft drinks, and 40% of bottled water in reusable containers by 2028. By 2028, 15% of filled beverage containers sold in shops in the Navarra region must be reusable.
- The New Circular Economy Action Plan is part of a wider European strategy - the New Green Deal - which aims to create a climate-neutral, resource-efficient and competitive economy by 2050. With regards to packaging - one of the key product value chains identified - the document sets the target of “all packaging on the EU market being reusable or recyclable in an economically viable way by 2030”. More specifically, the main actions about packaging are: reduce (over)packaging and packaging waste, promote design for reuse and recyclability of packaging and reduce the complexity of packaging materials used. More broadly, the EU’s Waste Framework Directive notes that member states should prioritise the options with the most environmental impact: prevention and preparation for reuse and recycling. Member states are impelled to act in order to promote reuse activities through, for example: “encouraging the establishment of and support for preparing for re-use and repair networks (...) and by promoting the use of economic instruments, procurement criteria, quantitative objectives or other measures”. Additionally, targets for preparing for reuse and recycling of waste were increased, and are now more demanding: by 2025, the preparing for reuse and the recycling of municipal waste shall be a minimum of 55 % by weight, by 2030 this number will have to increase 5% and by 2035 the target is to reach 65%.⁸¹

3.4.2.3 *Environmental Fees*

Some jurisdictions are requiring certain environmentally harmful items – such as single-use food packaging – include a charge in order to disincentivize their use. These policies are likely most effective when combined with policies that incentivize the use of reusable food packaging. These policies can also serve to equalize the cost of single-use packaging and reusable packaging – helping to make reusable packaging more competitive.

- “Scotland has consulted on the proposal to introduce charges for environmentally harmful items, with single-use cups identified as a priority item. This built on the previous advice of an expert panel that a charge is more effective than a discount in changing behaviour and increasing reusable cup use.⁸²
- This is to say that if a local city is administering a \$0.25 fee per single-use cup, for example, and that fee is either being absorbed by a cafe, or in most cases, passed on to the customer, then a reuse service charging that amount or even less per use, comes to

⁸¹ Circular Economy Portugal, (2021), *Making the Business Case for Packaging Reuse Systems*.

⁸² Ellen MacArthur Foundation (2022), *The Global Commitment - 2021 Progress Report*.

either a net-zero or net-positive transaction when compared to the single-use option.¹⁴ This is an effective motivator, and the savings add up over time.⁸³

- Berkeley, CA “Disposable-free dining,” ordinance, January 2020. Requires patrons who don’t use a reusable cup to pay the \$0.25 fee for a single-use cup.
- Santa Cruz County, CA, July 2020. Charges customers \$0.25 for single-use disposable cups.
- The City of Palo Alto has adopted the Disposable Foodware Items and Other Disposable Products Ordinance focusing on plastic straws, produce bags with a single-use cup tax planned for 2021.⁸⁴

3.4.2.4 Drinking Water Fountains and Support for Refilling Drinking Water Containers

Jurisdictions have undertaken efforts to encourage the use of reusable drinking containers instead of single use containers via the provision of drinking water fountains, apps that provide information on where the fountains can be found, and public awareness campaigns:^{85/86/87}

- In the United Kingdom, the Welsh government committed to becoming the World’s first “Refill Nation” in 2018. The government spent GBP 200,000 towards a refill scheme to promote free drinking water access instead of using single-use plastic bottles, and reported having 1,947 refill points in 2020.
- Ljubljana is promoting drinking fountains to decrease the need to buy bottled water. There are 44 public drinking fountains in Ljubljana, visible on a dedicated app.
- New Zealand ran a ‘Feels good to refill’ campaign, which promoted refilling bottles over the summer period, educating people on the benefits of refilling and providing a website to allow them to find their nearest free refill station. The government is also funding a design project for a New Zealand container return scheme for beverage containers. This has included looking at options for refilling, recognising that reuse should be prioritised over recycling.

⁸³ Closed Loop Partners, (2021), *Bring Reusable Packaging Systems to Life – Lessons Learned from Testing Reusable Cups*.

⁸⁴ Ibid.

⁸⁵ Ellen MacArthur Foundation and United Nations Environment Programme (2022), *The Global Commitment - 2021 Progress Report*.

⁸⁶ Ellen MacArthur Foundation (2021), *The Global Commitment - 2020 Progress Report*.

⁸⁷ Ellen MacArthur Foundation (2020), *New Plastics Economy – 2019 Progress Report*.

Policies Key Points

- Events, hotels, restaurants and some other HoReCa establishments appear to have been targeted by several jurisdictions as ‘low hanging fruit’ where the use of reusable food packaging may be easier to implement – specific controlled environments should be considered strong candidates for policy interventions;
 - Policies targeting these establishment types either require a certain percentage of their packaging is reusable (often different figures for different types of packaging) or do not allow them to use single-use packaging.
- Actors within a profit-driven system will nearly always take the less expensive and easier option, and therefore EU-type regulation where actors are required to use packaging that is geared for ‘reuse or recycling’ will likely often cause actors to use recyclable packaging that does not require difficult and/or expensive reverse logistics solutions.
- German regulation (*German Packaging Act (2019)*) required restaurants, bistros, and cafes to provide reusable packaging at the same cost as single-use packaging (erasing the main disincentive to use reusable packaging for consumers). This type of approach should be investigated as an alternative to environmental fees that are made to accomplish the same goal but may be too high, too low, or require consistent adjustment to remain effective.
- Some jurisdictions are banning certain single-use plastic packaging while simultaneously encouraging reusable packaging or instituting reusable packaging requirements – which would prevent establishments from simply finding other materials from which to make single-use food packaging options.
- Selling drinks and water in single-use containers can be very profitable, and many establishments will refuse to provide water (for example) in glasses to guests in order to be able to charge for it. Several jurisdictions are targeting this directly by requiring these establishments to provide reusable options, even specifying glasses.

3.5 Gaps and Barriers to Advancing Reusable Systems across Canada

Many of the barriers that impact reusable food packaging influence several categories of reuse, such as single-use packaging being a cultural norm/programming that is difficult to break, or the fact that reusable systems generally involve more labour from both the consumer and the businesses involved than single-use systems. Similarly, across reuse systems (and in food packaging) the increased logistical complexity of reverse supply chains versus the one-way supply chains for single-use packaging are another defining barrier for encouraging the advancement of reusable packaging systems. Barriers specific to reusable food packaging include: (i) sanitation/freshness concerns; and (ii) insufficient/prohibitively expensive washing facilities/capital costs.

Food packaging must ensure that food is sanitary and that food arrives to the consumer as fresh as possible (often airtight). Similarly, some reusable food packaging will become dirty or have some food left in them after use, and sending that packaging back along the reverse supply chain can allow for mold or other issues to develop. The specific barriers in ensuring that reusable food packaging is sanitary and ensures freshness vary depending upon the sector (HoReCa, retail grocery, retail online ordering etc.) but business models are emerging that account for sanitation and freshness within each sector. Some HoReCa models have short or relatively local reverse supply chains and can pick up/wash/sanitize their packaging daily – making post-use sanitary concerns much less relevant. Some B2B reusable food packaging models have found touchless solutions so that food is delivered to retail locations within reusable packaging that is sealed and sanitized and consumers can purchase that material using their own reusable containers without having any contact with the product. Therefore, while reuse models may be challenged by some barriers regarding sanitation and freshness, these barriers can be overcome through thoughtful product design or effective logistics/reverse logistics setups.

The Loop pilot in Canada currently sends their reusable containers back to the United States for washing/sanitation due to a lack of available infrastructure in Ontario (where the program is currently based) and the high capital costs associated with establishing these facilities. Other businesses, such as Friendlier, have built their own sanitation facilities from the ground up and currently have more capacity than they need (they scaled their facilities to account for expansion). The degree to which sanitation facility design/construction/operation constitutes a barrier depends on many factors (the founders of Friendlier are chemical engineers that have expertise in process engineering and designed their own sanitation facilities – which is not an option for all entrepreneurs).⁸⁸ The costs of designing and building washing/sanitation facilities can vary widely depending upon the desired degree of automation, how standardized the packaging is, real-estate availability/costs/choices, equipment availability/associated costs, etc. This barrier could be eased through assistance programs that either provide funding or expertise/support for the design and construction of washing/sanitation facilities.

⁸⁸ Interview with Friendlier, October 28, 2022.

4. Personal Care and Household Care Product Packaging

4.1 Introduction

Personal care products are applied to the human body for the purposes of cleaning, beautifying, promoting attractiveness or changing appearance. Categories of personal care products include oral care, skin care, sun care, hair care, cosmetics, body care and perfumes. Meanwhile, household care products are typically considered to be various types of cleaning products used within the home and include such items as laundry detergent, dishwashing liquid, bathroom cleaners, floor cleaners, etc.

Personal and household care products represent the second largest application for plastic packaging globally (after food and beverages), with an estimated 19% of the global plastic packaging market in 2021.⁸⁹ In terms of materials, plastics dominate both the personal care and household care packaging markets. For instance, it has been estimated that plastics held a 61% market share of the personal care packaging market in North America in 2015,⁹⁰ and has likely to have grown since that time. Given the importance of plastics as a packaging material for both of these market segments, these applications provide a significant opportunity to reduce single-use end-of-life packaging waste through broader adoption of reuse platforms. In addition, these segments have seen a large number of reuse business models developed recently, the details of which could be leveraged and duplicated within these segments and other packaging applications not investigated in this report.

4.2 Current State in Canada

While reuse is an established market model for some products, such as automobiles, similar practices are still in their infancy for most other product groups. This can be observed for plastics packaging through the annual reports published under the Global Commitment program. Led by the Ellen MacArthur Foundation, in collaboration with the UN Environment Programme, the Global Commitment has united more than 500 organizations behind a common vision⁹¹ of a circular economy for plastics. Companies representing 20%

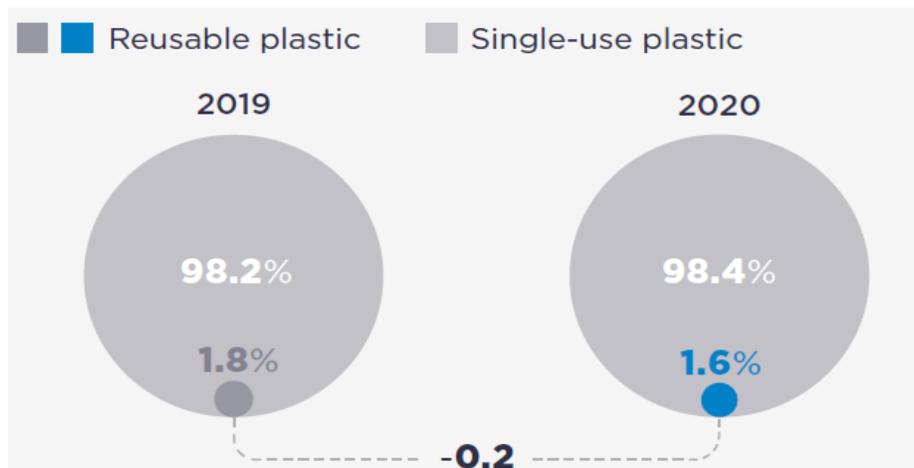
⁸⁹ Grandview Research (2020), *Plastic Packaging Market Size, Share & Trends Analysis Report By Product (Rigid, Flexible), By Technology (Injection Molding, Extrusion, Blow Molding, Thermoforming), By Application (Food & Beverage), And Segment Forecasts, 2022 – 2030*.

⁹⁰ Pierce, L. (2015), *Plastic Packaging Dominates the Personal Care Market*, published in Packaging Digest.

⁹¹ The six elements of the vision are as follows: (i) elimination of problematic or unnecessary plastic packaging through redesign, innovation, and new delivery models is a priority; (ii) reuse models are applied where relevant, reducing the need for single-use packaging; (iii) all plastic packaging is 100% reusable, recyclable, or compostable; (iv) all plastic packaging is reused, recycled, or composted in practice; (v) the

of all plastic packaging produced globally have committed to ambitious 2025 targets to help realize that common vision.⁹² The latest Global Commitment annual report has indicated that the proportion of reusable plastic packaging by signatories was only 1.6% of the total plastic packaging used, and more than half of signatories are still reporting 0% reusable packaging.⁹³ The estimate of 1.6% of plastic packaging being reusable by the major global brands that have signed onto the Global Commitment would be expected to mirror the situation in Canada at present in terms of what is available on the marketplace, although potentially with higher reusable packaging rates for personal care and household care products (see text following table).

Figure 3: Share of Reusable Plastic Packaging for Brand and Retail Signatories Reporting in Both 2019 and 2020
(% weight)



Source: Ellen MacArthur Foundation and United Nations Environment Programme (2022), *The Global Commitment - 2021 Progress Report*.

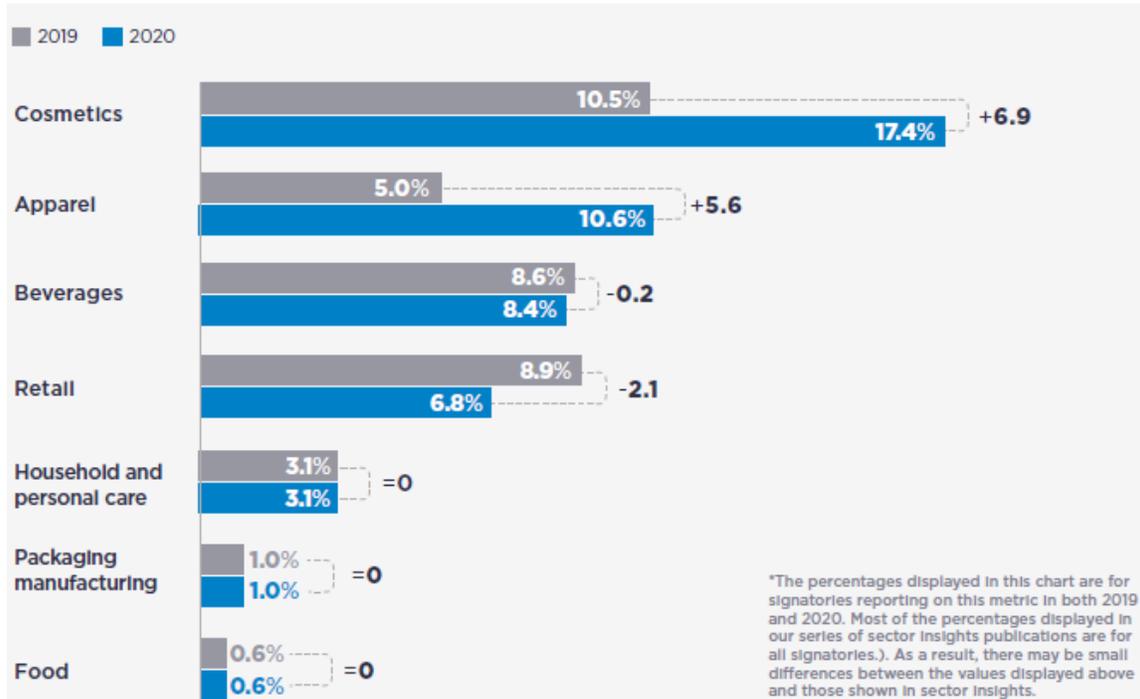
The average share of reusable plastic packaging is low for most sectors, although cosmetics is the best performing sector with 17.4% of plastic packaging among signatories being reusable in 2020, which was up from 10.5% the prior year. This increase was driven by the roll-out of refill stations in stores and refill-at-home models. Signatories under the household and personal care sector only had 3.1% of their plastic packaging being reusable in 2020.

use of plastic is fully decoupled from the consumption of finite resources; and (vi) all plastic packaging is free of hazardous chemicals, and the health, safety, and rights of all people involved are respected.

⁹² Accessed at the website of the Ellen MacArthur Foundation (<https://ellenmacarthurfoundation.org/global-commitment/overview>).

⁹³ Ellen MacArthur Foundation (2022), *The Global Commitment - 2021 Progress Report*.

Figure 4: Average Share of Signatories' Plastic Packaging that is Reusable
(as a % of plastic packaging weight by sector)



Source: Ellen MacArthur Foundation and United Nations Environment Programme (2022), *The Global Commitment - 2021 Progress Report*.

Overall, 56% of signatories did not offer any reusable plastic packaging, while 22% of signatories had between 0-3% of their total packaging being reusable and the remaining 22% of signatories has more than 3% reusable packaging.⁹⁴

Despite the generally low percentages of plastic packaging that is available in reusable format among a significant sampling of major brands globally, there are numerous examples of reuse platforms that have been established in Canada for both personal care and household care products. These examples include both global, well-established brands as well as niche small companies in Canada. For instance, outlined in the table below is a summary of identified refilleries in Canada that offer personal care and/or household care products in reusable packaging formats. Close to 100 refilleries in Canada were identified. This list of Canadian refilleries was created March 2021, with efforts to be as complete as possible⁹⁵, however it is expected that there will be many more refilleries in Canada than are outlined in table below.

⁹⁴ Ibid.

⁹⁵ Scout Environmental (2021), *A Guide to Opening and Running a Bulk-Reuse Refillery in Canada*.

Table 4: Examples of Refilleries in Canada for Personal Care Products and Household Care Products

Province	Number of Identified Refilleries	Examples
BC	21	<ul style="list-style-type: none"> All Things Being Eco (Chilliwack, BC) Simple September (Kitimat, BC) The Refill Shop (New Westminster, BC) Refill Road (Vancouver, BC)
AB	10	<ul style="list-style-type: none"> DYP Refillery (Calgary, AB) Replenish (Edmonton, AB) Purple Carrot (Lethbridge, AB) No Planet B Refillery (St. Albert, AB)
SK	4	<ul style="list-style-type: none"> Mortise & Tenon (Regina, SK) The Alternative (Regina, SK) The Refillery YXE (Saskatoon, SK) Bulk Basket (Saskatoon, SK)
MB	1	<ul style="list-style-type: none"> Refill Market (Winnipeg, MB)
ON	46	<ul style="list-style-type: none"> Eco-Refillery (Woolwich, ON) Front Porch Refillery (Stouffville, ON) Great Lakes Refill (Sarnia, ON) The Simple Concept (Bowmanville, ON)
QC	7	<ul style="list-style-type: none"> Frenco (Montreal, QC) Nous Rire (Montreal, QC) Mega Vrac (Montreal, QC)
NB	4	<ul style="list-style-type: none"> Juniper (Saint John, NB) The Wellness Exchange (Moncton, NB)
NS	2	<ul style="list-style-type: none"> The Tare Shop (Halifax, NS)
PE	-	-
NF	1	<ul style="list-style-type: none"> Bare Goods (Bay d'Espoir)
Total	96	

Source: Scout Environmental (2021), *A Guide to Opening and Running a Bulk-Reuse Refillery in Canada*.

In addition to the above companies, some major retailers of personal care and household care products are opening refilleries. For instance, The Body Shop Canada has launched a national refill program whereby participating locations in Canada will offer shoppers a refillable aluminum bottle for a selection of the brand's best-selling shower gels, shampoos, conditioners, and hand washes. This is the company's first step in a 5-year plan to roll out refill stations in the majority of their stores across the globe. By switching to refills, The Body Shop estimated that every customer can prevent approximately 32 plastic bottles from going to landfills and, collectively, The Body Shop and their customers could eliminate the use of over 25 tons of plastic each year. Beginning in April 2021, The Body

Shop launched refill stations across 400 stores globally, and plans an additional 400 stores in 2022.⁹⁶

Apart from refilleries which typically supply personal care and household care products manufactured by other companies, there are many examples of innovative Canadian manufacturers of these products that are offering reusable packaging for their products. Examples of just a few of these manufacturers are as follows:

- **Rocky Mountain Soap (Canmore, AB)** – Produces a wide range of personal care products (e.g., hand and body wash, deodorant, moisturizer, shampoo, conditioner, etc.). The “Rocky Refill” program include all of their skincare packaging, cream deodorant jars and other applications. Empty packaging is returned to their workshop, sanitized, refilled, then goes back on the shelves to be purchased again. At present, the refill program is only available in their stores, however there are plans to expand the program to their on-line sales. The sterilization process involves washing the packaging with hot water and then drying the packaging using a compressed air system. The plastic packaging that is eligible to be refilled includes all 1 litre bottles, toner bottles (travel and regular size) and cream deodorant jars as well as a wide range of glass packaging. The products that come in 1-litre plastic bottles include foaming wash, antibacterial kitchen hand wash, everything wash, hand sanitizer, hair care (shampoo and conditioner) and bubble bath. Rocky Mountain Soap is exploring options to accept empty bottles through the mail (for on-line shoppers) as well as drop-off at their retail partners. The cost of their refilled packaging remains the same.⁹⁷
- **The Unscented Company (Montreal, QC)** – Produces a variety of personal care and household care products such as shampoo, conditioner, hand soap, dishwashing tabs, etc. The company has established two broad programs that reduce plastics packaging. First, their 2L, 4L and 10L formats can be refilled either at home or in-store. Refill options include hand soap, shampoo, conditioner, dish soap and laundry detergent. Their take-home bulk options and in-store refill stations greatly reduce packaging needs. Refill formats are sold at a 15% discount. Second, the company offers a range of solid cleaning products that are traditionally sold in liquid format with plastic packaging. The solid format allows the sale/shipping of these products in non-plastic formats. Examples include shampoo bars, conditioner bars, laundry tabs, etc. The company estimated that their refill program and solid products prevented approximately 1.1 million plastic bottles from being disposed of in 2021.⁹⁸
- **Myni (Quebec City, QC)** - Manufactures personal care and household care concentrated cleaning tablets in Quebec City, QC. Tablets are available for all purpose cleaner, glass and mirror cleaner, bathroom cleaner, degreaser cleaner, stainless steel cleaner, laundry detergent, dishwasher detergent and hand soap. The tablets are used at

⁹⁶ Beauty Packaging (2021), *Body Shop Canada Launches Refill Program with Aluminum Bottles*.

⁹⁷ Accessed at the website of Rocky Mountain Soap (<https://www.rockymountainsoap.com/blogs/blog/return-your-bottles>).

⁹⁸ Accessed at the website of The Unscented Company (<https://unscentedco.com/>).

home in conjunction with the starter kit bottle by dissolving the tablets in water. Refill tablets can be purchased and used in the existing bottle, thereby significantly reducing plastic packaging. Their starter kit bottles are made out of wheat straw which is suggested to be biodegradable and the tablet packaging is made of corn starch which is certified compostable. Myni products are sold on-line and in retail outlets throughout North America.⁹⁹

- **Earth Brand (Oakville, ON)** - Earth Brand cleaning pods contain approximately one ounce of concentrated cleaning solution in a fully-dissolvable film. Once the pod completely dissolves in water, it leaves behind a safe and ready-to-spray household cleaner. There are four different Earth Brand cleaning pods available: (i) disinfectant cleaner; (ii) glass & multi-surface cleaner; (iii) multi-purpose kitchen cleaner; and (iv) bathroom & shower cleaner. Every pod is suggested to eliminate the use of one spray bottle. The process works by: (i) dropping the pod in a 750-1,000 ml spray bottle (most spray bottles are this size); (ii) filling the spray bottle with cold to warm water and screwing on the spray nozzle; and (iii) waiting 1-2 minutes and then shaking the bottle to mix fully. Earth Brand pods are available at retailers across Canada or can be bought on Amazon.¹⁰⁰

4.3 Policies, Regulations, Programs and Infrastructure that Enable or Support Reuse Systems across Canada

To a large extent the major infrastructure in Canada related to the reuse of personal care/household care packaging was outlined in the previous section, most notably the large number of refilleries that are operating in Canada as well as some entrepreneurial manufacturers in Canada that have integrated reuse platforms into some/all of their product offerings. However, consumer access to reuse refill infrastructure across Canada is uneven, and most projects are largely localized pilots. These projects are having challenges scaling due to funding constraints, lack of regulatory incentivization, limited customer and business comfort/experience, internal capacity and uneven understanding and acceptance by local health authorities.

In terms of policy, in 2018, Canada adopted the Ocean Plastics Charter, which commits to achieve 100% reusable, recyclable, or (where viable alternatives do not exist) recoverable plastics by 2030, and recycle/reuse at least 55% of plastic packaging by 2030 and recover 100% of plastics by 2040. In November 2018, the Canadian Council of Ministers of the Environment approved the Strategy on Zero Plastic Waste which includes actions such as extending producer responsibility and investing in circular infrastructure and innovation.

⁹⁹ Accessed at the website of Myni (<https://myni.ca/>).

¹⁰⁰ Accessed at the website of Earth Brand Pods (<https://www.earthbrandpods.com/>).

Some of the more notable programs in Canada that could foster the reuse of personal care and household care product packaging are the following:

- Reuse Refill Canada is an Ontario-based initiative that's working towards normalizing the adoption of reuse and refill models throughout the country. They are focused on increasing consumer and industry participation in the reuse refill economy and aim to achieve this by developing tools and sharing knowledge that can decrease the barriers and highlight the far-reaching benefits of a circular economy.
- The Share Reuse Repair Initiative (SRRI) brings together government, business, and community innovators to build a culture and economy of sharing, reuse, and repair in the Greater Vancouver region. The SRRI has three key functions: to collaboratively test promising prototypes; to build a more consistent foundation of support through policy, funding, and partnerships; and to amplify existing efforts while catalyzing positive new innovation. For instance, their SHIFTing Consumer Behaviour Project was designed to develop a better understanding of how to change the mindset of consumers and business to one of reuse.

4.4 Key Initiatives, Policies or Infrastructure in Other Jurisdictions

Provided in this section is a summary of key government policies/initiatives in other jurisdictions that have been implemented to foster the reuse of packaging (that would encompass personal care and household care products). In addition, examples of companies in jurisdictions outside of Canada that have established business models for the reuse of packaging for personal care and/or household care products are provided.

4.4.1 Policies/Initiatives

Reuse policy and legislation are still at a nascent stage for most countries. Only a small selection of countries have adopted national reuse targets that are applicable across some or all packaging categories. More commonly, governments acknowledge that reuse should be an important part of their overall waste reduction strategy but haven't set specific targets on reuse. Governments have multiple types of policy levers at their disposal that they can use to reduce single-use plastics and encourage or mandate reusable packaging. These range from prescriptive regulation and laws that set legally binding targets, to incentives/disincentives such as deposit return systems (DRS) and extended producer responsibility (EPR), to public education and awareness campaigns.¹⁰¹

¹⁰¹ World Economic Forum (2021), *World Economic Forum's Platform for Shaping the Future of Consumption - Consumers Beyond Waste – National Reuse Policy*.

According to the Ellen MacArthur Foundation, encouragement of voluntary actions, awareness raising and education campaigns, alongside promotion of collaboration with the private sector and civil society organizations, are the most common measures used to drive progress on reuse by governments in 2020. Other reported efforts to increase adoption of reuse models included support for pilot projects or reuse solutions or systems that include establishing mandatory requirements to provide products in reusable formats, especially in the retail and catering sector as well as changes to public procurement such as banning single-use formats and instead opting for reusable options.¹⁰²

Outlined below are some key examples of government policies established internationally that can impact the reuse of personal care and household care product packaging.

4.4.1.1 European Union¹⁰³

The European Union recognizes reuse as a core element of its waste reduction strategy. Although the European Union does not have binding legislation in place on reuse, there are multiple Directives that outline measures for member states to reduce consumption of single-use plastics, which they can formulate at a national level. These Directives and other initiatives are as follows:¹⁰⁴

- The Packaging and Packaging Waste Directive calls on member states to take measures to increase the share of reusable packaging placed on the market and of systems to reuse packaging. Such measures may include the use of deposit-return schemes and setting qualitative or quantitative targets. The Directive also outlines requirements for reusable packaging that must be satisfied, including the physical properties of the packaging enabling a number of rotations, and health and safety requirements.
- The Single-Use Plastics Directive outlines measures for national authorities to reduce the consumption of single-use plastics. It provides for a phase out of single-use plastics via measures such as European Union-wide bans for 15 plastic items, fee-modulated EPR schemes for a number of items, and targets for the separate collection of plastics for recycling.
- In the 2018 European Strategy for Plastics, the E.U. committed to ensure that all packaging in the European Union can be reused or recycled by 2030 – though this does not offer explicit targets for reuse. Europe has called for new reuse targets (non-binding) of 5% by 2025 and 10% by 2030. While these reuse targets have not been finalized, the feasibility of the targets will be considered at a later date.

¹⁰² Ellen MacArthur Foundation and United Nations Environment Programme (2022), *The Global Commitment - 2021 Progress Report*.

¹⁰³ European Environment Bureau (2020), *Explained: Europe's New Waste Prevention and Reuse Laws*.

¹⁰⁴ Ibid.

4.4.1.2 France^{105/106/107}

France has established several policies to achieve the phase-out of single-use plastic packaging by 2040. Targets for reduction, reuse, and recycling are set for 2021-2025 and then for each period of five years thereafter. The 3R decree proposes a 20% reduction target for single use packaging by the end of 2025, of which at least half will be obtained through switching to packaging that is reused or reutilized (including bulk sale, refills, and deposit return schemes). France also has reuse targets in Article L. 541-1 of the *Environmental Code*, which aims to reach a proportion of 5% of reused packaging marketed in France in 2023, expressed in terms of sales unit or sales unit equivalent, and 10% of reused packaging marketed in France in 2027, expressed in sales unit or sales unit equivalent.

France also enables and promotes the sale of products without packaging or in containers which can be reused. The *Law Related to Anti-waste and the Circular Economy* (No 2020-105) incentivises clean purchases and other measures in order for consumers to use reusable packaging and containers. Key stipulations under this Law are as follows:

- Article 9 - Establishes targets of 5% reused packaging by 2023 and 10% by 2027.
- Article 35 - France is the first European Union country to introduce a ban on destroying unsold new products. Producers, importers and distributors of new non-food products intended for sale shall be required to reuse, in particular through the donation of essential products to associations, or recycle their unsold products, in accordance with the hierarchy of treatment methods. Sanitary and childcare products which have remained unsold must necessarily be reused, except in the case of products with a minimum durability of less than three months, or in cases where there is no possibility of reuse following discussion with the associations. Products included under this requirement are textiles, electronic products, daily hygiene products, shoes, books and household appliances.
- Article 41 - States that, from January 2021, ‘any final consumer may ask to be served in a container supplied by him, so far as the latter is clearly clean and suitable for the nature of the product purchased.’ In addition, Article 41 defines bulk selling as selling products in reusable packaging.
- Article 43 - Obliges retail shops with a sales area greater than 400 m² to ensure that clean or reusable containers, which replace non-reusable packaging, are available to the final consumer, whether free of charge or for payment, in connection with the sale of products without packaging.
- Article 44 - Enables consumers to use their own reusable or recyclable container. An establishment display shall inform the final consumer about the rules for cleaning and the suitability of reusable or recyclable containers. The consumer is responsible for the

¹⁰⁵ Ellen MacArthur Foundation and United Nations Environment Programme (2022), *The Global Commitment - 2021 Progress Report*.

¹⁰⁶ European Environment Bureau (2020), *Explained: Europe’s New Waste Prevention and Reuse Laws*.

¹⁰⁷ Zero Waste Europe (2021), *France’s Law Promoting Bulk and Reusable Packaging*.

hygiene and the fitness of the container. The institution may refuse to serve the consumer if the consumer's container is demonstrably dirty or unsuitable.

- Article 72 – EPR systems must include packaging waste reduction objectives, with sanctions applied to unmet objectives. In addition, at least 2% of EPR contributions must be used for the promotion of reusable packaging.

4.4.1.3 Other Jurisdictions

Examples of reuse policy initiatives that could impact personal care and/or household care product packaging from other jurisdictions include the following.^{108/109/110}

- Romania - In 2018, Romania issued an Emergency Ordinance (74/2018) which included reuse provisions such as: (i) from January 2020, businesses that put packaged goods on the market must sell 5% of their goods in reusable packaging (across all formats), increasing by 5% annually until 30% in 2025. The Ordinance serves as a legal framework and is limited to stating general guidelines, with its amendments detailed and implemented through secondary legislation. In 2020, a draft bill establishing a Deposit-Refund System for glass, plastic, and metal packaging was proposed for 2022, but has not yet passed.
- United Kingdom – The UK government is supporting the UK Plastic Pact which includes members responsible for 80% of plastic packaging sold through UK supermarkets, and has a target for 100% of plastics packaging to be reusable, recyclable, or compostable by 2025. The UK government has also imposed a new plastic packaging tax, as of April, 2022 which will be a catalyst for increased use of reusable and refillable packaging. The tax is charged (at a rate of £200 per tonne) if a company manufactures or imports plastic packaging components which contain less than 30% recycled plastic.
- Chile - To incentivize reuse, industry does not need to pay an EPR fee for reusable packaging.
- Japan - In 2020, Japan launched a strategy aimed at reducing disposable plastic waste by 25% by 2030. The government plans to reach the target by ordering that all containers and packaging be designed to be reusable or recyclable by 2025. It also aims for a 60% recycling rate for containers and packaging by 2030 and 100% utilization of used plastics by 2035.
- Australia - In 2018, Australia established its 2025 National Packaging Targets which apply to all packaging that is made, used and sold in Australia. The Australian Packaging Covenant Organization (APCO) is charged with delivering the industry-led

¹⁰⁸ World Economic Forum (2021), *World Economic Forum's Platform for Shaping the Future of Consumption - Consumers Beyond Waste – National Reuse Policy*.

¹⁰⁹ Ellen MacArthur Foundation and United Nations Environment Programme (2022), *The Global Commitment - 2021 Progress Report*.

¹¹⁰ Matusow, J. (2021), *A Growing Responsibility for Sustainable Packaging*, published in Beauty Packaging.

targets, and various levels of government (national, state, local) in Australia have endorsed the targets and work collaboratively with APCO. The four targets aim for: (i) 100% of packaging being reusable, recyclable or compostable by 2025; (ii) 70% of plastic packaging being recycled or composted by 2025; (iii) 50% of average recycled content included in packaging by 2025; and (iv) phase-out of problematic and unnecessary single-use plastic packaging by 2025.

- India - In 2021, India became the first Asian country to develop a plastic pact. As part of the pact, leading private sector players in India have set 2030 targets including: (i) define a list of unnecessary or problematic plastic packaging and items and take measures to address them through redesign and innovation; (ii) 100% of plastic packaging to be reusable or recyclable; (iii) 50% of plastic packaging to be effectively recycled; and (iv) 25% average recycled content across all plastic packaging.
- Peru - Reported the approval of a new technical standard setting out the criteria for containers to be classified as reusable, as well as procedures to evaluate compliance with the criteria.
- Spain - In July 2019, the Government of Catalonia issued a regulation limiting the use of single-use plastic products within its facilities. A government agreement is being finalized extending the limitation to all government and public sector facilities and public events.

4.4.2 Company Examples – Personal Care Product Packaging

4.4.2.1 by Humankind^{111/112}

Their products are designed to reduce the single-use plastic footprint by 90% or more. The system works by initially sending customers their refillable container—or reusable pump—and their first refill. Subsequently convenient refills are sent according to the customer’s schedule. The refillable containers are plastic as they’re designed to be durable, hygienic, and easy to travel with. However, the refills are made mostly with biodegradable paper, which is where the plastic savings originate. Examples of their products and refill packaging systems are as follows:

- **Deodorant Refill** - Made mostly with biodegradable paper, reducing the single-use plastic waste found in a single-use deodorant by 90% on average. It still contains some plastic components that keep the deodorant stick sanitary during transit and which allow it twist up in the container. The biodegradable paper can be composted. The small plastic components are polypropylene and can be recycled in most areas.
- **Hand Sanitizer Refills** - Hand sanitizers come in an aluminum bottle, designed to be highly recyclable. The reusable pump cap is transferred to the next bottle purchased.

¹¹¹ Accessed at the website of by HumanKind (<https://byhumankind.com/>).

¹¹² Ellen McArthur Foundation (2020), *Reuse Rethinking Packaging*.

- **Body wash** - Comes in an aluminum bottle, which is widely recycled. When it is empty, the aluminum bottle is recycled and the reusable pump is transferred to the next bottle.
- **Toothpaste** - Tablet refills arrive in a compostable pouch made from kraft paper and a sugar-based lining. The refill pouch can be composted. It is not recyclable.
- **Silk floss** - Is 100% biodegradable and spun around a sugarcane-based bioplastic spool. Refills are shipped in a compostable pouch made from kraft paper with a sugar-based lining. The floss and kraft pouch can be composted and the spool should be recycled.
- **Mouthwash** - Refill tablets arrive in a compostable pouch made from kraft paper and a sugar-based lining (vs. the typical single-use plastic bottle). The refill pouch can be composted.
- **Shampoo and Conditioner** – Comes in an aluminum bottle. After use, the aluminum bottle is recycled and the reusable pump is transferred to the next bottle.

Users subscribing to by Humankind deodorant, shampoo and mouthwash refills save, on average, over 2 kilograms of single-use plastic within the first year of use. Their products are produced in the U.S., UK, and China and they currently do not ship to Canada.

4.4.2.2 Bites (California)¹¹³ and Unilever¹¹⁴

Bites produces/sells toothpaste tablets (with the product name “Bits”) in glass bottles, which is infinitely recyclable and eliminates the disposal of empty plastic toothpaste tubes. There are 62 tablets (which are chewed before brushing) in their small bottles which equals about one month of brushing your teeth twice a day and 248 tablets in their 4-month subscription jar which is enough for one person to brush their teeth twice a day for four months. Their mouthwash jar comes with 124 Bits and should last four months if used once a day. The glass bottles and jars are kept by the consumer and are refilled with more Bits. Refill Bits are sent in 100% home compostable pouches every four months with a subscription. They are available in Credo Beauty and Erewhon retail outlets in the U.S. and available on-line.

Bites is not the only company that has introduced toothpaste tablets in order to eliminate the use of toothpaste tubes. Unilever has introduced their Signal 8 Integral Tooth Tabs sold in a reusable jar.

¹¹³ Accessed at the website of Bites (<https://bitetoothpastebits.com/pages/sustainability>).

¹¹⁴ Mohan, Anne-Marie (2019), *Unilever Innovates Two New Product Formats for Loop*, published in Packaging World.

4.4.2.3 CoZie¹¹⁵ (France)

CoZie has developed a bulk dispensing machine for cosmetic products such as moisturisers and face creams that allows users to purchase the desired amount to the nearest millilitre. The special design of the dispensing system stocks the cosmetic products in airless bags to maintain the product shelf life, and prevents contact between the formulas and the machine. The dispensing system is designed to meet strict specifications for hygiene and traceability (i.e., automatically generated print-out labels with product name, date and batch number) of cosmetic products. The refillable containers used for all products are high-quality, durable glass containers.

For the first purchase, users pay EUR 1.5 per container. The same amount is deducted from the user's next purchase when bringing back empty containers to a store selling CoZie cosmetics. This indirect deposit structure creates brand loyalty and keeps customers coming back. CoZie takes care of washing all containers centrally and redistributes the clean containers to vendors.

CoZie has only been using the technology for the company's own formulas, but external brands for shampoo and shower gel were to be added in England. There are an estimated 335 points of sale in France where CoZie cosmetics can be purchased through their bulk dispensing machines.

4.4.2.4 Splosh¹¹⁶ (Wales)

The Splosh factory is located in Newtown, Wales where a wide range of personal care and home care products are manufactured for use within a refill system. The system works as follows:

1. Customers choose one of the starter boxes (with the reusable containers) or customers can make up their own among the options available. Splosh will send the bottles to the customer, full and ready to use. Alternatively, customers can just buy refills for their own bottles. Every bottle that Splosh sells is refillable with their concentrated refill pouches, which translates into reducing plastic waste by 90-95%.
2. Refills are purchased when needed. These purchases occur online or with their app. The refills come in little boxes that fit through a customer's letterbox.
3. The customer refills the reusable container by pouring the concentrate into the empty bottle. For some products it will be necessary to add water first.

¹¹⁵ Ellen MacArthur Foundation (2020), *Reuse Rethinking Packaging*.

¹¹⁶ Accessed at the website of Splosh (www.splosh.com/).

The products sold by Splosh include hand wash gel, shower gel, shampoo, conditioner, laundry detergent, laundry powder, fabric conditioner, laundry stain remover, dishwashing liquid, dishwasher tablets, kitchen cleaner, bathroom cleaner, floor cleaner and toilet bowl cleaner. These products are sold directly by Splosh to their customers, thereby eliminating supermarkets from the distribution chain.

Splosh has estimated that they have saved approximately 2.3 million plastic bottles from end-of-life through their product line. If customers return the used refill pouches to Splosh, they will upcycle them into new products such as crinkly pouches.

4.4.2.5 Plaine Products (Cincinnati, Ohio)^{117/118}

Plaine Products produces a wide range of home and personal care products that are used through a refill system. Their system operates through the use of aluminum bottles. They decided to use aluminum bottles because historically, aluminum has proven to be a key material in successful recycling programs. Unlike plastic, aluminum is able to be completely recycled without any loss in quality at a fraction of the initial production costs and energy requirements. Their aluminum bottles are also strong enough to survive a number of trips. As a result, they will be well worn before they are recycled. They are also easily cleaned and sterilized, so the bottles are safe to use repeatedly. The system operates as follows:

- Customers order one of the Plaine Products offerings which arrives at their door in a refillable bottle. The lid is replaced with a pump.
- When a customer is getting low, a refill bottle is ordered. Customers can also subscribe and they will be sent a bottle in their desired timeframe.
- When the current bottle is empty, it is rinsed out and the pump from the empty bottle is switched to the refill bottle.
- The refill's lid is put on the empty bottle and it is placed in the refill box. The enclosed return label is placed over the existing shipping label and is mailed back to Plaine Products where the aluminum bottle is cleaned, refilled, and reused.

Product offerings include shampoo, conditioner, hair and body wash, hair repair, beauty oil, deep conditioner, body wash, hand wash, body lotion, hand sanitizer, face wash, face moisturizer, face toner and beauty oil. Plaine Products has estimated that the use of their products has eliminated the use of approximately 431,000 plastic bottles.

¹¹⁷ Accessed at the website of Plaine Products (www.plaineproducts.com/).

¹¹⁸ Ellen MacArthur Foundation (2020), *Reuse Rethinking Packaging*.

Plaine Products ships to Canada, however they do not currently have a method for sending individual customer's bottles back to Plaine Products from Canada. It has been estimated that Plaine Products has 20,000 end-users in the U.S. and Canada.

4.4.3 Company Examples – Household Care Product Packaging

4.4.3.1 Blueland (New York, New York)¹¹⁹

Blueland is a brand that offers a variety of cleaning products without single-use plastic packaging. Their products are formulated without water and therefore minimize the packaging and carbon footprint generated when shipping these products from their warehouse to customers. Their cleaning products are paired with reusable bottles and vessels so customers only buy the bottle or vessel once and never dispose of it. It is necessary to purchase a starter kit consisting of the plastic, glass or silicone dispensing or storage container (which will be continually reused) and concentrated product in tablet or powder form. The concentrated product needs to be mixed with water or used directly with water in the case of laundry machines or dishwashers. Subsequent purchases are of a tablet/powder to be mixed with water and contained in the already purchased dispensing/storage container. Product options are available for household cleaning products (e.g., hand soap; dish soap; dishwasher liquid; laundry detergent; cleaning sprays such as multi-surface, bathroom, glass and mirror; and toilet cleaners) and personal care products (e.g., facial cleaner, body wash). Their tablets are an estimated 30 times smaller than the average cleaner. Blueland ships to Canada.

4.4.3.2 Replenish (Los Angeles, California)^{120/121}

Replenish is a reusable, durable spray bottle that attaches to pods with liquid concentrates ranging from cleaning to personal care products. The user screws the pod to the base of the spray bottle and pushes down to release the concentrate to the fill line on a built-in measuring cup. Water is added to the top of the bottle and the product is ready to use. The Replenish system is available for household cleaning products (i.e., multi-surface cleaner, dish spray) and personal care products (i.e., foaming hand soap, hand sanitizer) under the Clean Path and Clean Revolution brands (that were developed for Amazon). A starter kit is necessary which consists of the dispensing bottle and liquid concentrate pods. One refill pod makes 18 bottles of foaming hand soap while one pod makes 6 bottles of multi-surface cleaner. This is estimated to reduce the volume of plastic packaging by 90% and reduce the costs of cleaners by 50%. The Replenish bottling platform can be adapted to all different product offerings, allowing companies to white label under their own brand without any

¹¹⁹ Accessed at the website of Blueland (www.blueland.com).

¹²⁰ Accessed at the website of Replenish (<http://replenishbottling.com/>).

¹²¹ Ellen MacArthur Foundation (2020), *Reuse Rethinking Packaging*.

development costs and get to market faster with a complete reusable, concentrate-based solution. It has been estimated that there are 250,000 users on the Replenish platform globally.

4.4.3.3 Algramō (Santiago, Chile)^{122/123/124}

Algramō's circular platform consists of 2 key components: (i) refill stations (i.e., dispensing machines); and (ii) smart packaging used to dispense the product at their refill stations. With their platform, customers refill products in reusable smart packaging. Packaging is only paid for once when a customer initially uses the system. Their smart packaging is available next to their refill stations and costs 20 pesos, which must be brought on subsequent purchases. The packaging used in their platform are radio-frequency identification (RFID) tagged containers that link the packaging with their dispensers and the product that is being purchased. This technology ensures product quality and traceability allowing an identification of exactly which product was purchased at any of their refill stations, including the expiration date and the manufacturing batch number. At present, they have 80 dispensers with most of these dispensers located in Lider Supermarkets, SuperBodega Acenta Supermarkets and Sodimac Homcentres (all of which are in Chile) as well as one Lidl store in the UK (with others being added). The main (and potentially only) product sold in these dispensing machines are four varieties of Formil laundry detergent sold in a standard 875 ml format, mirroring the single-use packaging alternative. Algramō has indicated that they are working on setting up vending machines at schools and universities, minimarkets and gas stations.

Algramo also offers home delivery via electric tricycle. Users buy reusable containers and create an online account, which manages credits for refilling and stores rewards for reusing packaging that can be recouped from the dispensing machines. Users order whatever household products they need, schedule a tricycle visit and pay via an app. They can then refill their smart containers (paying by weight), eliminating waste and providing flexibility as to the amount ordered. They are now dispensing homecare, personal care and pet food. The company has launched pilots with Unilever Omo and Quix homecare products, Nestle Purina and most recently with Walmart and is now present in Santiago, New York and Jakarta. For instance, they piloted with Unilever which saw some customers refill their detergent bottle 15 times, with each refill eliminating the use of a 135-gram plastic bottle. The app platform and intelligent packaging enables customer insights, easy payment, and tracking of credits. Algramō is open to adding new brands to the system, and adapting the technology to suit established stores such as warehouses, mini-markets, and supermarkets.

¹²² Accessed at the website of Algramo (<https://algramo.com/en/>).

¹²³ Marchant, N. (2021), *This Chilean Start-Up is Revolutinizing Reusable Packaging*.

¹²⁴ Ellen MacArthur Foundation (2020), *Reuse Rethinking Packaging*.

4.4.3.4 Hepi Circle (Indonesia)^{125/126}

In Indonesia, the small-size individual packaging, known as 'sachets' is a particular phenomenon. For example, about 70% of all detergent is sold in sachets. These sachets are made from multilayers that cannot be recycled. In addition, their small format has no value to be collected and is easily missed from the collection process.

Hepi Circle is Indonesia's first refill delivery network that offers everyday cleaning products in small format reusable bottles to replace single use sachets. Customers buy a bottle of detergent at their local store, pay a deposit and with their next purchase, customers return their empty bottles. The reuse habit is rewarded with a 'hepi point', that can go towards the purchase of food or a range of products in reusable packaging. The empty bottle is cleaned and refilled at a central location, and then redistributed to the local stores, by bike, ready for the next customer. The refill and distribution to local stores is powered by women on bikes. Hepi Circle is selling products in refillable containers (bottles or boxes) in 1,000 local kiosks within 4 districts in the Surabaya and Gresik area in Indonesia. The same bottle is used across all of the local stores and products, facilitating scale, increasing efficiency, and reducing costs.

4.4.3.5 Dazz (Broomfield, Colorado)¹²⁷

Dazz's reusable spray bottle and refill system uses coin-sized concentrated cleaning tablets activated with tap water. Dazz offers a start-up kit consisting of a spray bottle/dispenser and tablets of various cleaning products. Their bottles and dispensers are made from PET plastic and designed to be reused over and over again. Their tablet packets are made from polylactic acid (corn-derived) film and are biodegradable and compostable. The cleaning product tablets offered by Dazz include window and glass cleaners, bathroom cleaners, all-purpose cleaners and foaming hand soap. Refill tablets are typically delivered by mail, with the reusable bottle only purchased the initial time when a customer begins to use the Dazz system. The company has estimated that the use of the Dazz clearing system has eliminated the need for producing close to 3 million plastic spray bottles.

4.4.3.6 Ecopod (Miami, Florida)¹²⁸

Ecopod is a smart-tech refill system (i.e., vending machine) that dispenses home care products into reusable containers. The company manufactures and installs the Ecopods at qualifying residential and retail properties. Ecopod has several refill station locations

¹²⁵ Accessed at the website of Hepi Circle (www.hepicircle.org/index.html).

¹²⁶ Ellen MacArthur Foundation (2020), *Reuse Rethinking Packaging*.

¹²⁷ Accessed at the website of Dazz (www.dazzcleaner.com/)

¹²⁸ Accessed at the website of Ecopod (<https://ecopod.us/>).

throughout Miami, Florida in apartment buildings, supermarkets, a retail center, and convenience stores. The vending machine fits into approximately the same size space as a beverage vending machine. Users bring their own Ecopod containers to refill their detergents and cleaners. Home care cleaning products offered (under the NuVe brand) include laundry detergent, bathroom cleaners, dishwashing liquid, degreaser, all-purpose cleaners, fabric softener and floor cleaners. They also partner with manufacturers, retailers, or consumer product goods companies who wish to offer their products via refill.

They also offer Ecopod Refill Van home delivery service (in select zip codes in South Florida) or curbside pickup at their facility in Miami. They also ship their refillable products throughout the U.S., but not into Canada.

4.4.3.7 Ecover (United Kingdom)¹²⁹

Ecover manufactures a wide range of cleaning products that can be refilled at stores across the United Kingdom by simply take in your empty and refilling. There are over 700 refill stations throughout the United Kingdom, such as at supermarkets and health food stores. Cleaning products offered include laundry detergent, fabric softener, stain remover, dishwashing liquid, multi-purpose cleaner, toilet cleaner, all-purpose cleaner, floor soap, window and glass cleaner, multi-action surface cleaner, bathroom cleaner and hand soap. Refills can also be bought online in bulk to store and refill from home.

4.4.4 Reuse Examples for Large Global Brands

Many of the reuse examples provided above were focused on smaller companies serving niche markets instead of global/international brands. Some of these global brands have also been active in implementing reuse options for their personal care and/or household care products, for example:¹³⁰

- Unilever launched nine reuse pilots in 2020, including rolling out a dilutable detergent liquid in Brazil that uses 75% less plastic packaging and is 20-30% less expensive for consumers, compared to buying its non-concentrated option in a 3-litre bottle.
- L'Oréal launched reuse solutions across 20 products in plastic packaging, including refillable at home serum bottles, and is planning to roll out 74 products in reusable packaging by 2022 for different formats, including bottles, jars, mascara, pencil, and dye kits. The company is also planning with Loop to launch return from home models for several of its brands, such as Garnier.

¹²⁹ Accessed at the website of Ecover (www.ecover.com/global/).

¹³⁰ Ellen MacArthur Foundation (2022), *The Global Commitment - 2021 Progress Report*.

- Natura Cosmetics indicated that it has reuse models in place for 271 product lines (10% of its total) and has set a target to expand the availability of refill options to cover 50% of all product lines (a total of 1,362) by 2025.
- Henkel AG & Co. KGaA launched 10 pilots in 2020, including setting up refill stations in the Czech Republic where customers can refill liquid detergents, fabric softeners, dishwashing liquids, or shampoos and shower gels.

4.5 Gaps and Barriers to Advancing Reusable Systems Across Canada

Section 1.3 of this report provides a detailed description of the cross-cutting consumer, manufacturer (brand owner), retailer and government barriers to advancing reusable systems. All of these barriers will apply to reusable personal care and household care packaging and are therefore not repeated in this section. The barriers specific to personal care and home care reusable packaging that were identified are as follows:

- Cleaners have specific challenges from a packaging sustainability viewpoint. Cleaning products often contain chemicals that can degrade packaging over time, so the packaging must be designed robustly enough to withstand such conditions. Packaging for foods and other less aggressive products typically do not face this challenge. In addition, unlike foods that are often consumed quickly after purchase and therefore their packaging must only contain the product for a relatively short time, cleaning products are typically kept for much longer by the consumer and therefore the reusable packaging must be designed to last much longer.¹³¹
- Fragrances (e.g., perfumes) are easy solutions to refill due to their high percentage of alcohol content, which avoids the formula's contamination due to its inherent antimicrobial properties. However, the refill challenge is significant for cosmetic products which use light, and water sensitive products. Skin care formulas are usually more sensitive and made of a variety of active ingredients. As a consequence, the skin care formula is much more complicated to established workable refillable systems that preserve the functionality and hygienic properties of the product. For example, in the case of Biotherm's Life Plankton Elixir, as well as their Life Plankton ingredient, the formula includes probiotic fractions in high concentrations (5%), hyaluronic acid and Vitamin C. In order to ensure quality and stability of the formula, Biotherm has had to create a refillable packaging process capable of guaranteeing a secure and effective formula. The refilling process takes seven minutes, is complex and has several steps. The first step is the disinfection process of the empty bottle. Before each refill, the package is cleaned with purified water to make sure it is completely empty and doesn't contain any trace of formula. After, it is dried with filtered air and sterilized with

¹³¹ Lingle, R. (2019), *Cleaner and Greener: Cleaning Products, Sustainability and Packaging*, published in *Plastics Today*.

ultraviolet light. Next, every bottle is placed in a recharging zone and refilled with Life Plankton Elixir formula. The closure is then replaced for a new one.¹³²

- Packaging directly affects a finished product stability because of interactions which can occur between the product, the package, and the external environment. Such interactions may include barrier properties of the container and its effectiveness in protecting the contents from the adverse effects of atmospheric oxygen and light. In some instances, cosmetics themselves could start to prematurely breakdown the packaging and lead to a shorter shelf life. Antioxidants and anti-aging ingredients such as Vitamin C and Retinol start to break down in the presence of air almost immediately, becoming less and less effective with each use. These ingredients are further compromised if they're also exposed to light - for example, when stored in a clear glass jar. Therefore, to package cosmeceutical formulas effectively and safely, airless pump containers are required.¹³³

¹³² Molpak (undated), *Refillable and Reusable Packaging is the New Cosmetic Challenge*.

¹³³ AO Skincare (undated), *Sustainable Packaging Trends and Challenges for Skincare Brands*.

5. Textiles (Apparel and Carpet)

5.1 Introduction

Textiles can refer to a wide range of materials and end-use applications, however this report focuses on the reuse of two categories that represent a very high percentage of the overall annual textile demand in Canada, specifically apparel and carpets. Other types of textiles not addressed in this study include mattresses, upholstery and rugs.

Apparel includes clothing (adults and children) as well as a wide range of accessories such as hats, gloves, scarves, etc. It was recently estimated that approximately 1.1 million tonnes of end-of-life apparel is disposed of annually in Canada. This despite the convenient access to an extensive array of reuse opportunities for a significant percentage of the population in Canada.

Carpet is a type of floor covering made from woven fiber, and comes in a variety of styles, patterns, and colours. Due to its cushioned surface, carpet absorbs sound, adds additional warmth, and offers a non-slip surface. Most carpets cover the whole floor in a room, as opposed to a rug, which only covers a small section. Carpets find widespread use in Canada both within households as well as commercial buildings. Carpets are mostly made of non-biodegradable fabrics, with an estimated 97% of the annual amount of end-of-life carpets in Canada being made of nylon, PET and/or polypropylene – all non-biodegradable. As with apparel, carpets are a significant source of material being disposed of in Canada, with an estimated 500,000 tonnes of used/waste carpet entering the waste sector annually, of which an estimated 479,000 tonnes flow directly to Canadian landfills.¹³⁴

5.2 Current State in Canada

5.2.1 Apparel

A very large percentage (i.e., >95% if consignment/resale stores are not included) of Canadian apparel reuse begins with non-profit and charitable partners which are largely focused on finding new owners to reuse that apparel. For charitable organizations, the textiles that are donated are generally apparel items such as clothing, shoes, handbags, etc.

¹³⁴ Cheminfo Services (2022), *Characterizing Reuse, Recycling and Disposal of Textiles in Canada*, prepared for Environment and Climate Change Canada.

Table 5: Channels Used to Collect Apparel by Charities

Channel	Description
Donation Bins	Typically with property owner’s consent.
Direct Drop-off	To thrift stores or depot locations.
Curbside	Offered to every home in given areas.
Residential Door	Offered to select homes via phone soliciting or flyers.
Drives or Events	Limited time and location.
Retail Returns or Take Back	Retailer’s over-run, returns or collected at point of sale.

Source: The Salvation Army Thrift Store (2019), *A Tipping Point: The Canadian Textile Diversion Industry – An In-depth Look at the Current Industry and the Prospects for the Future*.

Broadly speaking there are three categories of charities involved in receiving donated apparel items, specifically:

- charities/non-profits that collect and sort the donated apparel and then sell that apparel within their own thrift stores;
- charities/non-profits that collect (or use the services of a private sector collector) donated apparel and then sell that apparel (for a predetermined price based on weight.) to for-profit thrift store chains. In this instance, the charity does not operate its own thrift stores; and
- charities/non-profits that collect (or use the services of a private sector collector) donated apparel and then sell that material to organizations that do not operate thrift stores in Canada (e.g., this material can be exported directly without any attempt to sell the donated material within thrift stores in Canada or it can be sold to sorters/graders, brokers or recyclers).

Apart from reusing apparel that is donated to charities, there are other channels within Canada that divert apparel from the municipal solid waste stream and into the hands of new owners. This includes material left within “donation bins” at retail fashion stores across Canada as well as the use of consignment/resale stores, where used clothes can be sold instead of donated. Outlined in the table below is a broad estimate of the amount of apparel that is diverted in Canada annually, most of which will be reused – either in Canada or internationally. More detailed descriptions/analyses of these various reuse channels for apparel are provided in the various sections that follow the summary table.

Table 6: Estimated Amount of Apparel Diverted in Canada (2021)
(tonnes)

Type of Charitable Organization	Diverted
Charities with Thrift Stores or For-Profit Thrift Stores	229,574
Charitable Donations with no Thrift Stores	10,000
Apparel Donated at Retail Clothing Stores	<1,000
Consignment/Resale Stores	Unknown
Total	≈240,574

Source: Cheminfo estimates.

The available literature on waste/used clothing typically always references the fact that 85% of end-of-life clothes are disposed of^{135/136}, implying a 15% diversion rate. Given that there are an estimated 1.1 million tonnes of apparel disposed of annually in Canada, the 240,000 tonnes of apparel diverted annually results in an estimated diversion rate of 18% in Canada.¹³⁷ A very large percentage of this diverted apparel will be focused on reuse.

5.2.1.1 Charities with Thrift Stores

The apparel collected by charities are generally, although not exclusively, sold to new owners through the utilization of thrift stores. Thrift stores are usually operated by and for a charity or non-profit organization. Most thrift stores are donation-based. For example, clothes are donated to a non-profit organization, and then those donations are taken to the thrift shop. The items donated are then sorted and priced by volunteers or paid employees, and subsequently sent to the floor for purchase. Profits generated are typically used for some charitable purpose. Thrift stores usually accept every donation offered to them since ultimately the tagged price is meant to reflect the condition of the merchandise. As a result, thrift stores will typically have some material that needs to be forwarded to landfill versus a consignment/re-sale store¹³⁸ that only chooses items that it knows it can sell or if they do not sell, the item is returned to the customer (in the case of the consignment store).

Thrift stores aim to turn over their stock quickly and so are known to offer bargains. Items sold in a thrift store are typically sold in the same condition in which they were donated, which means the quality might be much lower than a re-sale/consignment store. Items

¹³⁵ Bick, R. et. al. (2018), *The Global Environmental Injustice of Fast Fashion*, published in Environmental Health.

¹³⁶ CBC News (2016), *Textiles are the Next Frontier in Recycling for Cities Looking to Cut Waste*.

¹³⁷ Cheminfo Services (2022), *Characterizing Reuse, Recycling and Disposal of Textiles in Canada*, prepared for Environment and Climate Change Canada.

¹³⁸ Consignment or re-sale stores are locations where people can sell or attempt to sell their unwanted apparel items instead of donating them.

spanning a wider range of quality are generally offered through thrift stores and they tend to be less expensive than re-sale/consignment stores. Individuals donating an item to a thrift store will not receive any money or a percentage of the profits if the item is sold. Rather, the store will likely provide a receipt for the donation, which can be used for personal tax deductions.^{139/140/141}

While there is likely to be well over 100 charities in Canada that are collecting donated apparel to support their cause, there are 5 major non-profit charitable organizations that operate their own thrift store chains in Canada, specifically:

- The Salvation Army;
- Goodwill Industries, which consists of five separate organizations in Canada (i.e., Goodwill Alberta, Goodwill, Ontario Great Lakes, Goodwill, Niagara, Goodwill, Amity (Hamilton, Oakville and Milton, Ontario) and Renaissance Quebec);
- The Society of Saint Vincent de Paul;
- Mission Thrift; and
- Mennonite Central Committee.

5.2.1.2 Charities Selling through For-Profit Thrift Stores

The two largest for-profit thrift store chains in Canada (that sell apparel collected through charity partners) are Value Village and Talize. Value Village has 148 thrift stores that are located in all ten Provinces in Canada and has relationships with approximately 30-40 charities in Canada to purchase the donated apparel that these charities have collected. Value Village does not operate or service any donation bins on behalf of charities in Canada – they simply purchase what charities have collected through their donation bins or other mechanisms that they have employed to collect donated apparel in Canada. Value Village does collect donated apparel directly at their thrift stores on behalf of specific charities. Meanwhile Talize operates 12 thrift stores in Canada (10 in Ontario; 2 in British Columbia) and through their Recycling Rewards operating arm, services the donation bins of their charity partners.

5.2.1.3 Charitable Donations with no Thrift Stores

Several organizations in Canada have established relationships with charities/non-profits to operate and service donation bins or to otherwise collect donated apparel on behalf of these charities/non-profits. Charities/non-profits choose to participate in these programs as

¹³⁹ 2A Thrift Superstore (undated), *The Difference Between Consignment and Thrift Stores*.

¹⁴⁰ Wroblewski, M.T. (2020), *Difference Between a Thrift Shop and a Resale Shop*.

¹⁴¹ Lopez, C. (undated), *What's the Difference Between a Thrift Shop and a Consignment Store*.

a fundraiser. Typically there is no cost to the charities/non-profits as the collection of the clothing as well as the processing and the distribution of the clothing is the responsibility of the third-party organization. The donation bins will carry the logo/name of the charity/non-profit and the charities are paid on a per pound basis for the apparel collected. These organizations will service the donation bin, collect the donated apparel and sell the material to generally non-thrift store downstream applications. For instance, this material can be exported directly or it can be sold to sorters/graders, brokers, or recyclers. Some of the major organizations in Canada that have established these types of business relationships are as follows:

- LML Trading (Digby, NS);
- Eastern Recyclers Association (Aylesford, NS);
- Ekotex (Montreal, QC);
- Envirotex Recycling (Thornhill, ON);
- Trans-Continental Textile Recycling (Surrey, BC); and
- Western Textiles and Recycling (Calgary, AB).

5.2.1.4 Apparel Donated at Retail Clothing Stores

Apparel brands have been instituting their own reuse/recycling programs. Apparel brands utilize a number of different models to operate their programs, some of which rely on reuse/recycling partners, charities, or websites for the re-sale of used clothing. The chosen models can depend on the specific products that the company is selling, the flexibility of their supply chains/reverse supply chains, and the stated goals of the program.

Many of the identified take-back programs involve brands partnering with reuse companies/recyclers, charities, or businesses focused on reverse-logistics. Three main examples of these types of businesses were identified. Along with the brands that they work with, these three businesses are as follows:

- I:CO (working with Adidas, American Eagle, H&M, Levi's, Reebok);
- SuperCircle (working with Reformation and ThousandFell); and
- Terracycle (working with Parade Underwear, LILYSILK, TEVA Sandals, ThouandFell and Carters Kidcycle).

I:Collect (I:CO) appears to be the major brand-aligned company that manages stored collected end-of-life apparel in Canada. They have stated that they collected 600 tonnes of apparel from these stores between 2013-2018 (or approximately 120 tonnes per year).¹⁴² Terracycle has agreements with several dozen brands across various industries, with five brands that produce apparel. All of the apparel brands that have recycling partnerships with

¹⁴² Ibid.

Terracycle operate their recycling programs exclusively in the U.S.¹⁴³ In Canada, Terracycle operates a “Zero Waste Box” program where a program member will pay to have a box for collecting apparel placed in their location – with the cost of the box covering the management of the collected textiles and transportation costs. This program is not brand-aligned, and the apparel collection boxes may not be located at retail stores as much as other locations.

Beyond I:Collect, SuperCircle and Terracycle, a number of brands operate their own take back programs. Some of these programs are partnered with charities that supply used clothing to a variety of causes, some of these programs are recycling programs that focus on recycling the products into feedstock for new products, and some of these programs take old clothing and resell the old clothing via used online stores. While there are expected to be many of these programs operating today in Canada, some of the larger ones include The North Face, Zara and Patagonia.

Overall, the scale of all of the brand-led programs (regardless of whether they are partnered with specialists or not) appear to be very minor when compared to the established used clothing donation/thrift store infrastructure. For example, I:Collect is expected to be the largest brand-based apparel end-of-life specialist in Canada – collecting apparel from at least five large clothing brands. However, the only data identified on the company and its operations in Canada indicates that they divert approximately 120 tonnes per year across all of the brands that they represent – which is not a significant quantity when compared to what is collected by charitable organizations in Canada.

Some recent literature indicates that the apparel resale market is expected to expand in scale significantly over the next several years (one article indicated an expected tripling in size between 2021-2025).¹⁴⁴ The literature did not specify major retailer programs as the main source of this expansion, instead it is likely that this expansion will represent an increase in reuse/resale activities across thrift stores, major retailer resale programs, consignment stores, online consignment/exchange businesses, and online marketplaces such as ebay or Kijiji. Many of the businesses involved in this evolving space are new or are not particularly well-established, and there is limited data available regarding potential intervention points to expedite the development of these new or evolving apparel resale models. It is clear, however, that major retailers are heavily involved, a recent report on resale indicates the following:¹⁴⁵

- “brands with resale shops increased 275% in 2021 compared to 2020, according to the Recommerce 100;
- 78% of retail executives said their customers are already participating in resale – slightly up from 2020;

¹⁴³ Interview with Terracycle, April 8, 2022.

¹⁴⁴ Aoun, (2022), *Big Retailers are Getting into the Secondhand Market. Will That Change How we Shop?*

¹⁴⁵ Retail Leader website, (2022), *Resale Report: Factors Driving Market Growth.*

- 52% of retail executives said offering resale is becoming table stakes for retailers; and
- 88% of retail executives who currently offer resale said it's helping drive revenue.”

The fact that major retailers are able to make money via their resale programs is a significant indicator that these types of resale programs may continue even during periods of time that are difficult economically (where some environmental programs that represent costs to a business are often discontinued). In fact, given that consumers have less money to spend during difficult economic periods and resale programs offer consumers less expensive options may indicate that this growing activity within apparel may be a resilient activity that continues to grow regardless of difficult economic conditions.

5.2.1.5 Consignment/Resale Stores

If an individual has an article of apparel that they no longer want, however they do not want to dispose of it and contribute to apparel waste they can either donate it or sell it to a consignment/resale store. Consignment stores are not donation-based. People bring their unwanted apparel to the store. Subsequently, buyers at the store sort through the items to identify which items are likely to sell based on criteria such as brand, style, quality, and timelessness. If they're not likely to sell, the items are politely declined. This makes consignment stores more selective than thrift stores, meaning that an item must be in nearly perfect condition and manufactured by a top company to be accepted. In addition, items are typically thoroughly cleaned prior to being put on the store floor. As a result, the condition of the resold items in a consignment store is usually higher quality than those found in a thrift store. This results in shoppers seeing higher prices and a focus on higher quality brands and pieces as a result. Consignment stores sell items on behalf of the original owner. This means that the owner of the apparel item receives money from the store for the apparel they sell. Most consignment stores offer 30%-50% of the final sale price to the owner of the apparel item when it is sold in their store. This financially benefits the owner as well as the shop since both are hoping to sell the goods and make money together.^{146/147/148}

Another term used in the industry is a resale store instead of a consignment store. The difference relates to the method of payout for the seller. A resale shop generally pays the seller for the items upfront and, consequently, bares the risk of sale themselves. A consignment store, however, stocks their shelves with goods still effectively owned by the seller shelves. Only when the product is sold will the seller receive a portion of the sale

¹⁴⁶ 2A Thrift Superstore (undated), *The Difference Between Consignment and Thrift Stores*.

¹⁴⁷ Wroblewski, M.T. (2020), *Difference Between a Thrift Shop and a Resale Shop*.

¹⁴⁸ Lopez, C. (undated), *What's the Difference Between a Thrift Shop and a Consignment Store*.

price as compensation. Therefore, the original owner never gets paid if the product doesn't sell.¹⁴⁹

There are hundreds of on-line consignment/resale stores where individuals can either sell their apparel, offer their apparel for sale on consignment or even exchange their apparel for “new” items. Some sources indicate^{150/151} that the online resale market is the fastest-growing sector of apparel reuse. These sources state that inflation and the rising cost of living are some of the driving factors behind this trend as consumers search for ways to purchase clothing that they can afford. Younger consumers (Gen Z and Millennial) are increasingly looking to second-hand or used apparel – and as these consumers begin to represent an increasing share of apparel-shoppers over time the trend towards reuse may continue to increase. A total of 50% of “second-hand dollars”¹⁵² are expected to come from online resale by 2024 (it is assumed that this means dollars spent on used apparel). The fact that this trend is driven by younger consumers may indicate that it will continue long-term.

Table 7: Examples of Large Online Consignment Stores Mainly Dedicated to Used Apparel and Related Items

Country	Online Store	Link
Canada	Thriftsome	https://thriftsome.ca
	Ready to Wear Again	https://readytowearagain.com
	Consign Toronto	https://shopconsigntoronto.com
US*	Thred-Up	www.thredup.com
	Swap	www.swap.com
	Flyp	www.joinflyp.com
	Poshmark	https://poshmark.com
	Depop	www.depop.com
	Tradesy	www.tradesy.com

* U.S. on-line stores will typically accept clothes from Canada as well

In addition to these on-line platforms, there are broader re-sale sites that will sell a wide range of used products in addition to clothes and accessories, such as ebay (www.ebay.ca), Kijiji (www.kijiji.ca) and Facebook Marketplace (www.facebook.com/marketplace/). There are a range of business models upon which these on-line platforms work, the nuances of which are not elaborated on in this study.

There are also several brick and mortar consignment/resale store chains in Canada where one can sell their clothes either directly or on consignment. Examples of these chains in Canada include Once Upon a Child (56 stores), Plato's Closet (41 stores), Style Encore (17

¹⁴⁹ Hed2Toe Salon & Luxury Consignment Boutique (undated), *Consignment vs. Thrift Store vs. Resale Shop in South Burlington, VT; Buying Process of Second Hand Clothing*.

¹⁵⁰ Retail Leader website, (2022), *Resale Report: Factors Driving Market Growth*.

¹⁵¹ Thred-Up, (2022), *2022 Resale Report*.

¹⁵² Retail Leader website, (2022), *Resale Report: Factors Driving Market Growth*.

stores) and National Thrift (4 stores). Plato's Closet, Style Encore and Once Upon a Child are all franchises operated under Winmark Corporation (Minneapolis, MN). Apart from these brick-and-mortar consignment/resale store chains, there will be hundreds, if not thousands, of small local thrift stores in operation in Canada – again purchasing unwanted apparel for re-sale within their store.

5.2.2 Carpets

There is very little carpet diversion (from disposal) occurring in Canada. Two carpet recyclers exist in Canada – Viking Recycling in Toronto, Ontario and Pacific Carpet Recycling in Langley, British Columbia. Carpet is not typically reused in Canada. In most cases, if a home or business decides to remove carpet and replace the carpet with either new carpet or alternative flooring the carpet is being removed because it has been deemed old/stained/damaged etc. and is therefore unlikely to be reused. However, Pacific Carpet Recycling does send a small quantity of the carpet tile that they collect to an undisclosed company in Michigan that resells the carpet.¹⁵³ This company in Michigan may apply a specialized cleaning process or may resell only to industrial clients where the appearance of the carpet is unimportant. The remainder of the end-of-life carpet that Pacific Carpet Recycling collects as well as all of the end-of-life carpet that Viking Recycling collects that is diverted is recycled – not reused.

Beyond Viking Recycling and Pacific Carpet Recycling, there are three U.S. based flooring manufacturers that have historically operated carpet recycling programs that have utilized the above two carpet recycling companies as well as their own distributor networks to collect carpet for recycling, specifically: (i) Tarkett; (ii) Armstrong Flooring; and (iii) Interface. The presence of these three flooring manufacturers in Canada (in terms of carpet diversion) is variable and in flux. For instance, Tarkett has operated their carpet recycling program in the U.S. and Canada for several years, but as of October 2021 ceased their program due to a reformulation of their products necessitating a change in their recycling line. End-of-life carpet that is collected by these three manufacturers in Canada is exported to their respective carpet recycling facilities in the U.S. – none of this diverted carpet is believed to be reused.

The diversion rate for end-of-life carpets in Canada is estimated to be 0.2%, with the majority of the small amount of carpet diverted being recycled and not reused. Therefore the reuse of end-of-life carpets in Canada is estimated to be <0.1% of the amount of end-of-life carpets generated in Canada annually.

¹⁵³ Interview with Pacific Carpet Recycling, April, 2022.

5.3 Policies, Regulations, Programs and Infrastructure that Enable or Support Reuse Systems across Canada

Extensive infrastructure and private/no-for-profit/thrift organizations already exist in Canada for the collection, sorting, cleaning, and distribution (through sales/donations/exports etc.) of used textiles. The bulk of these organizations are profiled above and will therefore not be discussed further within this section. Similarly, textile landfill disposal bans have been enacted by a number of municipalities in Canada and abroad. As these disposal bans are present in Canada as well as other jurisdictions, they will be discussed under the key initiatives in other jurisdictions section below. Aside from disposal bans, the main policy type identified in Canada regarding textile reuse were educational campaigns. These were enacted by private organizations and local governments across Canada. The following section describes how these educational campaigns function in general, and a short description of a Metro Vancouver program is provided as well.

5.3.1 Educational Programs

Educational programs have been enacted by government agencies and other organizations to raise awareness on the issue of waste textiles. These campaigns have been identified at the municipal level, state/provincial level, national level, within the private sector, at schools and universities, and elsewhere. In addition, many more general waste reduction programs or zero-waste initiatives include specific mention of textiles and describe ways to reduce a persons' clothing footprint, borrow or swap clothing, or give clothes away via donation instead of landfilling. As there are far too many educational initiatives to profile or even list within this report, this section will instead: (i) provide some general background on the content and methods used by the educational programs; and (ii) provide three brief profiles of educational programs within North America.

While many of the programs can either cover or focus on different topic areas, the main topic areas that are common to many of the programs include:

- Packages of statistics that show how much textile consumption/production has increased, and how much more waste is generated by people disposing of textiles, how much water and energy/GHGs are generated via textile production, and other metrics that clearly illustrate that textile waste is a problem and the need to reduce consumption and increase diversion/recycling;
- Guidance for consumers on how to look for higher quality clothing that is more likely to last longer, and what to look out for in terms of “fast fashion” that will wear out quickly;
- Guidance for consumers on how to care for their clothing to make sure that it lasts as long as possible – and accompanying information on how keeping clothing for a longer period of time can reduce GHG emissions and water consumption associated with the production of new textiles, etc.;

- Guidance for consumers on how to repair or alter their clothing so that they can wear it longer and discard it less often;
- Guidance for consumers on how to repurpose used clothing that no longer fits or is damaged into other applications such as household cleaning rags, scarfs, laptop cases, quilts, etc.
- Information on how clothing swaps work – and if the campaign has an on-line presence that includes community engagement – a listing of community events that include clothing swaps or charity drives; and
- Information on where clothing can be donated or recycled, and what kinds of clothing/conditions of clothing are eligible for donation.

As shown above, educational programs aiming to reduce the quantity of textiles flowing to landfills focus on both reducing consumption and on better managing end-of-life clothing when it is no longer fit to be worn or is otherwise unwanted. They manage this through providing information on the impacts of textile waste and textile production, as well as methods to enhance the longevity of clothing purchased by the public and adequately manage end-of-life or unwanted clothing outside of landfills.

5.3.1.1 Think Thrice About Your Clothes – Metro Vancouver

The Think Thrice About Your Clothes educational campaign was designed under the auspices of Metro Vancouver’s Integrated Solid Waste and Resource Management Plan, and is therefore an example of a campaign that was designed to help meet the objectives of a larger waste diversion plan.¹⁵⁴ The campaign is largely online, with information on various related community events like clothing swaps, sewing workshops, and information sessions on clothing waste being posted on the campaign website. The website has resources on reducing clothing consumption, repairing and caring for clothing, reusing or swapping clothing and places to take clothing for charity donations or recycling. The program’s website can be found here: <http://www.metrovancouver.org/thinkthrice>.

5.3.1.2 Pacific Carpet Recycling – B.C.¹⁵⁵

A small part of Pacific Carpet Recycling’s business is the collection of carpet tiles from commercial spaces that are installing new flooring and the shipment of these used carpet tiles to a cleaner/reseller in Michigan. The process is very simply and generally involves the removal of carpet tiles from the site and stacking the carpet tiles onto pallets so that they can be shipped safely (this is a significant barrier to expanding this activity, as most contractors are unwilling to undertake this additional labour). Once at Pacific Carpet

¹⁵⁴ Metro Vancouver, (2010), *Integrated Solid Waste Management Plan*.

¹⁵⁵ Interview with Pacific Carpet Recycling, October 18, 2022.

Recycling the tiles undergo a visual inspection and are then sent to Michigan for cleaning and redistribution.

Carpet tiles are more apt for reuse than rolled carpet because many of the carpet tiles in a location do not have to be cut or have their shape modified in order for the tiles to fit into a space – it is likely that only the carpet tiles around the outside of a room will need to be trimmed to size. Additionally, carpet tiles are generally designed for commercial spaces and are therefore very durable and more likely to be in a condition that allows for reuse even after a significant amount of time has passed than rolled residential carpet. Pacific Carpet Recycling indicated that much of their supply of carpet tiles comes from government buildings that have “green” or landfill diversion policies that they are working to uphold, or from certain large spaces (such as convention centers) where the businesses involved have environmental, social, and governance (ESG) requirements/policies that are designed to reduce waste going to landfill. An intervention point for NZWC could be investigating opportunities to include carpet tile removal/reuse requirements in government procurements and to raise the possibility of reusing carpet tiles from commercial spaces as an element of ESG requirements for private businesses.

5.4 Key Initiatives, Policies or Infrastructure in Other Jurisdictions

Key initiatives and policies from other jurisdictions that impact the collection and reuse of used clothing are described in sub-sections below. The project team has chosen not to focus on charities and thrift stores working to enhance the reuse of clothing in other jurisdictions because they likely bear many similarities to Canadian operations (discussed above). This is especially the case as some of the charity/thrift store operators in Canada also operate within the United States. Instead, this section has focused on: (i) extended producer responsibility schemes applied to textiles; (ii) textile disposal bans; (iii) import bans and economic disincentives applied by developing nations regarding used clothing; and (iv) other miscellaneous regulatory tools relevant to enhancing reuse opportunities for used clothing.

5.4.1 Extended Producer Responsibility

The European Union’s *Waste Framework Directive* mandates that EU member states must set up separate collection systems for used textiles and garments by January 1st, 2025, and that this waste can no longer be sent to landfill or be incinerated. Extended producer responsibility (EPR) programs will most likely be the financial instrument that achieves these requirements within various EU countries.¹⁵⁶ As a result, many EU member states are currently developing individual national EPR schemes to implement the collection

¹⁵⁶ Wilson, A. (2020), *Learnings from France on Textile Waste and EPR*, published in *Innovation in Textiles*.

obligation for used textiles.¹⁵⁷ Outlined in the table below are those jurisdictions that have already established an EPR textile program in the EU.

Table 8: Examples of Jurisdictions that Have or Intend to Implement EPR Programs for Textiles

Jurisdiction	Implementation Date/Notes
France	January 1 st , 2008
Sweden	January 1 st , 2022
Netherlands	Potential implementation date is January 1 st , 2023 ¹ . The EPR program will apply to consumer clothing, work clothing and household and home textiles.
United Kingdom	Department for Environment, Food and Rural Affairs was to consult with stakeholders on the potential for an EPR program for textiles in 2021

¹ the effective date of this measure is not yet final. Entry into force is subject to its passing through the upper and lower houses of parliament or proclamation of the Order in Council or ministerial decree and publication in the Staatsblad or Staatscourant (Government Gazette, in Dutch).

Sources:

- EcoTextile (2021), *Dutch Minister Proposes EPR for Textiles*.
- Website of Business.Gov.NL, *Fashion Chains Must Collect Discarded Clothing*.
- ExoTextile (2021), *New UK Waste Plans Propose Textile EPR Scheme*.
- Netherlands Ministry of Infrastructure and Water Management (2021), *Circular Textile Progress Report - Letter to the President of the House of Representatives of the States General Courtyard*.

If textiles cannot be landfilled or incinerated, reuse may be encouraged as a low-cost option for their management. Provided in the remainder of this section is a short description of the EPR program for textiles in France. The program in Sweden is still ramping up and detailed information on how much of the separated textiles are destined for reuse are not yet available (however, the program is to be operated with the waste hierarchy in mind – prioritizing reuse).

5.4.1.1 France¹⁵⁸

A national EPR program for textiles and footwear has been in place in France since 2008, when the organization, “Re-fashion”¹⁵⁹ was created to manage it. Through the program, companies that produce and/or sell regulated textile products can commit to implementing

¹⁵⁷ Policy Hub et. al. (2021), *Establishing EU-harmonised Rules for Extended Producer Responsibility as a Key Enabler for Championing the Transition to a Circular and Climate-neutral Apparel and Footwear Sector in the EU*.

¹⁵⁸ The information in this section was obtained from the following publication - Re_fashion (2021), *Annual Report 2020*, unless otherwise noted.

¹⁵⁹ Refashion is the organization's name as well as the title of the EPR program.

their own internal clothing collection program accredited by French authorities or pay a contribution to Eco TLC (now called Re-fashion) to provide the service for them.¹⁶⁰ Accreditation of companies began in 2009 and all companies participating in the scheme (as of 2018) elected to pay a contribution to Re-fashion.¹⁶¹

A total of 100% of the brands, companies, and producers that are putting regulated textile products on the French market are liable for mandatory eco-fees that must be paid annually. Eco-fees are fees that marketers must pay as part of the textile EPR framework in order to ensure the end-of-life prevention and management of textile products. Eco-fees are calculated via each marketer's annual declaration of the quantities of textiles and footwear that it marketed in the year immediately prior to the declaration year. In order to encourage marketers to sell more sustainable, eco-designed and easily recyclable products, Re-fashion has established a manner in which to apply “eco-modulation” to the eco-fees that operates around three major axes: (i) sustainability; (ii) integration of post-production off-cut recycled materials; and (iii) integration of post-consumer recycled materials. Supply of Textiles to the Market

There are five types of voluntary drop-off points (VDPs) used across France: (i) containers; (ii) gift drop-offs at the location of associations and thrift shops; (iii) in-store collection at shops; (iv) events-based and one-off collection (e.g. pop-up drop-off points); and (v) waste facilities. Some of the collection organizations are operating across several thousand locations while others are only focused on a handful of sites. Some operators may be commercial companies, while others are charity organizations. Similarly, some VDP owners are vertically integrated and also manage the sorting activity, while others are reselling the collected textiles to sorting operators. On-street containers remain the dominant VDP form with 78% of the number of VDPs in 2020.

An initial sorting process that identifies and separates re-usable products that will be forwarded for resale, and other sorting by material type is undertaken afterwards to enhance recycling opportunities. There are 64 sorting centres in the program, and across these locations reuse represented 56.5% of the material sorted, recycling 33.3% (i.e. garneting 23.6% and wipers 9.7%), solid recovered fuel (SRF) 9.1%, energy recovery 0.7% and disposal 0.4% (i.e. landfill or incineration without energy recovery).

Of the material sorted in France, re-use accounted for 56.6% of the total in 2020 (down 0.9% vs. 2019). The percentage for 1st choice quality items remained stable while the share of non-first choice quality textiles and footwear fell. Recycling¹⁶² accounts for 32.2% of

¹⁶⁰ Circular Clothing (2020), *Leading Through Legislation – How France’s Extended Producer Responsibility (EPR) Has Been a Game Changer for Textile Resource Recovery*.

¹⁶¹ Ibid.

¹⁶² The recycling process consists of transforming non-reusable textiles and footwear into new products such as wipers, geotextiles, fibers and plastic composites. Recycling includes: (i) garneting – non-wovens for automobiles, building, padding; (ii) cutting – professional and household wiping cloths; (iii) unravelling – yarn for spinning new textiles; and (iv) grinding – composite material, plastics, blocks, concrete.

the total amount of textiles sorted (down 0.4% vs. 2019). Volumes for garnetting remained stable but fell for wipers. The use of sorted textiles as SRF increased significantly, reaching 10% in 2020 (up 1.3% vs. 2019), while disposal with and without energy remained stable at approximately 0.8%.

Table 9: Fate of Textiles Sorted in France (50 Facilities)

	2009	2011	2014	2018	2019	2020	2020 vs. 2019
Reuse as Textiles							
1 st Choice			4.6%	5.6%	5.3%	5.4%	+0.1%
Other Choices			55.1%	46.9%	46.3%	45.4%	-0.9%
Footwear			5.3%	5.3%	5.9%	5.8%	-0.1%
Curtains/Net Curtains						0.01%	
Total	55%	59.3%	65%	57.8%	57.5%	56.6%	-0.9%
Recycling							
Garnetting	17%	21.4%	20%	22.8%	23.3%	23.4%	+0.1%
Wipers	10%	8.7%	8.3%	9.6%	9.3%	8.7%	-0.6%
Total	27%	30.1%	28.3%	32.4%	32.6%	32.2%	-0.4%
Recovery as SRF	0%	0%	4.8%	8.6%	9.1%	10.4%	+1.3%
Disposal							
With Energy			0.7%	0.3%	0.3%	0.4%	+0.1%
Without Energy			1.2%	0.9%	0.5%	0.4%	-0.1%
Total	18%	10.6%	1.9%	1.2%	0.8%	0.8%	
Total	100%	100%	100%	100%	100%	100%	

Source: Re_fashion (2021), *Annual Report 2020*.

As outlined in the table above, of the used clothing and footwear collected and sorted in France in 2020, 56.6% (or 73,000 tonnes) was destined for continued use. In other words, these textiles will be resold in the second-hand clothing market (not-for-profit associations or second-hand stores), in France and abroad. It is estimated that 95% of this material is exported to approximately 20 countries while the remaining 5% is resold in France. The largest export destinations in terms of volume were located in Northwest Africa and Sub-Saharan Africa.

Reuse rates have been declining (65% in 2014 vs. 56.6% in 2020), as collection volumes continue to rise. The more the public sorts and separates used textiles from their household waste, the more the ‘reuse quality’ diminishes. This trend towards sorting both more and better, which the public authorities have strongly encouraged, will necessarily redirect the recovery model away from its current primary focus on ‘reuse’ towards greater recycling.

5.4.2 Disposal Bans

The implementation of disposal bans on textiles from residential waste collection is not common in North America. The jurisdictions that have implemented this option are outlined in the table below. These disposal bans are typically implemented as a result of waste composition studies that have identified the significant percentage that textiles, considered to be a recyclable material, represent within the waste disposal stream. Typically, in conjunction with these disposal bans are other measures that facilitate the recycling of textiles, for instance the introduction of curbside recycling of textiles, an increase in the number of donation bins available in the jurisdiction and educational programs to communicate the existence of the ban and options available to residents to recycle their textiles.

Table 10: Examples of Jurisdictions that have Implemented a Disposal Ban on Textiles

Jurisdiction	Implementation Date	Regulation
Colchester County, NS	April, 2016	Chapter 33 Solid Waste By-Law
Markham, ON	April, 2017	By-Law 32-95
North Bay, ON	April, 2020	By-Law No. 2020-30
Massachusetts	November, 2022	310 CMR 19.000

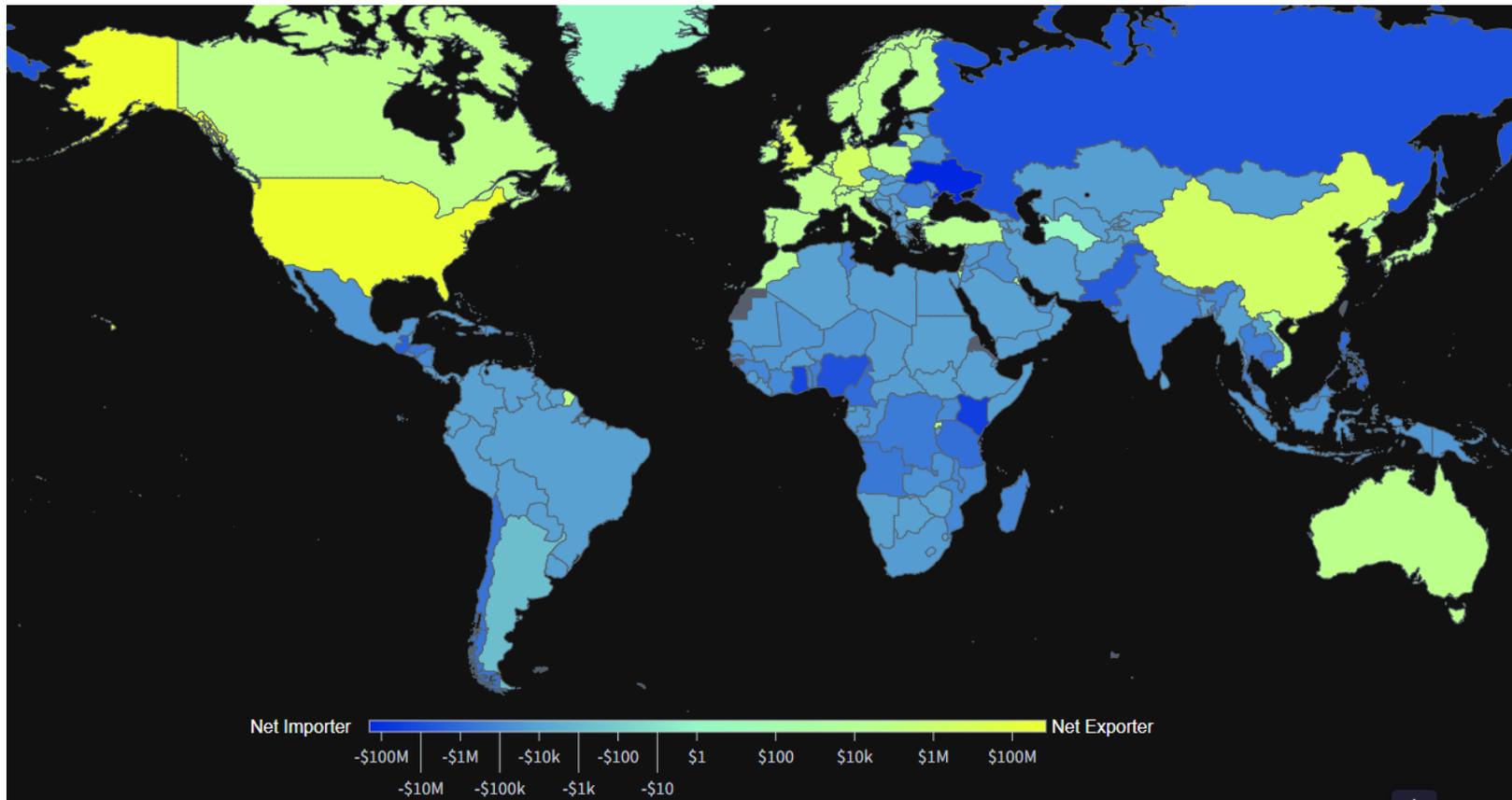
Source: Cheminfo Services.

5.4.3 Import Bans and Economic Disincentives

Import bans and tariffs are both instruments designed to limit the import of used clothing. These measures have been implemented within several countries in Africa and in China, though for different purposes. The import bans and tariffs imposed in African nations have largely been either due to COVID-19, or to assist in the development of domestic clothing manufacturing sectors (new clothing produced domestically has not been able to compete – on price – with imported used clothing). China instituted their policies in order to improve the quality of the used textiles that they were receiving and thereby enable better recycling opportunities through a higher-quality waste stream.

These import bans and disincentives are important to note because (as noted under the France EPR program section above) much of the textiles slated for reuse are reused in developing nations and may have impacts upon their domestic textile manufacturing businesses and waste management sectors. It is likely that significant volumes of donated textiles that are not sold in these countries are landfilled or open-burned. Further details on each individual import ban or disincentive are not provided within this report, as the specifics of the bans are not particularly relevant as much as the existence/impetus behind the bans is. However, a diagram indicating net exporters and net importers of used clothing is shown below to provide an indication of where clothing donated in Canada and other developed nations is sent.

Figure 5: 2019 Net Trade Balance for Used Clothing – HS 6309



Source: The Observatory of Economic Complexity website, *Used Clothing 6309 (Harmonized System 1992 for 4-Digit)*

5.4.4 Regulations

There are a number of regulations discussed elsewhere in this report that have an impact on the generation or management of textiles, including the discussion of the CARE stewardship program for carpets in California (created under California’s Assembly Bill 2398 in 2020) and measures such as disposal bans. This section is therefore a “catch-all” section that discusses a small selection of other regulatory measures designed to reduce the volume of textiles going to landfill each year. These regulations include: (i) France and the City of Montreal banning the disposal of unsold clothes/other goods (see below); (ii) the European Union requiring that all countries separate textiles from the MSW stream by 2025; (iii) taxation changes that encourage people to get their textiles or other goods repaired instead of disposing of them; and (iv) design for recycling initiatives.

5.4.4.1 *Bans on Burning Unsold Merchandise*

France has recently (2020) passed new legislation called “Projet de loi relatif à la lutte contre le gaspillage et à l’économie circulaire” – or Bill on the fight against waste and the circular economy.¹⁶³ Similarly, Montreal recently announced that they will be banning the landfilling or disposal of unsold clothing and waste generated during production (as well as unsold food) as part of their zero-waste plan.^{164/165}

These approaches have been developed due to what has been described as fashion’s “dirtiest open secret.”¹⁶⁶ In 2018, luxury giant Burberry was caught destroying £28.6m of unsold merchandise, revealing a pervasive industry practice. Fashion brands incinerate unsold goods in order to protect their exclusivity and value.^{167/168} Other brands that have been found to incinerate their own merchandise to keep their exclusivity include Louis Vuitton, Nike, Urban Outfitters, Walmart, Eddie Bauer, Michael Kors, Victoria’s Secret, J.C. Penny, and likely many others.¹⁶⁹

The main methods that are used to destroy unsold clothing (and other merchandise) is burning and shredding – though landfilling also occurs. Incinerating (waste to energy) is preferred because brands can then claim that destroying their merchandise is recycling, and use the incineration of unsold clothing for greenwashing.¹⁷⁰

¹⁶³ TheFashionLaw website, (2020), *New French Legislation Prohibits the Destruction of Unsold Goods, Including Clothing*.

¹⁶⁴ CTV News, (2019), *Montreal Wants Stores to Stop Throwing Out Unsold Food, Clothes*.

¹⁶⁵ CBC News, (2019), *How the City of Montreal Plans to go 'Zero Waste'*.

¹⁶⁶ The New Fashion Initiative (2019), *New Apparel Policy Group Proposes a Ban on Textile Waste*.

¹⁶⁷ Ibid.

¹⁶⁸ The Guardian (2019), *France to Ban Destruction of Unsold Consumer Goods*

¹⁶⁹ Vox, (2018), *Why Fashion Brands Destroy Billions’ Worth of Their Own Merchandise Every Year*.

¹⁷⁰ Ibid.

As all of the burned clothing is brand new, it stands to reason that the clothing is ready to be reused

5.4.4.2 E.U. Textile Separation Law

The revised *Waste Framework Directive* ((EU) 2018/851) will require all Member States to collect its textile waste separately by 2025. This regulation is expected to reduce the amount of textile waste ending up in residual waste and increase the amount that is available for reuse or recycling.¹⁷¹ The *Waste Framework Directive* also requires member states to promote repair and re-use of textiles. The European Commission is currently supporting member states in working to design the framework for separate collection for textiles via conducting a study on the technical, regulatory, economic and environmental effectiveness of textile fibres recycling, with a view to identify promising areas for future research and innovation projects, as well as related challenges and existing regulatory barriers and to inform policy options.¹⁷²

5.4.4.3 Value-Added Tax Reductions for Repair and Reuse

Several of the educational programs designed to help reduce textile waste (described under the “Educational Programs” section in this chapter) contained guidance for consumers on how to identify quality products that could be expected to last longer, and how to repair textile products instead of disposing of them. As required under the *Waste Framework Directive* in the European Union, several member states (and other countries separately) are using market-based incentives to make repairing products more economically attractive.

Some of these incentives are tax breaks for services that include repairing products, and some of them are subsidy approaches that are designed to reduce the cost of repairing goods by covering some of the cost. One of the instruments identified reduces taxes on any small businesses whose activities lead to reuse of a product. The main initiatives that were identified were described in a European Environment Agency report, and are listed below.

- “reduce value added tax on the repair of bicycles, shoes, leather goods, clothing and electrical appliances, from 25% to 12% as of 1 January 2017 in Sweden and also in Austria from 20% to 10% from 1 January 2021;
- reduce cost of repair through a 50% deduction of labour cost for repairs of textiles through government subsidy (Sweden);

¹⁷¹ European Environment Agency, (2021), *Progress Towards Preventing Waste in Europe – the Case of Textile Waste Prevention*.

¹⁷² European Parliament Website, (2020), *Parliamentary Questions – 16 November 2020 – Answer given by Mr. Sinkevičius on behalf of the European Commission Question reference: E-004882/2020*.

- low value added tax on the repair of clothing, e.g. of 6% (Belgium); and
- reduction in patent taxes for small businesses whose activities lead to the reuse of a product (e.g., repair of shoes, furniture and clothing) (Bulgaria).¹⁷³

5.5 Gaps and Barriers to Advancing Reusable Systems across Canada

Barriers to the reuse of carpet and the reuse of other textiles (such as clothing) vary, and therefore these barriers will be discussed separately. Carpet is almost never reused within Canada nor any other jurisdictions for several reasons:

- carpet is often removed because it is old/damaged/stained and needs to be replaced – there is no demand to reuse this type of carpet;
- when carpet is installed, it is sized for specific areas, and therefore trying to reuse this carpet in areas that are sized differently (different shape/size of room) would be very challenging and uneconomical; and
- there are very few businesses in Canada (or elsewhere) that collect carpet with the intention of trying to recycle it – let alone reuse it – and therefore most carpet that is removed from a building is thrown directly into a dumpster with no opportunity for reuse.

There have been no identified programs or businesses focused on trying to reuse carpet – though there are several programs operating to recycle the carpet instead.

The reuse of used clothing has the following barriers:

- sorting and grading of textiles rely on expensive manual labor, no harmonized sorting standards or criteria exist, challenging downstream markets;
- textile circularity is not economical in the current system as large-scale reuse and repair is hindered by high transportation, labor, and processing costs and decreasing quality and cost of new products;¹⁷⁴
- demand for used clothing in developed countries generally (including Canada) is relatively low, as new clothing is often inexpensive (fast fashion) – this has led to a situation where much of the used clothing collected via charities or thrift organizations in the developed world are exported to developing countries, with the following associated barriers/concerns;

¹⁷³ European Environment Agency, (2021), *Progress Towards Preventing Waste in Europe — The Case of Textile Waste Prevention*.

¹⁷⁴ National Institute of Standards and Technology, (2022), *Facilitating a Circular Economy for Textiles Workshop Report*.

- some developing nations are instituting import bans and economic disincentives to arrest the flooding of their markets with cheap used clothing – as the clothing that is not sold is sent to landfill or open-burned;¹⁷⁵
- the import bans are also being instituted to try and protect domestic textile manufacturing markets – which cannot compete at a cost-level with donated clothing; and
- taking used clothing and shipping it around the world may conflict with goals focused on reducing greenhouse gas emissions;
- the practice of burning unsold merchandise in order to maintain exclusivity and prevent less expensive clothing from a given brand enter the market is commonplace, and prevents the reuse (or use – depending on the viewpoint) of clothing every year.

In addition to the charity/thrift store reuse system other opportunities for reuse in Canada are somewhat limited. Two companies – Brands for Canada and DeBrand – work with brands to find opportunities to reuse clothing including uniforms from jobs. They do this by “de-branding” whereby they take uniforms and branded apparel that must usually be destroyed (often for security purposes – as with airline uniforms) and remove the branding and insignias from it so that it can be distributed to people in need as new apparel. Brands for Canada are currently trying to work with the Canada Border Services Agency (CBSA) to access counterfeit items so that the items can be de-branded and distributed instead of landfilled – but have had a great deal of difficulty accessing the correct personnel at either the CBSA or ECCC to speak with.¹⁷⁶ Therefore, the destruction of identified counterfeit apparel could be considered a barrier to reuse in Canada as well.

¹⁷⁵ Some additional information on these import bans is provided within the “Regulations” sub-section of this chapter.

¹⁷⁶ Interview with Brands for Canada, April 26, 2022.

Textiles Key Points

- Carpet tiles are far more likely to be reusable than rolled carpeting due to the fact that many of the carpet tiles in a room do not have to be cut to a certain shape to fit a specific room, and because they are generally built to be far stronger and more durable than rolled carpet. An intervention point for NZWC could be investigating opportunities to include carpet tile removal/reuse requirements in government procurements and to raise the possibility of reusing carpet tiles from commercial spaces as an element of ESG requirements for private businesses.
- Apparel resale through brands investing in resale programs and large online consignment stores is a significant growth area for textiles reuse – and yet still represents a very small fraction (<5%) of clothing collection for reuse in Canada. A recent survey of industry executives running resale programs for their brands indicated that 88% of retail executives find that these programs help to drive revenue¹ – which speaks well to the continuing existence of these programs (even during, and maybe especially during harder economic periods) and the continuing expansion of these programs. Identifying effective intervention points to assist or encourage the expansion of these programs could be a project for the NZWC to consider.
- As required under the *Waste Framework Directive* in the European Union, several member states (and other countries separately) are using market-based incentives to make repairing products more economically attractive. Making products last longer via repair is an important element of reuse, and strengthening Canada’s garment repair/remanufacturing/craft sector could be a strong way to drive small-business employment and encourage reuse.
- Tax breaks or exemptions for certain types of businesses have been one of the main “carrot”-type policies adopted in European nations to help drive reuse. For example, one of the instruments identified reduces taxes on any small businesses whose activities lead to reuse of a product.
- EPR programs are being rolled out or developed across Europe to help and finance separate collection systems for textiles and garments that are required under the *Waste Framework Directive* by January 1st, 2025. Further developing an understanding of Canada’s current used apparel collection infrastructure, understanding the supporting mechanisms (such as landfill bans for textiles) that could support demand for more collection, and then identifying where/how further investments can be made to support the development of collection infrastructure that leads to actual local reuse could be activities that the NZWC could undertake that would support the eventual development of EPR for textiles via better identifying how funds would be best utilized.

6. Construction, Renovation and Demolition Materials

6.1 Introduction

Construction, renovation, and demolition (CRD) wastes are very rarely reused in Canada or elsewhere. Construction materials are in general being used for the first time, as opposed to being ‘reused’, and therefore are largely irrelevant. Renovation waste materials are those materials that are being replaced through renovation – and these materials are often being replaced because they are old, worn, or otherwise unsuitable for use. No examples of materials reuse from renovation activities were identified. Similarly, no real examples of demolition waste being reused were identified. There are many examples of renovation/demolition waste being recycled (or downcycled) in Canada and abroad through the hauling of CRD wastes to specialized CRD processing facilities. These facilities sort and process CRD waste and generate useful products – often achieving recycling efficiencies of over 90%.¹⁷⁷

Demolition activities (both when demolishing certain parts of a structure during a renovation or the entire structure during a demolition) are inherently destructive and often preclude reuse. Instead, reuse tends to occur when structures are ‘deconstructed’ rather than demolished. This practice involves approaching a renovation or demolition activity with the mindset of taking things apart and keeping them intact instead of simply removing them as quickly as possible via any means necessary. Deconstruction is a methodical process that can provide reuse value, but takes much longer than demolition and is very labour intensive (driving costs of deconstruction to more than double costs of demolition).¹⁷⁸ Deconstruction is not widely practiced. This section will examine reuse activities made possible through utilizing deconstruction as opposed to demolition (still considered a part of the CRD sector). Downcycling or recycling activities (such as the reuse of reprocessed asphalt or aggregate) will not be covered.

Encouraging deconstruction and subsequent reuse requires an ecosystem that includes: (i) deconstruction companies; (ii) re-sellers of products that have been retrieved from deconstruction activities; (iii) builders and value-adding businesses (such as wood product manufacturers that are willing to purchase wood from deconstruction and make value-added products with it) that are willing to pay premium costs to purchase end-of-life materials from deconstructed structures; and (iv) standards organizations (such as LEED or the International Living Future Institute) that are able to create certification schemes for

¹⁷⁷ Cheminfo Services, (2022), *Plastic Waste Management in the Construction, Renovation, and Demolition Industry in Canada*.

¹⁷⁸ Green Building Advisor website, (2018), *Why Deconstruction Makes More Sense than Demolition*.

reuse that add value to projects that prioritize reuse; and (v) architects and other businesses that are willing to require builders or contractors to prioritize reuse or work with organizations that prioritize reuse during the bid development process. Unlike demolition, deconstruction only works if the materials that are being harvested can be effectively reused – which requires the existence of additional organizations/stakeholders that share the same goals and manage different elements of the deconstruction/value-addition/purchase and rebuild process.

6.2 Current State in Canada

“Across Canada, about 84 per cent, or four million tonnes of construction waste, ends up in landfills each year. Even in a forward-thinking jurisdiction like Metro Vancouver, less than one per cent of construction and demolition materials are reused.”¹⁷⁹ Very little deconstruction is occurring in Canada, with Unbuilders (a company founded in 2018, based in Metro Vancouver that employs 30 people) being the country’s largest and best-known deconstruction business.^{180/181} This 5-year-old 30-person company does not represent a significant proportion of Canada’s total demolition sector, nor does it manage a significant proportion of the CRD waste sent to landfills in Canada annually.

There are other businesses in Canada that may participate in some deconstruction or selective deconstruction processes – but overall most businesses choose the most economically sensible option in most cases – which severely limits the potential of deconstruction activities going forward without extensive policy intervention.

There are organizations that accept and resell new and used building materials in Canada, such as Habitat for Humanity ReStores. However, at this time these businesses are not operating in widescale partnerships with major demolition contractors across Canada for deconstruction projects. Instead, they are likely operating with smaller scale contractors – and may not purchase/offer for sale the full scope of materials that would be gathered during a full deconstruction.

¹⁷⁹ Vancouver Sun, (2021), *A Canada-Wide Deconstruction Industry Should be Part of Our ‘Build Back Better’ Recovery*.

¹⁸⁰ Caulfield, (2021), *Deconstruction: A New Way to Make Old Buildings Disappear*.

¹⁸¹ Unbuilders website, *Homepage*.

6.3 Policies, Regulations, Programs and Infrastructure that Enable or Support Reuse Systems across Canada

As noted above, there is very limited deconstruction activity in Canada and policies, regulations, programs and infrastructure to enable deconstruction are rare/in their infancy. The “School of Construction and the Environment at BC Institute of Technology (BCIT) is offering a part-time distance and online learning micro-credential called Applied Circular Economy: Zero Waste Buildings (“ACE”).”¹⁸² Additionally, Zero Waste Canada (the Canadian national affiliate of the Zero Waste International Alliance) is offering a Zero Waste Construction Certification (pilot stage).¹⁸³ This certification does not apply to deconstruction activities, and instead applies to construction work. The certification seeks to recognize when construction projects are designed and executed so that when the building is eventually deconstructed, it can be done relatively easily and efficiently.

Beyond these educational/certification initiatives, some municipalities have taken action on deconstruction projects. As early as 2011 the city of Lethbridge (AB) had already undertaken 6 deconstruction projects with local contractors – diverting 90% of waste or more in 5 out of those 6 projects.¹⁸⁴ In Vancouver, permits for demolition can include deconstruction or recycling requirements depending upon the age of the house. Homes built before 1950 must have 75% of non-hazardous materials recycled. That minimum is 90% if the home is deemed a ‘character house.’ Houses from 1910 and older must be deconstructed and have a minimum wood salvage of three metric tonnes.¹⁸⁵ The City of Victoria has also introduced a Demolition and Deconstruction Waste bylaw¹⁸⁶ that targets wood specifically (with a target of 40 kilograms per square foot on single-family dwellings and duplexes built before 1960), and the City of North Vancouver has a similar wood-specific bylaw targeting certain homes built before 1950.¹⁸⁷

6.4 Key Initiatives, Policies or Infrastructure in Other Jurisdictions

This section contains information on initiatives and policies focused on deconstruction/reuse in jurisdictions outside of Canada. Deconstruction activities are still limited, and are more of a niche practice than a strategy with any kind of widespread adoption.

¹⁸² Caulfield, (2022), *BCIT Introduces New Deconstruction Micro-Credential*.

¹⁸³ Zero Waste Canada Website, *Zero Waste Construction Certification*.

¹⁸⁴ City of Lethbridge, (2011), *City of Lethbridge Facility Services Deconstruction Initiative*.

¹⁸⁵ City of Vancouver Website, *Demolition Permit with Recycling and Deconstruction Requirements*.

¹⁸⁶ City of Victoria website, *Construction Waste*.

¹⁸⁷ CBC News website, (2022), *New Bylaw Aims to Save Wood from the Landfill During Home Demolitions in North Vancouver*.

6.4.1 Initiatives

This section will cover some of the organizations (educational institutions, trade associations, non-governmental organizations, certification bodies, etc.) focused on reuse. Some of these organizations are not specifically focused on reuse, but include reuse as an important aspect of their overall mission. There are too many businesses or non-profit organizations focused on reuse or the value-adding/resale processes associated with deconstruction globally to identify or list all of them, but some of the organizations listed below have membership directories that list further stakeholders.

Build Reuse

This registered non-profit is an industry association that represents businesses and other stakeholders active in the deconstruction/reuse sector. They have a deconstruction training standards workgroup, a policy/advocacy and data committee, and plan conferences each year to support the reuse of building materials from deconstructed structures. They have also developed a national registry of deconstruction trainers to provide transparency and clarity around the qualifications of training platforms out there and have published best practice guides to help businesses looking to reuse materials. Their website contains a comprehensive training textbook on deconstruction and they are working to develop a deconstruction training program that they can then offer to aspiring deconstruction contractors. Their membership directory contains nearly 70 entries, providing information on stakeholders involved in every aspect of the deconstruction/value-addition/sales/reconstruction process.

Better Futures Minnesota

This organization trains men recently released from prison in deconstruction operations and operates a warehouse containing materials from deconstruction operations. They offer deconstruction services in the Minnesota area and materials from deconstruction operations are harvested and re-sold at their warehouse.

Re:Purpose Savannah

This women-only company in Georgia is operated by a non-profit (Emergent Structures) and dedicated to deconstructing historic buildings that would have otherwise been demolished. They focus not only on preserving the materials for reuse but on preserving the history of the structure through extensive documentation. They also supply deconstruction training through their apprenticeship program. Finally, they operate a yard through which they sell the materials that are harvested through deconstruction.

Project RE

Project RE is a Pittsburgh-based fabrication center for value added products ranging from furniture to buildings and has been formed via a partnership between three non-profits. They work with architects, designers, and tradespeople/craftsmen/women and both new and used materials to make value-added products. While not directly involved in deconstruction activities, Project RE represents the second phase of the process whereby used materials from deconstruction projects are transformed into value-added projects that can fetch higher prices and become desirable materials for reuse.

The Reuse People of America

The Reuse People of America started in 1993 with a building-materials drive to aid flood victims in Tijuana, Mexico. After a successful drive, the main actors decided to start a non-profit used building distribution center in San Diego. After experiencing a shortage of materials, they began a deconstruction operation to help supply their used building materials distribution center. They have trained and certified over 570 people in deconstruction (via their ReUse Institute), operate several warehouses filled with building materials from deconstruction projects, and offer both deconstruction services/training and consulting.

International Living Future Institute – Living Building Challenge

The International Living Future Institute has developed a Living Building Challenge standard (now on version 4.0) that addresses materials circularity. The standard is not widely adopted or employed, but the development of certifiable standards is a key to industry adoption, as it allows stakeholders to indicate that they align with certain standards and can be used for marketing purposes. Additionally, if standards become widely recognized in industry and by governments financial incentives can be attached to those projects that meet the standard thereby encouraging builders, architects, and other stakeholders to try to attain the standard. Some of the main reuse aspects of the standard include:¹⁸⁸

- All projects must strive to reduce or eliminate the production of waste during design, construction, operation, and end of life in order to conserve natural resources and to find ways to integrate waste back into either an industrial loop or a natural nutrient loop;
- All projects must feature at least one salvaged material per 500 square meters of gross building area or be an adaptive reuse of an existing structure;
- All projects must create a Materials Conservation Management Plan that explains how the project optimizes materials in each of the following phases:
 - Design Phase, including the consideration of deconstruction and appropriate durability in product specifications.

¹⁸⁸ International Living Future Institute, (2022), *Living Building Challenge 4.0 Standard*.

- Construction Phase, including product optimization and collection of waste materials for reuse or recycling.
- Operation Phase, including a collection plan for extra consumables and durables.
- End of Life Phase, including a plan for adaptable reuse and deconstruction.

All projects must divert waste material from the landfill to the following levels (by weight or volume) during construction:

MATERIAL	MINIMUM DIVERSION RATE
Metal	99%
Paper and cardboard	99%
Soil and biomass	100%
Rigid foam, carpet, and insulation	95%
All others - combined weighted average ²⁹	90%
Demolition Waste	80%

Source: International Living Future Institute, (2022), *Living Building Challenge 4.0 Standard*.

- All project types must provide dedicated infrastructure for the collection of recyclables and compostable food scraps.
- Projects located on sites with existing infrastructure must complete a pre-building audit that inventories available materials and assemblies for reuse or donation.

Nationwide Foam Recycling¹⁸⁹

Nationwide Foam Recycling recycles EPS, XPS, polyisocyanurate foam and composite foam insulation board. Composite foam insulation board consists of one of the three previously listed foams laminated to or between a layer(s) of fiber board or concrete. The company primarily focuses on large commercial re-roofing projects and are said to be North America's largest foam insulation board recycler. Many of the products that it gathers are recycled as opposed to reused, however the market for post-consumer XPS foam insulation is the re-use market. None of this material is recycled. This is the same for polyiso foam insulation – all of it is re-used. The re-use is as an insulation board. The post-consumer XPS is distributed through their normal distribution channels, which is a company called Insulation Depot.

6.4.2 Policies

The main policies identified encouraging deconstruction have been municipal ordinances that require certain projects to deconstruct as opposed to demolish certain old buildings. Among the cities that already have deconstruction ordinances are Milwaukee, WI; Palo

¹⁸⁹ Interview with Nationwide Foam Recycling, December 10th, 2021.

Alto, CA; Pittsburgh, PA; and San Antonio, TX.¹⁹⁰ Portland, Oregon also has a deconstruction program, which may have been the first deconstruction program undertaken in the United States. Short descriptions of the deconstruction programs in Palo Alto and San Antonio are provided below due to some characteristics they possess that are unique.

Palo Alto: Palo Alto requires residential and commercial structures that are being demolished to comply with deconstruction, salvage for reuse and source separation of materials requirements established under their source separation guidelines.¹⁹¹ Deconstruction requirements were put into place alongside source separation and hauling requirements for both construction and deconstruction projects. Source separation requirements enhance recycling and reuse opportunities by ensuring that materials are source-separated into categories on the worksite. The tracking of waste from these sites is integrated with the permitting process and the weight-scales at local waste management centers through a third-party company called ‘Green Halo’. This ‘Green Halo’ system is also used to track receipts from donating reusable materials to charity – which is how compliance with deconstruction requirements can be tracked. The city requires the use of approved reuse organizations to provide deconstruction surveys – but at present only one company is approved (The ReUse People – briefly profiled under initiatives above). The deconstruction surveys are meant to identify those materials that can be reused, those that be recycled, and those materials that are eligible for landfill. After the survey is complete, the deconstruction must be undertaken in compliance with the materials requirements identified in the survey and tracked via the Green Halo system. Policymakers in Palo Alto noted that obtaining compliance from waste haulers regarding source separation and tracking remains an ongoing challenge, and that a light-handed approach has been necessary as construction/deconstruction companies adapt to an entirely new approach. It is important to note that the source-separation requirements were designed in cooperation with local waste management centers in order to ensure that the requirements reflected existing infrastructure and the ability of waste management facilities to process materials for high recycling/reuse rates.

San Antonio: The San Antonio Deconstruction Ordinance requires deconstruction be practiced instead of demolition on certain properties – it is being brought into effect in phases. Phase 1 comes into effect in October 2022, and applies to city-executed demolitions for: (i) “Residential single-family structures, multi-unit structures with four (4) units or less, and accessory structures that were constructed on or before December 31, 1920, regardless of zoning overlay; and (ii) Residential single-family structures, multi-unit structures with four (4) units or less, and accessory structures that were constructed on or before December 31, 1945, and that have either: been locally designated as historic and carry a historic zoning overlay (H, HL, HS, or HE); or, are located within a Neighborhood Conservation District (NCD) and carry a NCD zoning overlay.” Phase II comes into effect in January 2023, and keeps the same requirements (for dates and building-types) but

¹⁹⁰ Prevost, (2021), *Sustainability Advocates Ask: Why Demolish When You Can Deconstruct*.

¹⁹¹ Government of Palo Alto, (2020), *Detailed Construction Materials Guide*.

expands the scope to cover all demolitions as opposed to just city-executed demolitions. Finally, phase III comes into effect in January 2025, and applies to all demolition permits for the above categories of housing – from 1945 onwards for the first category (increased to 8 units or less) and 1960 onwards (increased to 8 units or less) for the second category. This phased approach has the following advantages:

- by starting with city projects, the municipality has the ability to monitor and be involved in the deconstruction/resale project from the beginning and help to foster growth in these areas and better understand the challenges and barriers to deconstruction/reuse (and potentially remediate some of these barriers) before more sectors are opened to deconstruction requirements;
- by slowly increasing the number of units that may be required to deconstruct under the ordinance, private-sector businesses have more time to monitor the ongoing opportunities, speak with the city/other stakeholders regarding how they can be involved, and prepare for higher volumes of available business; and
 - on a related note – deconstruction/reuse requires an entire ecosystem of actors, and providing more time for the development of this ecosystem via phased-steps should allow the ecosystem to grow and evolve to meet capacity instead of having significant demand come from nowhere and not giving businesses time to adapt.

San Antonio also has requirements regarding materials, nails, screws, etc. being removed by hand to the fullest extent possible and encouraging salvaging materials. The following must be documented through the deconstruction process to ensure that the deconstruction occurs properly:

- photographs of deconstruction in progress, to be taken weekly at a minimum;
- itemized receipt of materials and quantities donated to a non-profit or community organization;
- itemized receipt of materials and quantities sold;
- itemized list and photographs of salvaged material that will be re-used on site or at another site;
- transaction receipt or weight tickets for the disposal of hazardous material abated during the course of deconstruction; and
- transaction receipts or weight tickets for all materials taken to a transfer facility, material recovery facility, and/or landfill.

The city conducts contractor training, runs a deconstruction think-tank in order to identify more ways to enhance reuse possibilities, and runs a material circularity for sustainable cities lecture circuit designed to bring more awareness to industry representatives and other interested stakeholders.

Key Points – Policies to Encourage Deconstruction and Reuse

- Deconstruction policies are the main policy instrument in place, with the intent being that businesses will independently undertake activities to ensure that materials are effectively reused;
 - Tax exemptions for donating materials to charities are supposed to support the affordability of deconstruction activities (along with the actual resale/reuse of more valuable materials) – this could potentially be supported further via other financial incentives for property owners/construction companies/project managers that opt to deconstruct instead of demolish;
 - Palo Alto indicated that they have little or no visibility on what happens to reusable materials after they are donated, and are not certain that they are always reused. Policymakers in the municipality indicated that ensuring the actual reuse of materials remains a major barrier – architects and builders need just-in-time materials of standard sizes and types for their builds – which is not a model amenable to reusing materials that arrive irregularly from deconstruction activities.
 - Two models for advancing the reuse of materials from deconstruction (beyond donation to charities) were identified: (i) an ‘upcycling’ center in cooperation with tradespeople, craftspeople, architects, schools, artists, etc. where materials from deconstruction can be provided to the center for use in various upcycling activities and for training/apprenticeship purposes (e.g., Project RE); (ii) an online marketplace model (surplus/reuse exchange) where materials are catalogued, stored and advertised online for resale – the municipality of San Francisco is working with a company called ‘Rheaply’ to create an online marketplace for their materials from deconstruction activities.
- Some jurisdictions have opted to support reuse and resale not simply through deconstruction requirements but also through supporting training/accreditation of deconstruction experts and supporting businesses that sell materials salvaged from reconstruction for the purposes of reuse – perhaps buyers of salvaged materials from these locations could be provided with tax exemptions or incentives in order to make the purchase and integration of salvaged materials more economically attractive;
- Accreditation requirements or only selecting specific companies with expertise in deconstruction for the provision of deconstruction surveys can be a bottleneck. If there are insufficient businesses that can undertake this service than applications for these surveys can pile up. Given how long/the administrative burden that can be associated with the permitting process (and the need for deconstruction surveys to be inserted into this process) it can be important to ensure that there are sufficient personnel available to undertake deconstruction surveys/activities. Additionally, administrative burden/capacity at the municipal level should be strongly considered before undertaking a deconstruction initiative.
- A phased approach to a deconstruction ordinance was noted in one jurisdiction, which likely would have provided private stakeholders within the jurisdiction with more time to adapt their business plans to new requirements and respond to new opportunities before the scale of material that needed to be handled ramped up.
- Deconstruction requirements that focus on weight % of diverted or recycled/reused materials can be circumvented through focusing on high-weight materials such as concrete and wood (grinding concrete for aggregate, chipping wood for wood chips). This can often result in very little reuse. Reuse of certain materials should be specified through an instrument like a deconstruction survey.

6.5 Gaps and Barriers to Advancing Reusable Systems across Canada

There are a number of barriers to expanding the deconstruction/materials reuse of end-of-life structures (or renovation wastes) in Canada. First and foremost is the fact that so many stakeholders need to be involved and that an entire ecosystem must exist for any individual element of the system to work. If deconstruction is commonly practiced, but there is no outlet for deconstructed material (either through resale or through value-added processing and resale) than the deconstruction becomes expensive and the materials will end up in landfill regardless. Similarly, one U.S. operator (The ReUse People of America) that tried to establish a center for reselling CRD materials found that they were running out of materials to sell and had to expand their business into deconstruction to obtain enough materials.¹⁹²

Shannon Goodman, the executive director of the Lifecycle Building Center indicates that another necessary piece of the puzzle is raising the visibility of reuse stores and advocacy groups. “She and other industry colleagues are trying to fund a study that would quantify the economic and environmental effects of the reuse industry, and show what their greater potential could be with the right strategic investments.”¹⁹³ Being able to quantitatively demonstrate (over a relevant timescale) that reuse has economic and environmental benefits over demolition could help motivate jurisdictions to adopt deconstruction programs.

Another major barrier is how difficult current buildings are to take apart. The practice of designing for deconstruction is beginning to take hold, but many older buildings are secured using engineered materials, industrial adhesives, and other building techniques that can damage building components during deconstruction. Similarly, the use of materials containing toxics such as asbestos and lead can cause hazards during the deconstruction process.¹⁹⁴ These issues can cause serious concerns for the safety of people and the environment. The fact that use cycles of buildings are getting shorter and shorter only exacerbates the need to design buildings to be taken apart. Every building at some point will either be remodeled or taken down, and therefore they should be designed to be disassembled.¹⁹⁵

Finally, “deconstruction takes more time to implement than traditional demolition because it requires a building to be carefully disassembled. And because deconstruction is time intensive it is also labor intensive. What could be demolished by a piece of equipment in a few hours, may take a crew of ten to twelve workers two weeks to accomplish.”¹⁹⁶ This makes the up-front costs of deconstruction substantially higher than the up-front cost of a

¹⁹² The ReUse People website, *About Us*.

¹⁹³ Prevost, (2021), *Sustainability Advocates Ask: Why Demolish When You Can Deconstruct*.

¹⁹⁴ The Urban Sustainability Directors Network (USDN) website, *Encouraging and Mandating Building Deconstruction*.

¹⁹⁵ Prevost, (2021), *Sustainability Advocates Ask: Why Demolish When You Can Deconstruct*.

¹⁹⁶ The Urban Sustainability Directors Network (USDN) website, *Encouraging and Mandating Building Deconstruction*.



demolition – and the time it takes to undertake a deconstruction can hold up construction projects for significant periods of time, leaving property owners and project managers facing difficult timelines. Addressing this requires lifecycle measures designed to increase the value of materials from deconstruction projects and make the use of these materials in new construction easier.

7. Electronic Equipment

7.1 Introduction

This section provides an introduction to electronics recycling and reuse initiatives. Recycling of electronics is included as these programs are “competitors” to re-use, are widely established from coast-to-coast-to-coast, and cover a wide range of electronics product categories. Information on electronics re-use is provided for computers and cellular phones. These programs span government-led, industry-wide, charity-driven, and business-specific initiatives.

7.1.1 Current State in Canada

7.1.1.1 Provincial / Territorial Recycling Programs

Electronic Products Recycling Association / Recycle My Electronics

The Electronic Products Recycling Association (EPRA) is an industry-led, not-for-profit organization that operates regulated recycling programs across Canada. Its aim is to ensure that end-of-life electronics are handled in a safe, secure, and environmentally-sound manner.

EPRA has operated the Recycle My Electronics program for over a decade. The program operates across nine Canadian provinces:

- British Columbia;
- Saskatchewan;
- Manitoba;
- Ontario;
- Quebec;
- New Brunswick;
- Nova Scotia;
- Prince Edward Island; and
- Newfoundland and Labrador.

Used electronic equipment contributed to the program is sent to approved recyclers for processing. Valuable materials including glass, plastics, and precious metals are recovered. Substances of concern like mercury and lead are managed in a responsible manner. Recovered materials are then put back into the manufacturing supply chain and used to make new products. A discussion with the EPRA indicated that collected electronic equipment would be recycled, and never sold or donated for reuse.¹⁹⁷

Electronics Recycling in Alberta

Alberta's electronics recycling program is operated by the Alberta Recycling Management Authority (ARMA). The program accepts the following for recycling:¹⁹⁸

- visual displays;
- computers and servers;
- laptops, tablets, and notebooks; and
- printers, copies, scanners, and fax machines.

Electronics are collected up from municipal sites, businesses, schools, and universities. Registered electronics processors disassemble them and separate different materials. Commodities like metals, plastics and glass are collected and sold to be made into new products.

Electronics Recycling in the Northwest Territories

Northwest Territories electronics recycling program is operated by the Government of the Northwest Territories. The program accepts:

- laptops;
- tablets;
- computers (including keyboards, mouse, cables and speakers);
- printers, copiers, scanners and fax machines;
- televisions;
- monitors; and
- cell phones.

Electronics collected at recycling depots are transported to Yellowknife, Hay River and Inuvik where they are stored. When there is sufficient volume, they are shipped to an electronics recycler in Alberta for recycling.

¹⁹⁷ Telephone conversation with Electronic Products Recycling Association.

¹⁹⁸ See the ARMA website (<https://www.albertarecycling.ca/>).

An expanded electronic and electrical product recycling pilot was launched in 2021. Residents in Yellowknife, Hay River, Inuvik, Fort Smith, Fort Providence and Norman Wells, Dettah, Enterprise, Kakisa, K'atl'odeeche First Nation, N'dilq can bring over 500 hundred products across seven categories for recycling (namely [i] small appliances and lighting; [ii] audio visual; [iii] telecom devices; [iv] power and air tools; [v] games, toys and music; [vi] lawn and garden; and [vii] solar panels).¹⁹⁹

Electronics Recycling in the Yukon Territory

The Government of Yukon operates an electronics recycling program for a range of designated devices, effective October 1, 2018.²⁰⁰ The program covers a wide range of product categories, including:²⁰¹

- desktop computers
- laptop computers
- computer accessories / peripherals
- desktop printers, fax machines, and copiers
- displays
- cellular devices and pagers
- non-cellular telephones
- answering machines
- personal image / audio / video systems
- home audio video systems
- aftermarket vehicle audio / video systems
- kitchen motorized appliances
- kitchen heating and cooking appliances
- countertop microwaves
- time measurement devices
- weight measurement devices
- garment care appliances
- air treatment appliances
- personal care appliances
- floor cleaning devices

Other Programs

Several other electronics recycling programs exist in British Columbia (but not other provinces and territories). These include:

- **Call2Recycle**²⁰² - Call2Recycle leads a recycling program for single-use and rechargeable batteries. Call2Recycle in British Columbia (but not elsewhere) also accepts eBikes, eScooters, eSkateboards, and Hoverboards to be recycled in their entirety.
- **ElectroRecycle**²⁰³ - In British Columbia, ElectroRecycle accepts more than 400 types of small appliances and power tools for recycling. These items are broken down into their component parts and materials which are sent for recycling to create new items.

¹⁹⁹ Northwest Territories Department of Environment and Natural Resources, *Electronics Recycling Program* (<https://www.enr.gov.nt.ca/en/services/electronics-recycling-program>).

²⁰⁰ Government of Yukon website (<https://recycle yukonelectronics.ca/>).

²⁰¹ Government of Yukon website (<http://recycle yukonelectronics.ca/wp-content/uploads/2019/10/Clarification-electronic-products-20191029.pdf>).

²⁰² See the Call2Recycle website (<https://www.call2recycle.ca/>).

²⁰³ See the ElectroRecycle website (<https://www.electrorecycle.ca/>).

7.1.2 Re-Use

The following sections provide an overview of prominent Canadian programs for the re-use of two types of electronic devices:

- personal computers; and
- cellular telephones.

These programs represent only a sample of those available across Canada. They represent programs led by government, industry associations, charities, and businesses selling electronic equipment. In addition to these, some computer and telephone retailers will accept equipment donations or returns and sell refurbished products. Still other businesses are established solely for the re-sale of refurbished electronics [see, as examples, GoReCell (<https://gorecell.ca/>) and Recycell (<https://recy-cell.ca/en/>) that buy, refurbish, and re-sell cellular phones]. As such, the landscape for electric equipment reuse is complex.

7.1.2.1 *reBOOT Canada*

reBOOT Canada is a registered charity incorporated in Ontario with the primary purpose of making the internet and digital tools accessible to under-served communities and individuals across Canada.²⁰⁴

Most hardware is donated to reBOOT Canada by the general public, institutions, and corporations who want to help. Computer donations are accepted, but so too is a wide range of networking, telecommunications, and entertainment equipment:

- computers (PC & Mac) - desktops, laptops, servers, tablets, thin clients, pocket PCs etc.
- display devices - monitors, televisions, touchscreens etc.;
- networking equipment - routers, modems, access points, repeaters, switches, hubs, security appliances etc.;
- hardware & peripherals - hard drives, ram, graphics cards, keyboard, mice, speakers, webcams, cables etc.;
- telephony equipment - cellular phones, smartphones, VOIP gear, hands-free devices, answering machines etc.;
- portable devices - media players, GSP units, e-readers, cameras, flash drives etc.;
- audio / video equipment - video conference gear, media projectors, home theatres, stereo receivers, karaoke machines etc.; and
- printers / copiers - inkjet / laser / impact / multifunction, unused ink cartridges / toner, imaging drums etc.

²⁰⁴ Information on reBOOT found at the reBOOT Canada website (<https://www.rebootcanada.ca/>).

reBOOT's main computer re-use program is called reSTART. The reSTART program provides computers at below retail cost for people receiving social assistance. The program is open to any resident of Canada who receives certain financial support. Both laptop and desktop computers are offered in standard and premium packages:

- laptops are available for a fee of \$195 for a standard package and \$295 for a premium package; and
- desktops are available for a fee of \$165 for a standard package and \$295 for a premium package.

reBOOT also offers the reSOURCE program that helps Canadian registered charities and not-for-profit groups by providing complete IT solutions ranging from a single laptop to enterprise server and network installation and ongoing support.

Information was not readily identified on the number of pieces of computer and related equipment re-sourced through the programs. However, reBOOT reports that, in 2021, laptops and desktops were provided to nearly 700 Canadian families.

7.1.2.2 Computers for Schools and Computers for Schools Plus

The Computers for Schools (CFS) program was established in 1993 and operates nationally in Canada. It is a refurbishment and re-use initiative that originally targeted computers and provided them to schools.

Computers were donated by public and private sector donors (government entities, small and large businesses, and residents). CFS refurbishment centres are located across Canada and these offer internship opportunities to students and recent graduates from college and university, providing young people with paid, practical experience in refurbishment centres across Canada.

Between 1993 and 2019, the CFS program provided over 1.5 million refurbished computers to schools across the country and has given more than 7,000 paid internships to Canadians to allow them to acquire market-relevant skills.²⁰⁵

²⁰⁵ Government of Canada, *About the Computers for Schools Program* (<https://ised-isde.canada.ca/site/computers-for-schools-plus/en/about-computers-schools-program>).

In 2019, the Computers for Schools program was rebranded as Computers for Schools Plus (CFS+). This program now provides computers and other digital devices to assist schools, libraries, not-for-profit organizations, Indigenous communities, and eligible low-income Canadians.²⁰⁶ As of 2021, over 1.7 million devices had been distributed.

Table 11: Equipment Accepted and Refurbished by CFS+

Digital Device Hardware	Digital Device Accessories
<ul style="list-style-type: none"> • Desktop computers (monitors and towers) • Laptops • Smartphones • Tablets 	<ul style="list-style-type: none"> • Keyboards and mice • Monitors • Printers, servers, and audio equipment • Cables of all types

B.C. Technology for Learning Society is a registered charity that collects donations of used computers and laptops from governments and businesses for refurbishment and redistribution to schools, libraries, low-income families, and learning-focused non-profit organizations across B.C. By delivering the Computers for Schools Plus program, it has refurbished and redistributed over 190,000 computers across B.C.²⁰⁷

7.1.2.3 *Electronic Recycling Association*

The Electronic Recycling Association (ERA) is a non-profit organization founded in 2004 to address the growing problem of e-waste and the increasing 'digital divide'. Several of their programs are relevant, including one that donates un-needed electronics and one that sells the un-needed electronics for re-use.

Electronics Re-Use

The basis for the initiative involves refurbishing donated computer and other equipment and donating it to users that need it.²⁰⁸

²⁰⁶ Government of Canada, *Computers for Schools Plus* (<https://ised-isde.canada.ca/site/computers-for-schools-plus/en>).

²⁰⁷ BC Technology for Learning Society website (<https://reusetechbc.ca/>).

²⁰⁸ Electronic Recycling Association website (<https://www.era.ca/>).



The program accepts:

- desktops - PCs and Macs, partial desktops, parts, and motherboards;
- notebooks - PCs and Macs, docking stations, parts, and cables;
- printers - inkjet & laserjet, plotters / copiers, scanners, and fax machines;
- computer peripherals - keyboards and mouse, cards, and accessories;
- phone systems - voicemail, parts, and accessories;
- software - operating system, editing, and design;
- servers - PCs & Macs, partial equipment, parts, and motherboards; and
- miscellaneous - server racks, lab equipment, and disk arrays.

Equipment can be donated at one of seven depots in Canada (including Vancouver, Edmonton, Calgary, Saskatoon, Winnipeg, Toronto, and Montreal). Alternatively, an equipment pick-up can be requested and the ERA offers shipping labels for free pickup from anywhere in Canada. The ERA refurbishes the donated equipment, and donates it to local charities, helping shelters, schools and educational programs succeed through the use of refurbished technology.

Electronics Re-Sale

The ERA also accepts no-longer-needed electronics that still have commercial value. In this case the electronics are sold, and proceeds used to support the ERA's non-profit operation.

7.1.2.4 Recycle My Cell

Recycle My Cell is a national recycling program for mobile devices and accessories. It is an initiative led by the Canadian Wireless Telecommunications Association (CWTA) along with its members (wireless equipment manufacturers and service providers). Devices donated under the program may be recycled or refurbished for re-use.

The program accepts accept all used, unwanted, or discarded mobile devices which connect to a cellular or paging network, including cell phones, smartphones, wireless personal digital assistants, external aircards, and pagers. In addition, cell phone batteries, headsets, chargers and other cell phone accessories are also accepted. Both working and non-working mobile devices are accepted. There is no fee or charge to consumers for recycling their wireless devices.

A total of 2,733 drop-off locations across Canada, including some in every province and territory. For example, there are approximately 30 locations in Vancouver. The program also offers a free mail-in option.

Devices are sent to recycling facilities where they can be refurbished or dismantled for scrap, depending on the model and condition. Scrap materials are then used to produce new mobile devices and a variety of other items.

In 2020 139,499 devices were recovered through the program. Information was not found on the number of these that were recycled and the number that were made available for re-use.

7.1.2.5 Bring-It-Back and Mobility for Good

Telus offers Bring-It-Back and Mobility for Good programs that result in cellular phone re-use.

Bring-It-Back²⁰⁹

Telus offers the Bring-It-Back program that refurbishes and resells used customer smartphones, giving them a new home rather than adding to electronic waste. The program lowers the initial cost of phone ownership, and results in a supply of phones for re-use.

For a device to be eligible for a Bring-It-Back return, it must meet the following criteria:

1. the device must power on and navigate properly to the home screen
2. the activation lock must be turned off
3. the LCD must function correctly and be free of dead spots or bruising
4. the screen must be undamaged and free of cracks
5. the rest of the device must be undamaged with no cracks, missing parts or signs of water damage (hinges, keypad, housing, buttons, battery, etc.)
6. all information must be wiped from the device

Mobility for Good²¹⁰

First launched in 2017 in B.C. as a youth focused program, the Mobility for Good program accepts donations of working phones and tablets. The donated devices were re-furbished, and offered to youth leaving foster care along with plans. The program was extended to seniors in 2020 and to Indigenous women at risk in 2021.

²⁰⁹ Telus, *Bring-It-Back* (https://www.telus.com/en/mobility/bring-it-back?INTCMP=tcom_social-impact_donate-your-phone_ban_to_bring-it-back).

²¹⁰ Telus, *Helping Connect Canadians in Need* (https://www.telus.com/en/social-impact/connecting-canada/mobility-for-good?INTCMP=tcom_social-impact_donate-your-phone_cont_to_mobility-for-good).

7.1.2.6 *Phone it Forward*

The Canadian National Institute for the Blind (CNIB) has a Phone it Forward program. Canadians can donate their modern smartphone to the Phone it Forward program, and receive tax receipt for the market value of the donated phone.²¹¹

If the phone is sufficiently modern, it will be refurbished as needed and outfitted it with a suite of accessible applications. Once the phone is refurbished, it will be given to a Canadian with sight loss who is in need of one. If the phone is not sufficiently modern, it will be sold and the earnings used to buy a newer or refurbished smartphone for a user who is blind.

7.2 Policies, Regulations, Programs and Infrastructure that Enable or Support Reuse Systems Across Canada

Several policies, regulations have been identified that indirectly support the reuse of electronic equipment.

7.2.1 Disposal Bans

Disposal bans provide a supply of electronic equipment for reuse (and recycling). As of 2013, three provinces in Canada had banned electronic waste from landfills:²¹²

- Nova Scotia
- Prince Edward Island; and
- Newfoundland and Labrador.

At the same time other jurisdictions had banned electronic equipment disposal in landfills, including Vancouver. Approximately 85% of residents in British Columbia and 79% of residents in Ontario fall into jurisdictions where e-waste is banned from landfill.²¹³

At issue is that disposal bans do not necessarily result in additional reuse, as diverted electronics may be recycled. For example, British Columbia and Ontario are members of the EPRA, and the electronics processed through this program are recycled as opposed to prepared for reuse.

²¹¹ Canadian National Institute for the Blind, *Phone it Forward* (<https://www.phoneitforward.ca/about.html>).

²¹² Kerr, S. (2013), *E-Waste: A Success Story; Electronics Product Stewardship Canada*, cited in Amit Kumar and Maria Holuszko (2016), *Electronic Waste and Existing Processing Routes: A Canadian Perspective*, Resources 5(4) (<https://www.mdpi.com/2079-9276/5/4/35/htm#B25-resources-05-00035>).

²¹³ Amit Kumar and Maria Holuszko (2016), *Electronic Waste and Existing Processing Routes: A Canadian Perspective*, Resources 5(4) (<https://www.mdpi.com/2079-9276/5/4/35/htm#B25-resources-05-00035>).

7.2.2 Export Controls

Canada is a party to the Basel Convention and maintains the *Cross-border Movement of Hazardous Waste and Hazardous Recyclable Material Regulations* (that previously included the *Canadian Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations*). The *Cross-border Movement of Hazardous Waste and Hazardous Recyclable Material Regulations* identify hazardous waste and hazardous recyclable material in Schedule 6, and these include circuit boards and display devices and any equipment that contains them. The Regulations also specifically exclude any part of electronic equipment — including scrap but excluding cells and batteries — that is suitable for base or precious metal recovery (in Schedule 9). The effect of these export controls is to reduce the export of certain electrical equipment under certain conditions, thereby providing a greater supply of materials for reuse in Canada.

Again, export controls on electronic equipment do not necessarily result in additional reuse, as diverted electronics may be recycled or even disposed in Canada.

7.2.3 Extended Producer Responsibility Programs

Extended Producer Responsibility (EPR) programs also offer the potential for increasing the supply of electronics items for reuse, with or without refurbishment. Examples of provincial EPR programs were provided earlier. Some additional details on the regulation behind Ontario's program is provided below.

Electronics EPR in Ontario²¹⁴

The *Electrical and Electronic Equipment (EEE) Regulation* under the *Resource Recovery and Circular Economy Act, 2016* designates information technology, telecommunications, and audio-visual equipment (ITT/AV) as materials under Ontario's producer responsibility regulatory framework.

ITT/AV is equipment that has a primary purpose of collecting, storing, processing, presenting or communicating information, including sounds and images, recording or reproducing sounds and images. ITT/AV includes equipment supplied into any sector (e.g., residential, business, hospital, institutional, commercial, industrial, etc.) and includes any batteries supplied with the ITT/AV (i.e., in packaging or in product).

As of January 1, 2021 producers are individually accountable and financially responsible for collecting and reusing, refurbishing or recycling their products when consumers discard them.

²¹⁴ See the Ontario Resource Productivity and Recovery Authority, *Electrical and Electronic Equipment* (<https://rpra.ca/programs/electronics/>).

As with landfill bans and export controls, EPR programs do not necessarily result in reuse (and no reuse targets were identified under Canadian EPR programs for electronics). However, under Ontario Reg. 522/20: Electrical and Electronic Equipment (EEE):

- the weight of EEE, including recovered resources from and batteries removed from that EEE may be counted as two times its actual weight by the producer for the purpose of meeting management requirements, where the producer utilizes the services of a refurbisher who is located inside Ontario [17.(1)3.].

This appears to incentivize the use of refurbishers and re-sellers of waste electrical and electronic equipment (over recycling or disposal) via providing ‘double-value’ for EPR requirements provided that the refurbishment takes place within Ontario. This could be considered a way to both incentivize reuse of electronics but also to incentivize the establishment of new reuse-focused businesses within the jurisdictions that the EPR program is operating in. Further research on this type of requirement and its potential applicability within more EPR programs in Canada should be considered. It is also interesting that despite this requirement, the EPRA (that manages the EPR program in Ontario) has indicated that the WEEE that they manage is always recycled and is never reused despite the fact that the above is included within Ontario legislation.

7.2.4 Surplus Equipment Strategy

The Government of Canada established an e-waste strategy to manage federal surplus electrical and electronic equipment. The “Guideline for the Disposal of Federal Surplus Electronic and Electrical Equipment” was developed to articulate the strategy. The guidelines emphasize reuse as a priority. For example, surplus computers and related equipment are donated to Industry Canada’s Computers for Schools program. Other functional equipment may be sold to the public through Crown Assets Distribution, or donated to charities.²¹⁵

7.2.5 Tax Credits

One means for supporting the reuse of electrical equipment is to allow tax credits for donations of serviceable devices (as was described for the CNIB’s Phone it Forward Program). In this manner, holders of used electrical equipment have a monetary incentive to seek out reuse programs rather than to submit the equipment to a program that may otherwise recycle it.

²¹⁵ Environment Canada (2014), *Promoting Sustainable Materials Management Through Extended Producer Responsibility: Canadian Waste Electrical and Electronic Equipment (WEEE) Case Study* (<https://www.oecd.org/environment/waste/Canadian%20WEEE%20EPR%20Case%20Study%20-%2012June2014.FINAL.pdf>).

7.3 Key Initiatives, Policies or Infrastructure in Other Jurisdictions

It is generally acknowledged that reuse of electronics is hampered by the current focus on recycling as a means of diverting waste. For example:

- United States (California) – *Laws that reward recycling more than reuse can inadvertently discourage the latter. In California, recyclers are not reimbursed for reuse, so reusable units are mostly diverted for recycling.*²¹⁶
- United Kingdom – *Producers, local authorities and recyclers have little or no incentive to re-use products over recycling them. The Government must increase the incentives for re-use so that all parties benefit from further re-use, in particularly making re-use evidence worth more than recycling evidence.*²¹⁷

A number of policies were identified in other countries aimed at increasing the extent of electronics reuse. One publication by the World Economic Forum identified policies from France, the United Kingdom, and Austria / Germany.

Sample Policies Promoting Reuse of Electronics Rather than Recycling

France passed the Anti-Waste for a Circular Economy Act in 2020. Since January 2021, some French businesses have had to display a repairability score. The repairability score is a grade out of 10, with 10 identifying that a piece of equipment is most repairable. The law applies to smartphones, laptops, televisions, washing machines and lawnmowers.

The UK's Right to Repair law was introduced in July 2021. It is aimed at extending the life of electronics and appliances, and requires manufacturers to make spare parts available to citizens and third-party repair companies. The law covers certain types of electronic equipment (dishwashers, washing machines, washer-dryers, refrigeration appliances, televisions and electronic displays), but not others (such as computers or cellular phones).

Austria and the German state of Thuringia introduced a publicly financed repair bonus to reimburse consumers for some of the costs of electronics refurbishment / repair. Up to €100 per person is available to have a defective electrical device repaired rather than disposing of it.

Source: World Economic Forum (<https://www.weforum.org/agenda/2022/01/repair-recycle-waste-circular-economy/>), *Biden Backs 'Right To Repair': What Countries are Doing to Tackle E-Waste* (<https://www.weforum.org/agenda/2022/01/repair-recycle-waste-circular-economy/>).

²¹⁶ Knowledge at Wharton, *How U.S. Laws Do (and Don't) Support E-Recycling and Reuse* (<https://knowledge.wharton.upenn.edu/article/how-u-s-laws-do-and-dont-support-e-recycling-and-reuse/>).

²¹⁷ U.K. House of Commons Environmental Audit Committee, *Electronic Waste and the Circular Economy*, First Report of Session 2019–21, HC 220 (<https://committees.parliament.uk/publications/3675/documents/35777/default/>).

Elsewhere, reuse targets have been used as a means to increase the re-use of electrical and electronic equipment. For example, Spain was the first EU country to introduce mandatory re-use targets. These range from 3% of large appliances to 4% of information technology equipment in 2018. The Flanders region of Belgium instigated financial incentives for local municipalities meeting re-use targets.²¹⁸

7.4 Gaps and Barriers to Advancing Reusable Systems Across Canada

Given the limited number of policies in place to promote reuse of electronics in Canada, this section describes the gaps and barriers that would need to be overcome to increase the extent that electronics are reused. This section is for electronics in general, however it should be recognized that barriers may be product specific. For example, barriers to reuse of computers may be different than those for reuse of kitchen appliances.

Kissling et al. identified barriers to reuse of electronics.²¹⁹ They summarize four primary barriers:

1. barriers related to the access to sufficient volumes of used equipment;
2. barriers related to informal and illegal re-use practices;
3. barriers related to regulations, standards and product design; and
4. barriers related to costs.

The specific barriers identified in their research that contribute to the primary barriers are identified in the table below.

²¹⁸ Ibid.

²¹⁹ Ramon Kissling, Damian Coughlan, Colin Fitzpatrick, Heinz Boeni, Claudia Luepschen, Stefan Andrew, John Dickenson (2013), (November 2013), *Success Factors and Barriers In Re-Use of Electrical and Electronic Equipment*, Resources Conservation and Recycling, 80(1):21–31.

Table 12: Barriers to Electronic Reuse

• Lack of legislation that sets financial incentives for re-use and enforces re-use
• Access to sufficient volumes of used equipment at good quality and at low costs
• Bad re-use practices (“shame re-use”) lead to reluctance towards re-use
• Competition from informal sector and from un-licenced recyclers (some of them pay for used equipment, which also increases procurement costs for compliant institutions)
• Public and industry organised collection and recycling schemes do not consider re-use in their design (no value conserving collection; logistical and financial discrimination of retailers, who contribute EEE for re-use)
• Some original equipment manufacturers (OEMs) do not approve of the sale of used products, because they fear that these products compete with OEM branded new products
• Unpredictability in supply and demand
• Societal discussion on the soundness of re-use of appliances (producers promote the selling of new appliances, not re-use)
• Complex legal and regulatory situation leads to administrative effort and costs for collection, preparation for re-use, and redistribution of used products (especially for transboundary movements from Non-OECD to OECD countries)
• Competition with recyclers for supply of used equipment (some recyclers pay for used equipment)
• No consideration of re-use in product designs
• Variety of different standards and lack of global re-use standard with clear definitions
• Market for products: prices of new EEE decrease, approaching the level of refurbishing costs. Demand for used EEE decreases
• Logistics costs
• Labour costs

Source: Ramon Kissling, Damian Coughlan, Colin Fitzpatrick, Heinz Boeni, Claudia Luepschen, Stefan Andrew, John Dickenson (2013), (November 2013), *Success Factors and Barriers In Re-Use of Electrical and Electronic Equipment*, Resources Conservation and Recycling, 80(1):21–31.

In a similar fashion, Cole et al. provided an extensive perspective on barriers to reuse of electronics that is applicable to Canada.²²⁰ Some of the barriers and gaps identified in this study are reproduced in the table that follows. Some of the key barriers here include:

- some products are not designed to be readily refurbished (as is the case with some cellular phone screens);
- the collection system is not geared to handling and separating devices for reuse from recycling;
- concerns by many over the impact of a device (such as a phone) and the confidentiality of data on the device.

²²⁰ Christine Cole, Alex Gnanapragasam, Tim Cooper, Jagdeep Singh (2019), *Assessing Barriers to Reuse of Electrical and Electronic Equipment, A UK Perspective*, Resources, Conservation & Recycling: X, Volume 1, June 2019.

Table 13: Barriers to Electronic Reuse

Group	Barrier / Gap
Electronics Producers	<ul style="list-style-type: none"> • Some manufacturers are still wary of reuse because they think an uncontrolled reuse/refurbishment sector could damage their brand image • Phones are sold as a part of a 2- or 3-year contract and are exchanged for new phones when the contract ends as opposed to when they need to be replaced • The design of some electronics prohibits or discourages reuse • Product design – some manufacturers build electronics to fail so that consumers need to buy new items regularly • There are a wide range of power supplies and charging cables etc. that make reuse more challenging – standardization would reduce this barrier • Products are not supported for long enough. That applies to both parts and software • No one commits to providing software updates to keep the product you buy today working for five years • Technical obsolescence makes things not worth reusing – technology is simply moving very quickly
Infrastructure	<ul style="list-style-type: none"> • Collection systems aren't geared for reuse • Products can be damaged during handling/use – and even cosmetic damage can make a product nearly unsaleable • Collection systems are not designed to prevent damage and devices can be damaged during collection or transport/sortation • It is often easier to purchase a new device or get a new device through a contract than it is to go and find an older device to reuse – consumers will often gravitate to options that require less effort
Cultural / Behavioural	<ul style="list-style-type: none"> • Reuse can be perceived negatively, as cheap or low-value • Consumers can be very concerned about how their devices look and can be unwilling to reuse electronic items that work perfectly if they are cosmetically damaged - items that are available for reuse have often sustained some sort of cosmetic damage • There are legitimate concerns regarding confidential data from a business perspective and a personal perspective being recoverable from electronic devices that are sent for reuse • Risk in terms of warranty and of not knowing how the device was utilized by its original owners – some warranty or guarantee would provide consumers with more peace of mind • Reliability is a large barrier preventing compliance schemes working with reuse sector

Source: Christine Cole, Alex Gnanapragasam, Tim Cooper, Jagdeep Singh (2019), *Assessing Barriers to Reuse of Electrical and Electronic Equipment, A UK Perspective*, Resources, Conservation & Recycling: X, Volume 1, June 2019.

8. Household Goods/Appliances

8.1 Introduction

This chapter represents a “catch-all” category of household items outside of textiles and electronics (with those two product categories largely addressed in other chapters within this report). There are a wide range of product categories and individual products that are reused within Canada that fall within Household Goods/Appliances. Examples of these products include the following:

- media, which can include books and magazines, records, tapes, CDs, DVDs and videos;
- housewares, which can include: (i) toys, games, puzzles, stuffed animals; (ii) craft items, art supplies, candles, seasonal/holiday decorations, pictures/frames, baskets and other decorative items; (iii) pots, pans, utensils/cutlery, dishes, mugs, glassware, (iv) exercise/sports equipment (e.g. bicycles, golf clubs, skis); and (v) various other miscellaneous items such as hardware and tools, luggage, antiques and collectibles, pet supplies, etc.;
- small and large appliances (e.g. stoves, washers/dryers, refrigerators, coffee pots, blenders, microwaves, etc.); and
- household and office furniture, which can include: (i) sofas, couches, loveseats, recliners, foot stools, chairs; (ii) tables – dining, kitchen, coffee, computer, patio, nightstands; (iii) storage dressers, armoires, bookcases, cabinets and entertainment centres; and (iv) lamps.

There will be other examples of household goods/appliances reused in Canada that are not outlined in the list above.

8.2 Current State in Canada

There is significant infrastructure in Canada to facilitate the reuse of various household goods/appliances that includes the donation of these items for reuse as well as the resale of these items to for-profit stores that will in turn sell these goods to new users. Both of these pathways to the reuse of household goods/appliances are discussed below.

8.2.1 Donation of Household Goods/Appliances

Used household goods, including appliances and furniture, collected by charities are sold to new owners through the utilization of thrift stores. These thrift stores can either be not-for-profit or for-profit. Both of these types of thrift stores are summarized in this section.

Thrift stores are usually operated by and for a charity or non-profit organization. Most thrift shops are donation-based. For example, goods are donated to a non-profit organization and then those donations are taken to the thrift shop. Profits that are generated are typically used for some charitable purpose. While there are many charities in Canada that accept donated goods (in particular apparel and related goods), there are 6 major non-profit charitable organizations that operate their own thrift store chains in Canada. Brief profiles of these thrift store chains are provided below:

- **The Salvation Army's** Thrift Store National Recycling Operations consists of 98 thrift stores, 115 donor welcome centers and 11 distribution and recycling centers. In total, thrift stores are located in 9 Provinces, with the exception being Prince Edward Island. The Salvation Army has also partnered with many municipalities across Canada for community-based donation events including locating bins, sheds and trailers at transfer stations and landfills. Non-textile and electronic items accepted by The Salvation Army for donation include: (i) antiques and collectibles; (ii) housewares; (iii) media and books, (iv) toys; and (v) seasonal items. In 2021, The Salvation Army (Canada) reported that they diverted 25.0 million pounds (11,300 tonnes) of household items and 8.3 million pounds (3,800 tonnes) of books, paper and pulp. Unsalable items that are donated are recycled with partner organizations that have been established.²²¹
- **The Saint Vincent de Paul** (SVP) operates 65 thrift stores in BC, ON, QC and NS. Used goods can be brought to these thrift stores for donation or can be picked up at individual households or businesses by SVP. Non-textile and electronic used items accepted by SVP include a wide range of furniture and household goods. Examples (outside of textiles and electronics) provided by SVP include: (i) craft, art supplies, pictures and picture frames; (ii) dishes, glasses, cutlery and household appliances; (iii) holiday decorations; (iv) household and office furniture; (v) knick-knacks, baskets and other decorative items; (vi) books/magazines; and (vii) toys, bicycles and books.
- **Mission Thrift** operates 52 thrift stores in 8 Provinces (BC, AB, SK, MB, ON, NB, NS, PEI). Items can be donated directly at these stores and many Mission Thrift stores offer pick-up as well. Non-textile and electronic used items that have been identified as being accepted by Mission Thrift include: (i) toys and games; (ii) pet supplies; (iii) furniture; (iv) jewelry; (v) hardware and tools; (vi) books; (vii) housewares; (viii) sports equipment; and (ix) antiques and collectibles. Not all stores accept furniture and accepted donations can vary between stores. Mission Thrift estimated that 75% of the donated goods that they receive are cleaned, repaired and resold. The remaining 25% are forwarded to various recycling outlets and in some instances they are sent to underdeveloped communities.²²²
- **Mennonite Central Committee** operates 47 thrift stores in BC, AB, SK, MB and ON. Non-textile and electronic items accepted for donation include: (i) media, which includes books and magazines, records, tapes, CDs and DVDs and videos; (ii)

²²¹ The Salvation Army (2022), *The Salvation Army Thrift Store Impact Report 2021-2022 – Caring for Our Communities and the Planet we Serve*.

²²² Accessed at the website of Mission Thrift (<https://missionthriftstore.com/donate>).

housewares, which include: (a) toys, games, puzzles, stuffed animals; (b) craft items, candles, seasonal decorations, pictures/frames, baskets; (c) pots, pans, utensils, dishes, mugs, glassware, kitchen appliances (i.e. coffee pots, blenders); bicycles, sports equipment (i.e. golf clubs, skis), garden tools, luggage; (d) lamps; and (e) antiques and collectibles; and (iii) furniture, which includes (a) sofas, couches, loveseats, recliners, foot stools, chairs; (b) tables – dining, kitchen, coffee and computer, nightstands, patio; and (iii) storage dressers, hutch, armoire, bookcase, cabinets and entertainment centres. Furniture is only accepted at certain locations.²²³

- **Goodwill Industries** consists of five separate organizations in Canada (i.e. Goodwill Alberta, Goodwill Ontario Great Lakes, Goodwill Niagara, Goodwill Amity (Hamilton, Oakville, Milton) and Renaissance Quebec). These five organizations, combined, operate over 50 thrift stores in Canada. To provide an example of quantities diverted, Renaissance Quebec estimated that they diverted 53,807,435 pounds (24,400 tonnes) of goods in 2020-2021 (41% of which was non-apparel/shoes, which equates to approximately 10,000 tonnes).²²⁴ The same types of household goods/appliances that were outlined for the other non-profit thrift store chains in Canada will also be collected by Goodwill Industries.
- **Habitat for Humanity** has over 100 thrift stores (ReStores®) in Canada. They have estimated that over the past 30 years, Habitat ReStores® have helped divert 950 million pounds (approximately 430,000 tonnes) of household furniture and building supplies from disposal in Canada.²²⁵ Unlike the preceding five non-profit thrift stores, Habitat for Humanity does not accept and re-sell textiles – they are only focused on household furniture (including appliances and home decor) and building supplies (e.g., doors, windows, paint, lumber, etc.). Habitat for Humanity indicated that they act as a hub for other organizations that focus on reuse or recycling. For example, ReStores® actively network with up-cyclers that purchase donated furniture and then paint it, restore it or modernize it for resale.²²⁶

Apart from the non-profit thrift store chains in Canada, there are also those chains that are for-profit. The two largest for-profit thrift store chains operating in Canada are Value Village and Talize. While both of these thrift store chains focus on apparel and related accessories (e.g. shoes, purses, etc.), they also accept a wide range of non-apparel household items. Brief profiles of these two companies are as follows:

- **Value Village** has 148 thrift stores in Canada (located in all 10 Provinces) and has relationships with approximately 30-40 charities in Canada to purchase goods (textiles and household goods) that these charities collect via various different mechanisms (e.g. donation bins, drop-off centers, community drives, etc.). Value Village does not operate or service any donation bins on behalf of their charity partners in Canada.

²²³ Accessed at the website of the Mennonite Central Committee (<https://thrift.mcc.org/donate>).

²²⁴ Renaissance Quebec (2022), *Renaissance 2021-2022 Impact Report – Aiming High for the Future*.

²²⁵ Habitat for Humanity (2022), *Habitat for Humanity ReStore – Celebrating 30 Years*.

²²⁶ Interview with Habitat for Humanity (October 13th, 2022).

Instead they simply purchase what charities have collected. Value Village does accept donated goods at their various thrift stores in Canada on behalf of specific charities. Examples of non-textile and electronic items that Value Village accepts include: (i) books and media; (ii) exercise and sporting goods; (iii) games and toys; (iv) housewares; (v) small appliances; and (vi) small furniture. Value Village estimated that they diverted 13 million pieces of kitchenware last year from the U.S and Canada. Value Village has approximately the same number of thrift stores in Canada and the U.S.²²⁷

- **Talize** is a Canadian owned and operated for-profit thrift store chain, with 12 stores – 10 located in Ontario and 2 in British Columbia. Each Talize location has a donation centre located within the store, where items can be dropped off. Donations can also be dropped off in donation bins outside of their stores. Talize does not offer home pick-up but its partner company, Recycling Rewards, does offer this service. In addition, Recycling Rewards services the donation bins of Talize’s charity partners, with this material being sold to Talize for sale within their stores. Non-textile items accepted by Talize include: (i) housewares (including small appliances such as microwaves, countertop appliances); (ii) books and toys; and (iii) some furniture such as chairs, night tables and small shelving units.²²⁸

8.2.2 Resale of Household Goods/Appliances

Instead of donating used household goods/appliances, these items can be sold to various brick-and-mortar or on-line stores that will then resell these items to new users. In place of receiving a receipt for the donated goods that can be used for tax purposes, cash is provided to the original user when household goods/appliances are sold to these types of stores. There are examples of stores re-selling used items across most of the items that have been discussed in this section, however these physical stores are much easier to locate for certain of the product categories, such as large appliances, furniture, sporting equipment, books/CDs/DVDs, toys, etc. Some of the smaller, less valuable items appear to have much fewer examples where these items can be sold for re-sale (e.g. small kitchen appliances, cutlery, etc.). Outlined in the table below are a few examples of brick-and-mortar stores in Canada where various different types of used household goods/appliances can be sold. There will be many more examples of these types of stores in Canada that are not identified in the table below.

²²⁷ Accessed at the website of Value Village (www.valuevillage.ca/thrift-proud/impact) as well as direct input from Value Village.

²²⁸ Accessed at the website of Talize Inc. (<https://talize.com>) as well as direct input from Talize.

Table 14: Examples of Resale (Brick-and-Mortar) Stores for Used Household Goods/Appliances

Company	Location	Category
Express Appliances	Toronto, ON	Large Appliances
The Appliance Warehouse	Toronto, ON	Large Appliances
London Direct Liquidation	London, ON	Large Appliances
Coast Consignment	North Vancouver, BC	Furniture
Clearance Furniture	Toronto, ON	Furniture
Anzico Hotel Furniture Liquidators	Vancouver, BC	Furniture
Play it Again Sports	Multiple locations	Sporting Equipment
Powerplay Sports	Niagara Falls, ON	Sporting Equipment
SportsX	Port Coquitlam, BC	Sporting Equipment
Bank & Voque	Ottawa, ON	Kitchenware
BMV	Toronto, ON	Books, Comics, DVDs, CDs, Vinyl Records, and Magazines.
Pandemonium	Toronto, ON	Books, Records, CDs and DVDs
Encore Books and Records	Montreal, QC	Books, Records, CDs and DVDs
Play it Again Kids	Nelson, BC	Toys
Toy Heaven	Smith Falls, ON	Toys
Once Upon a Child	Multiple Locations	Toys

Source: Cheminfo Services.

Apart from brick-and-mortar stores, there are various on-line options in which used household goods/appliances can be sold, either through resale or consignment. These includes on-line options where a very wide range of used items can be sold, such as Craigslist (<https://geo.craigslist.org/iso/ca>), Etsy (<https://www.etsy.com/ca/>), eBay (www.ebay.ca), Facebook Marketplace (www.facebook.com/marketplace/learn-more), Oodle Marketplace (<https://canada.oodle.com/>) and VarageSale (www.varagesale.com/). There will be many other examples than those provided here. There are also speciality on-line stores where the sale of items are restricted to specific categories of goods, and an increasing number of “buy nothing” groups that work as sharing platforms so that items are reused instead of disposed of, for instance:

- Bunz app sharing platform;
- OdetoToy (<https://odetotoy.ca/>) and ReKidding (<https://rekidding.ca/>) for used toys.
- SonicBoomMusic (<https://www.sonicboommusic.com/>) and Audipile (<https://audiopile.ca/buy-sell-new/>) for CDs/DVDs/records.
- SidelineSwap (<https://sidelineswap.com/en-CA>) for sports equipment; and
- Abe Books (<https://www.abebooks.com/Canada/>) and Thrift Books (<https://www.thriftbooks.com/>) for used books.

8.3 Policies, Regulations, Programs and Infrastructure that Enable or Support Reuse Systems across Canada

As outlined in this chapter, there is a significant amount of infrastructure in place in Canada for the reuse of the types of products that have been discussed in this section. This infrastructure exists through the collection networks and thrift shops that have been established in Canada by both non-profit and for-profit thrift store chains as well as the wide range of used merchandise stores that exist.

Environment and Climate Change Canada recently commissioned a study which analyzed the remanufacturing and other value retention processes (e.g., reuse) in Canada.²²⁹ This study indicated that “the policies and actions of the provinces and territories are almost exclusively focused on waste management and materials recycling,” which indicates that reuse has not been very prevalent, to date, within the policy framework of government agencies in Canada. The report had the following conclusions with respect to appliances and furniture:²³⁰

- Appliances - There is at least one OEM Value Retention Process (VRP) agent (refurbishment/repair) operating in Canada. Additionally, twenty-six independent companies, predominantly in British Columbia, Ontario and Quebec, were identified that undertake appliance refurbishment, one of which may also undertake remanufacturing activities. A majority of the VRP activity in this sector involves repairs undertaken by small independent companies distributed across Canada. There are insignificant remanufacturing and comprehensive refurbishment activities in Canada for home appliances. Refurbishment and direct re-use were largely present in Canada via charities. Sales channels for VRP products include appliance retailers, liquidation companies, outlet stores and direct sales via storefronts and on-line channels.
- Furniture - There are at least two OEM VRP agents operating in Canada, two independent remanufacturers, one contract VRP agent (re-use) and approximately nine independent VRP companies located primarily in Ontario and Quebec. In addition, there are over 30 furniture banks²³¹ that exist across Canada. There are also approximately 1,954 businesses engaged in re-upholstery and furniture repair, primarily in Ontario and Quebec. Refurbishment and direct re-use were largely present in Canada via charities. The report indicated that there are two seemingly distinct sub-sectors for furniture - one for consumer furniture, which focuses primarily on direct re-use and repair and is dominated by peer-to-peer re-use models and not for profit

²²⁹ Oakdene Hollins and Dillon Consulting (2021), *Socio-economic and Environmental Study of the Canadian Remanufacturing Sector and Other Value-Retention Processes in the Context of the Circular Economy*, prepared for Environment and Climate Change Canada.

²³⁰ Ibid.

²³¹ Furniture banks are registered charities, not-for-profit organizations or social enterprises designed to provide gently used household furnishings to individuals and families in need, at little or no cost.

organizations, and one for commercial furniture, where remanufacturing and refurbishment activities by, generally, for-profit businesses, such as Refurb Canada, are apparent. Sales channels for VRP products appear to be primarily through storefronts and direct business to business sales.

Table 15: Identified Furniture Banks in Canada

Furniture Bank	Location
Women in Need	Victoria, BC
Homestart Vancouver	Vancouver, BC
Helping Families in Need Society	Vancouver, BC
Shelter to Home	North Vancouver, BC
Fort Saskatchewan Furniture Bank	Fort Saskatchewan, AB
Find Edmonton	Edmonton, AB
Shoestring Warehouse	Red Deer, AB
Women in Need Society	Calgary, AB
Calgary Inter-faith Furniture Society	Calgary, AB
Calgary Drop-in Centre	Calgary, AB
Oyate Tipi Cumini Yape	Winnipeg, MB
Hands of Hope	Winnipeg, MB
Windsor Furniture Bank	Windsor, ON
Impact Furniture Bank	London, ON
Niagara Furniture Bank	St. Catharines, ON
Mississauga Furniture Bank	Mississauga, ON
Furniture Bank	Etobicoke, ON
Red Door Moving Shelter Program	Toronto, ON
Scarborough Furniture Bank	Scarborough, ON
JRCC Furniture Depot	Thornhill, ON
Redwood Furniture Bank	Barrie, ON
Georgian Bay Furniture Bank	Collingwood, ON
Matthew House Ottawa Furniture Bank	Ottawa, ON
Helping with Furniture	Gloucester, ON
Entraide Familiale de L'Outaouais	Gatineau, QC
La Meublerie	Laval, QC
Mada Community Centre – Furniture Depot	Montreal, QC
Welcome Collective Furniture Bank	Montreal, QC
Comptoir Familial de Terrebone	Terrebone, QC
Atelier de Recuperation St-Joseph	Chicoutimi, QC
Lancaster Baptist Church	Saint John, NB
Parker Street Food & Furniture Bank	Halifax, NS
Home Again Furniture Bank	Mount Pearl, NL

Source: Furniture Bank Network (<https://furniturebanks.org/furniture-banks/>).

An interview with The Salvation Army Thrift Store – National Recycling Operations indicated that there were no known policies, regulations, programs, etc. that specifically

foster reuse systems across Canada. All of the policies, regulations and programs that have been established by government agencies have been aligned with recycling and not reuse.²³²

To facilitate the transition to a circular economy, and as part of the Government of Canada's comprehensive zero plastic waste agenda, and implementation of the Canada-wide Strategy and Action Plan on Zero Plastic Waste, the federal government has stated that they will develop a national strategy to encourage remanufacturing and other VRPs in Canada. The objectives of this strategy include reducing the quantity of products sent to landfills and increasing the reuse of materials.²³³

As part of their party platform, the Liberal party promised to: (i) implement a "right to repair" to extend the life of home appliances, particularly electronics, by requiring manufacturers to supply repair manuals and spare parts and facilitate their replication after the part is no longer produced; (ii) introduce a new 15% tax credit to cover the cost of home appliance repairs performed by technicians (up to \$500); (iii) introduce a bill that includes provisions to better inform citizens of the environmental impacts of consumer products; and (iv) require businesses to inform Canadians of the environmental impacts of consumer products.²³⁴ These measures have yet to be implemented.

Most jurisdictions in Canada do not have EPR policies in place for appliances²³⁵ or the other household goods discussed in this chapter. However, there are some provinces that have established such programs for appliances, resulting in formalized collection networks and reverse logistics infrastructure. Examples of relevant EPR programs in Canada include the following^{236/237/238/239}

- The Major Appliance Recycling Roundtable (MARR) is a not-for-profit stewardship agency created to implement and operate a stewardship plan for end-of-life major household appliances in the province of British Columbia on behalf of the major appliance "producers" who are obligated under the BC *Recycling Regulation*. The MARR program accepts 18 different categories of large appliances (e.g., refrigerators, clothes washers, clothes dryers, ovens, microwaves, etc.). Discussions with MARR

²³² Interview with The Salvation Army (October 5th, 2022).

²³³ Accessed at the following website

(<https://www.canada.ca/en/services/environment/conservation/sustainability/circular-economy/retaining-product-value-circular-economy.html>).

²³⁴ Accessed at the following website (<https://liberal.ca/our-platform/a-right-to-repair-your-home-appliances/>).

²³⁵ Canadian Council of Ministers of the Environment (2022), *Guidance to Facilitate Consistent Extended Producer Responsibility Policies and Programs for Plastics*.

²³⁶ Ibid.

²³⁷ Paben, J. (2021), *Canadian Provinces Expand their EPR Programs*, published in *EScrap News*.

²³⁸ Youden, M. et al. (2021), *Canadian Product Stewardship and EPR: A Review of 2021 and Beyond*.

²³⁹ Major Appliance Recycling Roundtable (2022), *2021 Annual Report*.

indicate that that they do not engage in the reuse market. Instead, all appliances that they receive enter the recycling system, which will involve these products being shredded. MARR indicated that the appliances that enter their system are end-of-life, many of which have come from repair facilities – however, a systematic evaluation of the reuse potential for any appliance that enters their system is not undertaken – they are recycled automatically.²⁴⁰

- On September 1st, 2021, the Alberta Recycling Management Authority completed the first year of a two-year pilot project expanding the list of electronic equipment that can be recycled. The new categories include small appliances, audio visual equipment, games, toys and music, power tools, telecom equipment, lawn and garden equipment, and residential solar panels.
- Québec’s *Regulation Respecting the Recovery and Reclamation of Products by Enterprises* (RRRPE) was adopted in 2011. The RRRPE was amended in 2019 to add a category for household appliances and air conditioners which establishes different diversion targets for a range of products beginning in 2024 for some products and 2026 for others, increasing by 5% per year until reaching a ceiling ranging from 70% to 90% depending upon the product. The RRRPE also requires EPR programs to consider re-use before recycling for electronics, batteries and household appliances.
- On August 1, 2021, amendments to PEI’s *Materials Stewardship and Recycling Regulations* came into force. These amendments mean that more products are captured in PEI’s electrical and electronics stewardship program, including countertop appliances and personal care appliances. Microwave ovens were on the list of device types that were added in 2019 to PEI’s program.

There are also many institutes that offer certificates for appliance repair in Canada including the Appliance Technical Institute of Canada (Mississauga, ON), Herzig College (several campuses in Canada), Southern Alberta Institute of Technology (Calgary, AB), Québec Métiers D’avenir (Quebec City, QC), ITA – Industry Training Authority (Richmond, BC), etc.

8.4 Key Initiatives, Policies or Infrastructure in Other Jurisdictions

Research was focused on the European Union as the European Commission as well as individual countries/municipalities in Europe have been at the forefront in establishing innovative initiatives, policies and infrastructure to foster the re-use of various products. Identified measures are summarized below.

²⁴⁰ Consultation with the Major Appliance Recycling Roundtable (September 27th, 2022).

8.4.1 European Union

Under the *Ecodesign Directive* in the European Union, measures were included in 2019 to support the reparability of products. In order to promote reparability, and therefore to increase the lifespan of appliances, several ecodesign measures aim at facilitating products repair by ensuring the availability of spare parts, in particular that:²⁴¹

- spare parts are available over a long period of time after purchase, e.g. 7 years minimum for refrigerating appliances (10 years for door gaskets), 10 years minimum for household washing-machines and household washer-dryers, and 10 years minimum for household dishwashers (7 years for some parts for which access can be restricted to professional repairers). During these time-periods, the manufacturer must ensure the delivery of the spare parts within 15 working days.
- spare parts can be replaced with the use of commonly available tools and without permanent damage to the appliance; and
- manufacturers have to ensure the availability of repair and professional maintenance information for professional repairers.

These ecodesign measures apply to products placed on the European Union market, independently of where they are manufactured.

On March 30th, 2022, the European Commission put forward a proposal for a regulation establishing a general framework for setting ecodesign requirements for sustainable products, repealing rules currently in force which concentrate on energy-related products only. The regulation would lay down rules that would apply to all products on the internal market, with the aim of making them more durable, reusable, repairable, upgradable, recyclable and generally less harmful to the environment. Key aspects of the proposal are as follows:²⁴²

- Products on the internal market would have to comply with ecodesign requirements, which would be set out later, in delegated acts, for each group of products separately. Ecodesign requirements would aim to improve product durability, reliability, reusability, upgradability, reparability, possibility of maintenance and refurbishment, presence of substances of concern, energy use and energy efficiency, resource use or resource efficiency, recycled content, possibility of remanufacturing and recycling, possibility of recovery of materials, environmental impacts and expected generation of waste materials.
- Delegated acts for specific product groups would require a product passport to be available for each product. The product passport could include information on performance and information requirements; information related to traceability of the product; the declaration of conformity; technical documentation; user manuals; and

²⁴¹ European Commission (2019), *Questions and Answers – The New Ecodesign Measures Explained*.

²⁴² European Parliament (2022), *Briefing EU Legislation in Progress – Ecodesign for Sustainable Products*.

information about the manufacturer, importer or authorized representative. The delegated acts would determine which information would be included and who would have access to what and who would be allowed to update which information. The information would be stored in a registry set up by the Commission and would be accessible via a data carrier (such as a barcode) on the product, its packaging or documentation.

- Companies that discard unsold consumer products would be subject to transparency requirements and would have to publish, for instance, the number of discarded products, the reasons for discarding them, and how many of the discarded products were prepared for reuse, remanufacturing, recycling, energy recovery and disposal. Companies would need to disclose the information on a publicly accessible website. The Commission would be empowered to ban destruction of particular groups of products that have significant environmental impacts. In principle, these rules would not apply to SMEs, but a delegated act for a particular group of products could still specify otherwise.

8.4.2 Individual European Countries and Municipalities

The city of **Vienna, Austria** started the *Reparaturbon* as a pilot in 2020 as a way to promote repair and support local businesses. Through the scheme, which has since concluded, 50% of repair costs were subsidized by the city, capped at €100. The bonus, which covered anything repairable, from clothing and electronics to bicycles and furniture, was a success. Over 35,000 items were repaired through the scheme. Now a national repair bonus, which started in April, 2022 will adopt the same approach focusing on e-waste. The national repair bonus in **Austria** will subsidize 50% of repair costs for electronic and electrical equipment, capped at €200 per repair. The Austrian repair bonus, which is expected to run until 2026, is financed by €130 million from the EU Covid-19 recovery fund, and is expected to subsidize 400,000 repairs.²⁴³ The funding campaign includes household appliances, IT and communication devices, consumer electronics, cleaning devices, but also electronic toys and garden tools.²⁴⁴

In 2019, **France** adopted a law regulating the mandatory display of clear information for consumers on the reparability of electrical and electronic equipment. The objective of the index is to encourage consumers to choose more repairable products, and manufacturers to improve the reparability of their products. It applies to 5 categories of products sold in France after January 1st, 2021 including washing machines (with the other four categories of products being smartphones, laptops, televisions and lawnmowers). The index assesses 5 criteria: (i) documentation; (ii) disassembly; (iii) availability of spare parts; (iv) price of spare parts; and (v) product-specific aspects. Each criterion is scored on 20 points and each number is then compiled into an aggregate score out of 100, which is then divided by 10 and rounded to 1 decimal digit to make the final grade. The manufacturer computes the

²⁴³ Šeruga, K. (2022), *In Austria, the Government Pays to Repair Your Stuff*.

²⁴⁴ Wiener Zeitung (2021), *Bis zu 200 Euro Reparaturbonus für Elektrogeräte*.

index by entering all the parameters in a spreadsheet provided by the Ministry of Environment which includes the different categories and possible answers. The index has to be displayed near the product in shops, and online next to the price of the product using the following logo, with the colour corresponding to the level of reparability in 2 point intervals:²⁴⁵



The manufacturer is free to find additional ways of displaying the index, such as placing the index on the product package or adding a QR code with a link to more information.

Sweden has introduced tax breaks on repairs for consumer goods, with the aim of inspiring people to fix their broken items rather than discarding them. The Swedish government has issued a 50% tax break, reducing the VAT on repairs from 25% to 12%. Consumers can enjoy this benefit to repair anything, from clothing to bicycles to washing machines. For big-ticket items, like refrigerators, ovens or dishwashers, consumers can also claim half the labour cost of the repair back on their income tax.²⁴⁶

In **Norway** most consumer electronic products come with a 5-year warranty which is well beyond the minimum 2-year guarantee in the European Union. The statutory warranty period (established under the *Consumer Sales Act*) depends on how long the product is meant to last when subjected to normal use. As soon as it's been established that the fault is the vendor's responsibility, they must offer the consumer a repair or replacement. They must do so within a reasonable period of time. The repair or replacement should not come at a significant inconvenience to the consumer, and the vendor may normally not attempt to repair the same fault more than twice. If the vendor is unable to repair it or give the consumer a replacement product, the consumer may get a discount or their money back. The consumer may ask the vendor to pay interest on this amount, but they may also reduce the amount to compensate for the time the consumer has been able to use the product. If the consumer has incurred any expenses as a result of the fault, they may also claim compensation.²⁴⁷

In **Spain**, to promote the culture of repair and reuse, BSH Hausgeräte GmbH has an agreement with AERESS, a non-profit Spanish Association for the Social and Solidarity Economy, to carry out a project of preparing for reuse of old appliances. AERESS members in Spain are dedicated to teach and provide jobs to people at risk of exclusion. In this program, BSH stores old Waste Electric and Electronic Equipment (e.g. refrigerators,

²⁴⁵ Ifixit Europe (2021), *The French Repair Index: Challenges and Opportunities*.

²⁴⁶ Sutherland, A. (2020), *Swedish Government Tax Break Programme for Repair*.

²⁴⁷ Accessed at the following website (<https://www.forbrukerradet.no/cause-for-complaint/>).

dryers) collected from users when a new appliance is delivered to their houses. If the old appliance works, the device is identified and sent for selection if it is going to be fixed to re-use. The team from Koopera (a member of AERESS) is trained by BSH with the selected waste electrical and electronic equipment (WEEE) sent to Koopera to fix. BSH has given access to the Customer Service tool called “Quickfinder” with information on spare parts, exploded views of the appliances, repair, and user manuals, etc. The selected appliances are repaired with a full guarantee and are offered in the second-hand market. The project started with Koopera in Vizcaya, but currently BSH works with other 8 AERESS members across Spain. The total amount of appliances prepared for re-use was 35.3% of cooling appliances and 22.6% of big household appliances. BSH aims to replicate this project in some other cities in Spain if possible. BSH has a similar project in Belgium.²⁴⁸

In 2011, a law in **France** on the prevention and management of waste furniture was published. It was established in response to the significant amounts of furniture waste which were entering landfill (around 2 million tonnes annually), much of which still had reuse potential.²⁴⁹ The French law on waste furniture sets a clear reuse target, the only one of its kind in Europe and independent of European Union requirements.²⁵⁰

This system drives the collection, recycling and reuse of furniture arising from: (i) the domestic waste stream, managed and operated by écoMobilier (<https://www.eco-mobilier.fr>); and (ii) the commercial waste stream, managed and operated by Valdelia (<http://www.valdelia.org/>). The law establishes a re-use and recycling target of 45% for waste household furniture and 75% reuse and recycling rate for workplace furniture. In addition it sets a separate reuse target in the form of increasing the amount of used furniture put back on the market by 50% from a baseline.²⁵¹ The scheme is supported through charges paid by furniture producers, retailers and importers, to cover the associated costs. To promote the eco-design principles, Eco Modulation Criteria were created for the new furniture sold in the market, which allow lower levies charged to manufacturers (up to 20%) when they meet environmental product criteria.²⁵²

A key point about the law is that it grants access to collection points exclusively to social enterprises in order to carry out reuse activities because it realises the social value of furniture reuse.²⁵³

²⁴⁸ Interreg Europe (2020), *BSH Preparation for Reuse*.

²⁴⁹ Furniture Bank (2020), *Extended Producer Responsibility and the Role of Reuse Activities*.

²⁵⁰ Ibid.

²⁵¹ Ibid.

²⁵² Sawyer (2019), *State of the Art of Circular Economy in the Furniture Sector*, prepared for the European Commission.

²⁵³ Furniture Bank (2020), *Extended Producer Responsibility and the Role of Reuse Activities*.

8.5 Gaps and Barriers to Advancing Reusable Systems Across Canada

Section 1.3 outlines the range of cross-cutting barriers to reuse, many of which will apply to the reuse of household goods/appliances. This section focuses only on barriers that are somewhat unique to household goods/appliances.

There are a wide range of household goods and appliances that have been identified in this chapter as being the subject of reuse in Canada. Gaps and barriers cannot be identified for each of these items within this study. Instead the text below focuses on the barriers and gaps to the reuse of large appliances and furniture. However once cross-cutting barrier that applies to all household goods/appliances that was identified by the Salvation Army Thrift Store – National Recycling Operations was that the import tax credit is returned to importers when they can provide a destruction certificate indicating that the goods that were imported into Canada were destroyed when not sold. Destroyed includes both landfilling and incineration. This policy provides a specific benefit to importers to dispose of their unsold goods in order to receive the import tax credit instead of donating these goods for reuse (or even for recycling purposes).²⁵⁴

There is an active market for the reuse of many large household goods such as refrigerators, freezers, dishwashers and washing machines. The opportunities for reuse of small household goods are more limited due to the low initial costs leading to low residual value at the point of discard making these items less attractive for reuse.²⁵⁵ Specific barriers identified to the reuse of large appliances (white goods) include the following:^{256/257/258/259/260}

- Household appliances can be discarded in working condition and therefore functioning products can be found at recycling stations. Experts physically present at these collection sites are generally needed in order to conduct proper assessment of the conditions of each item. Most commonly, it is the municipalities that are in charge of the collection sites, but since they do not own the EPR-obligated appliances, there are poor incentives for municipal authorities to manage the site in a way that favours reuse.

²⁵⁴ Interview with The Salvation Army (October 5th, 2022).

²⁵⁵ Cole, C. (2019), *Assessing Barriers to Reuse of Electrical and Electronic Equipment, a UK Perspective*.

²⁵⁶ Dalhammar, C. et. al. (2021), *Enabling Reuse in Extended Producer Responsibility Schemes for White Goods: Legal and Organisational Conditions for Connecting Resource Flows and Actors*, published in *Circular Economy and Sustainability*.

²⁵⁷ Technopolis et. al. (2016), *Regulatory Barriers for the Circular Economy – Lessons for Ten Case Studies*.

²⁵⁸ Fitzpatrick, C. et. al. (2013), *Success Factors and Barriers in Re-use of Electrical and Electronic Equipment*, published in *Resources Conservation and Recycling*.

²⁵⁹ Bressanelli, G. et. al. (2020), *Towards Circular Economy in the Household Appliance Industry: An Overview of Cases*, published in *Resources*.

²⁶⁰ O’Connell, M. et. al. (2013), *Evaluating the Sustainability Potential of a White Goods Refurbishment Program*, published in *Sustainability Science*.

In addition, the Producer Responsibility Organization (PRO) might not even examine the white goods before transporting them from the collection site with some PRO organizations stating that financially, there is no incentive to look for functioning products. Potential reuse organizations and actors who might have the incentive to separate and prepare products for reuse are often denied access in practice. This leads to difficulty in accessing sufficient volumes of good used appliances. The economic case for white goods reuse is strong, but economy of scale is a factor, with constant supply of the right material a necessity to ensure an adequate level of throughput for maintaining viability.

- It is difficult to sort and get access to high-quality products that are suited for repair and reuse. This challenge has several facets such as the logistics of bringing used products from consumers or businesses to the reuse facilities. The collected items are often damaged by handling at the collection points, and it takes professionalism and knowledge to repair products safely, as there is generally a lack of safety standards. Many of the above-mentioned challenges imply additional costs such as high labour costs, costs to build and assure knowledge and operations, initial costs for additional efforts in collection and building up the infrastructure, which ultimately reduce the profitability of operations from selling reused products.
- Careless loading/unloading of appliances into collection containers can take place regardless of the condition of the white goods. This reduces the likelihood that they can be eventually be reused.
- Many used products are not suitable for reuse due to high energy demand and presence of hazardous or banned substances. The improved efficiency of newer products puts limitations on when re-use is a desirable strategy because of energy consumption in the use phase and also that how the use of smart grids and demand side management has the effect to prolong the desirable lifetime of products before replacement by newer models.
- Repair activities (that eventually lead to reuse) can be particularly challenging since there are many differences between various models and brands and a high turnover of new design solutions for white goods. Moreover, there may not be enough relevant repair information from producers. If the components are specialised and not common, finding spare parts can be difficult, and often producers charge high prices for spare parts. In some cases, spare parts are only offered for a limited number of years. Producers may also discourage independent repairers by offering tools and diagnostic software only to certain, authorized certified repairers.
- If the product's design hinders the access and replacement of integral components, then it reduces the potential for repair and reuse. Reuse centres have indicated that it has become more difficult to repair white goods. Older products were much easier to repair, but now with increasing electronic systems in place the preparation for reuse becomes much more challenging. Also it is reported that the construction of many products moved from systems that use screws and bolts that could be replaced to adhesive bindings that cannot be removed quickly. Therefore some reuse centres are considering

stopping reuse activities with white goods and focus on smaller electric items, like smartphones, tablets, and laptops, which require less storage space.

- Finding skilled and experienced repairers of appliances is another challenge for repair actors. The low profitability in the industry makes it difficult to attract and retain highly skilled repairers.
- Low trust and weak collaboration between actors and other conflicting interests between the actors are critical barriers. The conflicts could be related to distortion of recycling targets, distribution of reuse related costs and revenues between actors but also brands considering risks of bad reputation from uncontrolled reuse and reselling of their products. The latter is related to a fear of poor consumer perceptions and acceptance of buying used and repaired products, which also limits their market. The potential of reused products to cannibalise on the sales of new products has also been viewed as a possible barrier to motivating producers towards reuse. Producers promote the selling of new appliances, not re-use.
- For exporters of refurbished goods, trade laws and other regulatory mechanisms that govern the movement of remanufactured and refurbished goods across borders can affect the extent to which these can be exported. Many countries are concerned about the ‘dumping’ of waste disguised as refurbished or remanufactured export goods and impose restrictions or prohibitive requirements (e.g. fees, paperwork, additional inspections) on these imported goods. These measures can effectively reduce the competitiveness of ‘circular goods’ in the marketplace, relative to new ones.
- Not-for-profit organizations have identified competition with recyclers for the supply of used equipment as a challenge.

Key barriers to the reuse of furniture have been identified as the following:²⁶¹

- Lower quality materials and poor design – the move away from solid wood and metal furniture to cheaper plastic, chipboard and medium-density fibreboard reduces the potential for a successful second life since products are often insufficiently robust to be moved easily. In addition, products are often not designed for disassembly and reassembly, or reconfiguration.
- Limited collection and reverse logistics infrastructure – currently there are weak drivers and underinvestment in the collection and logistics for furniture take-back, with increased investment required to cover the cost of transport, labour and wider infrastructure associated with the collection and storage of furniture. Producer responsibility mechanisms are not widely used in the furniture sector.
- High cost of repair and refurbishment – in Canada, transport and labour costs are high, making any significant repair and refurbishment costly, particularly where re-upholstery is required. Often, small social enterprises are given just one or two matching items and it is not economically viable to constantly make upholstery patterns

²⁶¹ Eunomia, (2017), *Circular Economy Opportunities in the Furniture Sector*, prepared for the European Environmental Bureau.

unless the item itself is of particularly high value. Economies of scale are needed to make repair and refurbishment viable.

- Weak demand for second-hand furniture - the price differential between new furniture against the cost of second-life furniture, is not significant enough to drive more sustainable purchasing behaviour. This is coupled with poor awareness of the availability and benefits of sustainable furniture options, for both domestic and commercial purposes, a consumer desire for new products, and, to a degree, a stigma attached to second-life furniture.
- Presence of hazardous substances - obligations to deal with legacy hazardous substances introduces challenges and additional costs, with producers often failing to disclose hazardous substances contained in materials or products. Information on how to remove hazardous parts/components safely is often not disclosed.
- Weak product design and specification drivers – one of the most significant challenges to product life extension for OEMs and retailers includes the potential for reduced sales of new products. Durability, and facilitating repair and life extension, are not necessarily in the best commercial interests of the OEMs or retailers, unless they operate in a market niche that trades on high quality/longevity or lease, for example. In addition, short product warranties do not incentivise manufacturers to design for longevity. Even fire proofing labels can be attached in ways that result in them being removed by consumers, making the subsequent reuse difficult, if not impossible.
- Poor consumer information and availability of spares – consumers are rarely given guidance on how to maintain and repair furniture, in order to prolong and extend the product lifespan. Availability of spares is also important, however a lack of availability of spare parts encourages the purchase of new furniture over circular consumption patterns.
- Weak over-arching policy drivers – typically furniture is not managed in accordance with the waste hierarchy, with reuse failing to be prioritized over recycling, incineration and landfill. Underinvestment in reuse, repair and remanufacturing infrastructure limits the potential for furniture being managed in accordance with the principles of the waste hierarchy or the circular economy.

9. Other Identified Examples of Established Reuse Systems

9.1 Introduction

This section contains short, qualitative descriptions of miscellaneous initiatives from other jurisdictions that did not fit squarely into any of the other chapters in the report (too broad/too many products covered, or for packaging that is not covered at all in the other sections). These initiatives are all discussed within a single section below.

9.2 Miscellaneous Reuse Initiatives

RePack

RePack, based in Finland, replaces single-use packaging in e-commerce with reusable packaging that customers can return to be reused. The company has scaled up operations to work with more than 120 brands across 17 countries, including launching in North America with CanadaPost.²⁶² Its ambition for the next year is to further increase its network to work with 200 brands. “When customers order from the web store they can opt for RePack’s alternative reuse packaging. The order is then delivered to the customer in a RePack shipper with a prepaid return label. Subsequently, customers send the shipper back to RePack for a central quality check and redistribution. Each shipper has a unique barcode that ensures individual shippers can be identified and linked to a specific shipment. This enables a reward for customers to be triggered when sending back the RePack.”²⁶³ Customers receive discount vouchers for a selection of participating stores when shipping back the RePack. This indirect deposit structure creates brand loyalty and increases customer retention.”²⁶⁴ They have soft and hard packaging of various sizes (waterproof and durable) and work with and utilize existing delivery collection infrastructure (via major delivery companies that are likely already undertaking pick-up and delivery services in areas that require reusable-packaging collection) to ensure that the collection-stage is not an extra movement but one that is integrated with other pickups and deliveries in a given area.

²⁶² Ellen MacArthur Foundation, *Various Annual Reports (2020-2022)*

²⁶³ Ibid.

²⁶⁴ Ibid.

LimeLoop (California)

LimeLoop is very similar to RePack in that reusable packaging is offered by retailers that utilize its service and the packaging is sent out with return labels included. The difference lies in LimeLoop's use of microchip tracking. "Smart shippers are chipped and paired with a software platform (an app) to allow web stores to geolocate the shippers, gain feedback on the customer experience, and track accumulated environmental savings."²⁶⁵ "Web stores, fulfilment centres, and end-customers can use an app to further engage with the shippers, simplify logistics, and gather data about the shipper journey. An upcoming next generation of shippers will allow down-to-the-minute location tracking, consumer-engagement monitoring, and streamlined logistics management."²⁶⁶

Liviri (Colorado)

"Liviri has optimised and engineered reusable shipping boxes to keep meal kits and perishable items in ideal conditions. Insulation is built into the package, and reusable ice packs are returned with the package. The operation runs on two models, either a company buys the boxes and handles the logistics themselves (e.g. picks up the previous box with the next meal delivery) or customers send the boxes back to Liviri, via a return shipping label, where they are cleaned and then redistributed."²⁶⁷ This is somewhat similar to Canadian operations like Crisper and Fresh Prep except those operations run the entire program themselves (including the food) while Liviri provides reusable packaging to meal prep services that wish to use reusable packaging.

Swedish Return System

"Swedish Return System delivers reusable crates and pallets to the producer. The reusable units are filled and delivered to the wholesaler and then on to the retail outlet. The retailer empties the crates and pallets of goods, and returns them to the wholesaler. Swedish Return System then takes back the reusable crates and pallets for quality control and washing, after which they are ready to be used again. Swedish Return System is a business-driven EPR model jointly owned by the Trade Association for Grocery of Sweden (SvHD) (50%) and the Swedish Food & Drinks Retailers Association (DLF) (50%). It has been operating since 1997 and is currently enabling reuse crates to be used for half of all fresh food deliveries in Sweden."²⁶⁸ "Crates are vented, do not attract moisture, and protect primary packaging to reduce product damage during transport. Standardised design means producers and retailers know the exact measurements of crates and can calibrate packing systems accordingly. Customers pay a user fee and deposit for crates and half-sized pallets, and a daily rent and user fee for full-sized pallets. Optimised return logistics and lower

²⁶⁵ Ibid.

²⁶⁶ Ibid.

²⁶⁷ Ibid.

²⁶⁸ Ibid.

transportation costs due to lightweight pallets weighing 10 kg less than a Euro-pallet. Reusable crates reduce CO₂-equivalent emissions by 74% compared to similar disposable cardboard packaging. Crates have a lifetime of 15 years. When worn out, the crates are recycled and used in the production of new crates.”²⁶⁹

Windshield Washer Dispensing

There are two companies in Canada that are competing to bring windshield washer dispensers to gas stations; Station Lave Glacé and EcoTank. This model would eliminate the need for plastic packaging windshield washer fluid by allowing customers to pump windshield washer fluid like they pump gas. This model would require little behavioral shifts for customers and could offer benefits to gas stations in terms of not having to merchandise and store large pallets of plastic containers. The challenges to date have been:

- Navigating parent company contracts and the franchise model of a lot of gas stations; and
- upfront capital cost associated with purchasing a dispenser despite a good return on investment.

“Canadian Tire was reportedly interested in a pilot, but struggled with budget. In response, EcoTank was considering a leasing-subscription model to address the capital challenges, but requires them [partners] to have sufficient investment capital.”²⁷⁰ Further information on the potential program was not identified.

²⁶⁹ Ibid.

²⁷⁰ Scout Environmental (undated), *State of Reuse and Refill in Canada and Recommendations*.

10. Conclusions and Recommendations

10.1 Introduction

This chapter is divided into two main sections: (i) gaps or barriers that could be addressed through a working group; and (ii) sector-based conclusions and recommendations. The first section explores policies, regulations, programs and infrastructure from the perspective of what a working group can further investigate and consider for future implementation.

The second section analyses policies implemented in other jurisdictions used to promote or encourage reuse within the specific sectors that make up the main chapters of this report. Included in these discussions are the drawbacks, information gaps, or barriers associated with the policies, regulations, programs, and infrastructure under discussion. Additionally, these sections contain “supporting or complementary actions” that are meant to represent smaller steps that could be used to support larger policies – and some of these actions may represent opportunities that the working group could discuss.

10.2 Gaps or Barriers that Could be Addressed Through a Working Group

This section is focused on overall barriers or information gaps to furthering reuse as opposed to sector-specific recommendations. Additionally, this section describes gaps and barriers that can be addressed or further researched by a working group as opposed to describing actual policy implementation or the construction of infrastructure. Nine gaps/barriers were identified that fit this description and these are discussed below.

EPR Programs are Designed to Encourage Recycling as Opposed to Reuse: EPR programs across Canada are being implemented for packaging waste. Reuse should be prioritized over recycling as per the waste hierarchy – yet EPR programs across the country often only recognize recycling as a method through which packaging waste can be reduced.²⁷¹ In order to encourage industries regulated under EPR programs to prioritize reuse, reuse should be recognized under these EPR programs as an alternative to recycling. Reuse-Refill Canada’s 2022 report²⁷² describes utilizing pollution prevention plans as a method of “alternative collection systems” that could be recognized under EPR:

“As an example, and unlike other Canadian jurisdictions, the Ontario Blue Box regulation allows for the operation of “an alternative collection system for one or

²⁷¹ Interview with The Salvation Army, October 5, 2022.

²⁷² Reuse Refill Canada, (2022), *Barriers and Opportunities for Driving Reuse in Canada*.

more material categories of blue box material”. A reuse-based Pollution Prevention Plan could be the basis of specifying such an alternative collection system.”²⁷³

Reuse Refill Canada notes that the producer would report the reusable package as part of its EPR packaging supply related reporting to the regulator and would claim “resources recovered” based on each packaging trip through the reuse system.

- It is recommended that the working group consider contacting the various EPR program managers across Canada or otherwise conducting additional research into how reuse could be recognized under various provincial EPR programs and how regulated businesses could best respond to these potential opportunities. It could also be beneficial to find ways to prioritize or further incentivize reuse as opposed to recycling within these systems and interview various regulated entities to better identify options for incentivizing reuse over recycling.

The Establishment and Operation of Collection and Reverse Logistics Systems is Typically Far More Expensive Than Single-Use Packaging: Businesses are structured to make profit for their shareholders, and will typically not engage in actions that negatively impact their bottom-lines unless they are required to do so. This is why EPR programs are being designed to internalize the costs of managing waste generated by industries that generate recyclable wastes (such as the packaging sector). As this internalization of costs is ongoing, it may be instructive to investigate the following:

- Are there areas where reuse systems could ‘piggyback’ off of the collection systems being developed in support of recycling – i.e., using QR codes or similar technology, could it be possible for recycling centers to sort reusable containers in such a way that current recycling systems could form a part of the collection and sorting apparatus for reuse as well.
- There are a number of evolving reuse systems that utilize delivery/pickup via the same systems used by online retailers such as Amazon (FedEx, UPS, etc.) via a point-to-point methodology. Delivery systems such as these (and for groceries – i.e., Voila by Sobeys) are expected to expand significantly over the coming years. The working group should consider investigating how online packaging is or is not covered under EPR programs, and how grocery services and delivery services can be further involved in implementing reverse supply chains.

Retailers are not Incentivized to Participate in Reverse Supply Chains, and in Some Cases may Experience Significant Challenges in Trying to Participate: Brick and mortar locations will remain relevant for many types of goods for the foreseeable future, and as the interface between customers and products, can form a critical element of reverse supply chains. However, the buildings that house these businesses are not designed for

²⁷³ Ibid.

participation in any reverse supply chains. Space is often at a premium, for example a typical grocery store requires: (i) sales floorspace which consumes much of the building footprint; (ii) space for inventory (including refrigerators for dairy/seafood and freezers for grocery products and the bakery); (iii) space for offices/management; and (iv) laneways for the efficient restocking of packaged goods. This leaves little space for the storage of empty packaging (which is not often easily stackable for condensed storage). This challenge becomes even more difficult when locations such as shopping malls are considered, as individual retail locations can be even more space-limited and areas for accepting truck deliveries can be shared. Restaurants designed around a takeout or single-use packaging model face similar challenges. The working group should consider:

- Examining models such as the refillery model (for personal care/household care particularly) and looking for opportunities to integrate elements of this model into traditional retail chains (such as with businesses like Algramo and CoZie). It may not be reasonable to expect retailers to switch to a refillery model, but integrating elements of this model for certain products – if producers are willing to work with retailers to make the transition easier – could result in a reduction in packaging being sent to the waste sector. The working group could identify manufacturers of items that are strong candidates for reusable packaging²⁷⁴ and associations that represent retailers for these items and work to create further linkages or working groups focused on establishing reusable packaging supply chains.
- The above working groups could help identify policies or regulatory tools that might help incentivize the establishment of these reverse supply chains – it may be advisable to consider generating a costing analysis for regulated entities under EPR programs where the costs of continually recycling packaging is compared to the costs of establishing reuse systems over a five- or ten-year period – especially if reuse is incentivized under EPR.
- Consider investigating the potential costs that could be associated with remodelling various types of businesses to be more amenable to storing used packaging for reverse supply chains. Potentially consider investigating how a credit or tax incentive to encourage various types renovations for enabling reverse supply chains could help to ameliorate this particular challenge for brick-and-mortar locations.
- There are several businesses that are now selling products such as soap, detergent, etc. in “dry” form – as these products are often over 90% water by volume (consumers mix a tab or pod of concentrate with a specific volume of water). This reduces shipping costs and reduces packaging and is also amenable to a refillery model (reduced spillage of product, takes up less shelf space, consumers could use their own storage containers from home that do not have to be watertight). Engagements with retailers and product

²⁷⁴ The Sustainable Packaging Coalition identifies items that are bought frequently (personal care, home care, supplies for work environments), items with packaging that is often stored in the open on display (e.g. soap dispensers) and a more durable, “counter worthy” design is important to the consumer as strong candidates for reusable packaging in their 2022 Guidance for Reusable Packaging.

manufacturers should include discussions around expanding the manufacture/sale of “dry” products.

Businesses that are Currently Involved in Reuse are Not Enjoying the Same Benefits as Businesses Involved in Recycling: Interviews with reuse organizations have indicated that they do not receive the same incentives or compensation for the collection/distribution of products for reuse as other organizations receive for recycling the same products under EPR programs. Electronics recyclers receive compensation for recycling electronics under EPR, but organizations that collect computers, refurbish them and distribute the computers to schools or other organizations that require them do not receive the same benefits. In order to encourage reuse over recycling as per the waste hierarchy, organizations that foster reuse should be able to access the same benefits as organizations that recycle.

Paying Taxes can be Excessively Complicated for Businesses that use Deposit/Return Models in Some Jurisdictions: Consultations have indicated that paying taxes can be very complex for businesses that utilize deposit/return models. This can be excessively challenging for smaller and medium sized businesses that do not have large accounting departments and are having to take care of this type of bureaucratic paperwork themselves. In Ontario, there is a clean and streamlined way for alcoholic beverage bottle deposit/return programs to file their taxes, but all other packaging types are excluded from this option regardless of whether the deposit/return system works in precisely the same fashion. This administrative burden should not be challenging to address, and points to potential issues with governments not being prepared to interface effectively with newer circular business models.

A Cultural Shift Towards Prioritizing Reuse Over Recycling/Single-Use is Required in Order to Ensure Demand Exists for Evolving Reuse Businesses – and no Concerted Effort is Being Organized to Begin this Shift: Several of the businesses and associations consulted during this study highlighted the requirement for a cultural shift towards reuse, the need for individual members of the population to consider reusing something before buying new, and selling or donating a used item before sending it to landfill. Governments and policymakers typically utilize various sticks and carrots to incentivize businesses to make changes, but this does not address the core issue of demand. Instead, the leaders in the reuse community that were interviewed in support of this study consistently urged the writers of this report to emphasize the need for government actors to stimulate grassroots cultural change. Some suggested marketing campaigns and partnerships with various influencers or celebrities while others suggested stronger outreach campaigns and education. It may also be necessary to create new terminology to paint a more attractive picture of reuse items in order to foster this cultural shift and increase demand. For instance, instead of using reused items, one could use “pre-loved” or “gently used” items. Methodologies for encouraging cultural shifts are outside of the expertise of the project team but should be prioritized for further investigation. This would mark a shift from using sticks and carrots to encourage businesses to make changes to causing changes in demand

at the grassroots level that businesses would naturally respond and adapt to in order to meet new demand.

Reuse Needs to be Made Easier and More Convenient in Order to be Adopted as a Cultural Norm:

Several stakeholders including businesses in the reuse space, the associations that represent them, and other organizations that study ways to encourage reuse systems have indicated that participating in reuse systems is much more difficult than disposing of single-use items, and convincing stakeholders/consumers to invest their personal time in something that may not directly benefit them is a challenge. Work needs to be done on activities/programs/education/outreach that makes it much easier to locate reusable items – as easy as it is to buy something that is new. It will be important to create systems to access reuse items that are accessible, equitable, across the entire population. It will be necessary to create a diversity of platforms to facilitate access to reuse items and to foster the cultural shift to reuse. For instance, a new job for this sector could be professional finders that can track down used items that people need for a fee – where the total cost of the item will likely still be lower than new but the work involved in finding a used item could be handled by someone else. Another example would be to have an upholster located in a used furniture store or a tailor in a thrift store that sells clothes. Sweden has a second-hand shopping mall called ReTuna, whereas there was no known dedicated second-hand shopping mall in North America. In Utrecht, the Netherlands, all of the shops along the canal are only second-hand stores – so there is a dedicated location in the city where one knows where to go to visit second-hand stores. Also, in the Netherlands there is a country-wide garage/yard sale on a certain day of the year (Kings Day) and the various communities in the Netherlands assist on this day by providing infrastructure (e.g., tables and locations) where these garage/yard sales occur. Having a dedicated day ensures that people know that a certain day each year has been set aside and they can either sell or buy used goods on that day. Also, on this day there is a similar sale of used goods for children – so it is a good day to sell unwanted toys or to buy new toys that have been used. These types of interventions and physical locations/spaces make reuse more convenient (for both purchasers and sellers) and top-of-mind.

As Reuse has Begun to Become Trendy, Access and Equitability Have Been Sacrificed:

Many of the barriers highlighted in this conclusion section are based in economics – in order for reuse to become more widespread it must be economically competitive with single-use models. As certain forms of reuse (primarily in apparel) have become more ‘trendy’, thrift stores have begun increasing their prices.²⁷⁵ At this time, some reuse organizations involved in apparel have indicated that thrift stores can be more expensive to shop at than locations such as Wal-Mart or H&M that sell fast-fashion clothing. Care must be taken so that the cultural shift towards reuse does not reduce access to reuse for those without means, and so that reuse remains equitable. In fact, there are many opportunities within the circular economy to increase employment, including many jobs with a relatively low barrier to entry.

²⁷⁵ Interview with Blenderz, April 25, 2022.

Reuse and the Benefits of Reuse Need to be Quantified, Described in Depth, and Used as a Justification for Significant Policy Changes: Policymakers have indicated that it is difficult to quantify the benefits of reuse, either economically or in terms of the volume/weight of waste that is diverted from the waste sector through reuse systems. This lack of data makes the informational-basis behind expanding reuse systems difficult to justify. There is also no standardized methodology in place anywhere for understanding these benefits, and therefore different jurisdictions may be utilizing different informational bases to make decisions – which can be challenging within a framework that includes municipal, provincial, and federal levels of government that can benefit from clear transposable data for decision-making and policy development. In addition, policymakers have indicated that collateral benefits of reuse such as impacts on GDP, employment, embodied carbon, various economic impacts, ecological impacts, and social equity by allowing marginalized people to buy certain products or get employment via new employment opportunities. Being able to measure and demonstrate the benefits of reuse can assist in shifting the mentality among the population away from buying new and towards reuse options.

10.3 Sector-Based Conclusions and Recommendations

This section focuses on sector-specific opportunities, as well as some barriers and gaps. The opportunities discussed within this section are largely opportunities that have the potential to be leveraged in the shorter term without the establishment of significant new infrastructure or new technologies. Some longer-term solutions are discussed as complementary actions to the main opportunities discussed below, but these long-term actions are not the focus. Each of these sections contains some “complementary and supporting actions” that are meant to represent smaller steps that could be used to support larger policies – and some of these actions may represent opportunities that the working group could discuss.

10.3.1 Food Packaging

There are many potential opportunities for advancing reuse within food packaging across retail, HoReCa, and B2B/internal business movements. This is the case for tertiary packaging and secondary packaging used primarily by businesses, and the primary packaging that is accessed by consumers. The interventions area below applies to HoReCa establishments and events as these represent strong targets for reusable packaging, represent a base-case where materials are most often landfilled instead of reused or recycled, and can be leveraged at a municipal level regardless of provincial or federal support.

Opportunity or Measure: Mandating or incentivizing the use of reusable packaging systems for HoReCa businesses that have captive or semi-captive environments such as shopping mall food-courts, universities/other institutions with cafeteria-style food distribution, concerts/sporting events, etc. As outlined under the “Events and Specific Controlled Environments” section of the Food Packaging Chapter, self-contained areas have contained waste management opportunities that significantly simplify logistics/control for reusable food packaging. If businesses that operate in these contained areas are able to agree on a reusable packaging provider (or services provider if the packaging is picked up, cleaned, and returned before opening the following morning) then these types of areas become strong candidates for the use of reusable packaging. The same applies for concerts, festivals or sports events where customers have to enter and leave the event from specific gates where compliance with returns can be monitored, receptacles for return can be placed and waste management is centrally controlled. This option becomes more attractive given that these areas typically have lower recycling rates and typically send more or all of their waste to landfill

Difficulties and Additional Barriers:

- There may be a relatively high up-front capital cost associated with new reusable packaging collection systems, and a much higher capital cost if the facility in question opts to install washing systems for the reusable packaging on-site.
- Some businesses that engage in reuse have noted that there is insufficient capacity for cleaning/return (industrial container/dish washing) within sensible geographic boundaries, and some businesses could therefore experience difficulty accessing these services.

Complementary or Supporting Actions:

- Understanding the locations where events/concerts etc. occur, as well as the locations of food courts/institutions etc. and then strategically considering where to locate industrial scale container/dish washing locations where needed to service these locations could be a critically important undertaking in supporting any new mandatory measures. Additionally, undertaking stakeholder consultations to address situations where this type of cleaning already exists (with additional capacity) in order to forge new partnerships and lower capital costs.
- Developing a directory of businesses offering reusable packaging provision/collection/cleaning/return services and providing incentives to create more of these businesses to address potential shortfalls in service availability once requirements for reusable packaging use are in place.

10.3.2 Personal Care and Household Care Product Packaging

Personal care and household care products (such as soaps, detergents, certain cosmetic products, etc.) are often amenable to reusable packaging because sanitary concerns are decreased (the products are not ingested) and because they are often bulky/heavy purchases made up largely of water. The fact that these products are also often in “pod” form or are in a liquid form makes the use of reusable packaging easier than with many food products (which is why refillereries in Canada often focus on these products instead of food).

Opportunity or Measure: Measures that either mandate or encourage the use of reusable packaging in retail settings are likely deployable in a municipal context and are likely to drive the use of reusable packaging. These measures can include requirements for businesses of certain sizes and up to make unpackaged products available to any consumer that brings in their own packaging and requirements for businesses to provide reusable packaging to consumers. Given the difficulties that may be associated with these types of requirements, a phased and product-specific approach could be used to allow for businesses and consumers to adapt to the changing environment (these types of requirements are being instituted in France, for example).

Difficulties and Additional Barriers:

- In order to offer reusable packaging options, most retail businesses may need to change floor plans on the sales floor, as well as in stock rooms (to make room for empty packaging that needs to be returned to vendors). Additionally, supply chains may need to be altered so that product manufacturers send bulk shipments of reusable containers to retail locations and retail locations can send them back. This is a significant effort and while it could potentially be implemented municipally, it would require a very high number of municipalities across Canada to implement this type of requirement in order to get multinational product manufacturers to adapt their supply chains.

Complementary or Supporting Actions:

- Canada’s evolving waste management landscape is increasingly hinged on EPR programs. While not under municipal control, provincial governments that are interested in encouraging reuse should strongly consider requiring: (i) some percentage of EPR contributions to go towards the promotion or infrastructure for reusable packaging; or (ii) the recognition of reuse as fulfilling EPR obligations – perhaps counting for more than recycling.

10.3.3 Textiles

Businesses that generate textile waste (apparel) may dispose of waste textiles as municipal solid waste instead of seeking to donate the material or otherwise send it for reuse. Additionally, textiles disposed of by consumers in Canada are generally landfilled. Separation or sortation laws and landfill bans can help to alleviate this issue and provide more opportunities for reuse.

Opportunity or Measure: In New York, businesses that generate textile waste (more than 10% of their waste stream in any given month is textiles) are required to separate their textile waste from the rest of their waste stream for reuse or recycling. In municipalities like Markham, Ontario there are landfill bans in place that prevent consumers from disposing of their used textiles in the trash. These municipal measures can together prevent significant quantities of waste textiles from entering landfills and send more used textiles into existing reuse infrastructure.

Difficulties and Additional Barriers:

- Current textile sorting/reuse/recycling infrastructure is inadequate to address all of the waste textiles generated in any given area – as sorting is often done by charities and often by hand. Measures to find additional capacity or help to automate sorting may serve to alleviate this issue.
- Used textiles are not sold in high volumes in Canada compared to new textiles due to relatively low demand. Therefore, many of the textile products slotted for reuse are sent overseas to developing nations for sale – and from there are not tracked and may be landfilled or open-burned. It is unclear how this issue may be resolved or used textiles may be better positioned for resale within Canada.

Complementary or Supporting Actions:

- If more textiles are being diverted into existing reuse infrastructure, some method of supporting or expanding that infrastructure should be considered. This could include capital investments in sorting technologies or “green” jobs credits of some type for local businesses that sort used textiles for reuse. As with many waste management operations focused on reuse or recycling, sorting remains the major technical/labour-based operational bottleneck.
- The best way to reduce apparel going into landfill and simultaneously increase reuse is to promote products that last and are amenable to reuse via disincentivizing fast fashion and encouraging consumers to look for quality. Diverting increasing amounts of textile products into reuse networks that are not amenable to reuse does not increase overall reuse. Educational campaigns against fast fashion that promote the purchase of quality products and educate consumers on how to repair apparel are other ways to increase the average lifespan of apparel and encourage consumers to try and sell or donate their used clothing to other consumers that will want them.

10.3.4 Construction, Renovation, and Demolition Materials

Deconstruction initiatives are the main tool with which to drive reuse of CRD related materials, as demolition activities often prevent materials reuse. This first action represents the crux or the beginning of a potential supply chain where additional materials from this sector become available for reuse – and interviews have indicated that jurisdictions that have deconstruction requirements are more likely to see reusable materials flow to charities that resell the items for reuse.²⁷⁶

²⁷⁶ Interview with Habitat for Humanity, October 13, 2022.

Opportunity or Measure: Deconstruction initiatives. Without a deconstruction *requirement* buildings will continue to be taken down in the least expensive way possible – which is demolition with no reuse that results in materials going to landfill (this is also the case for renovations).

Difficulties and Additional Barriers:

- An interview with a jurisdiction that has implemented a deconstruction requirement indicated that they have little-to-no visibility on what happens to materials after they are donated. Therefore, while materials may go to facility that accepts donations, there is no certainty that it will be resold and may later be landfilled due to being unsaleable. Habitat for Humanity indicated that ReStore affiliates must be very cautious and strategic when accepting CRD materials in order to ensure that they can be re-sold, as they represent a significant cost burden if they are not purchased and must be disposed of.
- There can be significant administrative burden and additional costs involved with implementing a deconstruction initiative if enforcement and the tracking of waste-by-weight is intended. Waste haulers represent a critical element of this chain and may experience significant additional costs if waste needs to be tracked or sorted on site (as will deconstruction operators). Widespread non-compliance may occur if enforcement or transparent tracking mechanisms are not in place.

Complementary or Supporting Actions:

- The City of Palo Alto initiated a deconstruction initiative – and initiated a waste separation/hauling requirement alongside it in order to maximise the amount of waste being either reused or recycled and minimise the amount of CRD waste going to landfill (details can be found in Palo Alto’s Detailed Construction Materials Guide). The materials guide was developed in cooperation with local waste management centers in order to arrive at requirements that suited the infrastructure that was already in place and maximised opportunities for reuse and recycling of materials. Palo Alto’s deconstruction initiative requires a thorough pre-deconstruction assessment by a qualified company, and this survey identifies and catalogues materials that can be recovered for reuse and will likely be sold and reused. The list of these materials is uploaded to the municipality as part of the permitting process and the municipality can then track what items get donated as per the requirements of the deconstruction survey. Aside from donated materials tracked by receipt, a % of the waste generated via the deconstruction must be recycled (80%) as per the waste separation/hauling requirements. These percentages are calculated via integrated load tracking – whereby the scales of local waste management facilities generate tonnages of specific separated materials per load delivered that are linked back to specific sites. This system may involve considerable administrative burden, but allows for the tracking of materials for reuse (through donations) as well as the tracking of materials for recycling and likely generates significant (and trackable/enforceable) landfill diversion.
- Opening up avenues for reuse of deconstructed materials through new innovative systems such as the online marketplace intended for San Francisco operated by Rheaply may increase the amount materials that are actually reused. Additionally, funding or otherwise supporting up-cycling centers that involve multiple stakeholders utilizing deconstructed materials to manufacture new value-added goods (such as Project RE) could also increase the percentage of deconstructed materials that are reused and also create jobs.

10.3.5 Electronic Equipment

Electronic equipment can be a difficult sector within which to encourage reuse. Rapidly changing technology/obsolescence, data security/privacy concerns, the fact that some OEMs do not approve of or warranty resold/used products to discourage competition with new products, and the fact that reuse is not recognized as contributing to success metrics while recycling is within EPR programs are all significant barriers to reusing these items. There are still some actions that could lead to encouraging both reuse and increasing the lifespan of products.

Opportunity or Measure: Advocating for right-to-repair legislation is critical in this sector, as repaired and refurbished products can suffer from being distrusted when compared to new products. This perception can only be changed through concrete results, which will require more devices being highly repairable and for warranties to be generated to cover repaired or refurbished items.

Difficulties and Additional Barriers:

- The current EOL management system for electronic equipment does not support reuse and is focused on recycling – as is evident through the metrics EPR programs must meet to demonstrate success.
- EOL electronics management facilities are not designed to prioritize reuse/repair and are instead designed to ensure recycling – due at least partially to high labour costs of technicians that can analyse and repair EOL electronics.

Complementary or Supporting Actions:

- France has passed the Anti-Waste for a Circular Economy Act in 2020. Since January 2021, some French businesses have had to display a repairability score. The repairability score is a grade out of 10, with 10 identifying that a piece of equipment is most repairable. The law applies to smartphones, laptops, televisions, washing machines and lawnmowers.
- Austria and the German state of Thuringia introduced a publicly financed repair bonus to reimburse consumers for some of the costs of electronics refurbishment / repair. Up to €100 per person is available to have a defective electrical device repaired rather than disposing of it.

10.3.6 Household Goods/Appliances

British Columbia and Quebec currently have EPR programs for certain appliances, and neither of these programs focus on or have provisions for reuse. Both programs are focused entirely on recycling. Encouraging appliance reuse can be challenging due to the fact that appliances are often only disposed of when they are broken down and more expensive for a consumer to fix than purchasing new. Consumers do not often change appliances for fashion or because they wish to have the most up-to-date refrigerators on the market (as with some other smaller devices such as smartphones). Still, some provisions encouraging repair and requiring availability of parts for older appliances can help consumers hold on to their appliances longer.

Opportunity or Measure: Jurisdictions across Europe have approached the issue of appliance repair and resilience differently. Europe’s Ecodesign initiative requires spare parts to be available for a minimum of 7 years or 10 years for certain parts, and also requires that repair professionals and consumers have access to information on how to repair their products. Further requirements are expected to apply to specific product types. The EU also requires companies to disclose the destruction of any unsold goods and provide reasoning for this destruction in order to disincentivize this practice. In Vienna (and later in Austria proper) 50% of repair costs for certain electronic goods, consumer electronics, cleaning devices etc. have been subsidized by the state – making repairs much more affordable. Sweden utilized tax breaks on repair services to achieve a similar goal. France requires that equipment be tested for repairability and places a rating on the equipment, with equipment that is more easily repairable scoring higher and therefore being more attractive for purchase. All of these requirements are generally centered around lengthening the lifespan of appliance and other goods and improving their repairability to limit the amount of material entering the waste sector and enhance reusability/resale of used items.

Difficulties and Additional Barriers:

- There is currently no financial incentive for producer responsibility organizations in Canada to try and foster reuse or to look for functioning products amongst household appliances that are disposed of by consumers and slated for recycling.
- Many older used products are not suitable for reuse due to improving energy efficiency requirements or the presence of hazardous or banned substances.
- Without requirements for transparency on how to repair items (as in Europe) there can be a great deal of difficulty in repairing used items due to the high number of different brands and models on the market, each of which can use unique parts or require specialized tools.

Complementary or Supporting Actions:

- Canada’s evolving EPR architecture remains key to encouraging or advancing reuse in Canada. EPR programs for appliances could include requirements that funding from the program be put towards reuse infrastructure or staffing/training for repair technicians to examine certain goods collected by EPR programs for repairability and resale. Additionally, EPR programs recognizing reuse as fulfilling EPR obligations remains critical to advancing this issue further.

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