Study on Reuse and Refill of Plastic Packaging

National Ecosystem Scan

CANADA PLASTICS PACT

Canada Plastics Pact Mission

The Canada Plastics Pact (CPP) is tackling plastic waste and pollution, as a multi-stakeholder, industry-led, cross-value chain collaboration platform. The CPP brings together Partners who are united behind a vision of creating a circular economy in Canada in which plastic waste is kept in the economy and out of the environment. It unites businesses, government, non-governmental organizations and other key actors in the local plastics value chain behind clear actionable targets for 2025. By aligning with the Ellen MacArthur Foundation's global Plastics Pact network and the New Plastics Economy's common vision of a circular economy for plastics, CPP Partners commit to fundamentally rethinking the way we design, use, and reuse plastic packaging. The Canada Plastics Pact is a member of the Ellen MacArthur Foundation's Global Plastics Pact network. It operates as an independent initiative of The Natural Step Canada, a national charity with over 25 years experience advancing science, innovation and strategic leadership aimed at fostering a strong and inclusive economy that thrives within nature's limits.

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Executive Summary

The interest in exploring the potential of reusable packaging models is rapidly growing in Canada and elsewhere, largely driven by a desire of both private and public organizations to reduce plastic waste and other negative environmental impacts of packaging by keeping plastics in the economy. Reusable packaging includes refillable packaging that is refilled and reused by consumers and supported by dispenser systems, or returnable packaging that is refilled and reused by businesses. Referred to as a USD 10+ billion global innovation opportunity by the Ellen MacArthur Foundation, reusable packaging systems present great promise; however, a systemic change is needed to unlock its full potential. Collaborative efforts facilitated by the Canada Plastics Pact (CPP) can enable joint leadership and drive acceleration of the exploration and scaling of reusable packaging models.

Current state of the ecosystem in Canada

Reusable packaging options widely available in Canada currently include reusable shopping bag, water refilling systems (bring your own bottle (BYOB) or with standardized bottles), bulk stores and returnable beer bottles. Reuse of transportation packaging is also expected to be prevalent in Canada, though few examples can be found in the public domain. Innovative solutions and initiatives to expand and scale reusable packaging are still niche or in pilot stages.

The majority of new piloting and scaling efforts are focused in larger urban centers like Vancouver, Toronto and Montreal where consumer density is higher. The following sectors are leading the charge:

- **Food service providers**, notably beverage and food take-out containers, collaborate with reusable service providers that enable the reverse logistics, including client engagement and incentives, collection, sanitization and return to store;
- **In-store grocers** selling product refills and reusable packaging, offering refill stations, or act as a collection site for used packaging suitable for resale/refilling;
- **E-commerce grocers** enable at-home refilling or take back used packaging. Often their value proposition comes with standardized packaging, a full reverse logistics network, and technology; and
- **Independent zero-waste online stores** are emerging in larger cities and metropolitan regions, with the highest concentration in Montreal (based on this research).

The products targeted in reuse and refill innovation include:

- Beverage and take-out food containers;
- Cosmetics and personal care products;
- Household staples (cleaning products); and
- Consumer shipping packaging (home deliveries, moving boxes).

Over 150 companies are currently exploring, deploying or operating reusable packaging systems in Canada, including 27 service providers. Others include retailers offering refill options, and brand owners offering zero waste or low waste products.

Many policy tools targeting circular economy or low carbon solutions may impact reusable packaging systems. However, with a few exceptions such as taxes on single-use cups in Vancouver or a dedicated fund of $500K for reuse initiatives by RECYC-QUÉBEC, few policy tools target the emerging reusable packaging industry explicitly. That means that there are many opportunities for creating or improving the enabling conditions for the development of reusable packaging systems, spanning the following areas:

- Financial support and incentives;
- Standardization;
- Regulation;
- Coordination and Collaboration;
- Consumer awareness; and
- Leveraging public services and infrastructure.

In Europe, the regulatory landscape is evolving. A draft European Union (EU) wide regulation including reuse and refill targets has been published. There are countries that require a mandatory percentage of products that need to be reusable and/or a mandatory percentage of retail space saved for refill systems.

Main opportunities for scaling

A shared concern among governments, businesses and consumers about the environmental burden and resource waste drives the development of reusable packaging systems. A number of key areas of focus should be considered in building on this momentum to accelerate this development:

- Consumer adoption is key. Incentives and coordinated communication have proven successful in driving consumer engagement;
- There is a lack of clarity on the net business benefits of reusable packaging systems, which may be related to the great degree of variation between the benefits depending on product and deployment strategies. A case-by-case assessment is therefore needed;
- Both consumer adoption and the environmental benefits, both of which are crucial for any business case, necessitate solutions at scale within a regional geography. The environmental benefits strongly increase with decreasing travel distance of the reusable packaging, and consumer adoption tips once a majority of users is aware and a solution becomes the 'new normal', especially when this new normal occurs across businesses and product types. A focus on scaling up in high density areas such as cities and regions, therefore may support the accelerated development of reverse logistics systems, leveraging the existing infrastructure and service providers, creating engagement, and yielding environmental benefits;

- Another great opportunity lies in developing and leveraging standards resulting in interoperable, accessible systems and a faster return on investment on infrastructure. These should result from industry collaboration;
- Policies, regulations and efforts from other potential enabling actors can incentivize and accelerate innovation

Recommendations for the Canada Plastics Pact

Reusable packaging systems present great promise in Canada; however, a systemic change is needed to unlock its full potential. Collaborative efforts facilitated by the Canada Plastics Pact (CPP) can enable joint leadership and drive acceleration of the exploration and scaling of reusable packaging models. Key leverage points for the CPP include:

1. Brokering partnership and convening stakeholders to
   a) Contribute to the development of effective policies and regulations
   b) Undertake pilots
   c) Develop standards
   d) Develop infrastructure
2. Learning from national and international practices and disseminating knowledge among its members and broader network
3. Helping to foster innovation ecosystems
4. Identify pathways and geographies for common focus and prioritization around which to convene stakeholders

1.0 Introduction

1.1 Reusable Packaging Systems

According to the Sustainable Packaging Coalition (SPC), reusable packaging is packaging that allows either the business or the consumer to put the same type of purchased product back into the original packaging and accomplishes a minimum number of reuses by being part of a system that enables reuse.

There are two types of reusable packaging systems - refillable and returnable packaging.

- **Refillable packaging** is packaging that is designed to be owned and refilled by consumers with a separately-purchased product or through dispenser systems; and
- **Returnable packaging** is 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. It should be noted that this differentiation is mainly of relevance for primary and sometimes secondary packaging. Primary packaging refers to the packaging that is in direct contact with the product such as bottles, jars, cans, blister packs, bags, sachets, etc. Secondary packaging refers to the layer of packaging that surrounds one or more primary packaged products. It serves to group together multiple primary packaged products, providing a convenient way of handling, displaying and transporting the products. Examples of secondary packaging include boxes, cartons, trays, and multipacks.

Sustainable Packaging Coalition (SPC) builds on definitions proposed by the Ellen MacArthur Foundation, which identifies four models for reuse that further distinguish whether the user needs to leave home to refill or return the packaging or not.

Figure 1: Reusable Packaging Systems by the Ellen MacArthur Foundation

1.2 Products that are Suitable for Reusable Packaging Systems

The Sustainable Packaging Coalition suggests that reusable packaging (refill and returnable packaging) may be a better fit for certain categories of product, such as:

- Items that are **used in food services** (e.g., beverage cups, takeout containers), are more likely to reach high levels of reuse in practice due to their pervasiveness;
- Items that are **bought frequently** (e.g., personal care and home care products, supplies for work environments), since they are consumed fairly quickly and have high levels of repeat purchasing;
- Items **purchased online that are returned often** (e.g., clothing, footwear), since products are already being sent back by consumers when they don't fit or match expectations;
- Where purchasing a **specific quantity of product** is important and consumers express a desire to purchase less or more than the standard quantity sold;
- Where the current packaging **fails to adequately protect the product** and there are chronically high loss or damage rates;
- Where there is already a **"closed loop system" of return in place**, such as with rental items;

Where there is a **subscription model in place** and used packaging can be collected during the delivery of the next order; and

- Packaging that is **often stored in the open or on display** (e.g. soap dispensers) and a more durable, "counter-worthy" design is important to the consumer.

More valuable introductory content can be found in the following publications:

- Sustainable Packaging Coalition, Guidance for Reusable Packaging - Understanding goals and assumptions in order to design a more successful reusable packaging program, 2022;
- Ellen MacArthur Foundation, Reuse – Rethinking Packaging, 2021;
- Ellen MacArthur Foundation, Upstream Innovation, Strategy 2: Reuse – A Guide to Packaging Solutions, 2021;
- World Economic Forum, Future of Reusable Consumption Models: Platform for Shaping the Future of Consumption, Insight Report, 2021; and
- Australian Packaging Covenant Organisation, Scaling Up Reusable Packaging, 2022

1.3 Business-To-Business Packaging Reuse

Reusable systems and practices are generally reported as well-established in Business-to-Business (B2B) supply chains, mainly for tertiary packaging. Tertiary packaging refers to the outermost layer of packaging that is used to protect and transport multiple primary or secondary packaged items as a single unit. Examples of tertiary packaging include pallets, shipping containers, and bulk bags. This type of packaging is used for transport, storage and handling of large quantities of packaged goods, and it is designed to provide protection from damage during the final stages of distribution, such as during shipping and storage. The logical next step for industry is to explore opportunities for increasing uptake of these systems, maximising impact across supply chains. The opportunities include pooled packaging such as pallets, as well as reusable distribution packaging such as crates for fresh produce and kegs for beer and other beverages. The Reusable Packaging Association estimates that 35 percent of all transport packaging globally is reusable, driven mainly by the cost-savings and handling efficiencies offered by reusable transport packaging systems. Additional opportunities exist for businesses to expand into and further leverage the known cost-savings and handling efficiencies in the business-to-business market, such as:

- Implementing smart systems;
- Standardizing packaging formats;
- Leveraging return systems to encourage the return and recycling of other packaging; and
- Sharing design and reducing transportation costs.

2.0 Reuse & Refill in Canada

2.1 Overview of Current Reuse and Refill Activities in Canada

Reusable packaging systems are on the rise in Canada (see the full list of companies active in this space in **Appendix C**):

- There are over 100 refilleries across Canada, also referred to as zero waste or low waste grocery stores. While refilleries target a niche consumer market, their existence and growth in popularity highlights that there is a market for reusable packaging solutions;
- Over 50 product and service providers across four provinces (British Columbia, Ontario, Quebec, and Alberta) offer reuse and refill alternatives, mainly located in dense urban areas, and often supported by online platforms. More than half (i.e., 27) of the identified service providers are Canadian start-ups, while other successful service providers have roots abroad;
- Large brand owners in the food services, retail, and consumer goods sectors have completed pilots in Canada and successful products are available or being deployed on the market in the foreseeable future. Many pilots, especially those of models that require consumer engagement, are formed by a collaboration between brand owners and service providers; and
- Federal, provincial and municipal governments are currently exploring options to support reusable packaging system emergence, primarily in support of plastics and overall waste reduction agendas.

The increase in interest seems to be mainly driven by a convergence of factors which include a global expectation for reduction of plastic waste by consumers, a sentiment that is also highly present in Canada; a rise in importance of business environmental, social and governance (ESG) performance; and regulatory trends in Europe and elsewhere. These provide a fertile ground for industry leadership and ambitious corporate commitments. In relation to reusable packaging systems, corporate commitments (similar to governmental ambitions) tend to relate to the use of plastics more so than to carbon reduction goals.

Reusable packaging systems that are already widely available include shopping bag reuse, water refilling systems (bring your own bottle (BYOB) or with standardized bottles) and beer bottle reuse (though not as prevalent as it used to be). It is suspected that reuse of tertiary packaging (packaging that facilitates the protection, handling and transportation of a series of sales units) is common and wide-spread. However, few of those solutions and initiatives could be found documented in the public domain. Further investigation of those activities, challenges and opportunities is recommended.

New refill systems are popping up across the country, and the majority of the focus and attention for piloting and scaling up reusable packaging systems is on cities where consumer density is higher (Montreal has the highest prevalence, followed by Vancouver and Toronto). The vast majority of

solutions, pilots and other initiatives currently focus on the Horeca (Hotel, Restaurant and Cafes) Food & Beverages sector with 18 reported initiatives for takeaway/takeout containers and cups (see **Appendix C**). These often collaborative efforts involve corporations and service providers that enable the reverse logistics, including client engagement and incentives, collection, sanitization and return to store. The eCommerce sector follows, with four reported companies enabling at-home refilling or reusable mailing packaging. Often their value proposition comes with standardized packaging, a full reverse logistics network, and technology. Household and personal care products purchased in retail stores is another sector exploring reusable packaging solutions, with at least three initiatives identified.

Reuse of transportation packaging is also expected to be common, however, few examples were found in the public domain in Canada.

2.2 Overview of Business to Consumer (B2C) models

Four models can be used to classify reusable packaging in Business to Consumer (B2C) solutions.[1] These differ in terms of packaging ownership and the actions required for the packaging to achieve its reuse cycles. A multitude of businesses is currently involved with the exploration of these models in Canada.

Over 150 companies are currently exploring, deploying or operating reusable packaging systems in Canada, including retailers offering refill options, and brand owners offering zero waste or low waste products, food service providers offering reusable alternatives. It also includes 27 business to consumer reuse and refill solution providers partnering up with major companies to pilot the use of digital solutions. Examples include Tim Hortons, A&W, Loblaws, General Mills and Lululemon. At least 27 business to consumer (B2C) reuse and refill solution providers; Breakdown of these 27 solutions is as follows:

- 'Refill at home' solution: **1 example**
- 'Refill on the go' solution: **3 examples**
- 'Return from home' solution: **3 examples**
- 'Return on the go': **20 examples**

These solutions are further illustrated in the following sections through case studies on different companies utilizing reuse and/or refill systems. The case studies include a description of the program and some of the perceived challenges and opportunities based on research and interviews. Please note that some systems and solutions may fall under multiple models. Refer to the case studies for more detailed examples of each model in practice.

[1] Upstream Innovation: a guide to packaging solutions report by Ellen MacArthur Foundation, November 2020 https://emf.thirdlight.com/file/24/h_Pf1MahttEqT6h_OwchCrKU2/Upstream%20Innovation.pdf

2.2.1 Business to Consumer (B2C) – Refill at Home

Users refill a reusable container at home with refills either delivered to the door (for example, through a subscription service) or bought in a shop. Users retain ownership of the main packaging and are responsible for cleaning.[1] The products and services available in this category:

Solid or concentrated products: Liquid refills are redesigned as concentrates (e.g. Unscented Co. concentrated refills or tablets, see **Appendix C**), reducing transportation and packaging costs.

Auto-refill services: Users are offered a refill subscription service, improving brand loyalty (e.g. Blueland, FrontPorch Delivery, see **Appendix C**)

Products that have a high water content (such as beverages, and some home care and personal care products) are good candidates for refill-at-home models as water can often be removed to produce a solid or concentrate that is then diluted by the user at home in a reusable bottle or dispenser. Furthermore, exploring integration with e-commerce can bring many benefits as compact refills easily fit through letterboxes and save transportation costs for home delivery. An online outlet also removes the 'attention' advantage that standard large packaging may have when products are physically displayed on a shelf.[1]

2.2.2 Business to Consumer (B2C) – Refill on the go

Users refill the reusable packaging at a dispensing point away from home, such as in a store. Users retain ownership of the reusable packaging and are responsible for cleaning.1

Customised dispensing systems: Users can choose their desired refill quantity (e.g. various refilleries and low or zero waste stores in Canada, Algramo, Soapstand, Ecoborne, Station Lave Glace, see **Appendix C**) often at more affordable prices and with personalised content.

Smart dispensers: Sensors are incorporated that recognize when a package is in place, automatically dispense the required quantity (e.g. Algramo, Ecoborne, Soapstand, see **Appendix C**), register product information, and facilitate cash-free payments.

Distributed sales points: Dispensers are moved outside of traditional stores, becoming mobile or being placed in public spaces, office buildings, etc. (e.g. Soapstand, Station Lave Glace, see **Appendix C**)

A common starting point is dried products (such as beans, pasta, and grains). These products have minimal packaging requirements, making them ideal for very simple bulk dispensers, and can be purchased and transported home in foldable/flexible packaging (for example, reusable bags) that are easy to bring along to the store. It also gives customers the opportunity to purchase the exact amount they require. Another place to look for opportunities is for beverages consumed on the go, allowing

users to bring along their own reusable bottle or cup. Other products such as concentrated home care and personal care products are good candidates also for refill-on-the-go models.

CANADIAN TIRE (case study)

Canadian Tire has primarily focused on plastic packaging reduction initiatives and increased use of renewable and recycled materials in packaging design. Due to their broad product assortment and complex supply chain, reuse/refill alternatives are still at the ideation stage.

CHALLENGES

Hazardous products: Many products sold have hazardous ingredients (e.g., paint, oils, cleaners, windshield wiper fluid, compressed gas) and require additional safety measures to store, clean, refill and reuse. For example, propane camping canisters currently sold at stores are single-use items. Refilled canisters cannot be sold inside the store by hazardous product restrictions, a barrier for the brand to offer refill alternatives on the shelf;

Supplier partnerships: Many strong candidates for refill and reuse alternatives are non-hazardous, such as pet foods, bird seed, grass seed, and ice salt. To move to refillable packaging would require changes to bulk shipments and packaging and new processes at stores to ensure product safety and minimal waste; and

Dealer model: All Canadian Tire stores are owned and operated by Associate Dealers. This adds another layer of complexity to operations, as it requires a standardized approach that can be deployed at all locations.

OPPORTUNITIES

Extended Producer Responsibility (EPR) credit and reverse logistics: Canadian Tire does not receive compensation for being a collector and managing EPR programs. However, investment is required to collect, store, and safely manage these products. There is an opportunity for EPR programs to develop a compensation scheme for the responsible management of these products to incentivize retailers to act as collectors in these programs; and

Industry standards for packaging: Canadian Tire is working with other retailers to develop pilots where a shared reusable container and supply chain could be used with customers and vendors. This would improve value to customers, increase impacts and reduce costs.

GENERAL MILLS

General Mills Inc., an American multinational consumer food company, its products, including Annie's, Betty Crocker, Nature Valley, Yoplait, Haagen-Dazs, Blue Buffalo, and various cereal products, are sold to customers in more than 100 countries on six continents. General Mills plans to conduct trials in selected countries for reusable and refillable packaging while acknowledging the current challenges for the development of these models at larger scale.

CHALLENGES

Lack of existing infrastructure and systems: As a global brand, General Mills has centralized production facilities only in selected countries, mainly in the USA and Europe. The economics of building refill systems requires decentralized systems such as collecting, sanitizing, and refilling dispensers at the production facility, which is currently not a viable solution for General Mills. It is critical to develop industry standards for economy of scale and common practices; and

Reverse logistics: General Mills ships the product to the distributor, not directly to the retailer. The backhaul mechanism requires a storage space where the reusable transport packaging needs to be stored until it's ready to be shipped to the production facility in full load to be economically viable. A willing partner must provide storage space for the reusable packaging before hauling back to the production facility after cleaning and sanitizing it according to food safety standards.

OPPORTUNITIES

Product Category: Reusable packaging systems do not fit every product category. Products used on the go such as cereal snack bars or sold in sachets such as food mixes or soups are not easy candidates. Cereals are also a big challenge due to the low density of the product; economically, it's not yet viable for markets like the USA, where consumption is significantly higher. The company sees the primary opportunity for the products already sold in rigid glass or plastic packaging, such as dairy and can products, and dry goods, such as pet food;

Research and Development (R&D) on refill systems for dry food safety and quality: The food safety, the shelf life and the density of the goods are the primary obstacles for any product to be offered in refill systems. General Mills has partnered with various refill solution providers to test air-tight dispenser units to prevent moisture, reduce the risk of food contamination and optimize the refill cycle of the products; and

Pilots and partnerships: Pilots are key to testing the viability (logistics, user adoption, etc.) of ideas with the technology solution providers and retailer partners to improve reuse and refill solutions and overcome barriers. The company is tackling challenges by building partnerships with solution providers and executing reuse and refill in Canada, the USA, and Europe.

ALGRAMO

Algramo is a next-generation solution offering consumers, retailers, brand owners, and cities alternatives based on bulk dispensing and a packaging-as-a-service model. Initially, Algramo used vending machines to dispense household products and staple goods in small stores in lower-income areas of Santiago in Chile. The company has since piloted a home delivery service and smart in-store dispensers with both Walmart Chile and Lidl UK. In addition to private label retail partners, Algramo is currently working with Unilever, Nestle and Coca-Cola. It operates primarily in Chile and the UK, with pilots operational in Jakarta and is working to launch a pilot in Mexico.

CHALLENGES

Slow transition of retailers: Retailers are comfortable with the status quo and resistant to change, which is one of Algramo's most complicated and critical stakeholders to expand its solution. There is an opportunity for public policy to nudge this tradition. A great example is a new law introduced in France that requires 20% of the floor surface of shops larger than 400 square meters to be fitted with refill systems by 2030. This proposal still has to be approved by the Senate;

Business to business (B2B) packaging regulations: To optimize economic and environmental performance of reusable packaging systems it is important to have optimized logistics with minimized transportation distance for the product that is sold in reusable B2B packaging. Note that some reuse providers sell their products in single-use (bag in box) packaging. This is likely the best option if the product is produced far from the point of dispensation;

Scaling in rural areas: The refill systems must move fast and efficiently to lower the cost of the product. It's also a new technology that requires consumers to adopt it more quickly for the solution's scalability, and it is more feasible in dense urban areas. Once the system is optimized in urban areas and has become mainstream it should have optimized economies of scale that should enable it to be scaled into lower density markets; and

OPPORTUNITIES

Canada pilot: If Algramo has a dedicated retail partner, they would be keen to explore entering Canada in 2024. When Algramo starts a pilot in Canada, it has expressed interest in joining the Canada Plastics Pact;

Funding and policy support & brand partnerships: The major influences for Algramo to expand in new markets are the Fast-Moving Consumer Goods (FMCG) partnerships with big brands, funding support, and the maturity of the policy framework to enable reuse and refill initiatives. Chile and the UK are two great examples of Algramo currently operating. The UK is the global headquarters of leading FMCG brands, a hotspot of many organizations dedicated to reuse and refill systems. There's also the new plastic tax that was implemented in April 2022. It applies at a rate of £200/tonne for companies that manufacture or import filled or unfilled plastic packaging greater than 10 tonnes per year with less than 30% recycled plastic. It is a signal for brands that plastic packaging will cost more in the future, which incentivizes reusing packaging; and

ALGRAMO (continued)

CHALLENGES

Product Category: Depending on the geography and factors like temperature and humidity, quality assurance standards need to be carefully considered on a product-by-product basis to ensure the refill system meets the global quality assurance standards of fast-moving consumer goods.

OPPORTUNITIES

Retailers' space efficiency: Algramo developed a new dispenser system called 'mini' that plugs into the existing shelf structures. It was piloted at the LIDL retailer store in the UK. This new dispenser system optimizes shelf space, and the detergent transported in bulk packaging improves logistic efficiency. According to the LIDL case study, the mini dispenser takes up the space of 66 Formil bottles while it can fill over 245 individual Formil pouches after just one replenishment. Therefore, a retailer gets about 4x efficiency on shelf space.

Figure 2: Algramo's new dispenser system piloted in LIDL store in the UK, 2022[2]

[2] https://corporate.lidl.co.uk/media-centre/pressreleases/2022/on-shelf-refill-trial

SOAPSTAND

Saopstand is an in-store dispensing solution that provides automated refill stations for home and personal care products to retailers, apartment buildings, and commercial spaces in Canada and the US. Soapstand has five stations in Vancouver, Canada, located at retailer chains, a zero-waste store, and a university. The rest of the stations are in the US, in apartment buildings and commercial spaces, and will operate in 70 stations across North America by Jan 2022. The company launched a sister brand called Drinkfill to provide beverages in refill and eventually plans to offer other liquid consumables (oil, etc.).

CHALLENGES

Bulk packaging & cost: Soapstand dispensers can only offer the products (home care and personal care) available in bulk packaging, which can be limited as only a few products and fragrances are being offered in bulk by the manufacturers. Another challenge is that bulk packaging is often filled manually rather than by automated manufacturing lines, which presents an extra labor cost. There must be enough demand to warrant a separate bulk production line to drop the cost of refilling products on shelves competitively;

Reuse of bulk containers: Most manufacturers who offer products (home and personal care) in bulk packaging do not accept empty used containers to refill. In most cases, these empty containers are repurposed by retail stores or communities interested in repurposing for different applications. There is a lack of system and transparency to collect and refill bulk containers in the current refill landscape;

Funding need: Building refill dispensers require upfront investments, and there is a need for sustainable investment to fund the refill solutions at scale; and

Lack of incentives for retailers/brands to deploy refill solutions: Retailers and brands are not incentivized to pilot and move towards refill solutions. They are comfortable with the status quo and selling products in single-use packaging and earn more profit in the absence of refill policy and regulations.

OPPORTUNITIES

Sustainable certification requirements: One of the incentives that apartment buildings and commercial spaces offer refill solutions and dispensers to residents in the US is the sustainability certification requirements. **GRESB*** is one of them, and as part of its real estate assessments, building management receives extra points to offer refill solutions to its residents; and

Desirability, Accessibility, and Affordability: Soapstand believes the refill solutions can be scalable and quickly replace their single-use plastic equivalents when the solution is desirable, accessible, and affordable by consumers. Hence, the location of the dispensers plays a significant factor; for example, a laundry station in an apartment building's laundry room is purely convenient for the residents to switch the refill alternatives.

* www.gresb.com/nl-en/products/real-estate-assessments/

2.2.3 Business to Consumer (B2C) – Return from Home

Users subscribe to a delivery and collection service that allows them to return empty packaging from home. A business or service provider then takes care of cleaning and redistributing the packaging.[1]

Auto-replenishment services: Businesses offer a subscription service, where the empty packaging is collected upon the next delivery of goods, making it easy to return packaging. This also improves brand loyalty and delivers user insights (e.g. Fresh Prep's meal kits in reusable packaging, Crisper, see **Appendix C**).

Superior packaging design: Packaging is designed with improved functionality and/or aesthetics to provide a better user experience (e.g. Loop, see **Appendix C**). This is possible as the packaging remains an asset to the business and the initial packaging cost is divided over many uses.

Shared infrastructure: Businesses share logistics and cleaning facilities across brands, sectors or wider networks, potentially through a third-party service provider, in order to improve the economics of reverse logistics (e.g. Loop, Sharewares, see **Appendix C**).

Focusing on e-commerce products that are delivered at a relatively high frequency, ideally through a subscription model, can be a good place to start. It allows the collection of empty packaging to be combined with the delivery of new products and avoids users needing to store empty packaging for long periods of time. The model is well suited to urban areas[3] where transport distances, both between deliveries and from delivery to cleaning/refilling sites, are shorter compared to areas with lower population densities.[1]

[3] CPP Partners Meeting, August 17, 2022, Loblaws Presentation

LOBLAWS

Loblaw Companies Limited (Loblaw) is Canada's food and pharmacy leader, as well as its largest retailer. With a network of 2,500 stores and national e-commerce options, Loblaw brings food, pharmacy, beauty, apparel, and financial services to customers across Canada.

Loblaw is committed to reducing and eliminating plastic wherever possible and has developed an internal Plastic Steering committee with a mandate to reduce the negative environmental impact of plastic, including all President's Choice product plastic packaging will be reusable or recyclable by 2025. Loblaw has piloted small and big reuse initiatives in the last few years. These pilots include:

- Eliminating millions of single-use plastic hangers and replacing them with wooden hangers, now being rolled out across Joe Fresh in all stores nationally;
- Eliminating single-use plastic pallet wrap and replacing them with reusable pallet wrappers;
- Reusable take-out food container program pilot launched in partnership with Friendlier in four Zehrs stores in Guelph, Ontario; and
- Refill stations pilot launched in partnership with Ecoborne in 16 stores at Provigo in Quebec that offer customers liquid hand soap, dish soap, and laundry detergent.

LOBLAWS Pilot programs learnings

Employee motivation: It's not always about the big pilots and big initiatives; it's also about getting people within the organization motivated, listening, and involving them in achieving what's possible to replace single-use options with reusable alternatives in store level.

Reverse supply chain: It's yet to be proven a working reverse supply chain mechanism, and make it work within the economics of a current system that spent years optimizing to ensure there are no empty trucks driving around.

Refill stations: More consumer education is needed to build more awareness for refill options in-store to support sales and adoption. Only a limited number of household items (dishwasher soap and hand soap) were tested vs. testing food products. The brand of the product used for the pilot was not widely recognized by consumers and could have affected uptake. The vendor is also unable to support cross-country logistics and most vendors in the space are regionally focused and don't have a presence in multiple Canadian markets. There is also a need to understand the store real estate required by the kiosk, as it replaces high-volume conventionally packaged products.

Due to the complexities of the supply chain operations for reusables, Loblaw proposed and has been working on adjusting the supply chain for an in-store distribution system. Through this integrated store model approach, success factors depend on:

- 'Full Shop' experience requires a dedicated store area for shopping a larger portfolio of products across a larger breadth of categories and drop-off bins of returned containers;
- Establish new consumer behavior by developing an incentive system and understanding customers' willingness to pay a premium, pay a deposit, and bring containers back for a refund; and
- Build an efficient alternative supply chain model to optimize the needs of the new reusable systems.

2.2.4 Business to Consumer (B2C) – Return on the go

Users purchase a product in a reusable container and return the packaging at a store or drop-off point after use. The packaging is either cleaned where it is returned (e.g. at a retail site) or a business or service provider takes care of the cleaning and redistribution of the packaging.[1]

Smart systems: Packaging is tagged with individual IDs, allowing businesses to follow stock, control deposit payouts, and obtain user insights (e.g. A Friendlier Company, Boox, Reusables, Muuse, etc. See the full list in **Appendix C**).

Turn-key solutions: Reusable packaging and infrastructure is offered as a 'service', removing the need for a brand or retailer to be responsible for the reuse system. For example, a 'reuse as a service' business might handle the reuse system on behalf of a restaurant or café, offering the items required for food delivery (cups, containers, etc.) and then taking care of the washing, collection, and redistribution (e.g. Cupko, See the full list in **Appendix C**).

Shared infrastructure: Return locations, collection, and cleaning infrastructure are shared between businesses, lowering the system cost while ensuring drop-off is convenient and seamless for a user. Low footprint reusable packaging: Packaging design and production are optimised to reduce upfront cost and resource use while maintaining utility and durability.[1]

BOOX

Boox is a reusable shipping service provider that enables the reuse of consumer products. Its full-circle services involve supplying proprietary, customizable, and reusable shipping boxes and bags to e-commerce brands of all sizes and reverse logistics services to collect, refurbish, and redistribute the Boox shippers back to those brands. It creates an additional benefit in returning or donating unused or unwanted products (such as textiles, etc.) to retailers while returning the empty reusable Boox. It has a network of partnerships that enable consumers to drop off their used Boox products locally in the US with Happy Returns, Ace Hardware, USPS postal and many others (more than 45,000 collection points) and the UK, beginning the process of return and reuse. Boox works primarily with beauty brands such as REN Clean Skincare, Saie, and Rhode and has done pilot projects with Lululemon and Revolve.

CHALLENGES

Consumer education and reuse cycle: Boox boxes could be reused and refurbished upward of 12 times, and the bags could be reused hundreds of times. But it would require consumers to return them, which is a current challenge company is tackling. Boox's overall return rate is between 20% and 30%. For some of its brand partners is higher than 65% depending on how the brand educates its customers. The return rate is related to how much brands take time to educate their customers about their reasons for switching reusable packaging and how to return the boxes or bags; and

Coverage of the solution/rural areas: While Boox has established many collection points in dense urban areas, it may still be inconvenient for consumers living in rural areas to return their boxes due to the limited availability of collection points. In fact, 90% of Boox boxes are shipped to densely populated urban regions. However, Boox customers in the US can return their boxes via the United States Postal Service (USPS) directly from their homes, regardless of their location.

OPPORTUNITIES

Increased brand loyalty: As environmental commitments and sustainability initiatives rise in popularity among consumers, Boox packaging offers a smart shipping option that safeguards products, creates higher retention rates, and increases brand loyalty. The concept has particular appeal to young, millennial consumers at the forefront of the push for eco-friendly innovations;

National collection partnerships and reverse logistics: National partnerships offer significant benefits, including the availability of numerous drop-off locations across the country and affordable reverse logistics operations. Boox has recently partnered with Canada Post and will be launching its services in Canada in April 2023. To further expand its reverse logistics network, Boox has also teamed up with Returnbear, in addition to existing partners Canada Post and Salvation Army. The inclusion of multiple partners will ensure convenient and accessible return options for customers; and

Cost competitive reuse model: For Boox, the consumer does the last mile of returns in a reverse logistic, which makes the solution financially viable for brands and cost-competitive with traditional packaging options.

TIM HORTONS, Restaurant Brands International (RBI)

Tim Hortons is a subsidiary of one of the world's largest quick-service restaurant companies, Restaurant Brands International (RBI) Inc. RBI has set a long-term target to become net-zero emissions by 2050. One of the impact areas RBI has been continuously reducing its environmental footprint is with Packaging & Recycling. One of the four RBI's sustainable packaging strategies focuses on reducing packaging use and promoting reusable alternatives, working closely with its suppliers and local partners to innovate the industry. Tim Hortons has launched two pilots in Canada to accelerate the adoption of reusable packaging since October 2020. They have been sharing the learnings from ongoing pilots and guiding other RBI brands in different markets on adopting reusable packaging.

CHALLENGES

Consumer adoption: The main obstacle to consumer adoption is the current awareness in the market of the reusable packaging, cups, and containers program. Consumers do not expect to encounter these programs at the check-out as it has yet to be widely used, and no one intuitively knows how it works;

Deposit cost: Currently, Tim Hortons offers a $4 deposit on each reusable cup purchased in the stores, which is a barrier for some consumers, especially low-income people. A reward program based on the number of reusable cups bought instead of dollars purchased might overcome the obstacle of the initial deposit amount; and

Contamination of the return process: Contamination in the return stream highlights the need for more intuitive and user-friendly return bins. Although Tim Hortons had initial difficulties getting all the cups into their collection bins, they have improved their system by detecting fraud and suspending accounts. A human-centric design approach can help ensure that customers understand how to properly dispose of their items, reducing the likelihood of contamination in the return stream.

OPPORTUNITIES

Power of awareness and consumer education: Tim Hortons found that encouraging team members to upsell the reusable cup-sharing program was effective in increasing participation, but it was not a sustainable long-term solution. While time trials showed that awareness can increase a consumer's willingness to choose reusable over single-use plastic packaging, relying on frontline staff at restaurants is unrealistic for driving mass awareness. Instead, it requires every food service business and quick-service restaurant to offer reusable packaging programs, and for the City of Vancouver to continuously communicate the single-use item bylaw and the availability of reusable programs with the public. By increasing awareness of these programs before consumers enter the restaurant, they will be more likely to choose reusable options;

CHALLENGES	OPPORTUNITIES
	The need for a collective effort to raise reusable packaging awareness: Other brand partners' adoption and promotion of reusable packaging programs are playing a crucial role in helping raise awareness. Currently, none of the big brands, including Starbucks and McDonald's, have reuse programs in Canada; A&W only offers a program called Cup Crew, where you swap an old cup with a new one in the store location in BC and Saskatchewan but does not participate in the public collection. There is a significant need for big food service brands and Quick Serving Restaurants to create reusable programs and offerings that will help raise awareness; and **Convenience of the reusable cup solution:** The ease of the return and refund process is crucial to increasing consumer retention. Reducing the friction in the upfront piece, which is getting the cup in the consumer's hand, and reducing the friction in the downside piece, which is having a convenient place to return the cup, is driving the success of cup-sharing programs.

2.3 Policy and Regulatory Context

Policy and legislation can play a major role in enabling the acceleration of reusable packaging systems. A major insight from this study is that currently, very few policies target reuse and refill systems for packaging specifically. However, many are relevant for shaping the context within which reusable packaging solutions can develop. These include cleantech innovation policies, plastics policies, carbon reduction policies, circular economy and zero waste policies, or even food health and safety.
With growing interest in and attention to reusable packaging systems across stakeholder groups, the regulatory and policy context for reusable packaging systems in Canada and elsewhere is evolving rapidly.

Existing policies and regulations can be found at all levels of government and can be grouped into six major categories, as further described in this chapter:

- Financial support and incentives;
- Standardization;

- Regulatory;
- Coordination and Collaboration;
- Consumer awareness; and
- Leveraging public services and infrastructure.

2.3.1 Financial support and incentives

Governments can influence the viability and success of reuse and refill systems through financial incentives in various ways:

1. Funding or support programs for projects, research & development (R&D), collaboration efforts, infrastructure development and/or start-ups or businesses.

On a federal level, various programs designed either to support general innovation and digital or cleantech innovation, can be considered in support of reuse projects. These include the Strategic Innovation Fund Impact Canada, Clean Growth Hub and the Digital Technology Supercluster.

On a provincial level, funds targeting the circular economy, in particular, can also be found. These include the CleanBC Plastics Action Fund Phase 2 of $10M, which is one of the few funds in Canada mentioning reuse explicitly; the Alberta Innovates Fund targeting technology development from TRL 3-7 (proof of concept to demonstration) and Fondaction in Quebec.

On a local level, there is a multitude of financial support that is provided to start-ups, entrepreneurs and projects via local funds and programs.

Available funding targeting circular economy in Canada is relatively small compared to some other countries, such as the US through its REMADE Institute or the EU through the Horizon program - $70M and a billion. It should be noted that organizations such as the REMADE Institute build on a long history of industry funding and collaboration within the industry and between industry and academia.

2. Economic incentives

Tax incentives known to be supportive of reusable packaging systems in Canada include the single-use beverage cup fee in Vancouver (though interviewees mention it being too low to be effective) and Green Jobs Tax Credits as adopted by the US Government. Various countries in the EU have also implemented a Plastics Tax on non-reusable packaging (Spain, Italy).

3. Extended Producer Responsibility (EPR) incentives

EPR frameworks can be leveraged to create favorable conditions for packaging reuse. For example, reusable packaging can be exempted from the regulations, or fees associated with them can be lower

through eco-modulation (Quebec). In Europe, there are also instances where EPR-funded organizations play a role in pre-competitive R&D activities (Netherlands).

2.3.2 Standardization

National governments are working with national standardization organizations to develop circular economy standards for reference in future legislation. In Canada for example, the Canadian Standardization Association (CSA) has been working on setting standards for a circular plastics value chain in support of the federal landscape. Product design standards have also been developed in, for example, the EU. However, specific standards for reusable packaging are still in their infancy, mainly driven by industry, and the journey to explore how other relevant standards (such as those related to food safety) apply to reusable packaging has recently started. Canadian Plastic Pact members have initiated discussions specific to food safety with the federal government to clarify requirements for recycled materials, an effort that could be extended to requirements for reusable packaging.

It has been noted by interviewees as well, that cities may play a role in either setting, or verifying compliance with food safety standards. Cities have been reported to play a role in standard setting for take-out packaging. For example, the German FreiburgCup has been launched by the city, with 60-70 % of all local coffee shops participating in its use. The City of Seattle's pilot program, called REUSE SEATTLE, is a public-private partnership among the city's major sports and entertainment venues, small and medium-sized restaurants and businesses, and PR3 to create practical solutions and standardized systems for reusable packaging.

2.3.3 Regulation

National policy and legislation can play a major role in enabling the acceleration of reuse systems by setting performance standards, driving performance outcomes and creating a level playing field.

Various regulatory interventions are being undertaken in Canada, impacting the case for reusable packaging systems:

- The federal single-use plastics prohibition regulation bans companies from importing or making six single-use plastic items, building the case for the creation of reusable alternatives. These include, checkout bags and foodservice ware made from or containing problematic plastics as well as ring carriers;
- Single-use items have also been banned from disposal by some municipalities across Canada; and
- The federal government is in the process of developing recycled content regulations. In the consultation on the Notice of Intent that precedes the draft regulation, four consultation questions related specifically to reusable packaging systems.

In the European Union, we see the emergence of regulations directly targeting the development of the ecosystem for reusable packaging systems. For example, some countries set mandatory percentages of

products whose packaging has to be reusable (sometimes sector or product specific for high-priority sectors, sometimes generic across industries). These requirements may or may not be set as part of existing extended producer regulations (EPR). While these requirements apply to brand owners mainly, France has set a mandatory percentage of retail space for refill systems. A summary of key requirements is summarized in **Table 1**.

Table 1: Regulatory requirements in the EU[4]

Country	Requirements
Germany	2018 Packaging Law commits to 70% reuse target for all beverage containers by 2022. Under 2021 amendment, all restaurants must offer reusable takeaway containers by 2023. Restaurants cannot charge more for reusable packaging, but can place a deposit on them. Restaurants must accept return of reusable packaging.
France	2019: "anti-waste law" commits to 20% packaging waste reduction, of which 50% (10% percentage points) by reuse, which includes specific targets for packaging waste in the food and non-food grocery sectors and in the transport sector 2022: All regular home meal deliveries will have to be packed in reusable packaging by January 2022. 2023: The percentage of reusable packaging sold compared to single-use packaging must reach 5%. All food ware used for on-site consumption in hotels, restaurants and cafes will have to be reusable. Supermarkets with floor space of >400m^2 have to dedicate 20% of their floor space to refill systems. 2027: The percentage of reusable packaging sold compared to single-use packaging must reach 10%. 2040: The use of any single-use plastic packaging is prohibited In France.
Austria	Draft law: 60% of beer and 20% water bottles, 10% milk & juice bottles in refillable bottles by 2024
UK	2021: packaging extended producer regulations consultation proposals for mandatory reuse requirements (details in 2023), with the introduction of obligations from 2025
Draft EU packaging regulation	Reuse and refill targets for 2030 and 2040 for: take-away beverages and prepared food, beverage container and transport packaging. Requirements specific to systems for re-use and refill stations.

2.3.4 Coordination and Collaboration

Achieving systems change requires in many cases simultaneous action of various ecosystem players. This joint action can be created around specific pilots and later deployment, however, there are also cases where collaboration is needed before there is a clear project or party taking the lead.

[4] Presentations: June 2022 KIDV webinar Reusable Packaging in France and Reusable Packaging in Germany; November 30 Reuse Symposium Presentation Reloop

Aside from non-governmental organizations such as the Canadian Plastic Pact, governments at various levels are seen to sometimes step up at take the role of convening ecosystem players, supporting discussions that lead to an agreement of the role each party can play in order to achieve shared goals and/or serve the public interest. Please refer to **Chapter 4** for the example of Reuse Seattle. On a country level, collaborative efforts have in some cases led to agreements (covenants) that act in lieu of regulation, which include explicit reference or even targets for reuse. For example, Australia and France developed covenants in collaboration with industry to adopt reuse systems. In Australia, this is an overarching covenant led by and overseen by the Australian Packaging Covenant Organisation (APCO), or very specific to an industry (such as food delivery services).

2.3.5 Consumer Engagement

Consumer awareness is key for driving consumer adoption and through that, system performance. This is one of the greatest challenges in this early stage of developing reusable packaging systems. Especially cities, who can build on existing promotion and education capacity and channels, can support reuse efforts deployments. Simultaneous launching of pilots or initiatives by various companies can make it easier for cities to support industry efforts, avoiding a perception as supporting individual commercial interests.

2.3.6 Leverage Public Infrastructure

Cities also are the owners and operators of infrastructure that can be leveraged to support the deployment of successful reusable packaging systems. Two examples of city action are highlighted in the case studies:

- The development of a radio-frequency identification (RFID) system on reusable cups that can be collected through a joint collection system (note that in the case of full producer responsibility, this infrastructure in Canada may be owned by private sector parties) (See Durham City case study); and
- The placing of reusable packaging collection bins in public spaces, such as sidewalks in proximity to a take-out location that issues the reusable packaging. (See the Tim Hortons case study).

2.4 Other Ecosystem Players

Canada is home to various non-profit initiatives that support or may support reusable packaging systems and system development. Most collaborations are focused on pilot projects rather than through broader industry or cross-sectoral collaborations; hence an organization such as the Canadian Plastic Pact is a welcome addition to the ecosystem.

Nationally, the following organizations have played a role in looking at reuse systems, including packaging:

- Circular Economy Leadership Canada;

- Circular Innovation Council;
- Environmental Defence;
- National Zero Waste Council;
- Reuse Refill Canada;
- Reuse Systems Alliance;
- Share Reuse Repair Initiative;
- Let's Go Zero Waste.

Various organizations focusing exclusively on Quebec such as:

- Circuit Zéro Déchet (Zero Waste Circuit);
- The Association Québécoise Zéro Déchet (AQZD); and
- RECYC-QUÉBEC.

There are also numerous local grassroots associations, most in major Canadian cities, that are proactive in adopting and promoting zero-waste solutions.

There are a few North American broad industry collaborations that impact Canada. These include cross-industry organizations such as the Reusable Packaging Association, the Sustainable Packaging Coalition, UPSTREAM and Resolve (proposed supply chain and packaging standards). There are also emerging industry-specific initiatives such as the Pact Collective (beauty products).

3.0 Overview of Challenges & Opportunities for Growing Reuse & Refill

The momentum for reusable packaging systems is clearly growing, as has been shown through the review of reuse and refill activities in Canada. The momentum seems to be mainly driven by consumer demand, international trends and industry leadership. For reusable packaging systems, the most important corporate commitments relate to the use of plastics in packaging (more so than carbon reduction goals – see Environmental Impact in **Table 2.** This aligns with governmental focus on plastics waste reduction goals, particularly related to single-use plastic items.

In order to uncover opportunities for scaling these systems and accelerating the existing momentum, an overview of the challenges and opportunities is presented in **Table 2**.

Table 2: Overview of Challenges and Opportunities for Scaling Reusable Packaging Systems

Theme	Challenges	Opportunities
Consumer Adoption	*Customer motivation:* Low awareness of reusable packaging and upfront costs (deposit costs) dissuading consumers from participating. *Quality, health and safety concerns*: Consumer perceptions of the safety of reusable packaging due to COVID-19. *Information challenges:* Novel, innovative, new, or unknown models of reusable packaging leading to low uptake and customer confusion. *Accessibility to reuse systems:* Consumers living in regional and remote areas, or those in low-density populations, may not have access to reuse systems.	*Consumer incentives:* Brands can offer incentives such as deposits or reward schemes to increase consumer participation in reuse systems. One example implemented by Just Salad, an American restaurant chain, offers one free salad topping each time customers use their reusable bowl for takeaway orders. *Targeted and coordinated communication:* Providing informative, targeted marketing and educational materials highlighting potential benefits for the consumer and environment by brand owners, including the support of local governments communicating available reuse and refill programs with residents, can increase consumer awareness.

Prioritizing Product Categories	*Quality, health and safety requirements:* Brands often assume that all packaging is a good candidate to move to reusable packaging, but this may not be the case. When pursuing reusable packaging innovations, it is important to acknowledge that reuse and refill are not always a good fit for every product category such as items that are high risk to food contamination, quality concerns, etc.	*Reusable packaging models should be adopted where they are suitable:* Reusable packaging systems will have the highest impact for categories that are consumed fairly quickly and have high levels of repeat purchasing. Some of these categories are: • Items that are used in food service (e.g. beverage cups, takeout containers). Example: Tim Hortons reusable cups and containers; • Items that are bought frequently (e.g., personal care, home care, supplies for work environments). Example: Soapstand offering refillable household products; • Items purchased online that are returned often (e.g., clothes, footwear). Example: Boox reusable mailers/boxes used by Rhode
Piloting and Follow Through	*Lack of clarity on net business benefits:* Concerns over the brand image and operational feasibility, as well as a lack of insight into the potential benefits and opportunities of reusable packaging are major barriers for brand owners and retailers, which may keep them from exploring and reuse and refill alternatives. Also, there is great variation between products and deployment strategies in terms of their net benefit, making a case-by-case assessment approach necessary. *For retail stores and groceries:* Real estate space and shelf space availability to place multiple reuse and refill stations is a challenge. (See Loblaws case study)	*Prioritization:* As a case-by-case approach is often needed to assess net business benefits, clear guidance on prioritizing products and packaging, and coordination among industry players in the deployment, may support progress. (See also Prioritizing Product Categories) *Sustainability performance:* There is a great potential for reusable packaging strategies and initiatives to support broader brand sustainability objectives and obligations, or to support brand reputation. Deploying pilots can help to assess net benefits, taking into account sustainability impacts. It should be noted though that sustainability impacts may need a certain scale and user adoption rate to materialize – see also Environmental Impact. *Shelf space & logistic efficiency:* Refill solutions can optimize shelf space at retail

		stores, and the product transported in bulk packaging increases the logistic efficiency, therefore saving costs and space for retailers. This should be considered in building the case for exploring refill opportunities. For example, a new plug-in dispenser system that can fill over 245 bottles implemented by Algramo in the LIDL store in the UK increased the shelf space four times more than a regular shelf that can hold 66 bottles. (See Algramo case study) *Sharing know-how:* sharing learnings of reusable packaging pilots between the brand owners, solution providers, and retailers, with or without the support of governmental agencies and non-profits, allows for the acceleration of scaling these solutions. *Access to capital* is also crucial to accelerate the transition and move beyond the pilots, especially for start-ups.
Standardised Packaging Formats and systems	*Brand loyalty*: Hesitation to share packaging designs is feared to lead to losing consumer brand loyalty and customer attraction as there may be less opportunity for differentiation or customization. That being said, reusable packaging systems can also support brand reputation (see opportunities and environmental impact). *Proprietary information sharing*: Design packaging information and the hesitation to share in-depth product and brand information with competitors are also barriers.	*Shared design:* Standardizing packaging design and sharing supply chain logistics across brands, sectors, and broader networks are crucial to increase the packaging cycle of reuse and refill rates. It helps optimize operations, potential cost reduction to pass on to consumers, and improve convenience and accessibility to consumers. *Standard packaging or refill system formats:* • Reduce the investment and operating costs of reusable packaging systems through increased interoperability, • Maximise environmental benefits and economic viability by setting durability requirements, • Ensure safety from health and environmental risks thanks to

		standardised minimum requirements for washing processes, • Foster economies of scale and market penetration of reusable packaging systems via shared systems, • Increase the return rate of used packaging by defining appropriate incentives, • While preserving product information and innovation (label, digital solutions etc.).
Utilizing Existing Infrastructure	*Costs:* Capital, logistics, retraining, and labor costs are incurred when businesses transition to reusable packaging in their B2C and B2B markets and build the required infrastructure or transform the existing infrastructure. *Global supply chains:* Complexities such as customs handling and long transport distances, where businesses operate offshore reuse supply chains. Similarly, as many Canadian and international products or supply chains operate globally, some packaging may need to be returned offshore to be refilled. (See General Mills case study).	*Transforming existing recycling infrastructure for reuse/refill reverse logistics systems:* Organizations can investigate opportunities, such as government investment and grants, to support the development of reusable system capacity domestically. An example is the ReCirculation Project in the City of Durham by Don't Waste Durham. This non-profit organization partnered with the City of Durham's Solid Waste Management Department, Sonoco recycling cooperation, and three tech companies to alter the current recycling infrastructure to collect, sort, and ship the reusable packaging back to retailers and manufacturers and create a sustainable business case. (See RE: CIRCULATION project case study)

Reverse Logistics	*Canadian geography:* Feasibility challenges particularly in rural and remote areas with low population density. A system of reuse may not be feasible due to high transportation costs. *Loss of packaging from the system:* Costs associated with packaging that must be replaced due to damage or low return rates. Volumes need to be maintained to ensure sufficient packaging exists in the reuse system to continue efficient operation.	*Focus on cities and regions:* for the majority of reusable packaging systems the largest benefits, both economical and environmental, are yielded in high density regions. Developing decentralized collection/washing/refilling & re-packaging and redistribution systems in cities, supporting various packaging types, can reduce the environmental impact of reverse logistics. Geography should be a factor for focus in the accelerated development of these systems relying on a simultaneous uptake in adoption and infrastructure development. *Collaborating with local solution providers for reverse logistic operations:* Multinational brands can partner with local solution providers to execute reverse logistics (collection, sanitization, and redistribution) operations to save cost, reduce environmental impact, support local economies and improved convenience and accessibility to consumers - for example, access to a higher number and density of drop-off points obtained through network collaboration. (See Tim Hortons case study) *Standardizing cleaning procedures*: the emergence of an independent, cross-brand and cross-packaging network of cleaning and sanitation facilities will greatly support the scaling of solutions in cities. Such independent facilities should operate in line with health and safety standards, allowing for brand owners to easily identify supply chain partners through certification or other control schemes.

Environmental Impact	*Scale*: Environmental performance benefits may only be quick at a certain scale. Geographical distances and fill rates have been found to be the most influential factors in determining environmental impact compared with single-use packaging. Geographical distances are reduced as logistics networks develop locally, and adoption rates are a function of consumer awareness, which is in turn dependent in part on the prevalence of reusable packaging solutions. *Measuring and demonstrating real impact:* • LCA assessments are not uniformly executed, leading to distrust in the results presented by product and service providers. • The real impact is not always measured and verified leading to potentially false advertising of benefits	*Scale*: There may be an opportunity to reframing how we understand scale to unlock the environmental potential of reuse. Environmental benefits may become a key driver when on a local level, systems reach maturity and scale. See also: Consumer Adoption Focus on Cities *Measuring systems*: Implementing a tracking system (e.g., Radio-frequency identification (**RFID**) technology) to trace packaging along supply chains is necessary to measure and demonstrate the real impact of systems, and inform improvement actions.

4.0 Insights from International Reuse & Refill Initiatives

Collaboration is key to enable the systems change necessary to allow for scaling of reusable packaging systems. This Chapter described inspiring initiatives that may inspire collaborative efforts in Canada in general, or undertaken by the Canadian Plastic Pact specifically.

International initiatives that are of relevance to Canada include the activities of other Plastics Pacts, the Sustainable Packaging Coalition, and the work of the Ellen MacArthur Foundation and the World Economic Forum (Platform for Shaping the Future of Consumption). Other inspirational examples of collaborative industry efforts are illustrated in this section.

One example of a successful industry initiative that is not further described in this section is that of a joint adoption of standardized packaging and operation of reverse logistics networks for B2B packaging, the Svenska Retursystem[5]. It is recommended to further explore that in future work focussing on B2B packaging systems.

Reusable Packaging System Design Standard by Partnership to Reuse, Refill, Replace Single-Use Plastics (PR3)

PR3, the private-public partnership housed at Resolve (a non-profit organization) received a three-year $1.1 million grant from the Plastic Solutions Fund in 2020 to develop reusable packaging design standards to integrate and support diverse reuse initiatives. Over three years of drawing on input from across the value chain, PR3 created reusable packaging system design standards, which set core requirements for aligning reuse systems between companies and brands (regardless of producer), allowing a wide range of businesses to easily plug into shared infrastructure. The standard helps to minimize reuse system costs and investor risks while maximizing accessibility, social equity, and environmental performance across the reuse supply chain.[6]

reuse

The Reuse Rose is a certification mark owned by RESOLVE. Use of the Reuse Rose indicates that an organization is making a good-faith effort to align with PR3 standards and establish interoperable reuse infrastructure or operations. Organizations that participate in interoperable reuse systems that align with PR3 standards are encouraged to apply the Reuse Rose to their assets.

[5] https://www.retursystem.se/sv

[6] https://www.resolve.ngo/site-pr3standards.htm

The organization's Reusable Packaging System Design Standard for foodware — such as takeaway cups and food containers — and consumer goods such as bottled soda, jars of food, and personal care products currently includes seven parts which are available for the public to view:

1. **Collection points:** requirements for staffed, automated, and passive collection locations;
2. **Containers:** minimum use cycles, labeling requirements, digital requirements, materials, and container design;
3. **Digital:** standardizing the data fields used by all ecosystem participants;
4. **Return Incentives;**
5. **Labeling and education:** visual and verbal requirements, labeling requirements for containers and collection points;
6. **Reverse logistics;** and
7. **Washing, sanitization and handling of foodware:** minimum requirements and recommendations for washing, sanitization and drying of foodware containers, as well as minimum requirements and recommendations for the hygienic handling processes for these containers during their collection and distribution.

The partnership wants to eventually incorporate e-commerce packaging and secondary (or business-to-business) packaging into its standards.[7] PR3 has activated the first interoperable and standardized reuse systems intended for food and beverage packaging in partnership with Reuse Seattle.

Reuse Seattle

Reuse Seattle is a city-run public-private partnership between the City of Seattle, the City's major sports and entertainment venues, small and medium-sized restaurants, and businesses, and PR3.[8] Reuse Seattle has a vision for aligned & shared reuse systems that are accessible, affordable, equitable, easy, scalable, interconnected, and everywhere. It supports the development of city-wide, standardized systems for reusable food and beverage packaging.

The City of Seattle aims to advance waste prevention and grow a circular economy by focusing on the food service sector, which is a major source of single-use plastics and other disposable items. It considers it its responsibility to create the conditions for reuse solutions to flourish by:

- Recruiting PARTNERS
- Making CONNECTIONS
- Offering INCENTIVE
- Establishing STANDARDS
- Coordinating SYSTEMS
- Promoting REUSE CULTURE

[7] https://www.greenbiz.com/article/setting-standard-reusable-packaging
[8] https://www.reuseseattle.org/

Reuse Seattle helps system operators and participants collaborate to pilot interoperable and open systems, thereby creating a common, standardized system for take-out food and beverage packaging across the City and across industries. It is being developed and scaled in three stages:

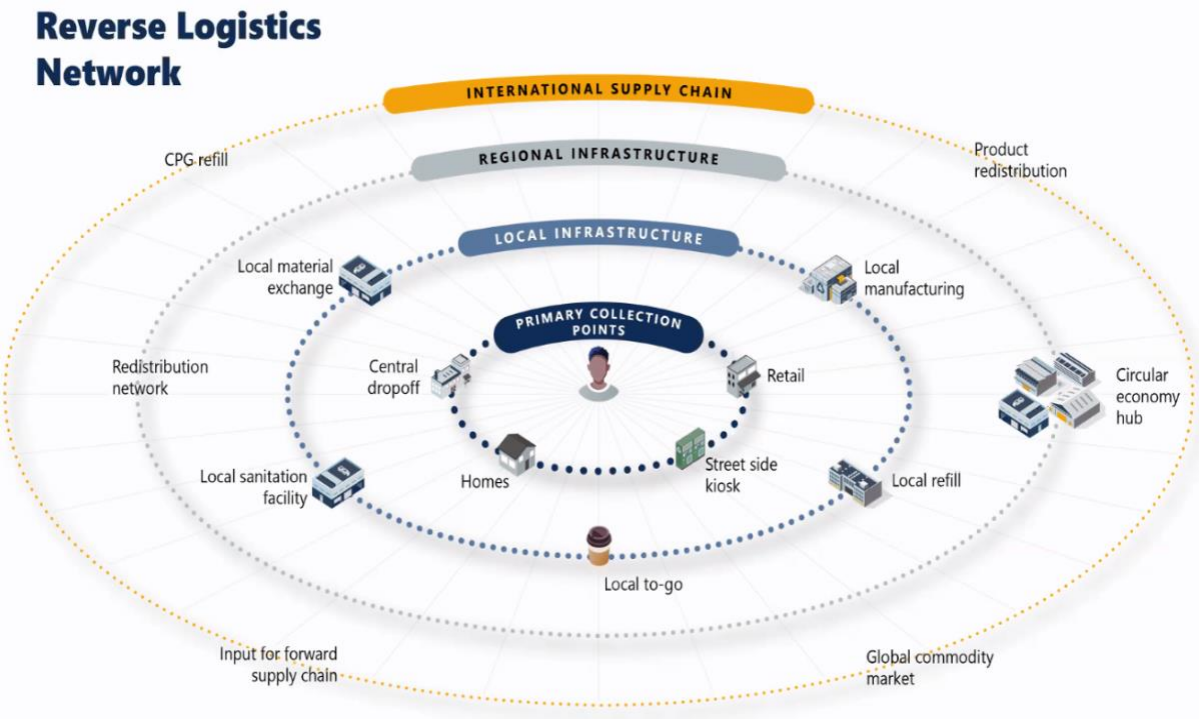
- Phase 1: large music, entertainment, and sports venues across the city. These "anchor" venues help introduce reuse to residents and enable investments in critical reuse infrastructure (wash hubs) and operations.
- Phase 2: smaller venues/businesses can tie into an already present digital and physical infrastructure
- Phase 3: Reuse Seattle helps reuse expand to all neighborhoods, stores, venues, and campuses.

Blueprint for Reuse Infrastructure

PR3 and WSP are working on a reuse infrastructure model where instead of each company developing its own reverse loops for its own products and assets, offering a shared logistics network that will serve many companies and accommodate many types of reusable and refill packaging for different applications. The shared logistic model will be coupling products, materials, and packaging to create economics of scale for recovery and redistribution back into the forward supply chain. The reverse logistic systems that exist today are embedded around the collection of electronics and eCommerce products which can be leveraged into the packaging systems. Other examples of shared systems are USB ports, shipping containers, cellular systems, etc.[9]

[9] New Reuse Economy Webinar by Upstream Solutions

Figure 3: Reverse Logistic Network framework by WSP



The RE: Circulation Project - Recovery and redistribution of reusable packaging as a municipal utility

The ReCirculation Project is a circular economy innovation created by Don't Waste Durham, a non-profit organization, to test a hypothesis: **The recycling industry's existing infrastructure can be adapted to recover and redistribute durable, reusable materials.** Don't Waste Durham formed a partnership with the City of Durham Solid Waste Management Department, the Sonoco recycling corporation, and three tech companies and rolled out a four-phase project over the last four years. The goal was to prove the current recycling infrastructure can be upgraded to collect, sort, and ship the reusable packaging back to retailers and manufacturers and create a sustainable business case.

Phase 1: Results of the first pilot showed that reusable containers tagged with radio-frequency identification (RFID) technology and placed into the residential recycling bins (curbside bins) on the street can be successfully picked up by recycling haulers, arrive at the recycling facility, dumped into the hopper, and then tracked, sorted, and recovered off the conveyor belts. The pilot test demonstrated where modifications to the existing recycling infrastructure could be made to make the recovery of reusable materials possible.[10]

Phase 2: A value chain analysis was completed in 2020 in partnership with Duke University's Nicholas School of the Environment. This analysis demonstrated a profitable value chain for recycling companies to recover and redistribute durable packaging back to retailers, producers, and manufacturers, as long as the volume of the materials collected is at a certain threshold or above.

Phase 3: The third pilot test was completed in early 2022 to measure the potential volume of city-wide residential pickup of reusable glass packaging and plastic can carriers, as well as cost savings for businesses and reduced carbon emissions. The project team simulated a recycling hauling company and a materials recovery facility (MRF) by picking up glass jars, glass bottles, and plastic can carriers from 25 households over eight weeks and sorting them for resale back to local producers and manufacturers. Glass is picked as the material for the pilot due to its relatively low recycling market, but reusing glass has a high-value potential. [9]

[10] http://www.dontwastedurham.org/the-recirculation-project

Phase 4: Phase 4 is currently under development, and the objective is to identify business models for the pickup of reusable glass packaging and resale it to the producers and manufacturers. The project team will also conduct an in-depth analysis of the end markets and gather best practices in bottle washing and label removal - currently building a large-scale wash and sorting facility. [9]

RREUSE – Reuse and Recycling European Union Social Enterprises

RREUSE is a non-profit organization active in the European Union that aims to promote policies, best practices, and partnerships that support the professional approach and development of social enterprises working in environmental services, with a focus on reuse and repair.

They recently conducted a research study on developing reuse networks in Europe with the goal of creating a reuse network in Finland. The study found that the main tasks of existing reuse networks in Europe include lobbying, sharing and exchanging know-how, improving visibility and publicity of the sector, and facilitating commercial cooperation between members. The study also emphasized the importance of reuse networks in lobbying and advocacy, recommending the creation of a long-term lobbying strategy, frequent communication with relevant stakeholders, and the organization of internal working groups to coordinate with members on lobbying and advocacy efforts.

Figure 4: The major tasks and objectives Of Reuse networks in Europe[11]

Table 1. Why was the network created – what were the issues trying to resolve or improve?

	1 Not important at all	2	3	4	5 Very important
Lobbying	25%	0%	0%	25%	50%
Publicity	12.5%	37.5%	25%	0%	25%
Exchange of know-how	12.5%	12.5%	0%	37.5%	37.5%
Commercial cooperation	25%	12.5%	37.5%	12.5%	12.5%

[11] Research study on developing re-use networks in Europe, March 2022, https://www.kierratyskeskus.fi/files/17402/FINAL_REPORT_-_Research_study_on_developing_re-use_networks_in_Europe.pdf

Refill Coalition: UK coalition in world's biggest multi-retailer refill trial

The UK's first-ever Refill Coalition, consisting of retailers M&S, Morrisons, Ocado, Waitrose & Partners, and supply chain solutions company CHEP, has been formed to co-design an innovative refill solution to tackle single-use plastic packaging waste. The solution is an interoperable system of product vessels, dispensers, fixtures, weighing and labelling components, and points of sale, developed based on open standards. The coalition, which was convened by UK refill experts Unpackaged in 2020, aims to test its system live in stores and online later in the year. The solution will reimagine the supply of key food staples and household products and is intended to develop a worldwide standard for plastic-free food distribution. The coalition's solution includes a bulk home delivery refill option, an industry first, and subject to a successful trial, coalition retailers will roll out refill stations across their stores and online.

5.0 Scaling Reuse & Refill in Canada

Reusable packaging systems present great promise in Canada; however, a systemic change is needed to unlock its full potential. Collaborative efforts facilitated by the Canada Plastics Pact (CPP) can enable joint leadership and drive acceleration of the exploration and scaling of reusable packaging models.

To assess the key leverage points for the CPP to support the accelerate uptake of reusable packaging systems in Canada, general recommendations were derived from the main challenges and opportunities (see **Appendix D**). The examples of international coordinating initiatives in Section 4, especially the RReuse study, were also used to identify the CPP's potential role. In summary, the CPP can play a significant role in the development of reuse and refill in Canada by:

1. Brokering partnership and convening stakeholders to
    a. Contribute to the development of effective policies and regulations
    b. Undertake pilots
    c. Develop standards
    d. Develop infrastructure
2. Learning from national and international practices and disseminating knowledge among its members and broader network
3. Helping to foster innovation ecosystems
4. Identify pathways and geographies for common focus and prioritization around which to convene stakeholders

Brokering partnership and convening stakeholders

Opportunities for partnerships may arise around many themes, however the ones most clearly emerging from this study are:

- Policies and regulations: The Canadian Plastic Pact (CPP) members may consider making joint contributions to policies and regulations, reflecting their joint needs and supporting the industry growth. The CPP may also support its members by informing them of relevant policy trends, funds, or regulations.
- Pilots: while many pilots already happen as a result of a form of collaboration between various organizations, the CPP may leverage its broad network to identify relevant connections, make introductions, and facilitate the broadening of the enabling and active ecosystem around specific initiatives.
- Standards: the PR3, Reuse Seattle and Refill Coalition examples clearly highlight the important role of convening parties in driving the development of standards, which support scalability of reusable packaging solutions.
- Infrastructure: related to standards development, infrastructure development may require or strongly benefit from collaboration, as both public and private parties have a role to play in

enabling, investing, building and operating such infrastructure. Moreover, the viability of reusable packaging systems increases with increasing scale of the infrastructure, especially the physical infrastructure (cleaning) but also digital infrastructure (larger adoption). Utilization of the same infrastructure supports scale.

Learning and knowledge dissemination

As the industry rapidly evolves many organizations in Canada and elsewhere are learning as they experiment. Sharing of learnings enables accelerated adoption of what works, and pivoting in response to what does not work. Keeping track of and sharing relevant learnings is within the Canadian Plastic Pact (CPP) mandate and can be of great value to its members. Learnings may be shared internally only, or shared with the CPPs broader network to influence external stakeholders.

Fostering innovation ecosystems

Another area the Canadian Plastic Pact could support is fostering innovation. It may, for example, consider launching challenges in response to needs of its membership, or convene stakeholder around relevant areas of research and development.

Supporting prioritization

Finally, acceleration benefits from a concentration of efforts. Both consumer adoption and the environmental benefits, both of which are crucial for any business case, necessitate solutions at scale within a regional geography. The environmental benefits strongly increase with decreasing travel distance of the reusable packaging, and consumer adoption tips once a majority of users is aware and a solution becomes the ‘new normal’, especially when this new normal occurs across businesses and product types. A focus on scaling up in high density areas such as cities and regions, therefore may support the accelerated development of reverse logistics systems, leveraging the existing infrastructure and service providers, creating engagement, and yielding environmental benefits. Similarly, when considering innovation or standardization, a focus on particular products may allow a growth in momentum and shortened implementation timelines.

Appendix A

Overview of Drivers for and Viability of Reusable Packaging Systems

The primary goal pursued by companies opting for reusable packaging systems is to reduce the environmental footprint of the package-product system. This in itself may be driven by environmental, social and governance (ESG) performance and maintaining the overall brand value in view of a shift in consumer perception of plastics. Important parameters are carbon emissions, associated water use, material health and chemical concerns, energy use, and impacts from disposal, including leakage into the environment and the negative effects of plastic pollution.

Other benefits of reusable packaging systems may include potential cost-savings, which may be tied to the costs of extended producer regulations (EPR) systems or an overall lower cost compared to the cumulative cost of single-use packaging. Additionally, increased brand loyalty, improved user experience, increased adaptation to individual needs in part fed by increased data on user preferences have been mentioned as potential benefits by the Ellen MacArthur Foundation.

The actual impact of reuse and refill systems depends on the system setup and the level of adoption by the consumer. Often, a minimum amount of reuse cycles is necessary to offset the more durable design of the packaging. When focussing specifically on carbon emissions, the amount of cycles may also need to offset any increase in logistical requirements compared to management as waste. Hence, the actual benefit of a reuse system depends on the type or product, the footprint and cost of the single-use versus the alternative durable packaging, the logistical system, and consumer participation.

The World Economic Forum developed a Reuse Viability Model, highlighting six dimensions of a truly successful, large-scale, system-wide reuse paradigm:

- **Delivery-model efficiency**: Shared reuse systems and short-distance logistics loops enable scalable economics across most major categories;
- **Consumer experience**: Consumers have access to a variety of reusables that compete with disposables on convenience, user experience and other measures of customer satisfaction;
- **Technology advancement**: Technologies such as QR codes and radio frequency identification (RFID) are deployed to create value-adding services, increase container lifetimes and standardize back-end processes;
- **Regulation**: Regulation pairs reuse incentives with comprehensive policies such as quantitative reuse targets and extended producer regulations measures;
- **Cultural shift**: A widespread cultural shift moves consumers and institutions towards reusables and away from disposables; and
- **Demonstration of impact**: Reusables demonstrate improvement on all leading economic, environmental and social impact metrics relative to disposables via common reporting standards.

Appendix B

Project Methodology Overview

This report aims at presenting an initial snapshot of the state of reusable packaging systems in Canada, including the international trends relevant to Canada. It further explores the challenges and opportunities for growth.

The study involved desktop research complemented by key informant interviews. Nine interviews were conducted in November 2022 Transcripts from two additional interviews conducted as part of a parallel study by the National Zero Waste Council were used, as well as recorded presentations from prior Canadian Plastic Pact Partner meetings.

Desktop research included reviewing existing international and Canadian publications on the topic, review of various databases of companies and initiatives that deploy reusable packaging solutions, and online research to complement these primary information sources.

Finally, information available to the Canada Plastics Pact and obtained during the Reuse Symposium on November 30, 2022, in Toronto, Ontario, were taken into consideration. The findings presented in this report are limited to information that was readily available for research and discussed during interviews.

Appendix C

List of Service Providers Supporting Reusable Packaging Deployment in Canada

B2B/B2C	Business to Consumer Market	Reuse/Refill Solution	Product/Service Category	Service Sector	Company	Description	Location	Province	Country of Service
B2C	Return on the go	Reuse	Takeout Container Service	Food and Beverage	**A Friendlier Company**	Centralized reuse system. Food at partner locations are served in reusable containers. With use of an app, users are to return containers.	Guelph	Ontario	Canada
B2C	Refill at home	Refill	Subscription/ Delivery Service	Home care, Personal Care	**Blueland**	Refills delivered to your home. Products include laundry soaps, hand soaps,and toilet bowl cleansers	Headquarters in New York City	New York	USA, Canada
B2B, B2C	Return on the go	Reuse	Returnable Packaging Shipping Service	Packaging and Shipping, Ecommerce	**Boox**	Reusable shipping service provider that enables the reuse of consumer products	Petaluma	California	USA, Canada
B2B, B2C	Collection Platform	Reuse	Takeout Container Service	Retail & Grocery	**Circulr**	Partners with brands to reuse their packaging. Collects empty containers and brings them back to the business for reuse	Toronto	Ontario	Canada
B2C	Return from home	Reuse	Meal Prep Service	Food and Beverage	**Crisper**	Meal prep service offered in reusable containers, Zero-waste meal kit	Toronto	Ontario	Canada
B2C	Refill on the go	Refill	Refill Station	Fluid/Motor Vehicles	**Crystal Innovation/Station Lave Glace**	Windshield washer refill station	Various Locations in Quebec and Toronto	Quebec, Toronto	Canada
B2C	Return on the go	Reuse	Takeout Cup Service, Washing-as-a-Service	Food and Beverage, Events	**Cupko**	Reusable cups, bottles and containers products and services for festivals, venues, stadiums or even universities.	Toronto	Ontario	Canada
B2C	Return on the go	Reuse	Takeout Cup Service	Food and Beverage	**Cuppy**	City wide cup sharing program	Vancouver	British Columbia	Canada
B2C	Return on the go	Reuse	Takeout Container/Cup Service, Washing-as-a-Service	Food and Beverage, Events	**Dream Zero**	Take-out container program which supplies food service providers with reusable containers	Toronto	Ontario	Canada
B2C	Refill on the go	Refill	In-store Dispensing Service	Home care, Personal Care	**Ecoborne**	Ecoborne is a single product filling station that works with a simplified refill system it	Ange-Gardien	Quebec	Canada
B2C	Return on the go	Reuse	Takeout Container/Cup Service	Food and Beverage	**Ekko**	Reusable takeout containers	Waterloo	Ontario	Canada
B2C	Reusable products	Reuse	Reusable bottle, cup and tote bags that supports donation programs abroad	Mobile App	**Fill it Forward (Cupanion)**	Refillable products are tagged with a QR code to identify the container. The QR code is integrated with the app to track times that it is reused.	Guelph	Ontario	Canada
B2C	Return from home	Reuse	Meal Prep Service	Food and Beverage	**Fresh Prep**	Meal prep service offered in reusable containers	Vancouver	British Columbia	Canada
B2C	Return from home	Reuse	Moving Boxes Service	House Moving	**Frogbox**	Reusable plastic containers for the purpose of moving from house to house. User is responsible for packing their belongings into the containers as well as transporting to the new location. Then Frogbox takes care of pick up at the end destination	Canada-wide	Canada-wide	Canada
B2C	Refill on the go	Refill	General refillery/Low Waste Store	Retail & Grocery	**Fullfill Zero Waste Market**	Reduced packaging and alternatives for single use items	Kimberly	British Columbia	Canada
B2B, B2C	Return on the go	Reuse	Takeout Container/Cup Service, Online Food Ordering platform (App)	Food and Beverage	**InWit**	Online food ordering app for reusable takeouts and cups	Toronto	Ontario	Canada
B2C	Refill on the go	Refill	General refillery	Personal Care	**Klova Boutique écoresponsable**	Bring your own containers and reduce waste by refilling your products in our bulk section of cosmetics, skin care & household products	Montreal	Quebec	Canada
B2C	Return on the go	Reuse	Takeout Cup Service	Food and Beverage	**La Tasse/ La Vogue**	Reusable takeout cup program	Various locations in Quebec	Quebec	Canada
B2B, B2C	Return on the go	Reuse	Reusable packaging Shipment	Packaging and Shipping, Ecommerce	**LimeLoop**	Reusable amd returnable packaging shipment service for ecommerce brands and retailers	San Francisco		US, Canada
B2C	Return on the go/Return from home	Reuse	Packaging Service	Food & Beverage, Retail & Grocery	**Loop Canada**	Reusable packing alternatives used for large retailers. Partners with brands and manufacturers to offer refillable versions of products.	Global	Global	Global

B2B/B2C	Business to Consumer Market	Reuse/Refill Solution	Product/Service Category	Service Sector	Company	Description	Location	Province	Country of Service
B2C	Return on the go	Reuse	Takeout Container/Cup Service	Food and Beverage	**Muuse**	Operates a deposit-based platform for smart, reusable packaging. provides to-go coffee cups and reusable food boxes for cafes and restaurants in Singapore, Hong Kong and Canada.	Toronto	Ontario	Canada
B2C	Refill on the go	Refill	Refillery with delivery/Low Waste Store	Retail & Grocery	**NADA (in partnership with JARR)**	Nada is a package-free grocery store that offers refillable goods and package-free products	Vancouver	British Columbia	Canada
B2C	Refill on the go	Refill	Refillery	Retail & Grocery	**Nousrire**	Low waste grocery store that offers refillable products	Various locations in Quebec	Quebec	Canada
B2C	Refill on the go	Refill	Refillery	Retail & Grocery	**PickEco Refills**	Refill stations for goods. Bring your own container	Chilliwack	British Columbia	Canada
B2B, B2C	Return on the go	Reuse	Returnable Packaging Shipping Service	Packaging and Shipping, Ecommerce	**Quil Packaging**	Reusable amd returnable packaging shipment service for ecommerce brands and retailers	Toronto	Ontario	Canada
B2C	Return on the go	Reuse	Takeout Cup Service	Food and Beverage	**Reego**	Reusable takeout cup program	Toronto	Ontario	Canada
B2C			Refillery	Retail & Grocery	**Refill & Co**	Low waste grocery store that offers refillable products		Quebec	Canada
B2C	Refill on the go	Refill	Refillery	Retail & Grocery	**Reimagine.co**	Package free groceries and refillable home and beauty products.	London	Ontario	Canada
B2B, B2C	Return on the go	Reuse	Returnable Packaging Shipping Service	Packaging and Shipping, Ecommerce	**Returnity**	Reusable amd returnable packaging shipment service for ecommerce brands and retailers	New York		US, Canada
B2C	Return on the go	Reuse	Takeout Container/Cup Service	Food and Beverage	**Reusables**	Subscription based reusable take-out container loaning system. You can request to have your food delivered in the designated reusables container.	Vancouver	British Columbia	Canada
B2B/B2C	Return on the go	Reuse	Takeout Container/Cup Service, Washing-as-a-Service	Food and Beverage	**Sharewares**	A citywide borrowing platform to supply, sanitize, and track reusable cups and takeout containers	Vancouver	British Columbia	Canada
B2C	Refill on the go	Refill	Refillery	Retail, Home Care, Personal Care	**Soap Dispensary**	Low waste store and refillery	Vancouver	British Columbia	Canada
B2C	Refill on the go	Refill	In-store Dispensing Service	Home care, Personal Care	**Soapstand (Drinkfill)**	Bring your own containers, and refill on products.	Vancouver	British Columbia	Canada
B2C	Return on the go	Reuse	Takeout Container/Cup Service	Food and Beverage	**Suppli**	Deliver take-out meals in reusable containers. Containers are collected through a drop off system	Toronto	Ontario	Canada
B2C	Refill on the go	Refill	Refillery with delivery/Low Waste Store	Retail & Grocery	**The Green Jar**	Sells products to replace single use items. The store also offers personal care and household products through a package free refill system.	Toronto	Ontario	Canada
B2C	Refill on the go	Refill	Refillery	Retail & Grocery	**The Local Fill**	Bring your own containers, and refill on products.	Cornwall	Ontario	Canada
B2C	Return on the go	Reuse	Takeout Cup Service	Food and Beverage	**The Nulla Project**	Reusable cup service. Service is available at partner coffee shops, eateries and retailers.	Vancouver Island	British Columbia	Canada
B2C	Refill at home	Refill	Bulk Refill Product	Home Care, Personal Care	**The Uncented Company**	design packaging to allow customers the ability to refill their bottles either at home or in-store. 891 refill locations across N/A	Montreal	Quebec	Canada
B2C	Refill on the go	Refill	Refillery with delivery/Low Waste Store	Retail & Grocery	**Unboxed Market**	Groceries and home care products available with reduced packaging or package free options. It appears that items that are available for purchase that are "single use" are packaged in glass conatiners which can later be recycled.	Toronto	Ontario	Canada
B2C	Refill on the go	Refill	Refillery/Low Waste Store	Retail & Grocery	**Vrac & Bocaux**	Zero waste grocery store. Most foods are sold in bulk. Bring your own containers to fill with bulk goods.	Montreal (3 locations)	Quebec	Canada
B2C	Refill on the go	Refill	Refillery	Retail & Grocery	**West Coast Refill**	Refill stations for goods. Bring your own container	Victoria	British Columbia	Canada
B2C	Refill on the go	Refill	Refillery/Low Waste Store	Retail & Grocery	**Zero Waste Bulk**	Bulk grocery shopping using bring your own containers. The store also sells single use item replacements such as metal straws and bamboo toothbrushes.	Waterloo	Ontario	Canada
B2C	Refill on the go	Refill	Refillery/Low Waste Store	Retail & Grocery	**Zero Waste Emporium**	Refill stations for goods. Bring your own container	Victoria	British Columbia	Canada

Appendix D

General recommendations to address challenges and capture opportunities

Recommendations for Canadian Plastic Pact were distilled from the study, and summarized in **Table 3** below:

Table 3: Recommendation for Canadian Plastic Pact (CPP)

Focus Area	Recommendations for CPP
Prioritize Product and Service Categories	Given the many considerations for reusable packaging, it is clear that it is not a one-size-fits-all solution to replace all types and formats of single-use packaging. Rather, because reusable packaging requires more materials and transportation, its success hinges on high levels of reuse or refill in practice by engaged consumers. The most promising solutions and sectors currently are takeaway containers and cups in the Horeca food & beverages sector, mailing packaging for clothing and other consumer goods bought online in the eCommerce sector, and household and personal care products purchased in retail stores. CPP could pursue further study into the B2B packaging solutions, a promising field for scalability where standardization and adoption may be easier to achieve.
Reuse Infrastructure	Achieving scale will require utilizing existing infrastructures, such as incorporating reusable packaging into curbside recycling and upgrading the current recycling systems to collect, sort, wash and ship the reusable packaging back to retailers and manufacturers. (See the Re: Circulation pilot in the city of Durham) A similar pilot could be performed in Canada with public-private partnerships in cities like the City of Vancouver, where there is a single-use cup ban, many reusable takeout containers, and cup service solution providers operating in the city. Achieving scale will also require developing and deploying new reuse infrastructure that serves consumers in local and regional supply chains. (See Blueprint for Reuse Infrastructure) The design of the reuse and refill services and systems will have similarities across business sectors at scale, such as requiring collection from the consumer, reverse logistics, washing and sanitizing, refilling, and/or restocking. Because of the challenges and costs associated with individual companies going it alone, hence it is recommended to further explore the conditions necessary for the emergence of an independent reverse logistics industry. Furthermore, it may be worth exploring the potential of in-store collection and take-back infrastructure under the existing extended producer regulations systems, and how these may be leveraged and could be funded to support their role in the reusable packaging ecosystem.

Focus Area	Recommendations for CPP
Standardization	Harmonizing reusable packaging systems through standards will reduce packaging and infrastructure diversity, thus providing clear framework conditions for investors and operators to develop independent reverse logistics systems. While PR3 is currently finalizing the work on developing the Reusable Packaging System Design Standard in the US for foodware, consumer goods, and personal care products (See PR3 case study), a feasibility study may be instrumental in assessing the viability of these standards in the Canadian landscape and develop guidelines for Canadian businesses. Standards of key interest are: packaging design, reverse logistics design, cleaning, and environmental (carbon) impact assessment methodologies. Eventually, incorporate e-commerce and business-to-business packaging into these standards.
Building on international knowledge and experience	Continue to build on the experience and knowledge of organizations such as the other CPPs, the SPC and Resolve in accelerating the evolution of the Canadian reusable packaging ecosystem.
Policies and public-private collaboratives	This ecosystem scan study reveals the existence of viable systems, as shown in the case studies; if scaled up under the right conditions, including a supporting policy framework, reuse can thrive in Canada. The CPP and its members may consider which policy elements best support their goals. Exploration paths include: • Which standards would benefit from joint development and governmental support. • Assessment of industry financial support needs and potential gaps in current funding opportunities or other financial incentives (e.g., funding opportunities in support of pre-competitive collaboration or coordination of deployment paths). • An assessment of which sectors or product types would benefit from regulatory interventions to support the business case. • Considering a focus on regional innovation 'hubs' for demonstrating and commercializing solutions, which would build on collaboration between companies, local governments, and knowledge partners.