

UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program
Student Research Report

**Development of Sustainable Packaging Guidelines
for Giftware and Clothing Products
at the UBC Bookstore**

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Executive Summary

Many products are distributed to the UBC Bookstore with packaging that is either excessive (i.e. multiple layers of cardboard and plastic) or not environmentally friendly (i.e. consisting of polystyrene and various other plastics). While some packaging is required to protect items from damage and breakage, much of this packaging could be eliminated, reduced, or otherwise optimized to meet sustainability guidelines.

The primary objective of this research is to produce a set of sustainable packaging guidelines for the UBC Bookstore to distribute to its Giftware and Clothing vendors. This is developed in three broad steps. First, I research the marketplace to determine what other companies have already developed in terms of sustainable packaging guidelines. I look at the experience of both large corporations such as Walmart, Unilever, and Dell and smaller sustainability-focused firms such as MEC and LUSH Cosmetics. Although the trend towards sustainable packaging is new, there are substantial lessons to be learned from the experience of these firms, including suggestions of what policies to pursue and evidence of resource- and cost-savings as a result of new practices. From this research, I compiled a set of best practices along four key pillars: Reduce, Reuse, Recycle, and Renew. These pillars address both the volume of packaging and the type of packaging to minimize the amount of material going to waste streams.

Second, I review the current packaging on existing Giftware and Clothing orders at the UBC Bookstore through conversations both with Bookstore staff and with major suppliers. The UBC Bookstore is already engaging with key sustainability practices including the reuse and recycling of a large proportion of packaging materials. Nevertheless, there are a number of opportunities for the UBC Bookstore to mandate best practices across all suppliers, and to engage in further opportunities to reduce and optimize current packaging processes. Importantly, there are also several key limitations, including: (1) competing priorities of stakeholders, (2) supply chain considerations, and (3) uncertainty in downstream effects.

Third, I map the current practices of the UBC Bookstore against the best practices determined by external research to construct a final set of sustainable packaging guidelines for the UBC Bookstore. In light of significant constraints to implementation, I divided my recommendations into three stages: what can be accomplished in the short-, medium-, and long-term.

Short-Term Recommendations

My first set of recommendations are those that can be implemented across all vendors without any significant pushback:

1. A necessary first step in creating change is to take stock of where vendors currently are in terms of sustainable packaging. Therefore, I recommend a strategy of **measurement and benchmarking** along several key variables, including the types of plastic currently used, percentage of recycled content in each material, and control over packaging decisions.
2. Once these are benchmarked, **best practices should be implemented across all vendors** including percentages of recycled content, elimination of Styrofoam, and bulk packaging of apparel items.

In the short-term, I also constructed an internal guideline for how the UBC Bookstore might best implement these strategies. It should incorporate the guidelines into its core mandate, create specific goals for each vendor, set timelines for transitions, and consider its bargaining power.

Medium-Term Recommendations

Once the low-hanging fruit have been addressed through short-term recommendations, the UBC Bookstore should next work one-on-one with suppliers to construct individualized strategies for reducing materials and shifting to preferred materials (i.e. recycled paper composites rather than plastics). By working one-on-one, the UBC Bookstore can listen to the concerns and considerations of its vendors and mutually construct recommendations with a higher likelihood of success. The incremental timeline also allows the UBC Bookstore to maintain a record of lessons learned that can inform future interactions with suppliers, particularly those who are initially resistant to change.

Long-Term Recommendations

There are several constraints to comprehensive and innovative changes in the short- and medium-term, including supply chain considerations and the technical feasibility of innovative materials. However, these constraints are expected to lessen over time, giving more opportunity for the UBC Bookstore to enact comprehensive change.

The UBC Bookstore is moving towards an increased percentage of Canadian content, increasing bargaining power and control over packaging decisions. With this shift, the UBC Bookstore is in a unique opportunity to establish rules of engagement with Canadian suppliers. Moreover, the UBC Bookstore should consider partnering with local actors already making waves in sustainability.

A second constraint involves ambiguity over the downstream treatment of soft plastics, as well as the feasibility of biodegradable and compostable plastics. As this information becomes known and as recycling and composting systems are upgraded, the relative preference for different types of plastics and other materials will change, affecting the UBC Bookstore's strategy.

Finally, there are several materials and processes that are biologically preferable, but not yet widely available (including mushroom-based cushioning, "egg carton" packaging, and sugarcane/bamboo paper alternatives). These materials should be tracked over time and implemented as they become increasingly available.

1 Introduction

Many products are distributed to the UBC Bookstore with packaging that is either excessive (i.e. multiple layers of cardboard and plastic) or not environmentally friendly (i.e. consisting of polystyrene and various plastics). While some packaging is required to protect items from damage and breakage, our client believes much of this packaging could be eliminated, reduced, or otherwise optimized to meet sustainability guidelines.

The primary objective of this research is to produce a set of sustainable packaging guidelines for the UBC Bookstore to distribute to its vendors. This research was focused on producing guidelines for Giftware and Clothing vendors, although many recommendations may be generalized to the UBC Bookstore's other product lines of Textbooks, General Books, Technology, and Supplies.

More specifically, the research assignment had the following objectives:

1. To research the marketplace to determine what packaging guidelines other retailers provide their vendors with the aim to reduce waste.
2. To review current packaging on existing Giftware and Clothing orders at the UBC Bookstore by examining the physical merchandise as it is being received.
3. To contact a selection of current Bookstore vendors to understand their logic for their current packaging strategy and to determine any limitations to proposed recommendations.
4. To write a guideline for vendors to recommend how to package merchandise in a more sustainable manner.

As UBC is recognized as a sustainability leader among Canadian universities, and given that many collegiate bookstores operate with similar vendors, it is anticipated that guidelines initially adopted by UBC may be further adopted by other Canadian collegiate bookstores.

This report is organized in six sections. Following this Introduction, Section 2 comprises an analysis of existing marketplace research including both primary and secondary data. I looked at guidelines and best practices established by other retailers, including very large corporations (Walmart, Unilever, and Dell) in Section 2.1 and smaller sustainability-focused retailers in Canada (MEC and LUSH cosmetics in Section 2.2. I also considered municipal and regional sustainability guidelines in Section 2.3.

In Section 3, I evaluate the current packaging practices of the UBC Bookstore. I conducted interviews with buyers at the UBC Bookstore as well as key vendors. In addition to overall considerations, I specifically evaluate practices for Clothing in Section 3.1 and for Giftware in Section 3.2. Although this report focuses on packaging practices from upstream suppliers, a life-cycle consideration of packaging materials requires consideration of downstream practices including internal reuse of packaging materials and opportunities for recycling and composting, which are considered in Section 3.3.

Section 4 maps out the current practices of the UBC Bookstore against the best practices from existing firms. I first established a general set of best practices in Section 4.1 under the principles of Reduce, Reuse, Recycle, and Renew. In light of these best practices, I considered the strengths

and opportunities of the UBC Bookstore in Section 4.2 with consideration also to key limitations. Finally, I looked at strategies to maximize success of recommended changes in Section 4.3.

My final set of recommendations is found in Section 5. Because of current limitations, including supply chain considerations and the technical feasibility of certain recommendations, I divided my recommendations into three stages. In the short-term (Section 5.1), I recommend establishing internal guidelines, measuring and benchmarking sustainability practices of all suppliers, and implementing certain strategies across all suppliers. In the medium-term (Section 5.2), I recommend working with each supplier one-on-one to address any resistance and work together to create more innovative and collaborative solutions. In the long-term (Section 5.3), I recommend the UBC Bookstore keep abreast of changes in the proportion of Canadian content, the understanding of downstream implications of different plastics types, and the commercial viability of more innovative materials and practices, and adjust its sustainability strategy correspondingly.

2 Marketplace Research

The first objective of this project was to conduct secondary research on sustainable packaging to determine overall trends in this field and to discover what guidelines other retailers have developed for their vendors. In this research, I discovered a significant trend towards sustainable packaging in three principal areas: large multinational organizations (i.e. Walmart, Unilever, and Dell), and smaller sustainability-oriented firms (i.e. MEC and Lush), and governmental organizations (i.e. City of Vancouver, State of California, and Sustainable Development Goals). While the movement towards sustainable packaging remains in its infancy, these trends indicate strong momentum toward sustainable packaging in the coming years, which UBC Bookstore is well advised to take advantage of.

2.1 SUSTAINABLE PACKAGING IN MULTINATIONAL CORPORATIONS

There is a significant business case for vendors to incorporate sustainability concerns into their packaging processes, including an increase of regulatory guidance regarding waste reduction, changing consumer preferences toward eco-friendly options, and cost savings that come from reducing materials and optimizing transportation loads. This business case can be illustrated through case studies of major international corporations who have adopted sustainable packaging mandates in the last 10 years. While these corporations operate at much larger scale than the UBC Bookstore, they have been able to implement sustainable guidelines at significant scale, leading to interesting examples of how sustainable packaging can be used both to reduce costs and to fulfill environmental mandates.

In this section I look at three companies. In 2006 and 2007 respectively, two of the largest global retailers – Walmart and Unilever – adopted sustainable packaging strategies which set the standard for guidelines in this field. To demonstrate how sustainable packaging can also be used for highly fragile goods, I additionally looked at Dell Inc. which has been particularly innovative in its packaging of computer hardware.

Walmart

In 2006, Walmart announced its Packaging Scorecard system, which allows it to rank existing manufacturers against a set of packaging standards, and demand improvements from them in subsequent years (Walmart, 2006). The Scorecard system ranks manufacturers on a suite of packaging imperatives, including: GHG emissions, use of raw materials, package-to-product ratios, use of recycled content, and value of recovered materials (Walmart, 2006).¹

Following the introduction of their Scorecard, Walmart achieved their goal to reduce packaging in their products by 5% by 2013 (Walmart, 2006; Sasine, 2013). While Walmart undertook several initiatives to achieve this goal, Senior Director of Packaging Procurement Ron Sasine remarked that the most effective strategy was to optimize packaging by considering the tradeoffs between the volume of material and its integrity, recyclability, and overall life cycle effects (Sasine, 2016). Beyond its environmental impact, this strategy allowed Walmart to reduce packaging *costs* both through a reduction of materials and through optimized transportation. Because of optimized transportation, Walmart reduced the GHG impact of its packaging by an average of 9.8 percent in the United States and 16 percent in Canada, translating to both a lower environmental footprint and lower costs (Sasine, 2016).

Another area in which Walmart found significant reductions in both materials and costs was through optimizing the box size options in their online shipping (Souza, 2016). Rather than having a limited number of box sizes that need to be filled with packaging fillers, Walmart uses 27 box sizes that reduce the need for fillers while maintaining product protection. Per the VP of Operations Justen Traweek, when scaled across the entire U.S. e-commerce platform:

“[T]his effort has the potential to reduce cardboard box consumption by 7.2 million cubic feet annually [...]. It also translates into the ability to pack more products into the tractor-trailers we put on the road.” (Souza, 2016).

Optimizing the size of cardboard boxes thus has significant potential to reduce both materials and transportation costs without compromising product integrity, a win-win for all stakeholders.

Ontario-based furniture manufacturer Teknion Ltd. found similar results from optimizing their box sizes. VP Materials, Purchasing, and Facilities Mark Wagner notes that following a switch from standard-sized to custom-sized boxes, “product takes up less space on the truck, so I’m burning less fuel to deliver it” and “even with the cost of buying the corrugate, Teknion has realized a savings of \$100,000 per year by making its own boxes” (Gruske, 2015).

In 2016, Walmart has unveiled a new set of priorities in its Sustainable Packaging Playbook: Optimize Design, Source Sustainably, and Support Recycling (Walmart, 2016). Importantly, these initiatives are predicted both to improve the Sustainability Index Score of participating products and to reduce the cost of goods, demonstrating how sustainable guidelines can lead to both a lower footprint and lower costs.

¹ While the tool is proprietary, manufacturers outside of Walmart’s supply chain are directed to scorecardlibrary.com, where they can see a demo of the Scorecard. This website was under construction for the duration of this research (December 2016 to January 2017), but may be a useful tool to consider going forward.

In response to research indicating that two-thirds of consumers will not recycle packages if not given clear instructions on how to recycle the product, Walmart has also been instrumental in developing the How2Recycle labeling system that communicates recycling instructions to the end consumer (McTigue Pierce, 2016b; How2Recycle, n.d.).

Unilever

In 2007, Unilever created a Responsible Packaging Steering Team focused around five packaging principles: Remove, Reduce, Reuse, Renew, and Recycle (Atkinson, 2008). A principal strategy in this endeavour is 'lightweighting', a strategy of optimizing structural and material design to reduce packaging through thinner layers of plastic and corrugate; Unilever has a target to reduce the weight of packaging by one-third from 2010 to 2020 through lightweighting (Unilever, 2017).

In response to the "Renew" and "Recycle" platforms of its Sustainable Living Plan, Unilever also committed this year to ensure that "all of its plastic packaging is designed to be reusable, recyclable or compostable by 2025" (Unilever, 2017). As will be further explained in Section 3.3: Consideration of Downstream Effects, only a small percentage of plastics actually make it into recycling streams, making this a critical component of the sustainability goals of any company.

Dell Inc.

Focusing on the packaging of computer products, Dell Inc. has been particularly innovative in the materials component of their packaging. In contrast to the "Rs" approach of most sustainability initiatives, Dell's goals focus on the "Three Cs": Cube, reduce packaging size; Content, use recycled or sustainable materials; and Curb, make packaging easily recyclable (Dell, n.d.).

Dell's success in these initiatives have been impressive. For their first C (Cube, reduce packaging size), Dell reduced packaging by 12.1 percent from 2008 to 2012. Moreover, their 'Multipack' strategy (of packaging multiple items in one box) reduces materials as well as transportation costs, storage space, and time that it takes a customer to unpack and configure their products (Dell, n.d.). With this initiative, Dell reduced its packaging by 31.3 million pounds as of 2015, with an associated cost savings of \$53.3 million.

Dell has also been quite innovative with its packaging materials using both bamboo cushioning and mushroom packaging in its products (Dell, n.d.). With highly technical and fragile products (computers), product integrity concerns are key; nonetheless they have proven that sustainable materials can effectively protect the product, a common concern for suppliers thinking to make the switch. Rather than polystyrene foam (i.e. Styrofoam), Dell has created cushions out of bamboo, a highly renewable fibre grown in Asia, close to the manufacturing facilities of Dell. Another innovative packaging material is its mushroom packaging for heavier products:

"The mushroom bioscience is based on using common agricultural waste products. Cotton hulls, rice hulls or wheat chaff are placed in a mold and injected with mushroom spawn. Five to ten days later, the mushroom root structure completes its growth. While it is as strong and protective as Styrofoam, it is organic and compostable." (Dell, n.d.).

While these materials are in early stages of development and not yet available as a widespread commercial alternative, they represent promising trends for UBC Bookstore to key an eye on as they are commercialized in the coming years.

2.2 SUSTAINABLE PACKAGING IN LOCAL PRODUCERS

In addition to the above large multinationals, several local producers have a more specific mandate toward sustainable packaging, providing further recommendations to the UBC Bookstore at a scale more consistent with that available to the Canadian collegiate bookstore industry. In the Vancouver area, these companies include outdoor apparel distributor MEC and cosmetics retailer LUSH. In addition to secondary research, I conducted an interview with the Director of Sourcing at MEC, who was happy to give advice to UBC Bookstore as it develops sustainable packaging guidelines.

Mountain Equipment Co-op (MEC)

Mountain Equipment Co-op is widely seen as a front-runner in the sustainability sphere, with its head offices located in Vancouver. In addition to secondary research, I conducted a phone interview with the director of sourcing, to gain additional insight into how UBC Bookstore can optimize its packaging decisions.

MEC has an environmental mandate to reduce the amount of waste going to the landfill, with initiatives including a plastic bag ban, annual waste audit, and innovative packaging strategies (MEC, n.d.). Since 2010, MEC has adopted a ‘sushi-roll’ packaging strategy wherein all apparel items are rolled, tied with raffia, and packed in a single outer plastic polybag rather than having clothes individually wrapped. (This practice has since become mainstream; many of the UBC Bookstore’s suppliers now use a similar practice.) This strategy has led to both environmental and financial returns for MEC, without impacting product integrity (Gruske, 2015). In 2010, the ‘sushi-roll’ strategy eliminated approximately 431,400 polybags, with paper consumption also decreasing by 15% from 2007 to 2010; in addition to a significant environmental impact, MEC’s waste reduction strategies saved the company almost \$250,000 in 2011 alone (Sam, Esakin, and Pappin, 2012).

By speaking to the Director of Sourcing, Claire Germanas, I gained additional insight into MEC’s strategy including both apparel and giftware (C. Germanas, personal communication, January 31, 2017). Germanas explained that the choice of raffia for tying clothing made sense both in terms of sourcing and disposal; raffia is widely available in close proximity to MEC’s suppliers in Asia and, because it is used for wrapping clothing, it is possible to use a lower grade recycled raffia which saves costs on the supply side; it is also easily recyclable on the downstream end.

Germanas also spoke to the strategy for shipping bottles, tumblers, and other ‘giftware’ type items. Rather than being packaged individually, bottles are packed in an egg-carton type box made of a recycled paper conglomerate. The conglomerate can be shaped to the cup, such that the product is protected without much plastic. The package is topped by reusable bubble pack for added protection. Importantly, she noted that this process resulted in labour cost savings, as the product is much easier to remove from the egg-carton than from individual plastic sleeves. While the

materials sometimes come at a cost premium, there is a trade-off with reduced labour needs, particularly important as the end distribution is in Canada, with comparatively high labour costs (C. Germanas, personal communication, January 31, 2017).

In all packaging strategies, an environmental perspective prefers paper materials to plastics; even with fragile materials such as glass, Germanas indicates that paper conglomerates can be used to protect the product, with as little plastic as possible (C. Germanas, personal communication, January 31, 2017). This is consistent with my research on the downstream recycling implications of plastic products (Section 3.3) and my final recommendations.

In both paper and plastic packaging, MEC incorporates a high percentage of post-consumer recycled material. A key part of my recommendations below is to establish a baseline for recycled content, as well as an understanding of how all materials can be reused and recycled further in their lifecycle. In terms of plastics, MEC packaging materials are primarily polyethylene with 95% post-consumer recycled material. For paper products, the percentage of recycled material depends on the use of the product; if it is load-bearing (i.e. cardboard boxes), it might be around 85% recycled content and 15% virgin (FSC-certified) material, with a higher percentage recycled content for non-load-bearing materials. Germanas also noted that to increase potential for recyclability, paper materials should include only vegetable-based inks (non-toxic) and should avoid lamination (C. Germanas, personal communication, January 31, 2017).

LUSH Cosmetics

LUSH Cosmetics is another local company which has enacted significant reforms to reduce its use of plastic packaging. While many of its strategies are not directly applicable to the UBC Bookstore (i.e. development of solid products that eliminate the need for any packaging), there are two initiatives that may inform our guidelines. First, LUSH has a robust plastic recycling project, in which customers can return empty containers to LUSH stores for rebates (for every five pots a customer returns, they get a free product) (PDP, 2012). This is particularly important due to the plastic used in LUSH pots; although they are HDPE (an easily recycled plastic), they are colored black which complicates recycling; by providing this program, LUSH has internalized their plastic supply chain and reduced dependence on virgin plastic.

Second, in addition to sourcing all its paper and gift materials within North America, the cosmetics company is running a pilot project to obtain 100% recycled plastic materials from a supplier near Vancouver, which reduces “the number of miles the goods need to be transported and the corresponding emissions created when those goods are shipped” (Gruske, 2015). This is an interesting strategy for the UBC Bookstore to consider; in addition to the amount and type of packaging material, vendors should also factor in the distance materials need to travel to get to their suppliers’ production facilities.

2.3 GOVERNMENT REGULATIONS AND GUIDELINES

Finally, the UBC Bookstore's packaging strategy can be informed by government regulations and trends, including mandates at the municipal level, and guidelines established by regional bodies. As part of the Zero Waste strategy in its Greenest City Action Plan, the City of Vancouver has a goal to "Reduce solid waste going to the landfill or incinerator by 50% from 2008 levels" (City of Vancouver, Zero Waste, n.d.). With approximately 35% of municipal solid waste in Canada comprised of packaging (GB Resources, 2013), sustainable packaging is a promising initiative to reduce solid waste and contribute to the achievement of Vancouver's Greenest City mandate.

At the provincial level, British Columbia has environmental guidelines on Extended Producer Responsibility (EPR) wherein producers are incentivized to consider the life cycle impact of their products and packaging, including recycling and disposal (Government of British Columbia, Waste Management, n.d.). While this primarily addresses the responsibility of packaging suppliers over the collection and recyclability of their products, rather than the responsibility of secondary businesses such as the UBC Bookstore, these guidelines demonstrate the momentum toward sustainable packaging at all levels of government. The Recycling Council of British Columbia (RCBC) has also issued an informative set of guidelines towards the achievement of Zero Waste with guidelines encompassing the "6 Rs": Re-consider, Reduce, Reuse, Recycle, Recover, Retain (RCBC, 2014).

Another regional-level set of guidelines was developed by CalRecycle, the recycling agency of the State of California (CalRecycle, 2012). Similar to the RCBC guidelines, this document prioritizes Principles for Packaging Reduction, focusing on four principles: Eliminate, Reduce, Reuse, and Recyclable Packaging and Recycled Content.

Finally, with the UN Sustainable Development Goals (SDGs) informing both public and private sector decision making through 2030, there are two SDGs with strong implications for sustainable packaging: Goal 12 and Goal 14 (Han, 2015; UNDP, n.d.).² Goal 12, Responsible Consumption and Production, addresses the responsibility of industry, business, and consumers to work together to "recycle and reduce waste" (UNDP, n.d.). Goal 14, Life Below Water, considers the impact of marine pollution on ocean life, with marine pollution largely comprised of plastics waste (UNDP, n.d.). With a growing number of stakeholders adopting the SDGs, this lens provides compelling justification for UBC Bookstore and its vendors to increase consideration of sustainable packaging in their corporate relations.

² There are two additional SDGs with implications for sustainable packaging: Goal 11 (Sustainable Cities and Communities) and Goal 17 (Partnerships for the Goals) (UNDP, n.d.). For an analysis of how these goals relate to the packaging industry, please refer to the Packaging Digest article by Rosemary Han (2015).

3 Analysis of UBC Bookstore

On December 8, 2016, I arranged a visit to the UBC bookstore to speak with the buyers for clothing and giftware, Melanie Dodig and Zachary Wong, and to walk through the warehouse and investigate first-hand the current packaging processes. I also hosted interviews with the largest suppliers for clothing (Bruzer) and giftware (Sharper), to gain further insight on their packaging logic. My interview guide for these conversations can be found in **Appendix 1**.³

My conversation with the buyers revealed some of the key considerations in packaging decisions, which were corroborated with subsequent conversations with key suppliers. A primary consideration for packaging decisions is product integrity. While efforts can be made to reduce materials and to introduce innovative materials, there is a perceived trade-off with more sustainable packaging and an increase in defective products (i.e. if the plastic polybags were removed from overseas apparel shipments, the product would be exposed to moisture damage). Beyond the financial repercussion of an increase in defective products, which suppliers are liable for until the time of delivery, there is also a sustainability trade-off: if products are damaged, they can't be sold, and enter directly into waste streams without any value add for customers. In this way, any move towards sustainable packaging must be considered as a trade-off with any related increase in product damage.

In this section, I go over the specific considerations for each of clothing and giftware. As the choice of packaging materials also depends on the downstream treatment of various options, I also consider the downstream effects of the UBC Bookstore's recycling and disposal practices.

3.1 CLOTHING

My conversation with buyers alerted me to the utility of several materials seen as 'excessive' in both clothing and giftware packaging. In terms of clothing, the primary consideration is mildew from atmospheric moisture or bad weather. Because much of the product comes from overseas, and there is little direct control over the transport, the plastic layer is used to ensure that product gets to distributors in Canada, and ultimately to the UBC bookstore intact.

In the walk through, I saw that suppliers were already following best-practices in this area. As with MEC, rather than having each item wrapped separately, clothing is packaged together in sets of 12-24 and packed in a single polybag. Through my conversation with Bruzer, I learned that this was a shift that Canadian distributors have asked for over time in consideration of the environmental impact of plastic (personal communication, December 16, 2016). While overseas

³ While the key points from conversation with both buyers at the UBC Bookstore and with suppliers are included in the analysis, detailed notes from each conversation are available from the author upon request. If you would like access to these notes, or contact information for further research, please contact the SEEDS coordinator.

suppliers tend to be shipped in individual polybags, many distributors in Canada including Bruzer have asked their primary suppliers to provide only bulk polybags. This demonstrates the efforts already made to include sustainability in packaging considerations, and the bargaining power that Canadian distributors do have with respect to their overseas suppliers.

Across conversations, vendors consistently noted that they reuse a large proportion of materials in their internal operations. When the product comes from overseas, it comes in a polybag. The distributors will then repackage product for distribution to collegiate bookstores, and perhaps add logos and imprints. When they ship the product to bookstores, they will reuse the same polybags rather than adding additional plastic into the supply chain. They will also reuse cardboard boxes, assuming there is no damage.

Internally, the UBC Bookstore also engages in reuse and recycling of packaging materials. The plastic polybags from apparel shipments are reused as garbage bags at the UBC Bookstore warehouse. Cardboard boxes are often reused to ship product to downstream consumers, whether they are individual consumers who have purchased product online, or the Bookstore at UBC Okanagan (R. Calero, personal communication, December 8, 2016). Importantly, this strategy of reuse is not only a sustainable initiative, but is preferable from a cost-efficiency perspective, as neither distributors nor UBC need to purchase additional packaging materials, saving both costs and logistics.

In terms of materials, there are three principal components in apparel packaging: cardboard boxes, plastic polybags, and plastic shrink wrap. My contact at Bruzer did not know the exact composition of these materials, but was able to give some general insight in terms of recycled content. While Bruzer does not have specific regulations in terms of proportion of recycled content, a sample cardboard box included 70% recycled material as well as an FSC label. We were unable to determine the proportion of recycled content in the plastic polybags (which are reused from overseas). The shrink wrap comes from a local vendor in Ontario, with recycled content, but not a specified amount (Bruzer, personal communication, December 16, 2016).

3.2 GIFTWARE

For giftware, which is often composed of ceramics or glassware, the principal concern is breakage, as well as scratching and scuffing for certain metallic surfaces. Existing attempts to move toward more sustainable packaging have already resulted in increased breakage. Giftware buyer, Melanie Dodig noted that the only strategy where they saw zero breakage was through Styrofoam peanuts, with a slight increase in breakage from plastic air pillows (personal communication, December 8, 2016). In this regard, it is important to seek strategies that minimize product breakage at the same time as increasing sustainability, such as custom-sized boxes, recycled corrugate packaging, better use of air pillows, and innovative materials. For example, my interview with the Director of Sourcing at MEC (see Section 2.2) indicated methods of packaging giftware that do not increase breakage, which will be included in my final recommendations (C. Germanas, personal communication, January 31, 2017).

Walking through the warehouse, there was a huge range in packaging strategies for giftware. In terms of a single product, tumblers, there were three different strategies with different mixes of plastics and paper products:

1. One method was to package up to 20 tumblers in collapsible cardboard dividers, which were then put in a single plastic polybag within a cardboard box.
2. Another method had each tumbler packaged in an individual plastic sleeve before being placed in cardboard dividers within a cardboard box.
3. Finally, a third strategy was to have each tumbler placed in an individual plastic sleeve within an individual cardboard box, which were then packed in a larger cardboard box.

There are two hypotheses for the different packaging strategies. In terms of product integrity, Melanie Dodig suggested that certain finishes were more susceptible for scuffing and scratching, which may come from contact with the cardboard inserts; the plastic sleeve may protect finishing from scuffing (personal communication, December 8, 2016). However, in my conversation with a supplier at Sharper, it appears that the primary reason for differences in strategy simply comes from differences in the original packaging decisions made overseas (mostly in China). As with apparel, much of the original packaging from overseas is reused by the Canadian distributors. My contact at Sharper noted that because of its market size, Sharper has limited bargaining power over these supply chain decisions. While scratching on the finish is a large concern for Sharper, my contact indicated that either cardboard boxes, dividers, or plastic inserts should adequately protect the content (Sharper, personal communication, December 9, 2016).

In terms of packing materials, Sharper used to use foam peanuts, but have made the switch to plastic air pillows, which are both a lower volume of plastics and much more easy to recycle than Styrofoam. While Sharper has seen a small increase in both cost and breakage, my contact indicated that the cost-benefit made sense in terms of increased sustainability and in terms of staying ahead of the curve (personal communication, December 9, 2016). While further strategies may better protect against damage, this switch indicates the willingness of suppliers to engage in sustainability initiatives.

The only giftware item that comprehensively uses Styrofoam are graduation frames, which are both an extremely high value item (retailing up to \$200), and quite susceptible to both breakage and scratching. As evidenced by the case study of Dell Inc. (see Section 2.1), there are alternatives to Styrofoam even for high value, fragile items. However, while Styrofoam can be systematically eliminated in other product categories, strategies for graduation frames should be considered on a case-by-case basis to ensure that any new strategy does not unduly compromise product integrity.

One other item that had a curious strategy at the warehouse were key chains. Some key chains were packaged in bulk in a single cardboard box, while others were individually packaged in plastic bags. The plastic bags are not only less sustainable, but also result in an increase of labour costs at the warehouse, as each item must be removed from the plastic bag, tagged, and reinserted. However, my contact at Sharper explained that the difference came from the different materials used; while cast iron key chains can be packaged together, a metallic finish will scratch if rubbed against other key chains so needs some layer of protection (Sharper, personal communication, December 9, 2016). This must be considered in any recommendation.

3.3 CONSIDERATION OF DOWNSTREAM EFFECTS

While this project has a specific focus on establishing guidelines for upstream relationships with direct suppliers, it is necessary to consider the entire product life cycle when making sustainability decisions. In particular, the relative preference for various material types depends on the availability of downstream reuse and disposal opportunities.

In this section, I explore downstream effects with attention both to opportunities to reuse and recycle within the Bookstore's internal operations, and to the downstream recycling of key materials, particularly soft plastics.

Opportunities for Reuse and Recycling

As mentioned, in its internal operations, the UBC Bookstore currently follows practices that are effective from a sustainability point of view. Almost all materials are recycled in house, including plastics and paper products. Wooden shipping pallets are left for a local actor to pick up and reuse in the transportation industry (though further research can explore alternate options for these pallets, including reuse within the UBC Bookstore's own supply chain). Moreover, prior to recycling, the UBC Bookstore strives to reuse materials. Plastic polybags are reused as garbage bags within the warehouse, eliminating the need for purchase of additional plastic bags. Cardboard boxes and other packaging materials are often reused in shipments to consumers and to the UBC Okanagan Bookstore.

However, there are additional opportunities for reuse and recycling both within the UBC Bookstore and with other organizations on campus. The UBC Bookstore is a net producer of packaging materials due to the amount that still ends up as waste. Other campus groups, such as Campus Mail, are net consumers of packaging materials as they send packages around campus. As suggested by UBC Bookstore Warehouse Logistics Coordinator, Rodolfo Calero, there is potential for the materials produced by UBC Bookstore to be consumed by Campus Mail, further extending the life cycle of these materials (R. Calero, personal communication, December 8, 2016). As this project focused on upstream recommendations, I did not examine the feasibility of this strategy. However, in line with UBC's sustainability mandates, further research might consider how different organizations within the university can feed off one another's packaging needs in a closed loop system.

Moreover, while the UBC Bookstore recycles all plastics, they are currently undifferentiated; we do not have information on the material composition of incoming plastics, which are thus not sorted before they are sent to recycling facilities (R. Calero, personal communication, December 8, 2016). While this is in itself not problematic (this is a common practice wherein the recycling facility is responsible for plastics sorting), it led to an interesting question: which plastics are most preferable and should the UBC Bookstore ask suppliers to use a specific type of plastics?

The answer to this question is complex and deals with a number of unknowns that should be tracked in the coming months and years. While it is known that #1 PET and #2 HDPE plastics are preferable in terms of recyclability, there is uncertainty regarding the downstream treatment of soft

plastics within the UBC waste system that I was alerted to in two conversations with Bud Fraser, Senior Planning and Sustainability Engineer at UBC, and with Patrick Wilkie, founder of the on-campus plastics recycling hub Melt Collective.

Uncertainty in Downstream Effects

The current process of plastics recycling does not require differentiation; plastics are sorted for different end destinations by the recycler (B. Fraser, personal communication, January 26, 2016). Essentially, this requires sorting different plastics by density and by colour (P. Wilkie, personal communication, February 1, 2017). However, soft plastics such as those used in packaging must be treated differently. At UBC, there are only a few centres which collect soft plastics for recycling, with the UBC Bookstore being one of them. There is not a lot of detail of what happens to soft plastics once they are differentiated. As it is quite difficult to recycle soft plastics, there is some evidence that suggests soft plastics are not recycled effectively (Ellen MacArthur Foundation, 2016). This might have further implications for the packaging decisions made by the UBC Bookstore, and might require a further shift away from soft plastics as more information becomes available. In addition to the general benefits coming from reducing materials, this uncertainty gives increased impetus for actors like the UBC Bookstore to prioritize Reduce and Reuse pillars over Recycling; without full knowledge of how materials are recycled, it is best to reduce the amount of material going to this channel.

Another consideration brought up by Bud Fraser was the ambiguity in “biodegradable” or “compostable” plastics (personal communication, February 15, 2017). While these seem like sustainable options, there are three factors reducing the promise of these labels. First, many products are labeled as “biodegradable” or “compostable” as a marketing tool rather than an authentic claim; without appropriate labelling, they are not necessarily superior to conventional plastics. Second, even if there are authentic claims, alternative plastics often create confusion for end consumers: Should they be recycled? Thrown in with yard waste? Thrown out? Finally, neither the UBC composting system nor the composting program at the City of Vancouver currently accepts compostable or biodegradable plastics in their composting streams. While a valiant effort, these products are actually not any better than conventional plastics (and may actually create more problems if they are thrown into composting systems out of confusion).

This is important as several suppliers currently use “biodegradable” air pillows as an alternative to Styrofoam. The particular product being used (Cell-O Green Air Cushions) cannot be put into UBC’s composting system, but can be recycled similar to other soft plastics. If this product comes at a price premium to air pillows made with conventional plastic air pillows, the conventional plastic air pillows should be used, as given disposal systems, they are treated the same. While recycling systems typically prefer #1 PET and #2 HDPE plastics, #4 LDPE is commonly used for soft plastics, and is preferable to #6 PS (Styrofoam) which has increasingly been linked to environmental and safety concerns (B. Fraser, personal communication, February 15, 2017).

There are similar concerns to alternative packaging materials such as bamboo or mushroom inserts: if not appropriately labelled, they create confusion for end consumers. Therefore, if suppliers move toward these products, products must be accompanied with supporting disposal guidelines and certifications.

Going forward, there are several motions to keep an eye on in downstream relations, that may further inform the upstream guidelines that the UBC Bookstore implements.

1. While biodegradable and compostable plastics are not currently accepted in the UBC or City of Vancouver composting streams, this may change in the future. If composting possibilities change, the UBC Bookstore may look to reconsider its position on these plastics, including biodegradable plastic air pillows.
2. Each time that the UBC Bookstore considers a new packaging material, such as compostable mushroom inserts (which should be certified compostable), they should check that that material is accepted by the relevant waste stream to avoid confusion and contamination.
3. While we do not at this point have full understanding of the downstream treatment of soft plastics, Bud Fraser is considering a SEEDS project at some future date to investigate. Follow up to this report should consider whether such a study has been implemented, and what the results were.
4. Melt Collective is an interesting group on campus that is going through pilot stages of being the first on-campus recycler of hard plastics. The founder of this initiative, Patrick Wilkie, has expressed interest in the plastic waste streams of the UBC Bookstore and while Melt Collective is not at this point set up to absorb soft plastics, follow up to this report should periodically consider whether this is still the case.

It must be recognized that upstream and downstream implications of packaging decisions are inherently interlinked. In order to implement sustainable solutions that do more good than harm, it is necessary to take this systems level approach.

4 Development of Recommendations

By evaluating the current practices of the UBC Bookstore against the best practices developed by existing firms who have implemented sustainable packaging strategies, I constructed a set of sustainable packaging guidelines for the UBC Bookstore, divided into short-, medium-, and long-term strategies. These strategies are found in full in Section 5, with the focus of this section outlining the thought process that went into the final set of recommendations.

Based on the experience of existing firms (Walmart, Unilever, Dell, MEC, and LUSH) as well as regional guidelines from the Recycling Council of British Columbia (RCBC) and CalRecycle, I first compiled a set of best practices that can be used to inform any sustainable packaging strategy, which are explained in this section and set out in **Appendix 2**. While the final recommendations found in Section 5 are specific to the current capabilities of the UBC Bookstore, the set of best practices can be used to inform a strategy for any organization.

I mapped the current practices of the UBC Bookstore against these best practices to develop an understanding of strengths, opportunities, and limitations, as found in **Appendix 3**. This includes recognition of the practices the UBC Bookstore is already engaging, as well as opportunities to improve. Because of current supply chain relations as well as the technical feasibility of some innovative materials, I also note limitations or constraints to the Bookstore's capacity to engage in new strategies.

Finally, based on my secondary research in Section 2 and my conversation with MEC's Director of Sourcing, I also noted lessons learned in implementation, including gaining supplier buy-in. This provides the background to final recommendations found in Section 5.

4.1 LESSONS LEARNED FROM SECONDARY RESEARCH

In Section 2, I considered guidelines established by both private firms (Walmart, Unilever, Dell, MEC, and LUSH) and governmental bodies (RCBC and CalRecycle). Drawing from this research, I constructed an initial set of best practices, which is found in **Appendix 2** and justified in this section. Previous guidelines have been constructed in diverse ways, from the "3 Cs" (Dell) to the "6 Rs" (RCBC). I have chosen to organize my guidelines similar to the method used by Unilever: Remove, Reduce, Reuse, Recycle, and Renew. Because Remove and Reduce principally differ in scale (i.e. Remove asks for a full elimination of materials while Reduce is less stringent), I have combined these considerations in my guidelines to have four considerations: **Reduce, Reuse, Recycle, Renew**.

This organization presents guidelines in a rough order of priority. In an ideal world, the first priority should always be to eliminate or Reduce any excessive packaging. This is particularly important for materials such as plastic which are difficult and energy intensive to recycle. This reduces the amount of materials that will eventually be put into the waste stream. Next, in order to extend the life of materials, efforts should be made to reuse materials throughout the entire supply chain. Only after the life cycle is exhausted, materials should then be recycled, which includes designing materials for recyclability. The Renew priority considers the composition of each packaging material; rather than extracting virgin materials, packaging materials should include recycled content when possible (in both plastics and paper products), and any virgin material should be extracted in a sustainable manner.

Reduce

Of all the environmental concerns, reducing additional materials is by far the most important in reducing the amount of materials to manage as waste. While product integrity will always be the foremost consideration, organizations should look for opportunities to eliminate packaging elements altogether.

Whenever possible, companies should strive to eliminate any packaging that can be safely removed without jeopardizing product integrity (CalRecycle, 2012). However, it must also be considered that not all materials are created equally. In selecting which materials should be removed, it is important to consider both upstream effects (i.e. what energy went into creating the original materials) and downstream effects (i.e. what the potential is for recyclability). First and foremost, any toxic materials should be systematically eliminated. This includes certain dyes, as well as biodegradable additives in petroleum based plastics (CalRecycle, 2012). In the case of the UBC Bookstore, these are unlikely to be concerns, but is worth mentioning as a primary consideration.

Next, any materials that are particularly difficult to recycle should be eliminated from the supply chain. An obvious material to eliminate is Styrofoam, which is not recyclable by most systems (B. Fraser, personal communication, February 15, 2017). Common uses of Styrofoam in packaging include Styrofoam inserts and Styrofoam peanuts. Both may be replaceable by plastic-based or paper-based alternatives. Because of its recyclability, and potential for recycled and renewable content, paper-based alternatives are preferable, but many companies will prefer plastic-based alternatives (i.e. air pillows) for fragile items, as it tends to be more robust. Other materials that inhibit recyclability are inks and dyes, and laminated surfaces (C. Germanas, personal communication, January 31, 2017).

Once toxic and unrecyclable materials have been eliminated, attention should be turned to excessive packaging. Frequently packaging includes several layers; organizations should consider each element and seek ways to remove any layers that can be removed without jeopardizing product integrity (Shova, 2016; CalRecycle, 2012). Key areas to look at include outer cartons or shrink wrap; in many cases these are important for transporting items in a safe and efficient way, but in other areas they merely pack on additional product without a justifiable increase in transportation efficiency. For ‘multipack’ items, it may be possible to remove either the outer polybag or inner polybags, depending on the product. For example, in the case of apparel, it is sensible to remove inner polybags and bulk wrap items in a single outer polybag (MEC, n.d.). In contrast, for goods which require individual packaging on the shelves, it may be the outer packaging that should be removed, and replaced with a simple label (Walmart, 2016). Finally, there may be a trade-off between the number of layers packaging and the robustness of primary packaging. Rather than including two layers of packaging, it might be worthwhile to increase the strength of one layer, and remove the second.

A specific strategy that was proven by both Walmart and Teknion Ltd. to reduce both packaging and costs was to optimize box sizes (Souza, 2016; Gruske, 2015). Rather than padding out standardized box sizes with layers of Styrofoam or other filler materials, boxes can be customized to better fit the product and thus reduce both cardboard utilization and the need for additional packaging materials. In addition to lower materials costs, this strategy reduces both the weight and size of packages which translates to lower shipping costs as more products can be shipped in the same load (Gruske, 2015). This result is common for the ‘Reduce’ strategy; by reducing materials, companies also reduce costs.

Reuse

A simple way to keep materials out of waste streams is to extend their product life cycle by reusing materials. Even if materials are recyclable, it is preferable to reuse them as many times as is feasible before they are ultimately recycled.

From a product life cycle perspective, it is important to design packaging processes such that materials can be returned or reused. For example, by requiring that all suppliers use standard-sized wooden pallets, pallets can be returned to any supplier and continuously reused within the supply chain (Gruske, 2015). Moreover, while returnable packaging materials such as bins, crates, and totes are more expensive initially than single-use cardboard containers, their reusability makes

their lifetime product cost lower than single-use containers, at the same time as reducing materials going into waste streams (Atkinson, 2008).

Rather than bringing additional materials into the packaging process at each stage in the supply chain, efforts should be made to reuse packaging from upstream suppliers in downstream relations. This is equally true for intermediary suppliers as for end-use organizations such as the UBC Bookstore. The Bookstore can consider both demanding its suppliers reuse packaging, and reusing packaging itself in relations with its consumers. For example, MEC has eliminated the use of plastic bags in their customer relations; customers can either use their own reusable totes, or can take a cardboard box from MEC's supply to bring products home (C. Germanas, personal communication, January 31, 2017).

Recycle

Although efforts should primarily be made to ensure that a minimal amount of product is sent to waste streams through the pillars of Reduce and Reuse, it is inevitable that some products will be at the end of their product life cycle upon arrival at the UBC Bookstore. If products are to be sent to waste streams, they should be recyclable or compostable rather than waste. All packaging materials, including labels and seals, should be mandated to be compatible with recycling systems (CalRecycle, 2012).

As briefly mentioned in the Reduce pillar, any materials that are difficult to recycle should be eliminated and replaced with recyclable alternatives. Packaging materials should be restricted to those that are commonly recycled, including #1 PET and #2 HDPE plastics, glass, paper, and cardboard. #4 LDPE might also be used for soft plastics (B. Fraser, personal communication, February 15, 2017). Depending on downstream recycling practices, it may be useful to select a single type of plastic to be used in all packaging from vendors, to facilitate in-store recycling (CalRecycle, 2012).

As mentioned above, Styrofoam should systematically be eliminated, with alternatives including recycled paper composites, plastic air pillows, and innovative materials such as bamboo and mushroom inserts (Dell, n.d.; McTigue Pierce, 2016a).

Another important element in facilitating recyclability is single-material packaging (Shova, 2016; CalRecycle, 2012; MEC, n.d.). Ideally, packaging should be a single material (such as recycled paper composite) such that it can all be placed in the same recycling channel. However, in many cases it is necessary to use a mix of paper and plastic products. In that case, materials should be easily separated by avoiding glue and laminations. Recycling should be an easy choice, and warehouse workers should not have to work to separate plastic layers from cardboard layers.

Finally, to ease recycling, there should be clear systems in place at the warehouse level such that all stakeholders know where each material should go. In terms of vendor relations, materials should be labeled to ease recyclability. This might be important for plastic types if the end-user needs to separate plastics by type, and is additionally important for unusual materials such as biodegradable plastics or compostable mushroom based inserts. An interesting system to consider is the Sustainable Packaging Coalition's How2Recycle Label which was co-developed with

Walmart to communicate recyclability to end-consumers (Walmart, 2016; McTigue Pierce, 2016b).

Renew

While the above three pillars are written in order of priority, Renew adds a different perspective to packaging systems. To make recycling systems effective, there must be a demand for recycled products, which can be fostered by demanding that vendors use a certain percentage of recycled material in their packaging. Having a policy of using post-consumer recycled material ensures that materials sent to recycling centres are actually given a second life.

In some cases, there is a trade-off between the percentage of recycled material and the robustness of packaging. In these cases, vendors must consider what the packaging is to be used for, and the degree to which robustness matters. For example, MEC uses a different percentage of post-consumer recycled material in its cardboard boxes (which must be more robust) than for interior filler material (which is not load bearing). For load-bearing cardboard boxes, MEC uses 85% recycled content and 15% virgin material. For non-load bearing fillers, the percentage of recycled content is higher. In terms of plastics, the best practice from MEC is 95% post-consumer recycled material (C. Germanas, personal communication, January 31, 2017).

Any virgin paper products should be made with Forest Stewardship Council (FSC) certified materials which ensure that the extraction of virgin materials does not contribute to deforestation (MEC, n.d.; Unilever, n.d.). Another interesting method to reduce the environmental impact of paper products is to use innovative fibre blends such as sugarcane and bamboo paper products. As part of my research, I had a conversation with the CEO of Caboo Products, a Vancouver-based producer of paper products using bamboo and sugarcane (A. Addante, personal communication, January 30, 2017). As these materials are extremely fast growing, and sourced in close proximity to packaging producers in East Asia, they are a sustainable alternative to virgin tree products. While they currently primarily focus on household paper products (such as toilet paper, face wipes, and paper towel), the CEO expressed a willingness to create more robust packaging materials if provided with scalable demand. While such a material is not immediately available (but is in product development), it is important to stay abreast of trends in sustainable products.

Finally, the Renew pillar also begs consideration of biodegradable or compostable materials, including innovative materials such as Caboo Paper Products, Dell's use of bamboo and mushroom-based alternatives to Styrofoam, and more conventional products such as biodegradable air pillows. As was discussed in Section 3.3, it is important to critically evaluate these claims and ensure that any "biodegradable" or "compostable" materials are in fact compatible with current waste streams used at UBC. For example, at this point, biodegradable plastics cannot be put in UBC's compost facility, and only serve to create confusion in disposal systems. Moreover, it must be understood that "biodegradable" claims are different from "compostable" claims, and either may be a sign of greenwashing rather than an authentic standard. While we must have a critical eye to these claims, it is important to periodically review what products are available and what products are compatible with current disposable systems. Ultimately, if biodegradable materials are available and easily disposed of, it is biologically

preferable to use them in packaging. However, it is not yet a best practice to use these materials until they can be appropriately disposed of in conventional waste streams.

4.2 STRENGTHS, OPPORTUNITIES AND LIMITATIONS OF UBC BOOKSTORE

As a whole, I found that the UBC Bookstore is currently doing a good job of making sustainable choices within the constraints of ensuring product integrity and the limited control over its supply chain. The Bookstore's buyers are already active in raising concerns with suppliers, and vendors appear amenable to enact any feasible changes. Moreover, current practices include the reuse of all packaging materials by both direct suppliers and the Bookstore itself, recyclability of packaging materials, and use of recycled content in both plastics and paper products. Nevertheless, with a more conscientious look at sustainable packaging, such as is being done through this report, there are opportunities for the UBC Bookstore to go even further and become a leader in this field.

While there are significant improvements to be made, there are also significant limitations to what the UBC Bookstore can currently mandate due to supply chain considerations. At present, most packaging decisions are made overseas, by upstream supply chain partners in East Asia with whom the UBC Bookstore has limited bargaining power. However, the UBC Bookstore is currently considering increasing the proportion of its inventory coming from Canadian suppliers. This shift will give the UBC Bookstore greater control over packaging decisions.

Comparing best-practices determined by secondary research with the current practices and opportunities identified at the UBC Bookstore, I came up with the following Strengths, Opportunities, and Limitations for the UBC Bookstore.

Strengths

As mentioned above, the UBC Bookstore is already engaging in a range of practices that are good sustainable options.

1. **Clothing:** Rather than wrapping each item of clothing in individual polybags, apparel is packaged together in bundles of 12 to 24 in a single polybag.
2. **Reusability:** Vendors reuse the packaging from overseas shipments, meaning that very little additional packaging is added to the product by the direct suppliers. When brought to the UBC warehouse, the UBC Bookstore reuses packaging materials (both boxes and fillers) in their shipments to customers and to UBC Okanagan.
3. **Recyclability:** The UBC Bookstore currently recycles all elements of packaging with very little waste coming out of the warehouse.
4. **Material composition:** Current packaging includes post-consumer recycled material in both paper products and plastics, with virgin paper materials FSC-certified.

While all initiatives can go further in terms of mandating best practices across all suppliers, and determining a set proportion of recycled content that should be used in each material, these results are impressive given that the UBC Bookstore has until this point not undertaken a specific analysis of its sustainability practices in packaging.

This may result from another key strength of the UBC Bookstore: a thorough willingness to engage in sustainable practices. While the primary consideration for these stakeholders will always be product integrity, all actors expressed willingness to adjust their practices. Moreover, in many cases, they already have. In terms of clothing, distributors have made the ask of their overseas suppliers to package product in one single bulk polybag rather than individual sleeves. For giftware, Sharper has made the switch from Styrofoam peanuts to plastic air pillows, even as this has come at a slight cost increase (Sharper, personal communication, December 9, 2016). Furthermore, Melanie Dodig at the UBC Bookstore has been attentive to issues in this sphere, and has brought up concerns with suppliers in the past (personal communication, December 8, 2016). Buy-in from key stakeholders is an important strength for the UBC Bookstore, and should be fostered by continuing to consult these key stakeholders in any future movements.

Opportunities

Despite a willingness to engage on sustainability initiatives, there are thus far no sustainability guidelines being provided to distributors in the Canadian collegiate bookstore industry; this provides a unique opportunity for the UBC Bookstore to set the standard and foster a conversation within this industry. From all conversations, it was clear that suppliers will prefer a standardized packaging process across all downstream buyers; in case of multiple demands, they will often go with the most stringent requirements for consistency. Currently neither Bruzer or Sharper are receiving demands from collegiate bookstores (personal communication, December 16, 2016; December 9, 2016). While this might be because these particular suppliers are relatively ahead of the curve, it is also likely that no universities have yet looked at this issue. As has been clear from the beginning of this project, while the specified scope is for UBC Bookstore, it is likely that any guidelines may be implemented across the Canadian collegiate space. This increases both the impact of any recommendations, and increases the collective bargaining power of the industry, which combats a key limitation in this sphere.

Another opportunity comes from the UBC Bookstore's mandate to increase the procurement of Canadian content. Currently approximately 60 percent of giftware comes from overseas, with Canadian content making up only 25 percent (M. Dodig, personal communication, December 8, 2016). Over the coming years, the UBC Bookstore intends to increase the proportion of Canadian content to 60 percent. With this shift, it is likely that the UBC Bookstore will have increased control over the packaging decisions of its supply chain, and can be in closer communication with vendors in terms of purchasing innovative and local materials. Moreover, subject to different regulatory requirements, these vendors might already be subject to more stringent sustainability requirements such as Extended Producer Responsibility (Government of British Columbia, Waste Management, n.d.). Nonetheless, such considerations must be considered in light of potential increases in costs. While this is a longer-term opportunity, it is important that as the Bookstore plans its shift toward increased Canadian content, it includes consideration of packaging processes.

In terms of specific guidelines, there are opportunities for the UBC Bookstore to continue their sustainable practices in a more directed manner. For example, while many clothing vendors already package apparel in sustainable ways, the UBC Bookstore can mandate best practices across all vendors. Moreover, while recycled content is currently used in most packaging materials, the

UBC Bookstore can benchmark current practices and ask for a specified increase in these materials. Areas of opportunity include:

- While most vendors have moved away from Styrofoam packing in favour of plastic air pillows, this can be mandated across all products.
- While most apparel vendors bulk pack clothing in sets of 12-24, this can be mandated across all apparel shipments. Additionally, rather than only packaging identical products together, multiple items can be packaged together in these bulk packs, as long as different colour dyes do not bleed into each other (i.e. pack green t-shirts with green sweatshirts).
- Of the three strategies for packaging tumblers, the best way appears to be one that uses post-consumer recycled cardboard dividers within a single plastic polybag (such is currently done by Nalgene). This provides sufficient protection with a minimal amount of materials. This practice can be used across all tumblers and bottles (excluding more fragile glass or ceramic items).
- While recycled material is already used in both plastics and paper products, vendors do not have a specified amount of recycled content in various materials. After benchmarking current practices, a minimum requirement can be identified and implemented.

These will be explained in full in the final set of recommendations.

While this project dealt principally with upstream considerations in terms of recommendations to be delivered to suppliers, there are additional opportunities for the UBC Bookstore in terms of its internal operations and downstream relations (as indicated in Section 3.3). The Warehouse Logistics Manager Rodolfo Calero had some interesting suggestions for how the Bookstore can further reuse packaging materials within the UBC network (personal communication, December 8, 2016). He also has done some work for Campus Mail, which has a large demand for cardboard boxes and other packaging materials; if the UBC Bookstore has excess supply of cardboard boxes, it may look to reuse them through this channel to extend their product life prior to recycling.

Limitations

The primary limitations to changing packaging processes are (1) competing priorities such as product integrity and cost, (2) supply chain considerations, and (3) sources of uncertainty.

While sustainability is an important consideration, it is important to recognize that each stakeholder will have different priorities for their packaging strategies, with principal considerations including product integrity and cost. If sustainable guidelines are seen to compromise product integrity, there is likely to be pushback from suppliers, who are liable for any breakage or damage until delivery. Moreover, if suppliers associate changes in their packaging strategies with higher costs, they are also likely to resist change. One way to address this limitation is to clearly communicate the effects of new strategies on issues of concern to key stakeholders. As evidenced in Section 2, there are many examples of strategies which do not compromise product integrity; moreover, many sustainability strategies are also cost saving. These should be communicated clearly and comprehensively. Another strategy to counter-act this limitation is to use internal learning, including benchmarking and measurement metrics to track the real consequences of enacted policies. At present, the UBC Bookstore is planning on rolling out guidelines incrementally by speaking with each vendor one at a time. This will allow it to

continuously learn strategies to overcome supplier concerns. Such a strategy might take longer to roll out but is ultimately expected to have a higher success rate in terms of stakeholder buy-in.

Another key limitation is the UBC Bookstore's bargaining power relative to its supply chain. In contrast to large players, such as Walmart and Unilever, and vertically-integrated firms, such as MEC and LUSH, supply chain considerations are a major consideration for a small player such as the UBC Bookstore.

Relative to its immediate suppliers, the UBC Bookstore is well-positioned, particularly if it acts in concert with the rest of the Canadian collegiate bookstore industry. Many direct suppliers exclusively supply the Canadian collegiate bookstore industry and others only supply a small number of other players. Moreover, the UBC Bookstore has good relationships with immediate suppliers as fostered both by my SEEDS client, Merchandise Manager Jennie Orpen, and by the apparel and giftware buyers Melanie Dodig and Zachary Wong. These relations give the UBC Bookstore referent power as well as power from its supply chain position.

However, the majority of packaging decisions are not made by direct suppliers but by actors much further up the supply chain. In their internal operations, direct suppliers are following sustainable practices in terms of reusing packaging from upstream suppliers rather than creating new, branded materials. This is not the problem. The actors making the original packaging decisions are often very large actors overseas (mostly in China) who have much larger power relative to the Canadian collegiate bookstore industry and who serve a large number of downstream distributors around the world, few of whom are enacting sustainability guidelines. My contact at Bruzer placed this dilemma in the context of progressions in international trade; as there has been a huge increase in international trade over the past 20 years, there has been an increasing percentage of product coming overseas, particularly from China, India, and Bangladesh. This gives Canadian distributors such as Bruzer less control over the packaging they receive (personal communication, December 16, 2016).

While it is unwise to pass the buck and assume that the UBC Bookstore has no power in the context of these supply chain dynamics, it is equally unwise to assume it has complete control. Nevertheless, there are opportunities for influence, particularly when demands are made at scale. In the same conversation with Bruzer, my contact noted that they had been successful in asking that apparel be bulk packed in a single plastic polybag, even though the standard for its upstream supplier in China was to individually wrap items (Bruzer, personal communication, December 16, 2016).

To counteract this limitation, the UBC Bookstore is seeking to increase the percentage of Canadian supplied apparel and giftware in the coming years (M. Dodig, personal communication, December 8, 2016). As the UBC Bookstore seeks out these partners and establishes new relationships, there will be increased opportunity to engage with suppliers for sustainability guidelines. Canadian suppliers will face different legal regulations regarding sustainability, and moreover might have more experience dealing with sustainability considerations. The UBC Bookstore must not only consider what it can do now, but also how it can use its buying power in the future to pursue more sustainable options.

The final limitation in constructing a set of guidelines is uncertainty regarding the downstream implications of various choices. In choosing packaging processes and materials, it is important to consider the entire lifecycle of various options (i.e. between paper products and various types of plastics) to appropriately determine the trade-off between different options. However, in many cases, the variables are simply unknown. As explained in Section 3.3, the key area in which this comes up is the downstream effects of different types of plastics. While every element at the UBC Bookstore is recycled, there is not a whole lot of understanding where that goes. In particular, there is no differentiation between the different types of plastic, which may include both PET and HDPE. Typically, soft plastics are quite difficult to recycle, and in many cases end up as waste even if they are ‘recycled’ (Ellen MacArthur Foundation, 2016). Currently, we do not have a thorough understanding of how these materials are dealt with through UBC’s recycling system (B. Fraser, personal communication, February 15, 2017). While we can only act within our best knowledge at this point, it is important that the UBC Bookstore stays abreast of changing information in this sphere, which may affect the relative environmental preference for different types of plastics or between plastic and paper products. As noted in Section 3.3, I believe it important to stay in communication with SEEDS and with Bud Fraser, to stay aware of any new information that may come up.

4.3 INSIGHTS ON IMPLEMENTATION

A final element to consider in developing sustainable packaging guidelines is how they will be accepted by vendors; while the UBC Bookstore would like to increase the sustainability of its packaging, it must be understood that this will not be the priority of all vendors, and such guidelines are likely to encounter resistance.

A useful way to gain buy-in is to present guidelines that make sense for the priorities of vendors, including a foremost concern for product integrity and a consideration of costs. Throughout my guidelines I have stressed areas in which previous organizations have not suffered increased product damage as a result of adopting new guidelines. While concerns of increased product damage are valid, in many cases they are unfounded. For example, a single outer polybag is just as effective as preventing damage from moisture as are individual polybags. In contrast, other strategies might have a small tradeoff with product integrity (i.e. eliminating Styrofoam), but strategies should be designed to minimize this tradeoff. For example, if Styrofoam is replaced with crumpled up paper, there will certainly be an increase in breakage. However, if it is replaced with alternatives such as Dell’s mushroom-based inserts, there is not an increase in damage. Indeed, Dell has created its packaging materials to be safe for the transport of computers, a high-cost and high-fragility item.

In terms of costs, I have stressed throughout my guidelines instances in which pursuing more sustainable practices are cost-saving. This is true because less materials are used, because less labour needs to be put in to unpacking and re-packing items, and because smaller, lighter loads translate into lower transportation and shipping costs. Wherever possible, these cost savings should be communicated to vendors to increase buy-in.

On the other hand, when recommendations focus not on reducing materials but on switching to more sustainable materials, there may be an increase in cost. Typically, because we are talking about packaging materials, the marginal cost increase is quite small, but when spread over a large volume of product it may be significant to vendors. In these cases, the UBC Bookstore must evaluate how it wishes to approach these costs. Will it absorb higher costs and accept lower margins? Will it pass higher costs on to consumers? Will it expect its suppliers to absorb these costs? While the answer to these questions depends on the relative bargaining power of the UBC Bookstore to both its upstream suppliers and downstream consumers, it must evaluate its ideal positioning when asking for these changes.

In terms of creating an implementation strategy, my conversation with the Director of Sourcing at MEC was particularly informative, as MEC has learned from early mistakes in stakeholder buy-in and was more than willing to share its lessons learned (C. Germanas, personal communication, January 31, 2017). In particular, Germanas offered five key pieces of advice for implementing a sustainability strategy:

1. Ensure that sustainability or waste reduction is embedded into the organization's mission statements, to give credibility and buy-in for initiatives to support organizational goals.
2. Set timelines for transitions. It will not be possible for all suppliers to adapt at once, particularly if they have outstanding orders. At the same time, without timelines, initiatives may drag. By setting clear timelines that engage key stakeholders in their development, organizations can increase the chance of success.
3. Many suppliers will require a minimum order quantity before they are willing to make any changes; use scale and bargaining power to induce change.
4. Consider the entire lifecycle of products and their packaging when evaluating alternatives.
5. There will definitely be push back when presenting recommendations to suppliers. The best way to overcome such push back is to clearly explain the purpose behind initiatives, to consider any financial or labour-saving returns, and to involve them in the discussion.

For one last piece of the puzzle, lessons from Walmart (2016) suggest that before implementing sustainable packaging guidelines, it is first imperative to understand where your manufacturers currently are. While they implemented this consideration through their Sustainable Packaging Scorecard, the UBC Bookstore can also ask its suppliers to answer preliminary questions on their packaging strategy to inform data-driven improvements in packaging. In particular, it would be useful to benchmark the following elements:

1. What types of plastic are currently being used? Is it a single type across all suppliers, or are some using better or worse alternatives?
2. What is the percentage of recycled content used in each packaging material (polybags, shrink wrap, cardboard boxes, and any paper conglomerate fillers)?
3. What additional packaging do immediate suppliers add to the supply chain, versus what materials do they reuse from upstream actors?

The answers to these questions can help the UBC Bookstore understand current supplier practices in terms of sustainability, and understand what regulations are likely to be possible and adoptable by its vendors in contrast to recommendations that ask suppliers to do too much, too soon.

5 Final Set of Recommendations

As identified above, there are significant limitations to many recommendations, primarily because of supply chain relations. This involves both the difficulty in implementing guidelines when the decision-makers are several stages further up the supply chain, and difficulty in convincing suppliers to chart a new course independent of the locus of decision making. For this reason, I have divided recommendations into three stages: short-term, medium-term, and long-term. Short-term recommendations focus primarily on information gathering and alerting suppliers to best practices used by other actors in the current supply chain. Medium-term recommendations involve speaking to each vendor individually and considering the use of each material in their packaging process. This will allow the UBC Bookstore to continuously learn and to track which strategies work well and which experience greater push back. Long-term recommendations include more innovative strategies that may not be immediately possible either technically or because of supply chain relations. They also include areas for further research that may have implications on the long-term sustainability strategy for the UBC Bookstore.

5.1 SHORT-TERM RECOMMENDATIONS

My initial recommendations are those that are expected to be implemented across all vendors without any significant push-back. Principally, this involves measuring current practices such that the UBC Bookstore can benchmark existing practices and track future progress against current practices. I will also recommend mandating widespread best practices as requirements across all vendors. I will also recommend several strategies for the Bookstore to implement internally.

Internal Guidelines:

1. **Incorporate Sustainable Packaging into UBC Bookstore Mission Statement.** First and foremost, the UBC Bookstore should incorporate sustainable packaging into its mission statement and organizational goals. While symbolic, this is an important communication tool both internally and externally. If embedded in the mission statement, all actors within the UBC Bookstore are more likely to internalize this shift. It also establishes credibility among vendors, who are more likely to see this as an authentic mission rather than a trend.
2. **Create Specific Goals for Each Vendor.** When presenting vendors with guidelines, also provide them with information on why you are interested in increasing sustainability, including both values-based arguments, mandates-based arguments (i.e. the UBC Sustainability Initiative), and business case arguments. If there are cost or labour savings, communicate them. If there is a consumer demand from UBC students, communicate it. Success will be maximized by clearly explaining the purpose behind initiatives and by consistently involving the vendor in the discussion.
3. **Set Timelines for Transitions.** In all strategies, the UBC Bookstore should mutually agree on timelines with its vendors. It is important that these are mutually agreed upon such that they are realistic and thus more likely to be followed. On the other hand, the Bookstore should encourage vendors toward ambitious timelines, such that initiatives do not drag.

4. **Consider Bargaining Power.** If there are cost increases associated with switching to a new material, how will those costs be absorbed? Does the UBC Bookstore (in consortium with the broader Canadian collegiate bookstore industry) have the market power to shift costs on suppliers? On consumers? Or will it have to absorb cost differences through reduced margins? Additionally, many suppliers will require a minimum order quantity before they are willing to make any changes. What volume are you willing to purchase in order to influence a decision?

Measurement and Benchmarking:

Before asking for specific materials to be used, or specific proportions of recycled content, it is vital to know where suppliers currently are. Once these metrics are known, the UBC Bookstore can set minimum requirements for materials and recycled content. The percentages used by MEC might be considered an industry best practice, but might not be attainable for all firms at once. Based on where firms currently are, the UBC Bookstore should then set annual targets with the goal of best practices attained in five years. Metrics to be measured include:

1. **What types of plastic are currently being used?** Is it the same type for shrink wrap and for polybags? Does the type of plastic change quite regularly (i.e. with the relative price of virgin and recycled materials) or do firms have a single supplier?
2. **What is the percentage of recycled content used in each packaging material?**
 - a. In polybags?
 - b. In shrink wrap?
 - c. In cardboard boxes?
 - d. In packing materials: Styrofoam, air pillows, paper products?
3. **What packing material is used?** Styrofoam? Air pillows? Paper products?
4. **Are virgin paper products FSC certified?**
5. **What packing materials are added by direct suppliers?** In contrast to what materials are reused from upstream actors?

Implementation of Best Practices:

1. For all products, replace #6 polystyrene plastics (i.e. Styrofoam) with more sustainable alternatives, such as plastic air pillows, recycled composite paper products, or inserts made from bamboo or mushroom composites.
 - a. “Biodegradable” air pillows are not recommended. While the current Cell-O Green Air Cushions can be used, they are not preferable to conventional plastics, so if they come at a price premium, it is cost-preferable to select other options.
 - b. At this point, there is no specific alternative that is preferred between plastic air pillows and recycled composite paper products. While the paper products are superior from a sustainability perspective, it is understood that this might not be the best option from a product integrity perspective, and we want to give some

flexibility to suppliers as to the alternative. Innovative materials such as bamboo inserts and mushroom cushions are encouraged, but if such materials are being used they should be cleared with the UBC Bookstore to ensure they are compatible with disposal systems.

- c. One exception to this guideline might be the Styrofoam used in graduation frames. While this should also be eliminated in a longer-term perspective, the product needs are different and this should be tackled through a one-on-one consultation rather than a broad strokes guideline.
2. For apparel products, all should be bulk packaged with a single outer polybag rather than individually wrapped. Items should be packed in a minimum set of 12, with a preference for packages of 24 or more items.
 - a. MEC has found that “sushi-rolling” items and tying them with raffia is an effective way to minimize the amount of space each shipment takes. This can be followed, but is not necessary.
 - b. It is possible that bulk packing can occur not only within a single product, but also in multipack items. In this case, vendors should be aware of the potential for fabric dyes to bleed into each other; perhaps only apparel of the same colour should be packed together.
 - c. An exception to this guideline are any products in which there is a clear imperative for items to be individually wrapped (i.e. lab coats, which must avoid contamination). While the amount of plastic should also be reduced for these products, it should be considered through a one-on-one consultation rather than a broad strokes guideline.
 3. Once the data has come in from the **Measurement and Benchmarking** strategy, it should be used to inform best practices. Depending on the distribution of suppliers along these measures, results could either lead to broad strokes guidelines or individualized targets. Specific guidelines include:
 - a. **All virgin paper products should be Forest Stewardship Council (FSC) certified** which ensures that they are not contributing to deforestation. This is likely to be a best practice across most suppliers, but should be conscientiously implemented.
 - b. **All paper products should include a minimum percentage of recycled content** determined by current best practices. For reference, at MEC the proportions are:
 - i. For load-bearing products such as cardboard boxes, 85 percent post-consumer recycled content and 15 percent FSC-certified virgin material.
 - ii. For non-load-bearing products such as fillers, higher percentage.
 - c. **All plastic products should include a minimum percentage of recycled content** determined by current best practices. For reference, at MEC the proportions are:
 - i. For plastic polybags, 95 percent post-consumer recycled content and 5 percent virgin material.
 - ii. For plastic shrink wrap, unknown.

- d. **Plastic types should be compatible with local recycling systems.** The best plastic types for recyclability are #1 PET and #2 HDPE. For soft plastics, #4 LDPE might be necessary. Vendors should avoid #6 polystyrene (Styrofoam), PVC, and petroleum based plastics that include biodegradable additives.

5.2 MEDIUM-TERM RECOMMENDATIONS

For most guidelines, a one-on-one approach will be most effective, even as it slows down the process. One-on-one consultation increases engagement with each vendor, allowing them to voice their concerns and construct strategies that work within their unique business model. Moreover, it gives the UBC Bookstore the opportunity to learn from early engagements and determine effective vs. ineffective strategies. Depending on the capabilities of each vendor, this strategy also gives the UBC Bookstore potential to go deeper and enact truly sustainable choices. The following strategies are suggestions for various vendors.

1. **For all products**, it is preferable to reduce plastics in favour of recycled content composites. For example, rather than using plastic air pillows as a filler, boxes can be custom-sized to reduce the need for fillers. As demonstrated from the experience of both Walmart and Teknion Ltd. (see Section 2.2), this strategy can also entail significant cost savings.
2. **For products that do require fillers (i.e. that are fragile)**, a paper composite is preferable to plastic air pillows. An interesting strategy was described by the Director of Sourcing at MEC (see Section 2.3) wherein ceramics and glassware can be packed in an “eggshell” design. Within custom-sized boxes, composite paper products can be shaped to nest products, removing the need for either individual boxes or plastic sleeves and fillers. Some plastic might still be used (i.e. a single layer of bubble wrap), but should be reduced. While a variety of strategies can be used, those that reduce the amount of soft plastics entering the waste stream are preferable.
3. **For less fragile items, such as tumblers and water bottles**, a system that minimizes the amount of plastics and other materials remains preferable. In respect to the three packaging systems for tumblers described in Section 3.2, the system used by Nalgene where products are inserted in simple cardboard dividers inside a single plastic polybag is preferable. However, if vendors have ideas which further reduce the use of plastic, these should also be considered.
4. **For key chains**, some require individual sleeves to prevent scratching and scuffing. Consider if these can be made of fibre-based sleeves rather than plastics. If plastics are necessary, consider if they can be packaged more simply to reduce the amount of plastic used while still protecting the product.
5. **For vendors who express concerns** to guidelines recommended in the short-term, or who were identified as exceptions, conversations should consider various ways to minimize the use of plastics, polystyrene, and other materials in ways that do not compromise their concerns (i.e. hygiene, safety, breakage).

6. **For all vendors, innovative materials should be considered, even if they don't yet seem technically feasible at scale.** Such materials include bamboo and mushroom inserts to protect products (these materials do not compromise product integrity as they have been developed to protect Dell's hardware), sugarcane and bamboo alternatives to virgin paper materials, and continuous innovation in compostable plastics. Whenever considering innovative materials that are not common, they should be analyzed with a systems-level perspective including their sourcing and disposal. If any materials are unusual, they should also include instructions on how to dispose of them by the end user, including any supporting certifications.

In all these considerations, the UBC Bookstore should listen to any suggestions vendors have. Due to their familiarity with their products, vendors are likely to have ideas that the UBC Bookstore has not considered, that still fulfil a sustainability mandate. Vendors should be seen as true partners in coming up with solutions; moreover, a bottom up approach increases stakeholder buy in.

Throughout these conversations, the UBC Bookstore should keep a record of lessons learned, including successful strategies and common concerns. These will inform both future interactions with those same vendors, and interactions with different vendors.

5.3 LONG-TERM RECOMMENDATIONS

Because of the limitations identified in Section 4.4, not all practices can be implemented in early years because of supply chain considerations, because of uncertainty with downstream effects, and because of the technical feasibility of some innovative strategies. This report should be evaluated on a yearly basis with consideration to changing realities in these three spheres. Each year, the UBC Bookstore should look into the following considerations.

Shift to Canadian Content

As the UBC Bookstore moves towards an increased percentage of Canadian content in the coming years, they will likely be a bigger player relative to packaging decision-makers, increasing the potential for robust recommendations. Moreover, Canadian suppliers might be subject to different regulations and cultural norms, increasing the potential for sustainable guidelines. Finally, as relationships are being set up, the UBC Bookstore has a unique opportunity to establish rules of engagement, which should include sustainability guidelines.

With each new supplier, the UBC Bookstore should consider the relative power of their new partner, both in relation to the Bookstore and in relation to upstream suppliers of products and packaging supplies. The UBC Bookstore should also consider any supplier mandates or mission statements which might be amenable to sustainability. By incorporating its sustainability packaging strategy into its own organizational mission statement, the UBC Bookstore can position itself as a leader in sustainable design, increasing its credibility with new partners.

Finally, with the shift to Canadian content, the UBC Bookstore will have the opportunity to engage with interesting local actors already making waves in sustainability. These include three Canadian firms identified in Section 2 (MEC, LUSH, and Teknion Ltd.), as well as designers of innovative

materials, such as Vancouver-based Caboo Paper, which was identified as an interesting opportunity in Section 4.1.

Downstream Implications

As identified in Section 4.3, there is currently considerable ambiguity regarding the downstream treatment of soft plastics. As a follow-up to this project, the UBC Bookstore should stay abreast of developments in this knowledge area, by annually checking in with the SEEDS coordinator to inquire whether there has been a project on this topic or whether one is in consideration.

Another area to keep an eye on in terms of downstream implications is the use of biodegradable or compostable plastics. At present, these are not accepted by either the UBC or City of Vancouver composting streams. As biodegradable and compostable plastics become more mainstream, this might change. The UBC Bookstore should also annually check in on this feasibility (the best contact currently is Senior Planning and Sustainability Engineer Bud Fraser) to determine if it should ever shift towards these plastics. If it becomes feasible to dispose of these products, it is necessary that the UBC Bookstore consider three further elements:

1. Biodegradable and compostable plastics are not the same thing, and the UBC Bookstore must be cognizant of which may be disposed of and which might not.
2. “Biodegradable” and “compostable” claims are frequently used as a marketing tactic without supporting proof. To avoid contaminating waste streams, any such plastics should be supported with appropriate documentation and certifications.
3. Because they are not common products, biodegradable and compostable claims can create confusion for end users. In addition to appropriate certifications, new materials should be supported with instructions on how to appropriately dispose of such materials.

One final element to keep an eye on is the momentum behind Melt Collective, an on-campus plastics recycling group created by a group of engineering students. They collect plastics, melt them down, and reform them into items that can be used by the UBC Community. At present, they are in their pilot stage and moreover only accept hard plastics. However, the founder Patrick Wilkie would like to consider the feasibility of including soft plastics, and internalize the recycling of plastics disposed of at the UBC Bookstore within the UBC community. The UBC Bookstore should also include an annual check-in with this group to evaluate the potential for on-campus recycling of its plastic waste.

Technical Feasibility

Several innovative materials and strategies mentioned throughout this report are not feasible at this time, either because of geographical reach, scale, or technical limitations. This should not inhibit their consideration as part of the UBC Bookstore’s sustainable packaging guidelines, as many materials can rapidly scale and it would be unwise to unduly restrict the Bookstore’s range of options. As mentioned throughout this report, the following are some trends which might be considered in the future as they become commercially available:

1. Dell uses bamboo and mushroom-based cushions in their packaging of computers (source). These are used as an alternative to Styrofoam, but are a much more sustainable alternative and are moreover proven to work without increasing product damage, as they are used for international shipments of personal computers and other hardware. However, based on my research, it is currently an internal technology used by Dell, and I could not find any independent suppliers of this material. It is worthwhile to raise these products with existing vendors to determine whether independent suppliers exist, and whether it is a cost-effective alternative.
2. MEC recommends the use of “egg carton” packaging strategies for fragile items such as glassware and ceramics. Rather than plastic and Styrofoam fillers, this strategy includes custom-made post-consumer recycled paper composites that are shaped to surround each product. They can be packed together in sets of 12 or more, with a single layer of bubble wrap protecting the lid. While this strategy is currently technically feasible, supply chain considerations may limit its implementation. It should nevertheless be mentioned in conversation with current vendors as a potential alternative. Moreover, as the UBC Bookstore shifts toward more Canadian content, this strategy might become more realistic.
3. As mentioned in Section 4.1, I have spoken with the CEO of Caboo Paper, a Vancouver-based supplier of household paper products made with a blend of sugarcane and bamboo fibres. These materials are fast-growing and sourced close to production facilities in East Asia. While they are currently used for household paper products, the CEO has expressed a willingness to attempt packaging products if there was a large enough demand. He is currently developing such materials with another purchaser, so they might become commercially available in the coming years.

Importantly, if any of these strategies are pursued, they must be supported with clear instructions of how they should be recycled, as they are not necessarily intuitive to the end user. When bringing in a new material, the UBC Bookstore must ensure that the material is compatible with current waste systems and that warehouse employees are given instructions as to how to appropriately dispose of materials in either recycling or composting streams.

6 Conclusion

This report looked at the current packaging practices of the UBC Bookstore to identify opportunities for improvement along sustainability imperatives. The UBC Bookstore is currently following several best practices in sustainable packaging; almost all packaging materials are readily recyclable, many materials are reused, efforts have been made to reduce plastic packaging in apparel, and buyers are active in raising any concerns that come up. However, there remain several constraints to a more thorough sustainability policy, including: (1) competing priorities of stakeholders, (2) supply chain considerations, and (3) uncertainty in downstream effects.

While certain sustainability measures are already in place, this report was designed to provide a more comprehensive analysis of the situation, to find policies which might be implemented in the context of the UBC Bookstore’s unique opportunities as well as its constraints. Specifically, I constructed three phases of recommendations: those that can be done in the short-term, including

internal guidelines, benchmarking of current practices, and expansion of current best practices; those that can be done in the medium-term, specifically one-on-one conversations with individual buyers; and those that must wait for issues to be resolved in the long-term, including shifts in the UBC Bookstore's supply chain, uncertainty as to the downstream effects of soft plastics and compostable plastics, and technical feasibility of more innovative materials and processes.

The primary objective of this report was to construct the set of guidelines, informed by existing guidelines by other firms and industries and current practices of the UBC Bookstore. However, recommendations are more likely to be adopted by vendors if there are associated cost savings or other financial incentives. A key takeaway is that, while sustainability concerns are considered by both the UBC Bookstore and its direct supplier, other priorities such as product integrity and costs are often seen as more important.

While this research was not able to determine specific cost savings for the UBC Bookstore's direct vendors from the proposed recommendations, research from the case studies indicated that many policies can be implemented that simultaneously reduce costs and reduce environmental impact. My recommendations were centered around four pillars: Reduce, Reuse, Recycle, and Renew. The first two pillars are directly related to cost savings, both in terms of fewer materials used and in terms of lighter shipments, which further save fuel and transportation costs. Wherever possible, these cost savings should be communicated to vendors to increase buy-in. The latter two pillars have more ambiguous implications on cost; switching to more preferred materials often comes at a higher cost (i.e. with the switch from Styrofoam peanuts to plastic air pillows). However, as was illuminated in this report, there are often simple solutions that reduce the cost premium of more sustainable choices. In the above example, the "biodegradable" plastic air pillows can be replaced with conventional plastic air pillows with the same environmental impact. Nonetheless, cost increases might be associated with certain recommendations, and the UBC Bookstore must evaluate how it wishes to approach these higher costs.

As a final consideration, it is important to recognize that this research should be treated as a living document and not as a one-time analysis of sustainability concerns. An interesting aspect of sustainability is its dynamism. New materials and processes are continuously being developed, and sources of uncertainty are continuously being resolved. While this report was designed to be flexible to changing circumstances, particularly in the recommendations proposed for the long-term, the UBC Bookstore should continue to engage in conversation with other actors in the UBC sustainability sphere who are involved in developing campus-wide solutions to our joint sustainability challenges.

Appendices

APPENDIX 1: INTERVIEW GUIDE FOR IN-DEPTH INTERVIEWS WITH VENDORS

Although this serves as a guide, my interviews were semi-structured, with the actual content, order, and flow differing substantially between conversations.

1. Introduction: explanation of the project and purpose of the discussion. Thank vendor for time and willingness to talk.
2. General Opening: Can you walk me through the packaging process? What is the decision-making process for how you package your products?
 - a. What are your primary considerations (i.e. lowest cost, minimizing damage) and how do you satisfy these?
 - i. Have you found damage in the past when switching from one packaging process to another?
 - ii. Have your priorities changed over time?
 - b. Where do most of your products come from: are they coming mostly from North America or further abroad?
 - i. How does that affect the packaging?
 - ii. What control do you have over the packaging you receive from abroad?
3. Buyer Demands: Are your buyers (i.e. collegiate bookstores) asking for specific demands regarding packaging? What are their primary concerns?
 - a. Are all collegiate bookstores looking at similar things from you in terms of packaging, or are you getting different priorities from different buyers?
 - b. Has the sustainability of packaging been a topic of consideration from any of your buyers? What priorities have been raised?
4. Sustainability: [This was very specific to each vendor based on what I had seen at the UBC Bookstore warehouse.]
 - a. In terms of the amount of packaging, can you talk to me about how products are packaged together?
 - b. What are the biggest barriers to reducing the amount of packaging / materials?
 - c. In terms of the type of materials, what materials are you using?
 - i. Are you using Styrofoam? Or plastic/biodegradable plastic air pillows?
 - ii. I've seen several different ways of packaging tumblers, including plastic bags, individual cardboard boxes, and cardboard dividers. Which do you use? Which do you find are most effective? Why are there differences?
 - d. Do you reuse packaging in-house? (i.e. cardboard boxes, wooden pallets).
 - e. What can you tell me about the recyclability of the packaging? (i.e. for plastics).
 - f. What about the content of the materials: do you know if the plastic / cardboard you use includes recycled content? Is FSC certified?
 - g. When you have made changes in the past, have you noticed an impact in terms of cost, damage, labour in your own warehouses?
5. Closing: Ask if there was anything I've missed in this discussion or if there was anything they would like to expand on? Thank respondent for their time and willingness.

APPENDIX 2: COMPILED BEST PRACTICES FROM SECONDARY RESEARCH

Compiled Best Practices from Secondary Research

Reduce

- 1. Eliminate toxic materials in the packaging.** In terms of plastic types, this relates to choosing PET and HDPE plastics rather than PVC or other petroleum based plastics that include biodegradable additives.
- 2. Eliminate any materials that inhibit recyclability.** This includes elimination of inks, dyes, or tints; laminated plastic; and non-recyclable materials such as Styrofoam inserts and peanuts.
- 3. Eliminate all packaging that can be altogether removed without jeopardizing product integrity.** Potential areas for reduction include:
 - a. Elimination of outer cartons or shrink wrap.
 - b. Elimination of the outer polybag on 'multipack'; replace with a simple label.
 - c. Elimination of any extra boxes, ties, or layers of packaging. Secondary and tertiary packaging may be eliminated by making primary packaging more robust.
- 4. Optimize box sizes** to minimize the amount of cardboard being shipped out. Standardized box sizes often need to be padded out with Styrofoam and air pillows before shipping. Custom-sized boxes might appear to be more costly, but they have been proven to reduce costs both by reducing materials and by taking up less room in shipping containers, optimizing transportation costs.

Reuse

- 1. Design packages that are returnable or reusable.** This can be done through the following best-practices:
 - a. Require that all suppliers use standard-sized wooden pallets such that they can be reused by any supplier.
 - b. Use returnable packaging, including bins, crates, and totes.
- 2. Reuse packaging from suppliers in packaging to consumers.** If packaging from suppliers is intact, it should be used in downstream relations before recycling or disposal.

Recycle

- 1. Design packaging to be compatible with recycling systems.** Ensure that all packaging elements – including the primary packaging as well as labels and seals – is recyclable according to local regulations. This can be achieved through the following practices:
 - a. Use materials that are commonly recycled: for plastics, this includes #1 PET and #2 HDPE, as well as glass, paper, and cardboard. In terms of soft plastics, it may be necessary to use #4 LDPE.

- b. Select a single type of plastic to be used in packaging from all vendors (polybags and shrink wrap) to facilitate in-store recycling.
 - c. Replace Styrofoam with recyclable alternatives, including recycled paper composites, plastic air pillows, and innovative materials such as bamboo and mushroom inserts.
2. **Use single-material packaging.** This facilitates identification and recycling. If it is not possible to use a single-material, ensure that materials can be easily separated by avoiding glue and laminations.
 3. **Communicate recyclability.** Clearly label all materials such that the consumer can easily recycle. For simple materials, this may simply require identification of the materials. For more complex materials, consider the Sustainable Packaging Coalition's How2Recycle label.

Renew

1. **Maximize the amount of post-consumer recycled material in packaging.** To make recycling effective, consumers must also purchase recycled products. Having a policy of using only recycled material ensures that materials sent to recycling centres are given a second life.
2. **Certify any virgin paper products with Forest Stewardship Council (FSC) certification.** This ensures that the product does not contribute to deforestation.
3. **Consider biodegradable and compostable materials.** When biodegradable materials are available, it is biologically preferable to use them in packaging. However, it must be understood that such claims are often a result of greenwashing. Moreover, not all waste systems can support biodegradable and compostable plastics; before implementing these guidelines, we must understand current waste management capabilities (which are not currently able to compost plastics).
 - a. Replacement of Styrofoam peanuts and inserts with post-consumer recycled conglomerates, or bamboo or mushroom cushions.
 - b. Replacement of plastic polybags with raffia ties.
 - c. Replacement of conventional plastics with compostable plastics, if composting systems are developed to adequately process these materials. (NOTE: at present, UBC and City of Vancouver composting systems do not easily process compostable plastics, so conventional plastics which can be recycled are preferred.)

APPENDIX 3: ANALYSIS OF UBC BOOKSTORE AGAINST PRELIMINARY GUIDELINES

Practices of UBC Bookstore mapped against Preliminary Guidelines

Reduce

1. Eliminate toxic materials in the packaging.

Successful practices: I did not see any packaging materials that violated these recommendations.

2. Eliminate any inks, dyes, or tints that inhibit recyclability.

Successful practices: All materials used in packaging are currently recycled at the UBC Bookstore.

3. Eliminate all packaging that can be altogether removed without jeopardizing product integrity.

Successful practices: Rather than wrapping each item of clothing in individual polybags, apparel is packaged together in bundles of 12-24 with only a single plastic polybag. This is vastly preferable to individual wrapping of each item of clothing.

Area for improvement: the UBC Bookstore stocks several different types of tumblers and water bottles that have excessive packaging. While some products are simply packaged with cardboard dividers and an outer polybag (i.e. the Nalgene bottles), others are packaged in individual cardboard boxes within a larger box. Others still are wrapped in a plastic sleeve inside their individual cardboard box. The first option (cardboard dividers) are preferred.

Limitations: In conversation with the giftware vendor, it was explained that while the different types of packaging are not necessarily needed (i.e. to prevent scuffing or scratching), they result from different practices used from overseas suppliers which the giftware vendor has little direct control over.

4. Optimize box sizes to minimize the amount of cardboard being shipped out.

Successful practices: As a general comment, boxes were well packed to reduce excess airspace. The only products with significant padding were the graduation frames, which require such padding to prevent damage.

Reuse

1. Design packages that are returnable or reusable.

Successful practices: Vendors reused the packaging included in overseas shipments. There is little additional packaging added to the product by the direct suppliers to the UBC Bookstore.

Area for improvement: Wooden shipping pallets are not returned to suppliers for reuse. Rather, they are picked up by an independent contractor on a weekly basis. While this means that the pallets are most likely returned to the shipping cycle for reuse, they are not reused by actors within the UBC Bookstore's own supply chain.

Limitation: As many of the Canadian suppliers are based in Ontario, it might not be feasible to return the wooden pallets across the country. In this context, the current practice of having them picked up by a local actor is likely the best option.

2. Reuse packaging from suppliers in packaging to consumers.

Successful practice: The UBC Bookstore is practicing this recommendation, by reusing packaging materials (boxes as well as fillers) in their shipments to customers, as well as in shipments to UBC Okanagan.

Recycle

1. Design packaging to be compatible with recycling systems.

Successful practice: The UBC Bookstore currently recycles all elements of packaging, with centres for plastics (undifferentiated) and paper products. There is very little waste coming out of the warehouse, although the quantity of materials might be further reduced.

Area for improvement: The plastic recycling is undifferentiated, without separate systems for different types of plastics. Given our uncertainty as to how soft plastics recycling is treated downstream, this may or may not be material. The UBC Bookstore should ask its suppliers to identify the type of plastic used, for ease of recycling. As more information about the downstream effects of soft plastics recycling is determined, it may be useful to choose a single type of plastic from all vendors.

2. Use single-material packaging.

Successful practice: while most packaging includes two or three materials (plastic polybags, cardboard, and outer shrink wrap), it is all easily separated for recycling.

3. Communicate recyclability.

Successful practice: this is not a problem with the type of packaging used in the Bookstore's supply chain. All materials are easily identified and recyclable.

Area for improvement: If suppliers begin to use more unusual materials, including compostable plastics and mushroom-based inserts, these materials should be supported with information on how to recycle/compost/dispose of them, along with any supporting certifications.

Renew

1. Maximize the amount of post-consumer recycled material in packaging.

Successful practices: conversations with vendors revealed that current packaging includes post-consumer recycled material, in both paper products and plastics.

Area for Improvement: Despite a certain percentage already being used, it is unclear whether recycled material is used in all products, and at what proportion. The UBC Bookstore should require a certain percentage of post-consumer recycled material in packaging. That percentage should be determined by current best practices, which first requires an inventory of the materials currently used.

2. Certify any virgin paper products with Forest Stewardship Council (FSC) certification.

Successful practice: Vendors indicated that they are currently using FSC-certified virgin material. It should be confirmed that this is a policy across all vendors.

3. Consider biodegradable and compostable materials.

Successful practice: in most cases, Styrofoam inserts have been replaced with air pillows. This should be extended as a practice across all products and vendors.

Area for improvement: As an alternative to air pillows, vendors may investigate the technical feasibility of cushions made from bamboo and mushrooms.

Limitation: While biodegradable or compostable plastics might ultimately be a worthy goal, the current composting systems at UBC and with the City of Vancouver do not accept compostable plastics. Rather, the best option remains easily recyclable plastics. At this point, compostable and biodegradable plastics are not recommended.

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