Introduction

The National Zero Waste Council – a leadership initiative of Metro Vancouver that brings together governments, businesses, and non-government organizations to advance waste prevention in Canada and the transition to a circular economy – has engaged Value Chain Management International (VCMI) to explore means to proactively reduce food loss and waste (FLW) and its equivalent carbon footprint (CO²e). This project is additionally supported by RECYC-QUEBEC, EEQ, Packaging Consortium (PAC), and Vancity.

Optimizing packaging solutions from economic and environmental perspectives is one of the scenarios being explored. Other means for reducing FLW that the project is exploring include identifying circumstances where the elimination of prepackaged foods or beverages (e.g. consumers using reusable containers to buy items sold in bulk) can produce positive social, economic, and environmental outcomes. Opportunities to reduce FLW by redesigning business models will also be explored.

To assist our analysis, we would greatly appreciate your perspectives by completing this online survey. The survey is entirely confidential and should take no longer than ten minutes to complete. If you wish to review the questions before completing the survey, the questions can be previewed here.

All of the information provided will be treated with the strictest confidentiality. We are not seeking the names of people, businesses, or organizations.

If you have questions about the study please contact Martin Gooch +1 416-997-7779 or martin@vcm-international.com.

We thank you in advance for your cooperation.

Regards,

Martin Gooch, PhD Value Chain Management International Inc.

al background	
Who are you? Please choose one answer.	
Source material (resin) supplier	Retailer
Packaging manufacturer/converter	Hotel, restaurant, institution
Material recovery facility (MRF)	Food rescue/redistribution
Packaging recycler	Federal government
Food processor/manufacturer	Provincial/territorial government
Food distributor	Municipal government
Other (please specify)	
Other (please specify)	
Other (please specify) In which province or territory are your operation Alberta	ons located?Please identify all that apply. Nunavut
In which province or territory are your operation	
In which province or territory are your operation	Nunavut
In which province or territory are your operation Alberta British Columbia	Nunavut Ontario
In which province or territory are your operation Alberta British Columbia Manitoba	Nunavut Ontario Prince Edward Island
In which province or territory are your operation Alberta British Columbia Manitoba New Brunswick	Nunavut Ontario Prince Edward Island Quebec
In which province or territory are your operation Alberta British Columbia Manitoba New Brunswick Newfoundland and Labrador	Nunavut Ontario Prince Edward Island Quebec Saskatchewan

3. In your experience, what proportion of each type of food and beverage product listed below do you estimate is sold to
consumers prepackaged?

	Less than									
	10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	Don't Know
Leafy greens										
Berries										
Apples										
Fresh chicken										
Hamburger beef										
Liquid milk			\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc			
Yogurt										
Granulated sugar										
Fresh fish fillets										
Shrimp-frozen			\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc		
Sliced bread										
Dried pasta										

	Cardboard/Paper	Plastic	Glass	Tin	Other
fy greens					
ries					
les					
sh chicken					
nburger beef					
iid milk					
urt					
nulated sugar					
sh fish fillets					
mp-frozen					
ed bread					
d pasta					
e you familiar with th	ne types of plastics pred	ominantly used to p	package food?		

Yes, familiar with plastic packaging of food

6. What type(s) of the following plastics is used to package each food item listed below? Please identify all that apply.

Note: For this series of questions, "Other" includes PE – polyethylene, PVC - polyvinyl chloride, OPP – oriented polypropylene, dark or coloured plastics.

	PET – polyethylene terephthalate	LDPE – low- density polyethylene	Polystyrene	PLA – polylactic acid	Complex or multi-layered laminates / films	HDPE – high- density polyethylene	PP – polypropylene	Other*
Leafy greens								
Berries								
Apples								
Fresh chicken								
Hamburger beef								
Liquid milk								
Yogurt								
Granulated sugar								
Fresh fish fillets								
Shrimp-frozen								
Sliced bread								
Dried pasta								

	1 = Not viable	2	3 = Somewhat viable	4	5 = Very viable
ET – polyethylene erephthalate					
DPE – low-density oolyethylene					\bigcirc
Polystyrene					
PLA - polylactic acid					
Complex or multi-layered aminates / films					
HDPE – high-density polyethylene			\bigcirc		\bigcirc
PP – polypropylene					
Other*					

	20% or below	21-40%	41-60%	61-80%	81-100%
PET – polyethylene erephthalate					
DPE – low-density oolyethylene				\bigcirc	
Polystyrene					
PLA - polylactic acid					
Complex or multi-layered aminates / films					
HDPE – high-density polyethylene					
PP – polypropylene					
Other*					

	-20%	-10%	0%	+10%	+20%	+40%	+60%	+80%	+100%
PET – polyethylene erephthalate									
DPE – low-density polyethylene									
Polystyrene									
PLA - polylactic acid									
Complex or multi-layered aminates / films									
HDPE – high-density polyethylene									
PP – polypropylene									

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$\overline{}$	punnznig	paoi	Kugii ig	50	ations

10. In your experience, how effective is each type of packaging at preventing food waste in each of the foods listed below *Please answer using* a scale of 1 to 5 where 1 = Not effective at all, 3 = Moderately effective, 5 = Very effective. <u>Please ignore any options that you consider inappropriate</u>

	Cardboard / Paper	Plastic	Glass	Tin	Don't know or N/A
Leafy greens					
Berries					
Apples					
Fresh chicken					
Hamburger beef					
Liquid milk					
Yogurt					
Granulated sugar					
Fresh fish fillets					
Shrimp- frozen					
Sliced bread					
Dried pasta					

11. Please indicate the impact that the following factors, each related to the design and role of food packaging, have on reducing food waste. *Please answer using a scale of 1 to 5 where 1 = minimal, 3 = moderate, 5 = significantPlease ignore any options that you consider inappropriate*.

Note: "Other" includes: prevent contamination, prevent adulteration, support consumer messaging, assist traceability.

	Increased shelf life	Enhanced food safety	Improved portion control	Decreased damage / leakage	Efficient rescue and redistribution	Other*
Leafy greens						
Berries						
Apples						
Fresh chicken						
Hamburger beef						
Liquid milk						
Yogurt						
Granulated sugar						
Fresh fish fillets						
Shrimp- frozen						
Sliced bread						
Dried pasta						

12. What is the potential to increase the percentage of each of these foods sold in bulk/not-packaged formats *Please answer using a scale of 1 to 5 where 1 = None, 3= Moderate; 5 = Significant). *Please ignore any options that you consider inappropriate.								
	1 = None	2	3 = Moderate	4	5 = Significant			
Leafy greens								
Porrios								

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Leafy greens				
Berries				
Apples				
Fresh chicken				
Hamburger beef				
Liquid milk				
Yogurt				
Granulated sugar				
Fresh fish fillets				
Shrimp-frozen				
Sliced bread				
Dried pasta		\bigcirc	\bigcirc	

	-10%	-20%	0	+10%	+20%	+30%	+40%	+50%	+60%	+70%	+80%	+90%	+100%
eafy greens													
Berries													
Apples													
Fresh chicken													
Hamburger beef													
Liquid milk													
Yogurt													
Granulated sugar													
Fresh fish fillets													
Shrimp-frozen													
Sliced bread													
Dried pasta		\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
4. For each food and posterior each footput creased functionality, of	rint of pacl e.g. reseal	kaging v	ithout r	egativel	y impac	ting food	d waste.	Answer re any o	options	include	: light w	eighting	;
e environmental footp	rint of pacl e.g. reseal	kaging v lable; re	ithout r	egativel	y impac omposti	ting food	d waste.	Answer re any o	options ptions th	include	: light w	eighting <u>r inappro</u>	;
e environmental footpicreased functionality, e	rint of pacl e.g. reseal	kaging v lable; re	ithout r	egativel	y impac omposti	ting food	d waste.	Answer re any o	options ptions th	include	: light w	eighting <u>r inappro</u>	;
e environmental footpe creased functionality, e eafy greens erries	rint of pacl e.g. reseal	kaging v lable; re	ithout r	egativel	y impac omposti	ting food	d waste.	Answer re any o	options ptions th	include	: light w	eighting <u>r inappro</u>	;
e environmental footpi	rint of pacl e.g. reseal	kaging v lable; re	ithout r	egativel	y impac omposti	ting food	d waste.	Answer re any o	options ptions th	include	: light w	eighting <u>r inappro</u>	;

Argunt Argunt Argunt Argundated sugar Fresh fish fillets Shrimp-frozen Sliced bread Dried pasta ther/Additional Comments: 5. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging tan foods and beverages purchased by individuals at a retail store?	Frogurt Stranulated sugar Fresh fish fillets Shrimp-frozen Sliced bread Stried pasta Shrind pasta Sheri/Additional Comments:		Cardboard/Paper	Plastic	Glass	Tin
Granulated sugar Fresh fish fillets Shrimp-frozen Sliced bread Dried pasta ther/Additional Comments: 5. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging han foods and beverages purchased by individuals at a retail store?	Franulated sugar Fresh fish fillets Fresh fi	iquid milk				
Shrimp-frozen Sliced bread Dried pasta ther/Additional Comments: 5. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging han foods and beverages purchased by individuals at a retail store?	Shrimp-frozen Sliced bread Dried pasta Sher/Additional Comments: 5. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging an foods and beverages purchased by individuals at a retail store? Yes	ogurt/				
Shrimp-frozen Sliced bread Oried pasta ther/Additional Comments: 5. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging han foods and beverages purchased by individuals at a retail store?	Shrimp-frozen Siliced bread Oried pasta Sher/Additional Comments: 5. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging an foods and beverages purchased by individuals at a retail store? Yes	Granulated sugar				
Sliced bread Dried pasta ther/Additional Comments: 5. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging nan foods and beverages purchased by individuals at a retail store?	Sliced bread Dried pasta Ther/Additional Comments: 5. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging an foods and beverages purchased by individuals at a retail store? Yes	Fresh fish fillets				
ther/Additional Comments: 5. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging an foods and beverages purchased by individuals at a retail store?	cher/Additional Comments: 5. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging an foods and beverages purchased by individuals at a retail store? Yes	Shrimp-frozen				
5. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging an foods and beverages purchased by individuals at a retail store?	ther/Additional Comments: 5. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging an foods and beverages purchased by individuals at a retail store? Yes	Sliced bread				
. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging an foods and beverages purchased by individuals at a retail store?	. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging an foods and beverages purchased by individuals at a retail store?	ried pasta				
5. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging an foods and beverages purchased by individuals at a retail store?	5. Do foods and beverages purchased online (e.g. from Amazon) and delivered to individuals' homes require more packaging an foods and beverages purchased by individuals at a retail store? Yes	her/Additional Commo	nte			
		ean foods and beve			rered to individuals' homes r	require more packaging
		an foods and beve			rered to individuals' homes r	require more packaging

Online versus retail packaging

16. Of the two main types of packaging, in general terms, how much**more** packaging do you associate with online versus retail purchased foods and beverages?

Primary: that in which individual products are wrapped

Secondary: cartons and containers in which products are transported

											More than
	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	100%
Primary packaging											
Secondary packaging											

ery viable)	ade packaging? <i>Please</i>	answer using a	a scale of 1 to 5 v	vileret – Not Vi	abie, 3 – Suitievi	mai viable, 5 –
	1 = Not Viable	2	3 = Somewl	nat Viable	4	5 = Very Viable
Cardboard/paper			C)		
Plastic			C)		
Glass)		
Glass						
Tin 8. In general, for each	n type of packaging mate		e maximum post-) consumer recy	Cling (PCR) cont	ent that can be
Tin 8. In general, for each			e maximum post-	consumer recy 61-80%	cling (PCR) cont	
Tin 8. In general, for each	cture of food grade pack	kaging?	•			
Tin 8. In general, for each icluded in the manufa	cture of food grade pack	kaging?	•			
Tin 8. In general, for each icluded in the manufa Cardboard/paper	cture of food grade pack	kaging?	•			Don't know

	-20%	-10%	0%	+10%	+20%	+40%	+60%	+80%	+100%
Cardboard/paper									
Plastic					\bigcirc				
Glass									
Tin									
	1 = Minimal im	npact	2	3 = Moderate imp	act	4	5 = Signit impad		on't know or N/A
0. What are the key facto	ors impacting t	the establis	hment of a	an economically	viable ci	rcular eco	nomy? <i>Pleas</i>	e identify t	heir impact
Cnowing what is meant by the erm "circular economy" and now to establish/implement		,puot			, aut			х Бе	
Cost and required capital investment				\bigcirc					\bigcirc
Lack of appropriate				\bigcirc			\circ		
infrastructure Inconsistent provincial or	\circ								
infrastructure Inconsistent provincial or municipal regulations Inconsistent provincial or municipal recycling programs	0			0			0		
Inconsistent provincial or municipal regulations Inconsistent provincial or									
infrastructure Inconsistent provincial or municipal regulations Inconsistent provincial or municipal recycling programs Inconsistent provincial or municipal composting									

Auditated technology Resistance from resin uppliers Resistance from packaging nanufacturers ack of international tandardization of SUP naterials Resistance from food industry ack of guidance on material hoices ner / Additional Comments:
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