

**REGIONAL DISTRICT OF NANAIMO
SOLID WASTE MANAGEMENT SELECT COMMITTEE
AGENDA**

Tuesday, June 18, 2019

1:30 P.M.

Committee Room

Pages

- 1. CALL TO ORDER**
- 2. APPROVAL OF THE AGENDA**

That the agenda be approved as presented.
- 3. ADOPTION OF MINUTES**
 - 3.1 Solid Waste Management Select Committee Meeting - May 9, 2019** **3**

That the minutes of the Solid Waste Management Select Committee meeting held May 9, 2019, be adopted.
- 4. INVITED PRESENTATIONS**
- 5. DELEGATIONS**
- 6. CORRESPONDENCE**
- 7. UNFINISHED BUSINESS**
- 8. COMMITTEE MINUTES AND RECOMMENDATIONS**
 - 8.1 Solid Waste Plan Monitoring Advisory Committee Minutes - May 15, 2019** **6**

That the minutes of the Solid Waste Monitoring Committee meeting held May 15, 2019 be adopted.
- 9. REPORTS**

9.1 Beverage Containers in British Columbia

8

1. That the Board send a letter to the Minister of Environment supporting the BC Product Stewardship Council's recommendations to increase the beverage container recovery rate.
2. That staff provide an update to the Board on the details, as they become available, on the new federal government initiative to reduce plastic pollution.

10. BUSINESS ARISING FROM DELEGATIONS

11. NEW BUSINESS

12. IN CAMERA

That pursuant to Section 90 (1)(k) of the Community Charter the Committee proceed to an In Camera meeting for discussion related to negotiations and related discussions respecting the proposed provision of a municipal service that are at their preliminary stages.

13. ADJOURNMENT

**REGIONAL DISTRICT OF NANAIMO
MINUTES OF THE SOLID WASTE MANAGEMENT SELECT COMMITTEE MEETING**

**Thursday, May 9, 2019
1:30 P.M.
Board Chambers**

In Attendance:	Director B. Geselbracht	Chair
	Director K. Wilson	Electoral Area A
	Director L. Krog	City of Nanaimo
	Director D. Bonner	City of Nanaimo
	Director E. Hemmens	City of Nanaimo
	Director M. Swain	District of Lantzville
	Alternate	
	Director T. Westbroek	Town of Qualicum Beach
Also in Attendance:	Director M. Young	Electoral Area C
	Director B. Rogers	Electoral Area E
	Director I. Thorpe	City of Nanaimo
	P. Carlyle	Chief Administrative Officer
	R. Alexander	Gen. Mgr. Regional & Community Utilities
	L. Gardner	Mgr. Solid Waste Services
	S. Bajwa	Special Projects Coordinator
	R. Graves	Recording Secretary

CALL TO ORDER

The Chair called the meeting to order and respectfully acknowledged the Coast Salish Nations on whose traditional territory the meeting took place.

APPROVAL OF THE AGENDA

It was moved and seconded that the agenda be approved as presented.

CARRIED UNANIMOUSLY

ADOPTION OF MINUTES

Solid Waste Management Select Committee Meeting - March 5, 2019

It was moved and seconded that the minutes of the Solid Waste Management Select Committee meeting held March 5, 2019, be adopted.

CARRIED UNANIMOUSLY

INVITED PRESENTATIONS

Regional District of Nanaimo Involvement in FCM Solid Waste Project in Vietnam

Larry Gardner presented to the Committee.

Sustane Technology Video

Committee viewed a brief video.

REPORTS

Award of Contract for Crawler Excavator

It was moved and seconded that the Regional District of Nanaimo Board:

- a. approve the award of a contract in an amount up to \$317,000 (exclusive of taxes) for the purchase of a Volvo EC250EL Crawler Excavator from Great West Equipment; and
- b. approve the purchase of a 6 year Maintenance Package for the Crawler Excavator for \$36,810 (exclusive of taxes).

Total value of the contract award request is \$353,810 (exclusive of taxes).

CARRIED UNANIMOUSLY

Landfill Leachate Sampling Request from Environment and Climate Change Canada

It was moved and seconded that the Board approve Regional District of Nanaimo involvement in the *Monitoring of Specific Contaminants of Concern to Three Species of Whales in Canada in Landfill Leachate Project* with Environment and Climate Change Canada - Waste Reduction and Management Division.

CARRIED UNANIMOUSLY

Regional District of Nanaimo Tipping Fee and Solid Waste Disposal Regulation Amendment Bylaw 1784.01, 2019

It was moved and seconded that the “Regional District of Nanaimo Tipping Fee and Solid Waste Disposal Regulation Amendment Bylaw No. 1784.01, 2019” be introduced and read three times.

CARRIED UNANIMOUSLY

It was moved and seconded that the “Regional District of Nanaimo Tipping Fee and Solid Waste Disposal Regulation Amendment Bylaw No. 1784.01, 2019” be adopted.

CARRIED UNANIMOUSLY

AVICC Special Committee on Solid Waste Management Vision and Goals

It was moved and seconded that the Board receive this report for information.

CARRIED UNANIMOUSLY

Regional District of Nanaimo Application for Continued Participation in Vietnam Solid Waste Management Project

1. It was moved and seconded that the Board endorse continued participation in the Federation of Canadian Municipalities' Vietnam Municipal Solid Waste Management Project from June 2019 to March 2021; and,

CARRIED UNANIMOUSLY

2. It was moved and seconded that the Board approve of Larry Gardner, Solid Waste Manager, to participate as part of the Canadian Technical Advisor team.

CARRIED UNANIMOUSLY

ADJOURNMENT

It was moved and seconded that the meeting be adjourned.

CARRIED UNANIMOUSLY

TIME: 2:18 PM

CHAIR

**REGIONAL DISTRICT OF NANAIMO
MINUTES OF THE SOLID WASTE PLAN MONITORING COMMITTEE MEETING**

**Wednesday, May 15, 2019
3:00 P.M.
Board Chambers**

In Attendance:	Director B. Geselbracht Director D. Bonner Ron Bolin Gregg Cherrington-Kelly Bob Colclough Craig Evans Jan Hastings Bill Manners Alec McPherson Jim McTaggart-Cowan Fred Statham Balakrishna (Viraat) Thammanna	Chair City of Nanaimo Member at Large Member at Large Member at Large Member at Large Member at Large Member at Large Member at Large Member at Large Member at Large Member at Large
Regrets:	Dean Jones Michelle MacEwen Peter Urquhart Wally Wells	Member at Large Member at Large Member at Large Member at Large
Also in Attendance:	Kyle Young Larry Gardner Meghan Ebueza Rebecca Graves	District of Lantzville Mgr. Solid Waste Services Solid Waste Planner Recording Secretary

CALL TO ORDER

The Chair called the meeting to order and respectfully acknowledged the Coast Salish Nations on whose traditional territory the meeting took place.

APPROVAL OF THE AGENDA

It was moved and seconded that the agenda be approved as presented.

CARRIED UNANIMOUSLY

INVITED PRESENTATIONS

Staff presented on the following items.

- Solid Waste Management Plan
- Solid Waste Management Plan Monitoring Advisory Committee Terms of Reference

- Communications

ADJOURNMENT

It was moved and seconded that the meeting be adjourned.

CARRIED UNANIMOUSLY

TIME: 5:46 PM

CHAIR

TO: Solid Waste Management Select **MEETING:** June 18, 2019
Committee

FROM: Sonam Bajwa **FILE:** 5365-02
Special Projects Coordinator

Subject: Beverage Containers in British Columbia

RECOMMENDATION

1. That the Board send a letter to the Minister of Environment supporting the BC Product Stewardship Council's recommendations to increase the beverage container recovery rate.
2. That staff provide an update to the Board on the details, as they become available, on the new federal government initiative to reduce plastic pollution.

SUMMARY

The Board passed the following motion on May 28, 2019:

It was moved and seconded that staff be directed to review the report prepared by the Ocean Legacy Foundation regarding British Columbia's Beverage Container Legacy: The Missing Millions and report back to the Board.

The Ocean Legacy report claims that over a 5-year period (2013-2017), more than 1.6 billion beverage containers were not returned within BC's deposit refund system and "could be coating BC's shorelines or floating in ocean currents".

On June 10, 2019, the federal government announced an initiative to reduce plastic pollution by ensuring that companies that manufacture plastic products or sell items with plastic packaging are responsible for managing the collection and recycling of their plastic waste. Other components of the initiative include banning harmful single-use plastics, prevent and retrieve discarded fishing gear and investing in new Canadian technologies.

British Columbia has the most advanced existing Extended Producer Responsibility (EPR) programs in North America, placing the responsibility of end-of-life products on the generator and retailer. For beverage containers, the two industry stewards are Return-It BC (previously Encorp) and BC Brewers' Recycled Container Collection Council (BRCCC), that have recovery rates of 75.8% and 91% respectively. New activities are proposed by the stewards to further increase their recovery rates. The RDN, through participation on the BC Product Stewardship Council (BCPSC), assists with advancing these, and other, EPR programs, and is an effective

and appropriate mechanism for the RDN to advocate for improving stewardship of beverage containers.

BACKGROUND

The Ocean Legacy Foundation recently released the report *British Columbia's Beverage Container Legacy: The Missing Millions* (Appendix 1). Ocean Legacy Foundation is a British Columbia based non-profit organization with a focus on plastic waste in the ocean. Their report claims that beverage containers are not returned for deposits and calls on the government to:

1. Increase the regulated deposit rate;
2. Add all beverage containers to the deposit refund system;
3. Require producers to collect and report on the recycling of bottle caps;
4. Raise regulated targets to at least that achieved by Alberta and Saskatchewan, with long-term targets matching the EU;
5. Enforce the regulated targets in a meaningful way, such as requiring producers to pay for the cleanup of ocean plastics equal to the amount by weight that they fail to collect and recycle.

The BC Product Stewardship Council, recently provided similar recommendations to the Ministry of Environment (Appendix 2).

The British Columbia Product Stewardship Council, established under the auspices of the Union of BC Municipalities, is a coalition of BC regional districts (including the RDN) established to advise the province and advocate to improve the effectiveness of extended producer responsibility programs in BC.

Management of beverage containers in BC - Extended Producer Responsibility

In British Columbia, beverage containers are collected through two different EPR programs, Return-It BC and BRCCC.

Return-It BC has seen a drop in recovery rate from 78% in 2016 to 75.8% in 2017¹ but will likely be ~77%² in 2018. Return-It BC relates part of the low recovery rate in 2017 to early in the year when collection was impaired by snowy and icy conditions in the Lower Mainland and southern Vancouver Island. Currently, any caps that are left on bottle are recycled because they are high quality plastics and they have plans to formally include bottle caps in their program.

Return-It BC conducts benchmark studies annually and in 2017, they included an analysis to better understand the scale and behavior of those who throw refundable beverage containers

¹ Return-It BC 2018 recovery rate is not available until July 2, 2019

² Stat provided to RDN staff by CEO of Encorp Pacific, Allen Langdon

away in the garbage (discarder). With a sample of over 5,500 participants taking the online survey, 56% of the survey participants were discarders, which totalled a projected 295,238,726 containers thrown away. The study showed that a large number of beverage containers were discarded outside the home due to lack of convenience (i.e. people do not want to carry beverage containers until they come across a recycling bin). To address this, Return-It BC has emphasized collection in public spaces, streetscapes, large venues, and events to avoid containers ending up in the landfill.

BRCCC has a 91% recovery rate for beer bottles and cans, which is one of the highest return rates for beer in North America. Bottle caps are currently excluded from their program.

Plastics in our Ocean

British Columbia has a total coastline length of 27,200 kilometres³. Although a large coastline increases the opportunity for waste to end up in the ocean, British Columbians are fortunate to have access to a very robust recycling and waste collection system with limited leakages.

The University of Oxford, in collaboration with the non-profit organization Global Change Data Lab, researches trends and topics across the world to monitor the progress towards the United Nations Sustainability Development Goals and publishes *Our World in Data*⁴.

According to *Our World in Data*, high-income countries tend to generate more plastic waste per person, however how plastic waste is managed determines its risk of entering the ocean. Mismanaged plastic is defined as

"plastic that is either littered or inadequately disposed. Inadequately disposed waste is not formally managed and includes disposal in dumps or open, uncontrolled landfills, where it is not fully contained. Mismanaged waste could eventually enter the ocean via inland waterways, wastewater outflows, and transport by wind or tides."

Countries like Canada, with very effective waste management systems have very low amounts mismanaged waste, therefore the opportunity for ocean discharge is also low. Poor waste management across many middle- and low-income countries means they dominate the sources of global ocean plastic pollution.

As shown in the map below, Canada accounts for 0 – 0.1% of the mismanaged waste in the world. It is important to note that mismanaged waste does not imply that it ends up in the oceans.

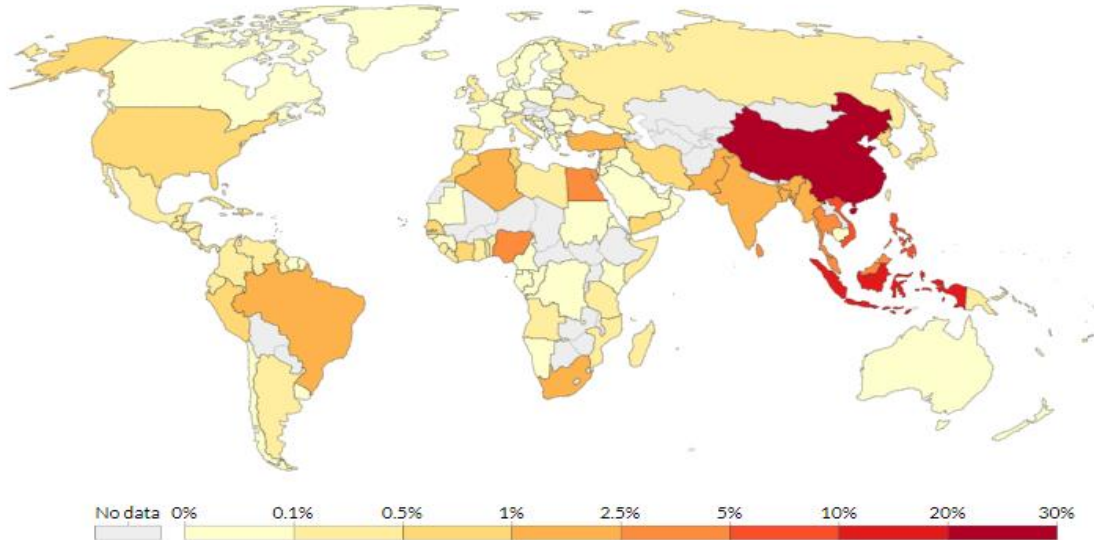
³ <http://knowbc.com/BC-Facts>

⁴ <https://ourworldindata.org/>

Mismanaged waste (% global total), 2010

Global share of mismanaged plastic waste derived from a given country. Mismanaged waste is material that is either littered or inadequately disposed. Inadequately disposed waste is not formally managed and includes disposal in dumps or open, uncontrolled landfills, where it is not fully contained. Mismanaged waste could eventually enter the ocean via inland waterways, wastewater outflows, and transport by wind or tides.

Our World
in Data



Source: Jambeck et al. (2015)

CC BY

In 2018 through the Great Canadian Shoreline Cleanup program, volunteers coordinated 876 cleanups and collected 411 tonnes of litter on 1,875km of Canadian shoreline. The Great Canadian Shoreline Cleanup is in partnership with OceanWise and World Wildlife Foundation and has been organizing clean up events and reporting data since 1994.

At every cleanup, volunteers collect citizen science data about the litter they are picking up. The 12 most commonly found litter items in Canada in 2018 were:

- | | |
|-------------------------|---------|
| 1. Cigarette Butts | 560,432 |
| 2. Tiny Plastic or Foam | 353,773 |
| 3. Food Wrappers | 56,116 |
| 4. Bottle Caps | 49,633 |
| 5. Paper Material | 44,130 |
| 6. Plastic Bags | 26,512 |
| 7. Beverage Cans | 23,462 |
| 8. Plastic Bottles | 21,327 |
| 9. Straws | 21,111 |
| 10. Other Packaging | 18,771 |
| 11. Foam | 18,699 |
| 12. Coffee Cups | 14,320 |

Although there are beverage containers that are not returned for recycling in BC, it is very unlikely that they are ending up in the ocean. Due to tides and currents, the beverage cans and plastic bottles that are found on Canadian shores often did not originate from Canada.

Nevertheless, the report from The Ocean Legacy Foundation and the Annual report from Return-It does highlight gaps in current collection of bottles in British Columbia where improvements can be made.

Role of the RDN

Advocacy: Historically, the RDN has actively worked with other local governments, product stewardship agencies and the Province to improve EPR programs through activities such as:

- Direct communication with stewardship agencies;
- Participation on the BC Product Stewardship Council such as through the recommendations to the Ministry of Environment and Return-it BC as presented above;
- Advocacy through organizations such as the Association of Vancouver Island Communities, Union of BC Municipalities, and Federation of Canadian Municipalities; and,
- Board resolutions supporting improvements sent directly to the Ministry of Environment.

Education and Awareness: Effective education and awareness programs are key to the success of any program. The RDN does supplement the existing education and awareness campaigns by Return-It BC and other stewards through our newsletters and What Goes Where app.

Role of the Government of Canada – June 2019 Announcement regarding initiative to reduce plastics pollution.

On June 10, 2019, the federal government announced they will be focusing on reducing plastic pollution; a copy of the news release is attached in Appendix 3. The announcement highlighted the following initiatives:

1. Ensuring that companies that manufacture plastic products or sell items with plastic packaging are responsible for managing the collection and recycling of their plastic waste;
2. Banning harmful single-use plastics as early as 2021 under the Canadian Environmental Protection Act and taking other steps to reduce plastic waste, where supported by scientific evidence and when warranted – and taking other steps to reduce plastic waste;
3. Working with industry to prevent and retrieve abandoned, lost, or discarded fishing gear, known as ghost fishing gear – a major contributor to marine plastic debris;
4. Investing in new Canadian technologies;
5. Mobilizing international support to address plastic pollution;
6. Reducing plastic waste from federal operations;
7. Reducing plastic microbeads in freshwater marine ecosystem;
8. Supporting community-led action and citizen-science activities; and
9. Launching Canada's Plastics Science Agenda.

Details of the program implementation were not provided in the announcement. The federal government did state its plan to work with provinces and territories, through the Canadian

Council of Ministers of the Environment, to support the development of consistent Extended Producer Responsibility programs across the country. The Government of Canada will also work in collaboration with provinces, territories and industry to set targets for plastics collection, recycling, and recycled content requirements. Updates on the program will be provided as they come available.

ALTERNATIVES

1. That the Board send a letter to the Minister of Environment supporting the BC Product Stewardship Council's recommendations to increase the beverage container recovery rate; and,
2. That staff provide an update to the Board on the details, as they become available, on the new federal government initiative to reduce plastic pollution.
3. The Board provide staff with alternate direction.

FINANCIAL IMPLICATIONS

Advocacy and education that promotes waste diversion are key elements of the RDN Solid Waste Management Plan and budgets have been established for carrying out these activities.

STRATEGIC PLAN IMPLICATIONS

Environmental Stewardship – Protect and enhance the natural environment, including land, water and air, for future generations. Achieve 90% waste diversion targets set out in the Solid Waste Management Plan.



Sonam Bajwa
sbajwa@rdn.bc.ca
May 31, 2019

Reviewed by:

- L. Gardner, Manager, Solid Waste Services
- R. Alexander, General Manager, RCU
- P. Carlyle, Chief Administrative Officer

Attachments

1. British Columbia's Beverage Container Legacy: The Missing Millions.
2. Consultation Recommendation to Ministry of Environment and Climate Change and Return-It BC in regards to the Encorp Pacific program plan.
3. Government of Canada taking action to reduce plastic pollution news release.



**OCEAN LEGACY
FOUNDATION**

British Columbia's Beverage Container Legacy: The Missing Millions



**MORE THAN ONE MILLION
BEVERAGE CONTAINERS
GO MISSING EVERY DAY IN B.C.**

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Executive Summary

Ocean Legacy Foundation: a British Columbia-based, internationally recognized, non-profit organization working to identify, clean-up, and prevent plastic waste from entering tributary and marine ecosystems. Ocean Legacy Foundation is calling on the BC government to make BC's deposit refund system the leading Canadian beverage container recycling program in stewarding its beverage containers and bottle caps, ensuring none of these plastics end up in the ocean.

Every year, an estimated 8 million tonnes is deposited into our oceans and waterways globally, 43% of which is single-use, disposable plastics such as beverage containers and their caps, straws, plastic bags, and plastic cutlery. Mismanaged beverage containers and bottle caps are major contributors to ocean plastics litter across Canada.

BC was the first jurisdiction in the world to implement a regulated deposit refund system for beverage containers in 1970. Deposit refund systems have been proven world-wide to be the most effective tool to reduce beverage container litter and increase beverage container litter clean-up. However, BC deposit refund system return rates have been declining, and the province is not meeting its own regulated target for several beverage container sub-categories, including small plastic containers ($\leq 1L$), polycoat containers and pouches, and bag-in-a-box. Specifically, the percentage of small plastic containers in the beverage container stream is growing, while the number not returned for recycling is on the rise. At the same time, Alberta and Saskatchewan deposit refund systems have achieved average return rates 9% higher than BC in 2017.

Over a 5-year period (2013-2017), more than 1.6 billion beverage containers were not returned within BC's deposit refund system and could be coating BC's shorelines or floating in ocean currents.

In 2018, the European Parliament and Council passed a Single-Use Plastics Directive that requires its member states to increase the collection and recycling of beverage containers to achieve a 90% capture rate by 2025. At the same time, Canada led the G7 in developing the Ocean's Plastic Charter, while the Canadian Council of Ministers announced its Strategy on Zero Plastic Waste. The Canadian government also unanimously passed Motion 151, which recognized the need for all Canadian communities to do their part to combat plastic pollution in and around aquatic environments.

BC has the opportunity to become a world leader again in recycling beverage containers through a number of proven approaches, including:

- Raise Deposit Levels – higher deposit rates have been proven to yield better return rates
- Expand the deposit refund system to manage all beverage containers – collecting and recycling all beverage containers reduces consumer confusion and improves container return rates
- Keep caps on – training consumers to leave caps on their containers reduces littering and ensures this material can be recycled

Increasing the effectiveness of BC's beverage container recycling system will result in fewer containers becoming ocean litter, while reducing greenhouse gases through recycling, avoiding taxpayer waste management costs, and creating green jobs.

Ocean Legacy Foundation calls on the BC government to:

1. Increase the regulated deposit rate.
2. Add all beverage containers to the deposit refund system.
3. Require producers to collect and report on the recycling of bottle caps.
4. Raise regulated targets to at least that achieved by Alberta and Saskatchewan, with long-term targets matching the EU.
5. Enforce the regulated targets in a meaningful way, such as requiring producers to pay for the clean-up of ocean plastics equal to the amount by weight that they fail to collect and recycle.

Ocean Legacy Foundation

We are the Ocean Legacy Foundation: a British Columbia-based, internationally recognized, non-profit organization that was founded in 2014 to end ocean plastic waste. We work to identify, clean-up, and prevent plastic waste from entering tributary and marine ecosystems. Since 2014, we have collected over 70 tonnes of plastic waste from five different countries including focused operations in the Pacific Northwest, which have formed and enabled plastic waste removal collaborations worldwide.

We use a combination of tools and sustainable technologies, such as mapping (Figure 1 and Figure 2), education, collaboration, skills training, research, policy development, clean-up expeditions and plastic-to-fuel technologies, which when integrated together make up Ocean Legacy's unique and globally-leading Marine Debris Solutions Program.

Our goal is to give all types of plastic waste and litter economic value and to encourage greater global stewardship around ocean health issues. We believe that every action towards eliminating plastic pollution counts. We also believe that we need jurisdictions around the world to do their part to clean up the plastics that exist while preventing new plastics from entering ocean ecosystems. Together, we believe we can leave an ocean legacy that can sustain the health of our waterways for present and future generations.

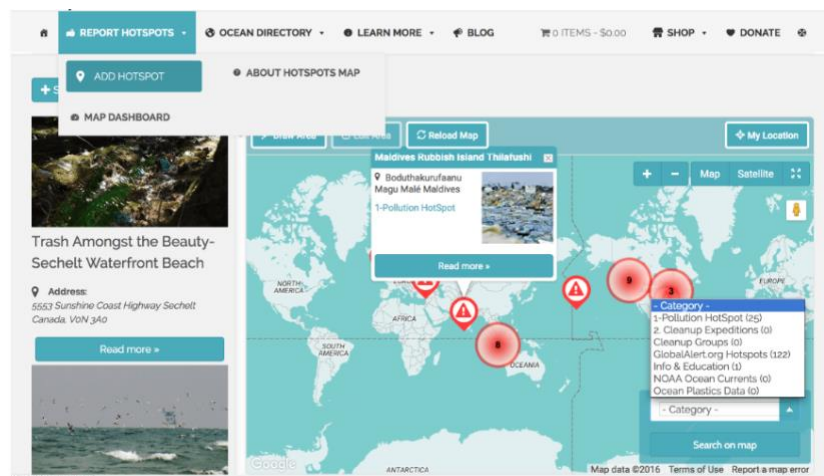


FIGURE 1: A VISUAL OF OCEAN LEGACY FOUNDATION'S INTERACTIVE HOTSPOT MAPPING TOOL¹.

¹Ocean Legacy Foundation, 2019. <https://oceanlegacy.ca/help-info/>



FIGURE 2: OCEAN LEGACY FOUNDATION'S GLOBAL INTERACTIVE DIRECTORY DASHBOARD MAPPING TOOL².

The Ocean Plastics Crisis

Oceans play a key role in our survival; we depend on the ocean. They provide sustenance and play, an integral role in regulating our global climate. Marine life depends on them, including 25 species at risk off British Columbia's shores³.

Canada has more coastline than any other country in the world⁴, including our beautiful British Columbia (BC) shorelines, which is home to seabirds, whales, and sensitive marine ecosystems. Canadian marine activities dependent on the health of our oceans and contribute more than \$30 billion to our GDP⁵; providing more than 320,000 Canadian jobs.

Yet we are facing an undeniable, planet-wide ocean plastic waste crisis. Every year, of the more than 300 million tonnes of plastic produced globally^{6,7}, an estimated 8 million tonnes is

² Ocean Legacy Foundation, 2019. <https://oceanlegacy.ca/help-info/>. Retrieved February 8, 2019.

³ Fisheries and Oceans Canada, 2018. Search aquatic species at risk: British Columbia. Available at: <http://www.dfo-mpo.gc.ca/species-especes/sara-lep/identify-eng.html?province=British%20Columbia>.

⁴ Office of the Prime Minister, 2016. Canada's Ocean Protection Plan. Available at: <http://www.tc.gc.ca/media/documents/communications-eng/oceans-protection-plan.pdf>. Retrieved: February 8, 2019.

⁵ Fisheries and Oceans Canada, 2018. Maritime sector in Canada summary tables. Available at: <http://www.dfo-mpo.gc.ca/stats/maritime-eng.htm>. Retrieved: February 8, 2019.

⁶ European Commission, 2018. A European strategy for plastics in a circular economy. Available at: <http://ec.europa.eu/environment/circular-economy/pdf/plastics-strategy-brochure.pdf>. Retrieved February 8, 2019.

⁷ UNESCO, 2017. Facts and figures on marine pollution. Available at: <http://www.unesco.org/new/en/natural-sciences/ioc-oceans/focus-areas/rio-20-ocean/blueprint-for-the-future-we-want/marine-pollution/facts-and-figures-on-marine-pollution/>. Retrieved February 8, 2019.

deposited into our oceans and waterways⁸. Of this, 43% is single-use, disposable plastics such as **beverage containers and their caps**, straws, plastic bags, and plastic cutlery⁹.

Shorelines all around the world are becoming coated in plastic waste, the oceans are becoming the largest “dumps” on the planet, and aquatic ecosystems are being transformed into “plastic soup”^{10,11,12}. Ocean plastics are ubiquitous, polluting our freshwater ways and shorelines; causing damage to marine wildlife, habitat; and compromising human health. According to UNESCO¹³, plastic debris causes the deaths of more than a million seabirds and 100,000 marine mammals every single year. Plastics have been found in the stomachs of birds, fish and whales; in our drinking water, beer, seafood, and table salt; and even in the human body¹⁴. Without intervention, global ocean plastics are expected to double by 2035¹⁵. If practices remain unchanged, it's expected there will be more plastic than fish in the ocean (by weight) by 2050¹⁶.

⁸ Jambeck, J; Geyer, R; Wilcox, C, Siegler, T.S.; Perryman, M, Andrady, A; Narayan; Lavender Law, K., 2015. Plastic waste inputs from land into the ocean. *Science* 13 Feb 2015: vol. 347 (6223). pp. 768-771

⁹ CCME, 2018. Strategy on Zero Plastic Waste. Available at: <https://www.ccme.ca/files/Resources/waste/plastics/STRATEGY%20ON%20ZERO%20PLASTIC%20WASTE.pdf>. Retrieved: February 14, 2019.

¹⁰ Charles Moore, 2009. Seas of Plastic. Ted Talk. Retrieved: February 6, 2019. https://www.ted.com/talks/capt_charles_moore_on_the_seas_of_plastic?language=en.

¹¹ Plastic Soup Foundation, no date. Available at: <https://www.plasticsoupfoundation.org/en/files/what-is-plastic-soup/>. Retrieved: February 6, 2019.

¹² Cho, R., 2011. Blog: Our Oceans: A Plastic Soup. January 26, 2011. Available at: <https://blogs.ei.columbia.edu/2011/01/26/our-oceans-a-plastic-soup/>. Retrieved: February 6, 2019.

¹³ UNESCO, 2017. Facts and figures on marine pollution. Available at: <http://www.unesco.org/new/en/natural-sciences/ioc-oceans/focus-areas/rio-20-ocean/blueprint-for-the-future-we-want/marine-pollution/facts-and-figures-on-marine-pollution/>. Retrieved: February 6, 2019.

¹⁴ Parker, 2018. In a first, microplastics found in human poop. National Geographic. Environment: planet or plastics. Available at: <https://www.nationalgeographic.com/environment/2018/10/news-plastics-microplastics-human-feces/>. Retrieved: February 8, 2019.

¹⁵ European Commission, 2018. A European strategy for plastics in a circular economy. Available at: <http://ec.europa.eu/environment/circular-economy/pdf/plastics-strategy-brochure.pdf>.

¹⁶ Ellen MacArthur Foundation, 2017. The new plastics economy: rethinking the future of plastics & catalysing action. Available at: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/NPEC-Hybrid_English_22-11-17_Digital.pdf. Retrieved February 8, 2019.

Beverage Containers Contribute to Ocean Plastics: The Facts

Mismanaged beverage containers and their caps are a big concern locally and globally. Despite deposit refund programs for plastic soft drink containers operating in every province except Manitoba and Ontario¹⁷, they are major contributors to ocean plastics litter across Canada (Figure 3).

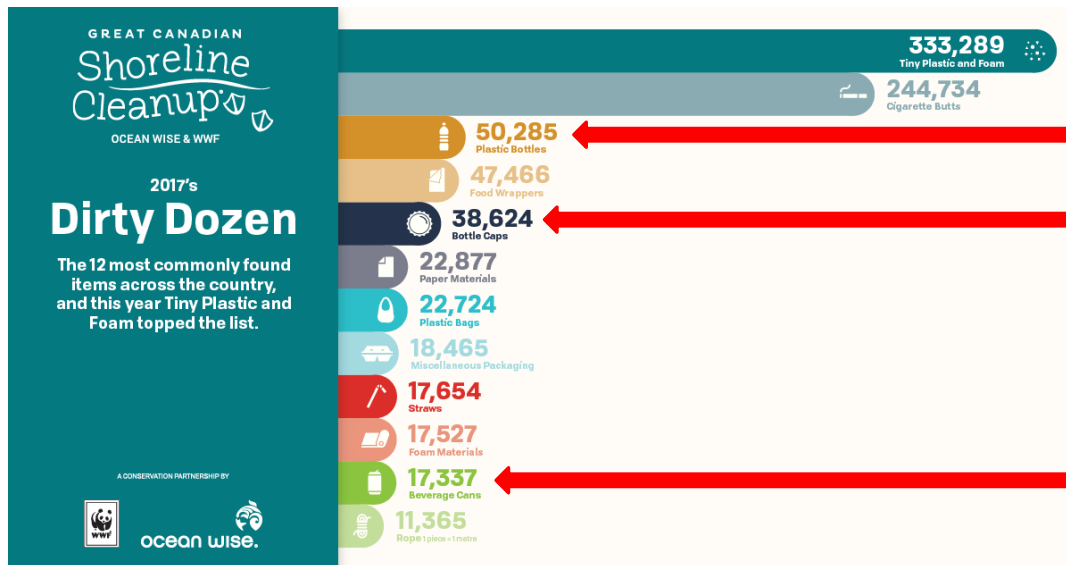


FIGURE 3: OCEAN WISE & WWF 2017 DIRTY DOZEN STATISTICS¹⁸

Beverage containers and their caps (and even drink box straws) enter the ocean through a variety of direct and indirect pathways. Direct pathways include: ocean dumping, shoreline littering, natural disasters and climatic variables such as blowing winds and rains (that pull beverage containers and other plastics from streetscapes, garbage cans, and recycling bins). The indirect pathways are through land-based sources (i.e., both inland and coastal communities) where plastic waste is allowed to funnel into stormwater runoff systems that eventually lead to the ocean^{19, 20} (Figure 4).

¹⁷ CM Consulting, 2018. Who pays what? An analysis of beverage container collection and costs in Canada, 2018. Available at: <https://www.cmconsultinginc.com/wp-content/uploads/2018/10/WPW-2018-FINAL-5OCT2018.pdf>. Retrieved February 10, 2019.

¹⁸ WWF, 2018. 2017's Dirty Dozen. Available at: <http://www.wwf.ca/newsroom/?uNewsID=27401#>.

¹⁹ National Oceanic and Atmospheric Administration, last revised February 1, 2019. Plastics. Available at: <https://marinedebris.noaa.gov/info/plastic.html>. Retrieved February 14, 2019.

²⁰ National Oceanic and Atmospheric Administration, 2018. Plastic marine debris. https://marinedebris.noaa.gov/sites/default/files/2018_Plastics_Fact_Sheet.pdf. Retrieved February 14, 2019.



FIGURE 4: PLASTICS IN THE OCEAN (INFOGRAPHIC)²¹

Once in the ocean, polyethylene terephthalate (PET or PETE) beverage containers, like pop bottles, will eventually sink (due to their density compared to salt water) and become part of the ocean floor or can be swept back to shore²². Other plastic beverage containers made from high density polyethylene (HDPE), like milk jugs, and bottle caps (which can be made from HDPE or polypropylene) will float indefinitely, can be swept out to sea becoming caught in ocean currents (gyres) and travel great distances. Once in the ocean, containers and caps begin slowly degrading into microplastic fragments and can be consumed by marine life^{23, 24}. WWF-Australia (2018) reports an estimated 40% of all marine mammals have been affected by eating marine plastics, and 56% of all whale and dolphin species have been recorded eating marine plastics. (Figure 5)²⁵

According to the Ocean Conservancy, more than 80% of ocean plastics originate due to waste mismanagement by land-based sources, and three-fourths of this comes from uncollected waste or litter²⁶.

²¹ National Oceanic and Atmospheric Administration. 2011. Plastics in the ocean. Available at: https://marinedebris.noaa.gov/sites/default/files/OR%26R_Plastic_In_the_Ocean_Infographic_FINAL.pdf

²² Smithsonian, 2018. Ocean: find your blue. Marine Plastics. Authored by the Ocean Portal Team. Reviewed by Dr. Jenna Jambeck, University of Georgia. April 2018. Available at: <https://ocean.si.edu/conservation/pollution/marine-plastics>. Retrieved: February 8, 2019.

²³ The Association of Plastics Recyclers, 2018. Recycling rigid plastics beyond bottles: caps on! Available at: <https://www.plasticsrecycling.org/education/faqs/caps-on>. Retrieved: February 9, 2019.

²⁴ Weule, 2017. Plastic and how it affects our oceans. ABC News. February 2017. Available at: <https://www.abc.net.au/news/science/2017-02-27/plastic-and-plastic-waste-explained/8301316>. Retrieved: February 9, 2019.

²⁵ WWF-Australia, 2018. Available at: <https://www.wwf.org.au/news/blogs/plastic-in-our-oceans-is-killing-marine-mammals#gs.b0wHDpPb>. Retrieved February 10, 2019.

²⁶ Ocean Conservancy, 2015. Stemming the Tide: Land-based strategies for a plastic-free ocean. Available at: <https://oceanconservancy.org/wp-content/uploads/2017/04/full-report-stemming-the.pdf>. Retrieved: February 8, 2019.

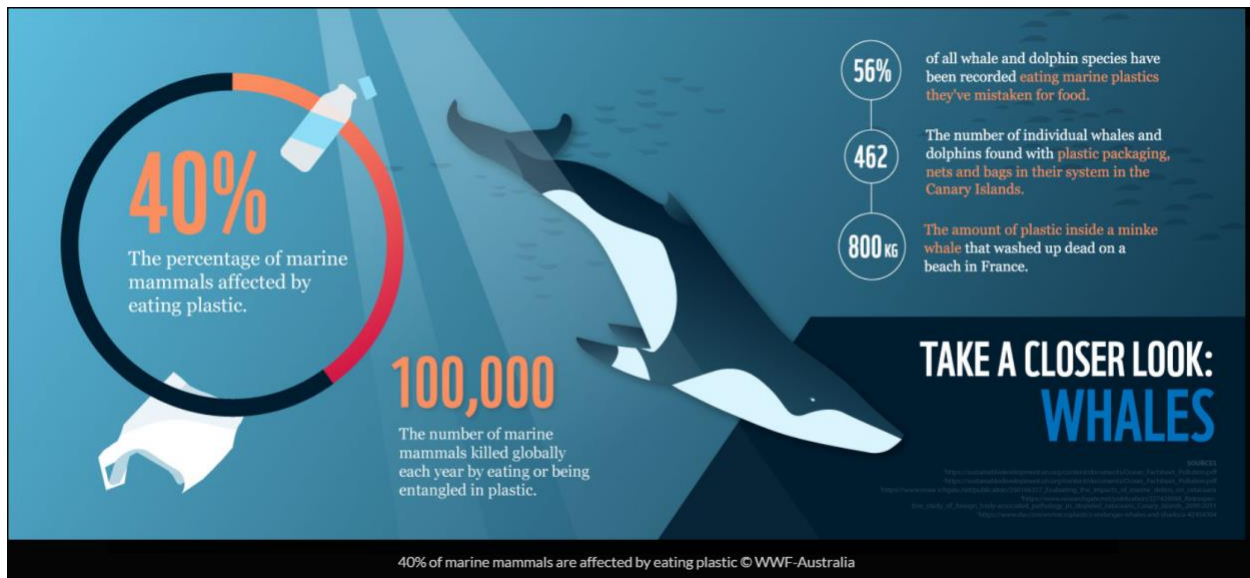


FIGURE 5: INFOGRAPHIC DEPICTING OF PERCENTAGE OF MARINE MAMMALS AFFECTED BY EATING PLASTIC (SOURCE: WWF-AUSTRALIA).

British Columbia's Leadership is Needed

BC was an early leader in tackling the issue of used beverage containers. In 1970, our province became the first jurisdiction in the world to implement a regulated deposit refund system for beverage containers, under its Litter Act²⁷. In 1971, Oregon followed suit and became the first jurisdiction in the United States to implement a system²⁸. Today, 40 jurisdictions (and counting) around the world have followed BC's lead and established their own deposit return systems to reduce litter and improve the collection and recycling of beverage containers²⁹.

BC now has the opportunity to show leadership once again. It's been fifty years since BC's deposit refund system was first implemented, and 15 years since its regulation was last updated. Unfortunately, its age is showing. Our deposit refund system (for all containers except beer) have seen declining, year-over-year returns (Figure 6 and Figure 7). At the same time, BC is not

²⁷ CM Consulting, 2012. Multi-Stakeholder Review of Prescriptive Measures in the Beverage Container Regulation Final Report. https://www2.gov.bc.ca/assets/gov/environment/waste-management/recycling/recycle/rel-res/multi_stakeholder_beverage_consultation.pdf.

²⁸ Container Recycling Institute, 2016. Bottle bill resource guide. Available at: <http://www.bottlebill.org/>. Retrieved February 10, 2019.

²⁹ CM Consulting and Reloop, 2018. Deposit Refund Systems for Beverage Containers: Global Review. Available at: <https://reloopplatform.eu/wp-content/uploads/2018/05/BOOK-Deposit-Global-27-APR2018.pdf>. Retrieved February 14, 2019.

meeting its own regulated target for several beverage container sub-categories³⁰, including: small plastic containers ($\leq 1L$); polycoat containers and pouches; and bag-in-a-box (Figure 8 to Figure 10).

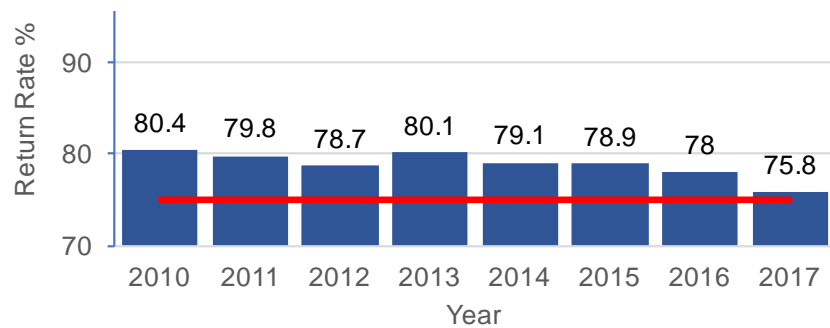


FIGURE 6: DECLINE IN ENCORP PACIFIC RETURN RATES 2010-2017

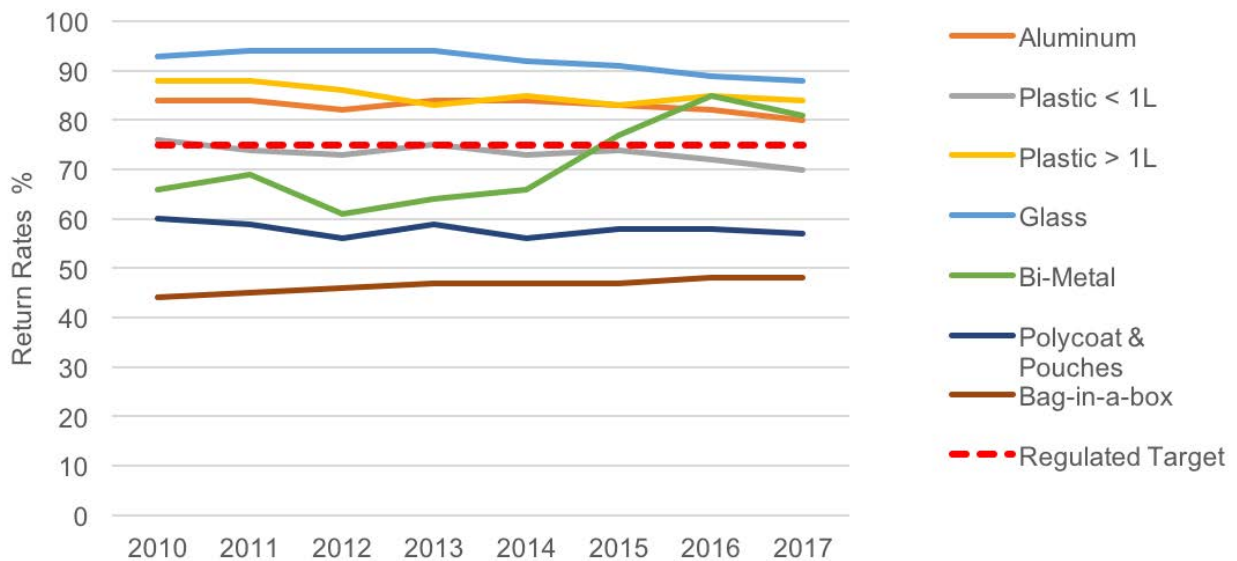


FIGURE 7: RETURN RATES BY CONTAINER SUB-CATEGORY

³⁰ Government of British Columbia. Recycling Regulation, Approval of extended producer responsibility plan. Section 5(1)(a)(i). Available at: http://www.bclaws.ca/Recon/document/ID/freeside/449_2004. Retrieved February 14, 2019.

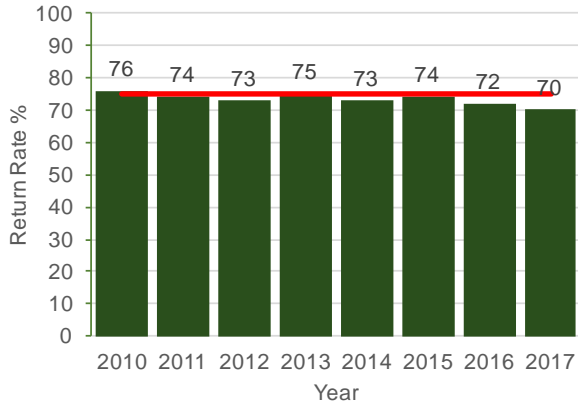


FIGURE 8: SMALL PLASTIC BEVERAGE CONTAINERS RETURN RATE

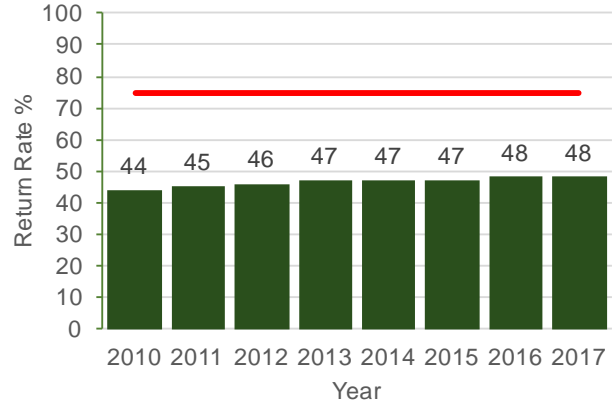


FIGURE 9: BAG-IN-A-BOX CONTAINERS RETURN RATE

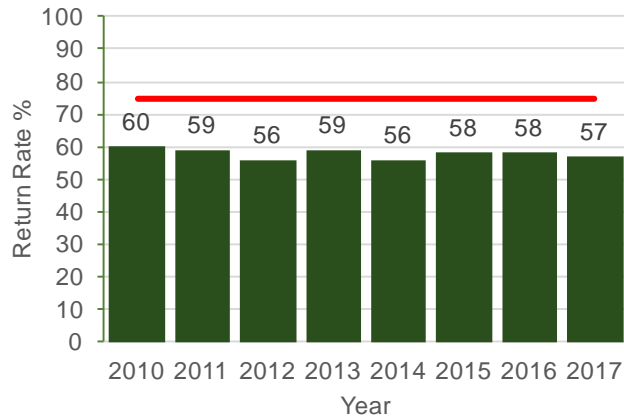


FIGURE 10: POLYCOAT AND POUCHES RETURN RATE

The decline in return of small plastic beverage containers seems to be a growing issue in the Encorp Pacific operated program. The percentage of these in this program is growing (from 30% in 2010 to 35% in 2017) and the number of small plastic containers lost (not returned for recycling) annually is on the rise (from 24% in 2010 to 30% in 2017) (see Table 1). Over the last five years, missing small plastic containers have made up large component of all missing containers in BC (see Table 2).

TABLE 1: SMALL PLASTIC BEVERAGE CONTAINERS SALES AND COLLECTION IN ENCORP PACIFIC'S PROGRAM³¹

ENCORP PACIFIC	Small plastic containers sold³² (≤1L, units)	All containers sold (units)	% small plastic containers sold (% of total sold)	Small plastic containers lost (units)	% small plastic containers lost (% of total sold)
2010	380,805,378	1,277,506,339	30%	89,662,767	24%
2011	379,081,054	1,237,182,406	31%	100,400,220	26%
2012	381,385,703	1,237,108,765	31%	101,351,852	27%
2013	380,158,047	1,214,144,300	31%	96,286,321	25%
2014	397,071,333	1,224,579,061	32%	106,218,404	27%
2015	418,711,159	1,266,027,839	33%	109,526,421	26%
2016	431,900,607	1,282,922,473	34%	119,522,548	28%
2017	471,268,072	1,349,149,437	35%	143,627,268	30%

These results are disappointing when BC's performance is compared to the results achieved by Alberta and Saskatchewan, where deposit refund systems have achieved average return rates 5% higher than BC in 2017 (Table 2). The differences in regulated materials between the three provincial programs are noted.

³¹ Encorp, 2017. Annual Report. Encorp Pacific, 2017. 2017 Annual Report. Page 21. Available at: <https://www.return-it.ca/ar2017/pdf/AnnualReport.pdf>. Retrieved November 2, 2018.

³² In all tables and figures, units for plastic containers ≤1L or <1L include all plastic containers for the appropriate size category (i.e., including liquor and non-liquor containers). This was necessary because in 2017, Encorp began reporting plastic containers as one category regardless of the beverage it contained. Prior to this Encorp reported plastic containers and plastic liquor containers for both ≤1L and <1L).

TABLE 2: COMPARISON OF RETURN RATES IN BC, AB, AND SK OVER A 5-YEAR PERIOD³³

YEAR	BC ENCORP PACIFIC + BRCCC Beer Cans (combined return rate)	AB ABCRC (return rate)	SK SARCAN (Return rate)
2013	84%	82%	82%
2014	83%	83%	86%
2015	83%	85%	82%
2016	82%	86%	87%
2017	80%	85%	85%
Regulated materials included	All ready-to-serve, <u>excluding</u> milk, milk substitutes and meal replacements. Beer cans.	All ready-to-serve, <u>including</u> milk, milk substitutes and meal replacements.	All ready-to-serve, <u>including</u> milk, milk substitutes. Excludes meal replacements.
Regulated materials not collected by organization(s)	Refillable Beer	Refillable Beer	Refillable Beer
Minimum deposit	5 cents Encorp containers 10 cents beer cans	10 cents	10 cents

BC's declining beverage container recycling performance is creating the perfect ocean litter storm in a province situated with a large coastline. In 2017, more than **387 million beverage**

³³ Return rates for Encorp, Alberta Beverage Container Recycling Corporation (ABCRC), and SARCAN were taken from each organization's Annual Report for each respective year. Like Encorp, neither ABCRC nor SARCAN manage domestic refillable beer bottles; in BC, AB and SK refillable beer bottles are managed by the national brewers' association in each province (e.g., the BC Brewers Recycling Container Collection Council). AB and SK return rates include all aluminum beer cans; whereas the BC Encorp return rate does not. As a result, we have included the combined return rates of Encorp Pacific plus BRCCC's beer cans to provide a more accurate comparison to the AB and SK programs.

- Encorp Pacific 2013-2017 Annual Reports. Available at: <https://www.return-it.ca/about/annualreports/>. Retrieved November 2, 2018.
- ABCRC 2014-2017 Annual Reports. Available at: <https://www.abrc.com/sustainability/>. Retrieved November 2, 2018.
- SARCAN 2013-2017 Annual Reports. Available at: <https://issuu.com/search?q=SARCAN>. Retrieved November 2, 2018.
- Brewers Recycling Container Collection Council, 2017. Annual Report to the Director 2017 Calendar Year. Available by email from Ministry of Environment and Climate Change Strategy. The BC Brewers Recycling Container Collection Council (the Brewers) collects and recycles BC's refillable beer bottles and beer cans.

containers³⁴ went ‘missing’ from BC’s deposit refund system (Table 3), along with the almost **840 million beverage container caps**³⁵ that once sealed those containers³⁶. Over a 5-year period (2013-2017), **more than 1.6 billion beverage containers** went “missing” from BC’s deposit refund system³⁷ and could be coating BC’s shorelines, ocean floors or floating in ocean currents (Table 3). This equates to over a million beverage containers per day that are sold and not recycled.

³⁴ The 387 million containers missing in 2017 was calculated using data provided by Encorp Pacific’s 2017 Annual Report and the Brewers Recycled Container Collection Council’s (BRCCC) 2017 Annual Report to the Director. Missing containers = Encorp Pacific (325,843,398) + missing BRCCC 2017 (58,967,820 beer + 2,359,980 refillables).

³⁵ The 840 million beverage container caps missing in 2017 was calculated using data provided by Encorp Pacific’s 2017 Annual Report and the Brewers Recycled Container Collection Council’s (BRCCC) 2017 Annual Report to the Director. Assume containers made of plastic, glass, refillable glass and gable top containers have caps (or corks). Missing caps (including corks) = Encorp Pacific (782,866,803) + BRCCC (57,004,620).

³⁶ Encorp Pacific (the producer responsibility organizations operating BC’s deposit refund system for non-beer containers) requires ‘caps off’ when containers are returned to depots. Encorp encourages consumers to return caps to depots, but it does not report on the quantity of caps recycled. See Encorp Pacific, 2019. General Return-It Recycling Questions. Available at: <https://www.return-it.ca/beverage/faqs/general/>; and Encorp Pacific, 2017. 2017 Annual Report. Available at: <https://www.return-it.ca/ar2017/pdf/AnnualReport.pdf>. Retrieved November 2, 2018.

³⁷ Calculated using data from:

- Encorp Pacific, 2013-2017 Annual Reports. Available at: <https://www.return-it.ca/about/annualreports/>. Retrieved November 2, 2018.
- Brewers Recycled Container Collection Council, 2013-2017 Annual Report to the Director Calendar Year. The 2013-2016 reports are available at: <https://www2.gov.bc.ca/gov/content/environment/waste-management/recycling/product-stewardship/stewardship-reports-plans>. Retrieved February 14, 2019. The 2017 report is available by email from Ministry of Environment and Climate Change Strategy.

TABLE 3: BEVERAGE CONTAINERS MISSING FROM BC'S REGULATED DEPOSIT REFUND SYSTEM

YEAR	ENCORP PACIFIC beverage containers sold (million units)	BRCCC refillable beer and beer cans sold (million units)	Total all beverage containers sold (million units)	ENCORP PACIFIC beverage containers missing (million units)	BRCCC refillable beer and beer cans missing (million units)	Total all beverage containers missing (million units)
2013	1,214	606	1,820	242	45	287
2014	1,225	623	1,848	256	43	299
2015	1,266	645	1,911	267	50	317
2016	1,283	659	1,942	282	62	344
2017	1,349	670	2,019	326	61	387
5-Year Total	6,337	3,204	9,540	1,372	262	1,634

The Solution: Raise Deposits, Expand the System, Caps On

There are a number of proven approaches that could reduce the number of beverage containers not collected under the beverage container system that potentially become ocean plastic waste. These are outlined below:

Raise deposits

Effective deposit refund systems have been proven to drastically improve beverage container collection, reuse and recycling rates by placing a value on beverage containers³⁸. Consumers and ‘binners’ (people who seek to collect wasted containers) have a financial incentive to collect containers and either directly return them to the collection system to realize their refund or donate the ‘street value’ of those containers to charities.

A global review of deposit return systems for beverage containers shows that higher deposit rates have been proven to yield better return rates^{39, 40} (Table 4). According to the European



³⁸ CRI: Container Recycling Institute, 2013. Bottled Up: Beverage Container Recycling Stagnates (2000-2010). Available at: <http://www.container-recycling.org/index.php/publications/2013-bottled-up-report>. Retrieved March 14, 2019.

³⁹ CM Consulting and Reloop, 2018. Deposit Refund Systems for Beverage Containers: Global Review. Available at <https://reloopplatform.eu/wp-content/uploads/2018/05/BOOK-Deposit-Global-27-APR2018.pdf>.

⁴⁰ CM Consulting, 2003. Evaluating the Relationship Between Refund Values and Beverage Container Recovery. Available at: <http://www.bottlebill.org/assets/pdfs/legis/canada/2003-RefundRecovery.pdf>

Commission, in their European Strategy for Plastics in a Circular Economy, “the five best performing Member States with deposit schemes for PET bottles (Germany, Denmark, Finland, the Netherlands and Estonia) reached an average collection rate for PET of 94% in 2014”⁴¹. The minimum deposit rates for PET containers in these jurisdictions ranges from € 0.10 to € 0.13 per container.

TABLE 4: COMPARISON OF RETURN RATES BY CORRESPONDING MINIMUM DEPOSIT LEVEL

	Minimum regulated deposit (CAD)	Deposit Value	Return Rate (2017)	Return Rate
Germany	.37		98%	
Netherlands	.37		95%	
Norway	.31		92%	
BC Brewers⁴²	.10		91%	
Alberta	.10		86%	
Saskatchewan	.10		85%	
Oregon⁴³	.10		82%	
BC's Encorp Pacific	.05		76%	

BC has the opportunity to raise its minimum regulated deposit along with target return rates with the objective to achieve return rates that rival those in other jurisdictions across the globe. For example, the European Parliament and Council Single-Use Plastics Directive (passed on December 19, 2018) requires its member states to increase the collection and recycling of beverage containers to achieve a 90% capture rate by 2025^{44,45}

⁴¹ European Commission, 2018. European Strategy for Plastics in a Circular Economy. p.42. Available at: <http://ec.europa.eu/environment/circular-economy/pdf/plastics-strategy-brochure.pdf>

⁴² Brewers Recycling Container Collection Council, 2017. Annual Report to the Director 2017 Calendar Year. Available by email from Ministry of Environment and Climate Change Strategy. The BC Brewers Recycling Container Collection Council (the Brewers) collects and recycles BC’s refillable beer bottles and beer cans.

⁴³ The Oregon Beverage Container Recycling Cooperative (OBCRC), which targets a list of designated containers. Oregon raised its regulated deposit refund level from 5-cents to 10-cents in April 1, 2017. The return rate of 82% was achieved from April -December 2017. The rate achieved by the organization under a 5-cent deposit for the period of January to March 2017 was 59%.

⁴⁴ European Parliament, 2018. Single-use plastics: Commission welcomes ambitious agreement on new rules to reduce marine litter. Brussels, 19 December 2018. Available at: http://europa.eu/rapid/press-release_IP-18-6867_en.htm.

⁴⁵ European Parliament, 2018. Parliament and Council agree drastic cuts to plastic pollution of environment. Available at: <http://www.europarl.europa.eu/news/en/press-room/20181219IPR22301/parliament-and-council-agree-drastic-cuts-to-plastic-pollution-of-environment>

Expand the deposit refund system to manage all beverage containers

Consumers drink a wide range of beverages away-from-home, including: milk, chocolate milk, soy milk and almond milk. In BC, only those milk, milk substitute and meal replacement beverage containers consumed ‘residentially’ are collected and recycled (through Recycle BC’s residential paper and packaging recycling program). This is because the BC’s Recycling Regulation only collects and recycles residentially generated packaging. There are two problems with BC’s approach: 1) consumers purchasing and wanting to recycle beverages ‘on-the-go’ have limited recycling options; and 2) the number of overall non-deposit beverage containers recycled versus sold are not accurately tracked or reported on. Without data, it’s impossible to accurately calculate the number of these containers available to become ocean litter. However, it is reasonable to assume, based on the performance of BC’s residential curbside program (which achieved a 75% residential recycling rate in 2017⁴⁶) versus the provincial deposit refund system (that achieved 75.8% province-wide across the residential and industrial, commercial and institutional sectors (Figure 6)), that at least 25% of the containers sold become available as litter.

Alberta and Saskatchewan have taken a different approach. These provinces added milk and milk substitutes to their regulated deposit refund systems in 2009 and 2017, respectively. Alberta’s system also includes drinkable meal replacements and non-beverage dairy product containers (like cream) that are sold in containers that are similar to milk containers.

Keeping the system simple by collecting and recycling all beverage containers the same way regardless of where it is consumed (at home, work or play) reduces consumer confusion and improves container return rates.

Keep caps on

When consumers remove caps from their beverage containers, those caps become available for intentional or unintentional littering and could end up as ocean plastic. Bottle caps are too small to be captured in modern day ‘material recovery facilities’ or MRFs.

Bottle cap litter is a big ocean plastic problem. Besides being one of Canada’s ‘dirty dozen’ plastics found on Canadian shorelines (Figure 3), the international community is also seeking ways to curb this nuisance material. The European Parliament and Council Single-Use Plastics Directive agreement suggests ‘caps on’ measures to make it more difficult for the public to litter this material.

Bottle caps can be recycled when left on empty beverage containers without contaminating the quality of recycling stream, as plastics recyclers generally shred the containers and then ‘float’ materials to separate the caps from the container materials. Alberta has recycled their containers

⁴⁶ Recycle BC, 2017. Annual Report 2017. Available at: <https://recyclebc.ca/wp-content/uploads/2018/07/RecycleBCAR2017-June292018.pdf>. Retrieved March 14, 2019.

with ‘caps on’ in this way since 2010. In Alberta’s system, the cap material is recycled⁴⁷. Training consumers to leave caps on their containers reduces the likelihood this material will be littered and ensures this small material can be recycled.

What’s in it for BC?

Fewer mis-managed containers available to become ocean litter

Well-managed deposit refund systems have been proven world-wide to be the most effective tool to reduce beverage container litter and increase beverage container litter clean-up^{48, 49} (see Figure 11 and Figure 12).

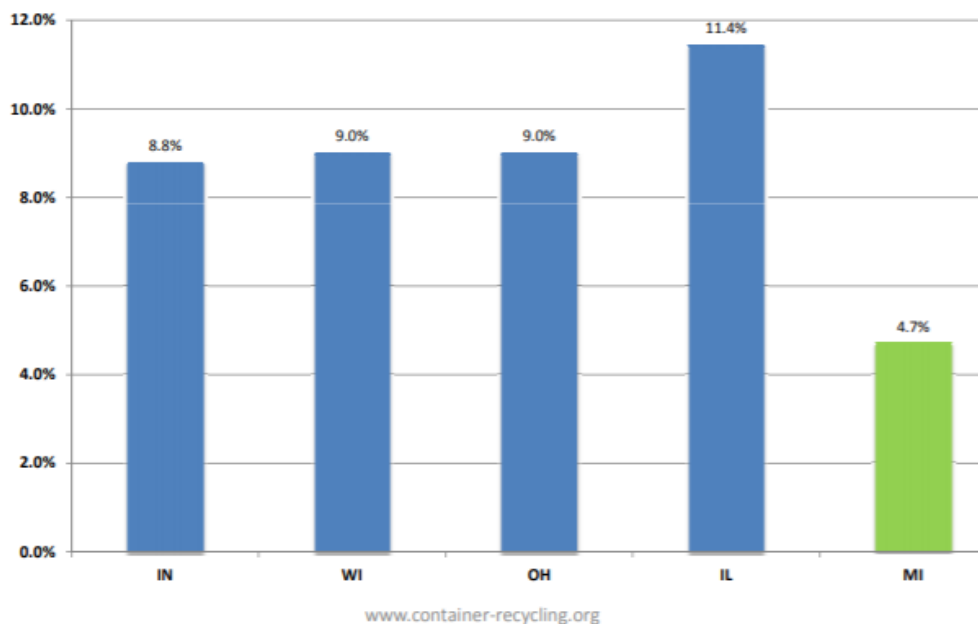
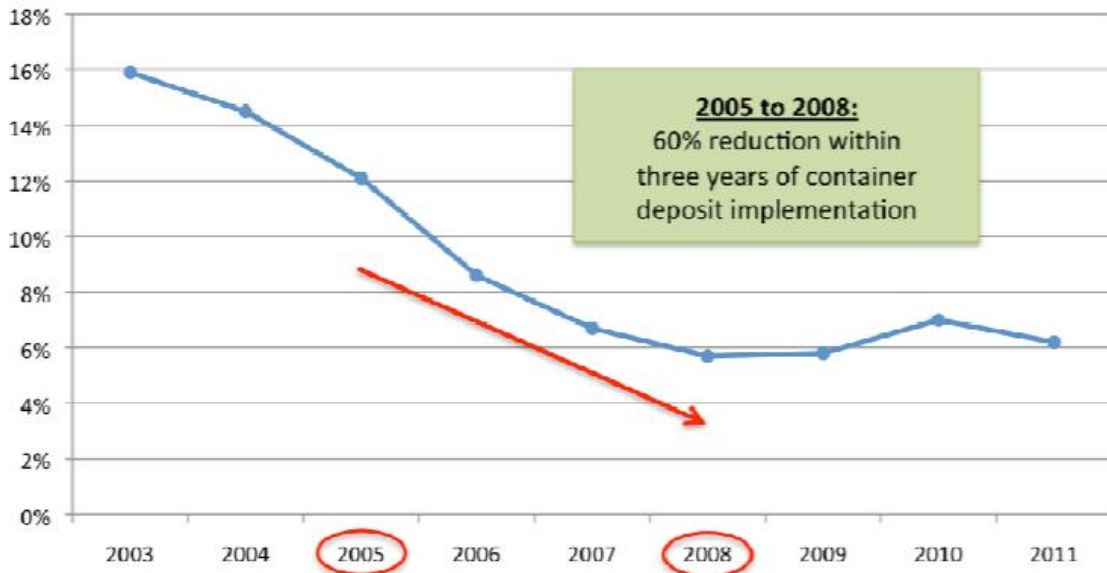


FIGURE 11: SOURCE CONTAINER RECYCLING INSTITUTE (2013) SHOWING FOUR STATES (INDIANA, WISCONSIN, OHIO, ILLINOIS) WITHOUT DEPOSIT REFUND SYSTEMS, AND ONE STATE (MICHIGAN) WITH A DEPOSIT REFUND SYSTEM.

⁴⁷ Guy West, Alberta Beverage Container Recycling Corporation. Personal communication February 7, 2019.

⁴⁸ European Parliament, 2011. Directorate General for external policies of the union. Briefing paper: a European refunding scheme for drinks. Available at: [http://www.europarl.europa.eu/RegData/etudes/note/join/2011/457065/IPOL-AFET_NT\(2011\)457065_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/note/join/2011/457065/IPOL-AFET_NT(2011)457065_EN.pdf)

⁴⁹ Container Recycling Institute, 2013. Impacts of Container Deposit Laws: Proven Effectiveness of Deposits to Reduce Beverage Container Litter. Presentation by: Susan V. Collins Container Recycling Institute on November 15, 2013. Available at: <http://www.sjenvironment.org/ArchiveCenter/ViewFile/Item/2167>. Retrieved February 7, 2019.



Source: Ocean Conservancy International Coastal Cleanup, 2003-2011

www.container-recycling.org

12

FIGURE 12: SOURCE CONTAINER RECYCLING INSTITUTE (2013) SHOWING LITTER REDUCTION FOLLOWING INTRODUCTION OF A DEPOSIT REFUND SYSTEM IN HAWAII.

Evidence also shows collection in Canada deposit refund systems get significantly higher return rates than non-deposit systems (Figure 13).

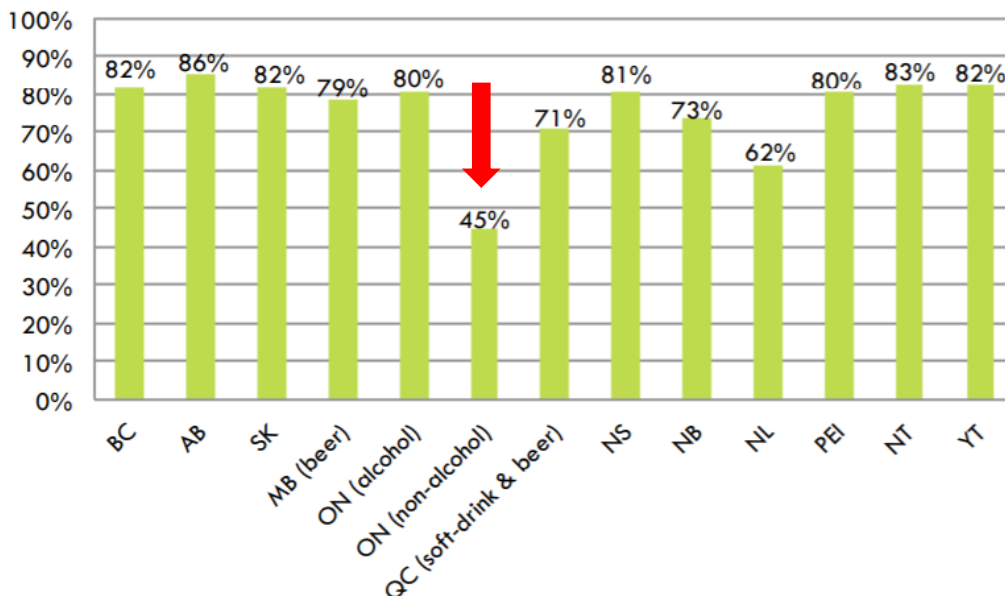


FIGURE 13: SOURCE CM CONSULTING (2018). RETURN RATES FOR ALL NON-REFILLABLE CONTAINERS IN CANADA⁵⁰. IN THIS DIAGRAM, THE ONTARIO NON-ALCOHOL CONTAINERS ARE THE ONLY CONTAINERS NOT SUBJECT TO A DEPOSIT REFUND SYSTEM.

At the same time, evidence from Alberta and, Saskatchewan (Table 2) suggests that raising deposits from 5-cents to 10-cents would enable BC to increase its return rate to 80-85% recovery, while evidence from the EU (Table 4) suggests that raising deposit rates to 30-cents or higher would enable BC to achieve return rates above 95%.

Increased reduction of greenhouse gases (GHGs)

Encorp Pacific reports on the GHG benefits of its deposit return system:

In total, Encorp’s activities in 2017 contributed to the reduction of about 103.8 thousand tonnes of CO₂ equivalent being released into the atmosphere, compared to 101.9 thousand tonnes in 2016. The increase in reduction is primarily due to the increase in volume of material recycled⁵¹.

Every container recycled reduces GHG emissions. As shown, increasing return rates would have significant GHG benefits.

⁵⁰ CM Consulting, 2018. Who Pays What? An Analysis of Beverage Container Collection and Costs in Canada. Available at: <https://www.cmconsultinginc.com/wp-content/uploads/2018/10/WPW-2018-FINAL-5OCT2018.pdf>. Retrieved February 10, 2019.

⁵¹ Encorp Pacific, 2017. 2017 Annual Report. Page 21. Available at: <https://www.return-it.ca/ar2017/pdf/AnnualReport.pdf>. Retrieved November 2, 2018.

Lower taxes

The most obvious economic benefit of deposit refund systems is their ability to increase the diversion of valuable commodities from local landfills and waterways. The need for diversion from landfill is becoming increasingly important as existing BC landfills near capacity and new ones are a greater challenge and cost to site. Deposit refund systems successfully pull materials from the waste stream for recycling and reduce the costs associated with municipal landfilling. A report by Morrison Hershfield (2016)⁵² found that in 2014, BC's deposit refund system resulted in \$17 million in avoided waste collection and landfilling costs and \$21 million worth of recovered materials. In 2016, after a review of 20 studies on deposit refund systems around the world, CM Consulting concluded that deposit refund systems provide a significant net cost savings to municipalities, even when regulated packaging recycling programs exist alongside regulated deposit refund programs⁵³. Recycle BC supports activities that divert glass (e.g., like glass beverage containers) from curbside recycling bin to depots. It states: "separating glass at curbside or delivering glass to depots helps ensure that more of it—and more of the other material—is recycled"⁵⁴. Successful diversion programs benefit taxpayers who otherwise face the long-term costs of landfill closures, and who can benefit from savings related to reduced municipal spending on waste collection costs and from recovered material value.

Green jobs and support for low income earners

In a report commissioned by the Container Recycling Institute, CM Consulting and Morris (2011)⁵⁵ calculated that deposit refund systems create 11 to 38 times more jobs than a curbside recycling system for beverage containers: the more successful the system, the more jobs that are created. A report by Morrison Hershfield (2016)⁵⁶ found that in 2014, BC's deposit refund system resulted the addition of approximately 640 jobs. It should be noted that in 2014, Encorp's overall return rate was hovering around 79%, but this has since fallen to 76%. As a result, it's likely these values have declined correspondingly. However, if BC were able to reverse this trend and achieve the new European target of 90% recovery by 2025, then the avoided waste

⁵² Morrison Hershfield, 2016. Assessment of Economic and Environmental Impacts of Extended Producer Responsibility Programs Operating in BC in 2014. Available at: <http://www.metrovancouver.org/services/solid-waste/SolidWastePublications/AssessmentofEconomicandEnvironmentalImpacts2014.pdf>

⁵³ CM Consulting & ReLoop, 2016. Studies confirm that Container Deposit Systems show big net savings to municipal budgets. Available at: https://reloopplatform.eu/wp-content/uploads/2016/06/Summary-of-studies_impact-of-DRS-on-munis-FINAL-31May2016.pdf. Retrieved March 14, 2019.

⁵⁴ RecycleBC, 2019. Recycling at home: How to recycle glass. Available at: <https://recyclebc.ca/recycling-at-home/how-to-recycle-glass/>. Retrieved March 14, 2019.

⁵⁵ CM Consulting and Jeffery Morris, 2011. Returning to Work Understanding the Domestic Jobs Impacts from Different Methods of Recycling Beverage Containers. Report for the Container Recycling Institute. Available at: <http://www.container-recycling.org/assets/pdfs/reports/2011-ReturningToWork.pdf>

⁵⁶ Morrison Hershfield, 2016. Assessment of Economic and Environmental Impacts of Extended Producer Responsibility Programs Operating in BC in 2014. Available at: <http://www.metrovancouver.org/services/solid-waste/SolidWastePublications/AssessmentofEconomicandEnvironmentalImpacts2014.pdf>

collection and landfilling costs, the value of recovered material and the jobs created would increase proportionally.

Low income populations also significantly benefit from deposit refund systems by using them as a means to supplement their income. In California, Ashenmiller^{57, 58} found that deposit refund systems provide a significant percentage of income for professional scavengers, i.e., up to 22% of their total income. Ashenmiller also found that petty crime rates are 11% lower in the 11 American states that currently have bottle deposit laws, likely because these populations have other methods to supplement their incomes by seeking and returning bottles for refund.

British Columbia charities and community groups also benefit from BC's deposit refund systems by fund raising through bottle drives. While Encorp Pacific doesn't publicly report the overall net revenue contribution of bottle drives to non-profit causes, they do report that "the average bottle drive raises between \$1,000 and \$1,500" per drive, and that "some groups have even made over \$3,000" in a half-day's work"⁵⁹. When waste has value, British Columbians have proven they are happy to collect, save and then donate it for a good cause.

⁵⁷ Ashenmiller, B., 2009. Cash Recycling, Waste Disposal Costs, and the Incomes of the Working Poor: Evidence from California. *Land Economics*. August 2009. 85:539-551.

⁵⁸ Ashenmiller, B., 2010. Externalities from Recycling Laws: Evidence from Crime Rates. *American Law and Economics Review*. Vol. 12, No. 1 (Spring 2010), pp. 245-261. Published by: Oxford University Press

⁵⁹ Encorp Pacific, 2019. Encorp Return it, It's worth it -Programs and Events -Bottle Drives. Available at; <https://www.return-it.ca/programs/bottledrives/>. Retrieved: March 14, 2019.

Call to Action: BC Shows Ocean Plastic Leadership

In 2018, Canada led the G7 in developing the Ocean's Plastic Charter⁶⁰ (which was signed by the leaders of Canada, France, Germany, Italy, United Kingdom, the European Union), and the Canadian Council of Ministers announced its Strategy on Zero Plastic Waste⁶¹. These Canadian initiatives recognized the importance of deposit refund systems and extended producer responsibility to tackle beverage container waste and other single-use plastics. On December 5, 2018, the Canadian government also unanimously passed Motion 151, which recognized the need for all Canadian communities (federal, provincial, municipal and indigenous) to do their part to combat plastic pollution in and around aquatic environments, including implementing:

- New regulation to reduce (among other plastic debris) single-use plastics like beverage containers;
- Permanent, dedicated, and annual funding for the cleanup of plastic debris; and
- Education and outreach campaigns on the root causes and negative environmental effects of plastic pollution in and around all bodies of water⁶².

On December 19, 2018, the European Parliament and Council passed a triologue agreement – the Single-Use Plastics Directive – that specifically requires its member states to increase the collection and recycling of beverage containers (and their caps) to achieve a 90% capture rate by 2025^{63 64}.

Ocean Legacy Foundation is calling on the BC government to make BC's deposit refund system the leading Canadian beverage container recycling program in stewarding its beverage containers and bottle caps, ensuring none of these plastics end up in the ocean.

⁶⁰ G7 2018 Charlevoix, 2018. Ocean Plastics Charter. Available at:

http://publications.gc.ca/collections/collection_2018/amc-gac/FR5-144-2018-32-eng.pdf

⁶¹ CCME, 2018. Strategy on Zero Plastic Waste. Available at:

<https://www.ccme.ca/files/Resources/waste/plastics/STRATEGY%20ON%20ZERO%20PLASTIC%20WASTE.pdf>. Retrieved: February 14, 2019.

⁶² Parliament of Canada, House of Commons, 42 Parliament, 1st Session, 2018. Gord Johns, private members motion, current session. M-151: National strategy to combat plastic pollution. Decision made/agreed to: 2018-12-05. Available at: [http://www.ourcommons.ca/Parliamentarians/en/members/Gord-Johns\(89263\)/Motions](http://www.ourcommons.ca/Parliamentarians/en/members/Gord-Johns(89263)/Motions).

Retrieved February 14, 2019.

⁶³ European Parliament, 2018. Single-use plastics: Commission welcomes ambitious agreement on new rules to reduce marine litter. Brussels, 19 December 2018. Available at: http://europa.eu/rapid/press-release_IP-18-6867_en.htm.

⁶⁴ European Parliament, 2018. Parliament and Council agree drastic cuts to plastic pollution of environment. Available at: <http://www.europarl.europa.eu/news/en/press-room/20181219IPR22301/parliament-and-council-agree-drastic-cuts-to-plastic-pollution-of-environment>

We at Ocean Legacy Foundation call on the BC government to:

1. Increase the regulated deposit rate.
2. Add all beverage containers to the deposit refund system to reduce litter and increase the litter clean-up of containers not yet in the system.
3. Require producers to collect and report on the recycling of bottle caps to reduce bottle cap waste available to become ocean plastic.
4. Raise regulated targets to at least that achieved by Alberta and Saskatchewan, with long-term targets matching the EU.
5. Enforce the regulated targets in a meaningful way. For example, make producers pay for the clean-up of ocean plastics equal to the amount by weight that they fail to collect and recycle.

Appendix A: Timeline of BC's Deposit Return System

- 1970 British Columbia implemented Canada's and the world's first deposit return system for beverage containers. It is followed by Oregon in 1971 and Alberta in 1972.
- 1997 BC government enacts the Beverage Container Stewardship Program Regulation, which includes extended producer responsibility (EPR) requirements including:
- requiring producers to take responsibility for the system;
 - managing the consumer paid deposit return system;
 - financing system operations;
 - meeting a minimum 85% recovery rate; and
 - requiring that all containers supplied into BC be re-filled or recycled⁶⁵.
- 1998 Government expands its beverage recycling program
- The system now includes all regulated ready-to-drink containers; this led to 196 million more containers being recycled. Milk and milk substitutes are notable exclusions.
- 1999 Polycoat containers were added to the deposit return system.
- 2004 The government enacts the Recycling Regulation and Encorp was established as the Producer Responsibility Organization
- The regulation streamlined its EPR regulatory structure by implementing a single comprehensive, results-based regulation to cover all producer operated stewardship programs.
 - It also lowered the required minimum recovery rates for beverage containers from 85% (Beverage Container Stewardship Program Regulation) to 75% and sets the current deposit and refund rates.
 - Encorp was formed to manage all non-alcohol beverage containers, and later forms an agreement to also manage non-beer alcohol containers on behalf of liquor and wine stewards.
- 2007 Government approved Encorp's first five-year stewardship plan (2007-2012).
- 2014 Government approved Encorp's second five-year stewardship plan (2013-2017).
- 2017 Government approved Encorp's application to continue operating its 2013-2017 plan for the 2018-2023 period, pending consultation on and receipt of approval for two amendments:

⁶⁵ Recycle BC. Available at: <https://recyclebc.ca/about-recyclebc/epr/>. Retrieved: October 19, 2018.

- Updated program performance targets for the period of 2018-2022.
- Measures to address specific government policy guidance, such as dispute resolution.

2018

- May 8 Encorp began a 45-day public consultation on proposed plan amendments.
- July 24 Encorp releases a summary of the consultation findings.
- August 10 Encorp submits proposed amendments to government for review/ approval

2018 Current status of Deposit Return Systems

- Deposit return programs exist in every province except Manitoba, though the programs range in scope and service,
- Hundreds more have been implemented globally.
- BC has regulated EPR requirements for 14 categories of materials⁶⁶, which are managed by more than 20 EPR program operators⁶⁷.

⁶⁶ Recycling Regulation. Available at: http://www.bclaws.ca/Recon/document/ID/freeside/449_2004
Retrieved: October 19, 2018.

⁶⁷ Government of British Columbia. Product Stewardship Plans and Annual Reports.
<https://www2.gov.bc.ca/gov/content/environment/waste-management/recycling/product-stewardship/stewardship-reports-plans> Retrieved: October 19, 2018.

Appendix B: Overview of BC's Recycling Regulation

BC's Recycling Regulation:

- Establishes the requirement for a deposit return system, i.e., establishes the minimum deposits that must be collected from and refunded to consumers;
- Requires “sellers” of beverage containers to collect a deposit from consumers that is not less than the minimum regulated deposit.
- Identifies and limits which containers are subject to deposit refund and who must pay the refund;
- Requires beverage container producers have a plan that collects and recycles beverage containers from container redemption facilities (e.g., depots, retailers that sell beverage containers);
- Requires producers to provide proof that materials collected are managed according to a 3Rs hierarchy that maximizes recycling over energy recovery; and
- Requires producers meet a minimum 75% recovery rate (i.e., collection rate) for 10 beverage container product sub-categories including:
 1. aluminum cans;
 2. refillable glass bottles;
 3. non-refillable glass bottles;
 4. plastic containers, able to hold 1 litre or less;
 5. plastic containers, able to hold more than 1 litre;
 6. drinking boxes;
 7. bag in a box;
 8. bimetal cans;
 9. gable top containers; and
 10. stand up pouches.

Since 1970, BC's deposit refund system has undergone many changes and has been regulated under several iterations of BC law (Appendix A). Since 2004, the BC system has been regulated under BC's Recycling Regulation, which establishes the legal framework requiring and defining:

1. Extended Producer Responsibility for designated materials (i.e., those identified in Schedules 1-5), including requiring producers (e.g., beverage container producers) to develop and implement a plan to meet regulated government recycling outcomes and targets; and
2. BC's deposit return system (Schedule 1).

Interestingly, the implementation of the Recycling Regulation actually lowered the regulated target recovery rate for beverage containers from 85% to 75% (Appendix A).

Since maximum deposits are not regulated, beverage container producers have the legal authority to charge higher than the minimum regulated deposits to encourage increased container returns. If the regulated targets were effectively enforced (e.g., with significant consequences for failure to achieve targets), then producers would have a legal (and potentially financial) incentive to make the program changes necessary to achieve regulated targets.

Additional notes

1. Since 2004, BC's deposit refund system (i.e., the Recycling Regulation, 2004) has remained virtually unchanged.
2. BC's deposit return system targets only a portion of the ready-to-serve beverage containers on the market. Milk, milk substitutes, and meal replacement containers are not subject to Schedule 1 of the Recycling Regulation and are not included in BC's deposit return system.
3. BC's deposit return system is operated by two producer responsibility organizations: Brewers Recycling Container Collection Council (the Brewers), which collects and recycles all domestic refillable beer containers and beer cans, and Encorp Pacific (Encorp), which manages all other regulated containers and the vast majority of containers in the system.

Appendix 1: Consultation Recommendation to Ministry of Environment and Climate Change in regards to the Encorp Pacific program plan.

We recognize that Encorp has set the overall target to increase to 80% by 2020. While this is an improvement from the 77% overall target previously proposed, the RDN believes that Encorp is capable of setting a higher achievable overall target.

- Low Recovery Rates - Pouches, Bag in Box and Drink Boxes
 - This target again is too low and should be set at a minimum baseline of 50%, rising to 75% in the second or third year
 - If these materials are underperforming there should be an increase in education/awareness or reduction in production from producers.
 - Clear signage at point of sale with refundable information should be made available
- Recyclability of commodities
 - Clear transparency about the recyclability of commodities with numbers showing what gets recycled and or sent for disposal. As a signee of the Ellen MacArthur Foundation's Global Commitment, Encorp has committed to recycle 75% of the plastic containers sold into the Province of BC by 2022 but again more can be done! What are the reasons behind the target being set at 75%? Recyclability? Collection? Disposal?
- Definition of 'Recyclable' - would be better to see a breakdown of reuse, recycling for further product/packaging production or waste to energy and engineered fuel in the recycling statistics.
- What are the hard to recycle container types?
- Is there any system/regulation in place to deter packaging companies from producing hard to recycle containers?
 - Surcharge to be added to these products in order to deter their availability?
 - Again the public needs more transparency about what happens to their recycling.
- Refundable amounts
 - Consider increasing refundable amounts in order to improve recovery numbers. Evidence has shown that if a larger deposit is put upon a packaging it can help improve recovery numbers.

Overall as a leading stewardship agency in BC, Encorp should be setting higher standards for Stewards to meet not just meeting the status quo.

Government of Canada taking action to reduce plastic pollution

Plastic has thousands of useful applications, but is often mismanaged and ends up polluting our environment and wasting valuable resources. Reducing plastic pollution and investing in Canadian innovation are part of the Government of Canada's overall plan to protect the environment and fight climate change to build a stronger economy and healthier communities.

The Government of Canada is taking the following steps to reduce plastic pollution, working with provinces, territories, businesses, and others. This includes ongoing work through the Canadian Council of Ministers of the Environment to develop an action plan to implement the Canada-wide Strategy on Zero Plastic Waste.

Banning harmful single-use plastics as early as 2021 under the Canadian Environmental Protection Act and taking other steps to reduce plastic waste, where supported by scientific evidence and when warranted – and taking other steps to reduce plastic waste

The ban would reduce pollution from single-use plastic products and packaging – such as shopping bags, straws, cutlery, plates, and stir sticks – that science indicates are harmful to the environment and human health, where warranted. The specific products and measures included in the ban will be determined following a State of the Science assessment on plastic pollution in the environment, which is already underway and will include a peer review, public consultations, and socio-economic considerations. Additional regulatory actions could include requiring products to contain a set amount of recycled content, or be capable of being recycled or repaired.

Ensuring that companies that manufacture plastic products or sell items with plastic packaging are responsible for managing the collection and recycling of their plastic waste

Extended Producer Responsibility (EPR) programs are recognized as an effective mechanism to support the creation of a circular economy. Under an EPR program, companies making products are responsible for the end-of-life management of their products and packaging. The Government of Canada will work with provinces and territories, through the Canadian Council of Ministers of the Environment, to support the development of consistent EPR programs across the country. The Government of Canada will also work in collaboration with provinces, territories and industry to set targets for plastics collection, recycling, and recycled content requirements.

Working with industry to prevent and retrieve abandoned, lost, or discarded fishing gear, known as ghost fishing gear – a major contributor to marine plastic debris

The Government of Canada will work with stakeholders through a new Sustainable Fisheries Solutions and Retrieval Support Contribution Program. We will support fish harvesters to acquire new gear technologies to reduce gear loss, and take concrete actions to support ghost gear retrieval and responsible disposal. We will work together with Canadians to reduce the impacts of ghost fishing gear in our aquatic ecosystems and keep our endangered marine animals safe.

Investing in new Canadian technologies

Through the Canadian Plastics Innovation Challenge, the Government of Canada is helping small businesses across the country find new ways to reduce plastic waste and turn waste into valuable resources supporting a circular economy. Seven challenges have been launched so far, providing over \$10 million dollars to 18 Canadian small- and medium-sized enterprises. These businesses are working to reduce plastic waste from food packaging, construction waste, marine vessels, and fishing gear. They are also improving plastic recycling through artificial intelligence and refining technologies for bioplastics.

Mobilizing international support to address plastic pollution

At the 2018 G7 in Charlevoix, Canada launched the Ocean Plastics Charter, which outlines concrete actions to eradicate plastic pollution and recognizes the need for urgent action to address the devastating impacts of marine litter on the health and sustainability of our oceans, seas, coastal communities, and ecosystems. As of May 2019, the Charter has been endorsed by 21 governments and 60 businesses and organizations.

Investing in waste management solutions in developing countries is essential to reducing marine litter. The Government of Canada is contributing \$100 million to help developing countries prevent plastic waste from entering the oceans, address plastic waste on shorelines, and better manage existing plastic resources. This includes \$65 million through the World Bank, \$6 million to strengthen innovative private-public partnerships through the World Economic Forum's Global Plastic Action Partnership, and \$20 million to help implement the G7 Innovation Challenge to Address Marine Plastic Litter.

Reducing plastic waste from federal operations

The Government of Canada is strengthening policies, requirements, and guidelines that promote sustainable procurement practices, and has committed to divert at least 75 per cent of plastic waste from federal operations by 2030. These changes will promote the purchase of goods and services that use reusable, recyclable, or compostable plastics or contain renewable or recycled plastic content.

Reducing plastic microbeads in freshwater marine ecosystems

To reduce the amount of plastic microbeads entering Canadian freshwater and marine ecosystems, Canada prohibited the manufacture and import of all toiletries that contain plastic microbeads (such as bath and body products) as of July 1, 2018. A complete ban comes into force July 1, 2019.

Supporting community-led action and citizen-science activities

To help keep our shorelines, bodies of water, parks, and other natural places free of plastic pollution, the Government of Canada will provide \$1.5 million in 2019 for organizations to start new plastics projects that mobilize and engage citizens. The Government of Canada will support community-led action through education, outreach, and citizen science, and support concrete actions through community cleanups and demonstrations to reduce plastic waste.

Launching Canada's Plastics Science Agenda

The Government of Canada will accelerate research along the lifecycle of plastics and on the impacts of plastics pollution on humans, wildlife, and the environment. It will support evidence-based decision-making and innovative approaches to sustainable plastics production, recycling, and recovery. Canada's Plastics Science Agenda will also identify priority areas for multi-sector research partnerships to help achieve Canada's zero plastic waste goals.