

Fact Sheet: System Performance

- Countries, states, and provinces that have implemented deposit return systems (DRS) consistently achieve higher collection rates for beverage containers than those that rely solely on municipal kerbside collection programmes.
- In general, the higher the deposit value, the higher the return rate.
- The highest return rates can be seen in systems that use a return-to-retail approach, where retailers selling beverages become legally responsible for accepting empty containers for recycling

In an effort to reduce litter and increase recycling, more and more jurisdictions are turning to deposit return systems (DRSs) for the recovery of beverage containers. Intended to act as an economic incentive to recycle, a deposit is a small fee charged on the purchase of certain beverage containers, which is refunded (partially or fully) to the consumer when he/she returns the empty container to a collection point.

Despite claims to the contrary by the beverage industry, international experience consistently shows that collection rates for beverage containers are significantly higher in jurisdictions that have deposit return. In Canada, provinces with deposit return programs recover an average of 82% of all non-refillable beverage containers sold, compared to just 46% in Ontario where non-alcohol containers are recovered through municipal kerbside recycling programmes. In some jurisdictions, collection rates are significantly higher at more than 95%. In the U.S., states with active container deposit laws recycle 50-89% of covered containers, while the overall recycling rate for beverage containers in states without deposit return is around 30%.ⁱ Nearly every European country with DRS reports recycling rates for single-use beverage containers of over 85%.

In addition, in most non-deposit jurisdictions in North America and Europe, collection rates for non-deposit containers tend to be over-estimated because they report on collection rather than what is actually recycled. What's more is that these rates do not account for free-riders and can sometimes include tonnage of imported recyclables.

Program performance is typically measured using the collection rate, which represents the number of containers collected for recycling in a given jurisdiction versus the number of containers sold. Assessing the performance of a DRS is straightforward since the deposit/refund allows sales and collections to be tracked to the last unit. Measuring the performance of kerbside collection programmes, on the other hand, is more complex because beverage packaging is collected together with other material, such as paper and non-beverage containers.

In contrast, in DRSs, collection is recycling because contamination is low and quality is high, and because these rates are reported on unit counts, not on weight.

The following table summarises the most recently available performance data of 42 different DRSs for single-use beverage containers around the world, where data was available.

Table 1 Latest Return Rates in DRS Jurisdictions Worldwide

Jurisdiction	Data Year	Refund		Total Return Rate
		Local Currency	Euro and USD Equivalent	
Croatia	2019	0.5 HRK	€0.066 USD\$0.07	88.7% ⁱⁱ
Denmark	2020	1-3 DKK	€0.13- €0.4 USD\$0.15-\$0.45	93% ⁱⁱⁱ
Estonia	2019	€0.10	(USD\$0.11)	87.2% ^{iv}
Finland	2020	€0.10-€0.40	USD\$0.11- \$0.45	93% ^v
Germany	2018	€0.25	USD\$0.28	98% ^{vi}
Iceland	2020	15 ISK	€0.11 USD\$0.12	91.5% ^{vii,viii}
Lithuania	2020	€0.10	USD\$0.11	91% ^{ix}
Netherlands	2018	€0.25	USD\$0.28	95% ^x
Norway	2020	1-2.5 NOK	€0.13- €0.32 USD\$0.12-\$0.30	92% ^{xi}
Sweden	2020	1-2 SEK	€0.11-€0.22 USD\$0.12-\$0.24	88.1% ^{xii}
California ^{xiii}	2019	USD\$0.05-\$0.10	€0.05-€0.09	67% ^{xiv}
Connecticut ^{xv}	2019	USD\$0.05	€0.05	50% ^{xvi}
Hawaii ^{xvii}	2018-19	USD\$0.05	€0.05	62.7% ^{xviii}
Iowa ^{xix}	2016	USD\$0.05	€0.05	64% ^{xx}
Maine	2017	USD\$0.05-\$0.15	€0.05-€0.14	84% ^{xxi}
Massachusetts	2019	USD\$0.05	€0.05	50% ^{xxii}
Michigan	2019	USD\$0.10	€0.09	88.7% ^{xxiii}
New York	2019	USD\$0.05	€0.05	64% ^{xxiv}
Oregon	2019	USD\$0.10	€0.09	85.8% ^{xxv, xxvi}
Vermont	2013	USD\$0.05-\$0.15	€0.05-€0.14	75% ^{xxvii}
Alberta	2019	CAD\$0.10-\$0.25	€0.07-€0.17 USD\$0.07-\$0.18	85.3% ^{xxviii}
British Columbia	2019	CAD\$0.05-\$0.20 ^{xxix}	€0.03-€0.13 USD\$0.04-\$0.15	82% ^{xxx, xxxi}
Manitoba	2016	CAD\$0.10-\$0.20	€0.07-€0.13 USD\$0.10-\$0.15	78.5% ^{xxxii}
Newfoundland and Labrador	2019	CAD\$0.05-\$0.10	€0.03-€0.07 USD\$0.04-\$0.07	68% ^{xxxiii, xxxiv}
New Brunswick	2018-19	CAD\$0.05-\$0.10	€0.03-€0.07 USD\$0.04-\$0.07	74% ^{xxxv, xxxvi}
Northwest Territories	2018-2019	CAD\$0.10-\$0.25	€0.07-€0.17 USD\$0.07-\$0.18	85% ^{xxxvii}
Nova Scotia	2018-2019	CAD\$0.05-\$0.10	€0.03-€0.07 USD\$0.04-\$0.07	83% ^{xxxviii, xxxix}
Ontario (alcohol only)	2019	CAD\$0.10-\$0.20	€0.07-€0.13 USD\$0.10-\$0.15	80% ^{xl, xli}
Prince Edward Island	2019	CAD\$0.05-\$0.10	€0.03-€0.07 USD\$0.04-\$0.07	85% ^{xlii, xliii}
Quebec (beer and soft drinks only)	2019	CAD\$0.05-\$0.20	€0.03-€0.13 USD\$0.04-\$0.15	74% ^{xliv}
Saskatchewan	2019-2020	CAD\$0.05-\$0.40	€0.03-€0.27 USD\$0.04-\$0.29	84% ^{xlv}
Yukon	2016	CAD\$0.05-\$0.25	€0.03-€0.17 USD\$0.04-\$0.18	82.3% ^{xlvi}

Jurisdiction	Data Year	Refund		Total Return Rate
		Local Currency	Euro and USD Equivalent	
New South Wales	2019-2020	AUD \$0.10	€0.06 USD \$0.07	67% ^{xlvii xlviii}
Queensland	2019-2020	AUD \$0.10	€0.06 USD \$0.07	60.1% ^{xliv}
Northern Territory	2019-2020	AUD\$0.10	€0.06 USD \$0.07	80% ^l
Australian Capital Territory (ACT)	2019-2020	AUD\$0.10	€0.06 USD \$0.07	49.9% ^{li}
South Australia	2019-2020	AUD\$0.10	€0.06 USD \$0.07	76.7% ^{lii}
Israel	2018	0.3 ILS	€0.07 USD\$0.08	77% ^{liii}
Kosrae (Federated States of Micronesia)	2017	USD\$0.05	€0.05 USD\$0.05	86% ^{liv}
Palau	2018	USD\$0.05	€0.05 USD\$0.05	90.34% ^{lv}
Republic of the Marshall Islands	2018	USD\$0.05	€0.05 USD\$0.05	Around 85% ^{lvi}
Pohnpei (Federated States of Micronesia)	2017	USD\$0.05	€0.05 USD\$0.05	Estimated at 60% ^{lvii}

Disclaimer: In general, return rates were obtained from programs operator or the government agency responsible for oversight.

Figure 1 Latest Return Rates for Deposit Return Systems Worldwide

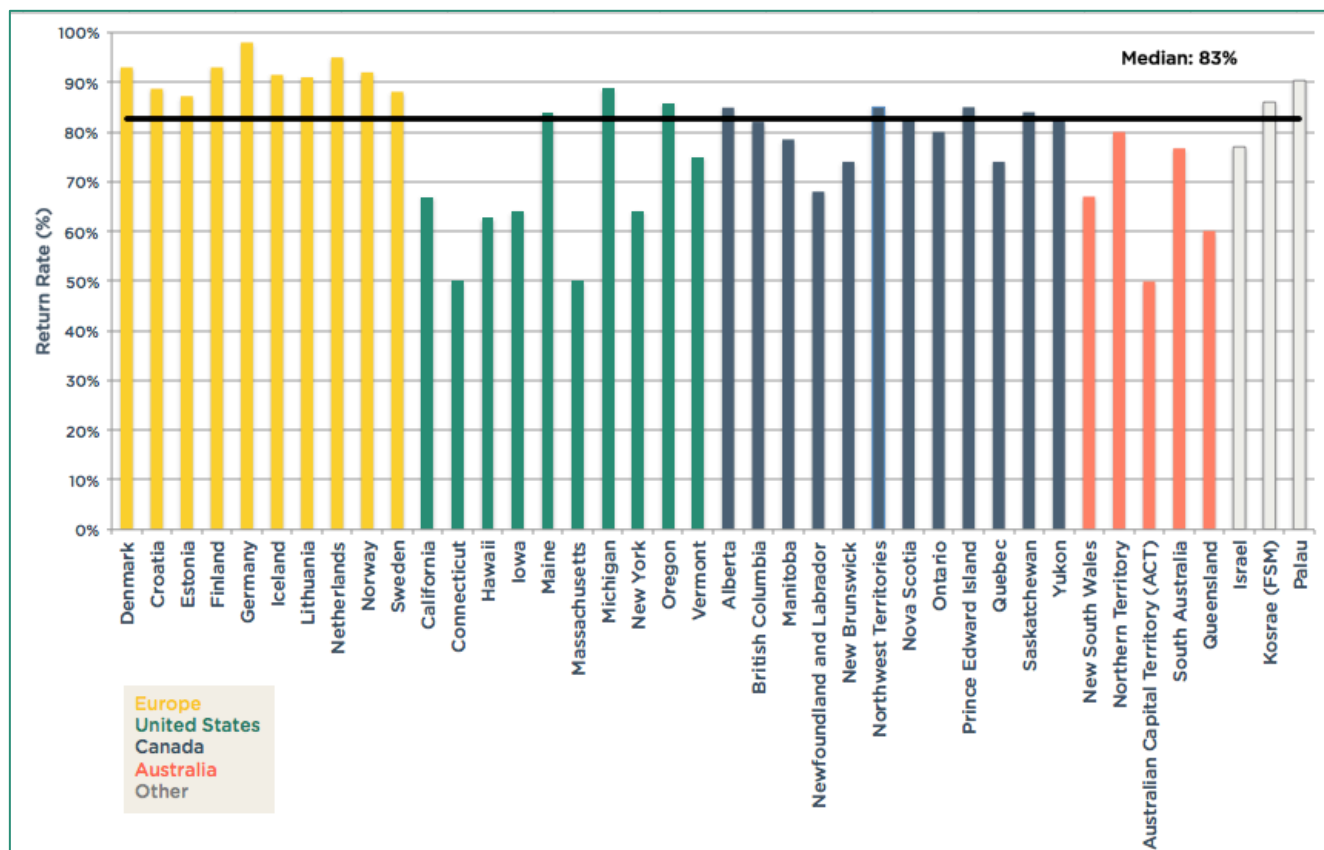


Figure 2 Latest Return Rates for Deposit Return Systems by Type of Redemption System

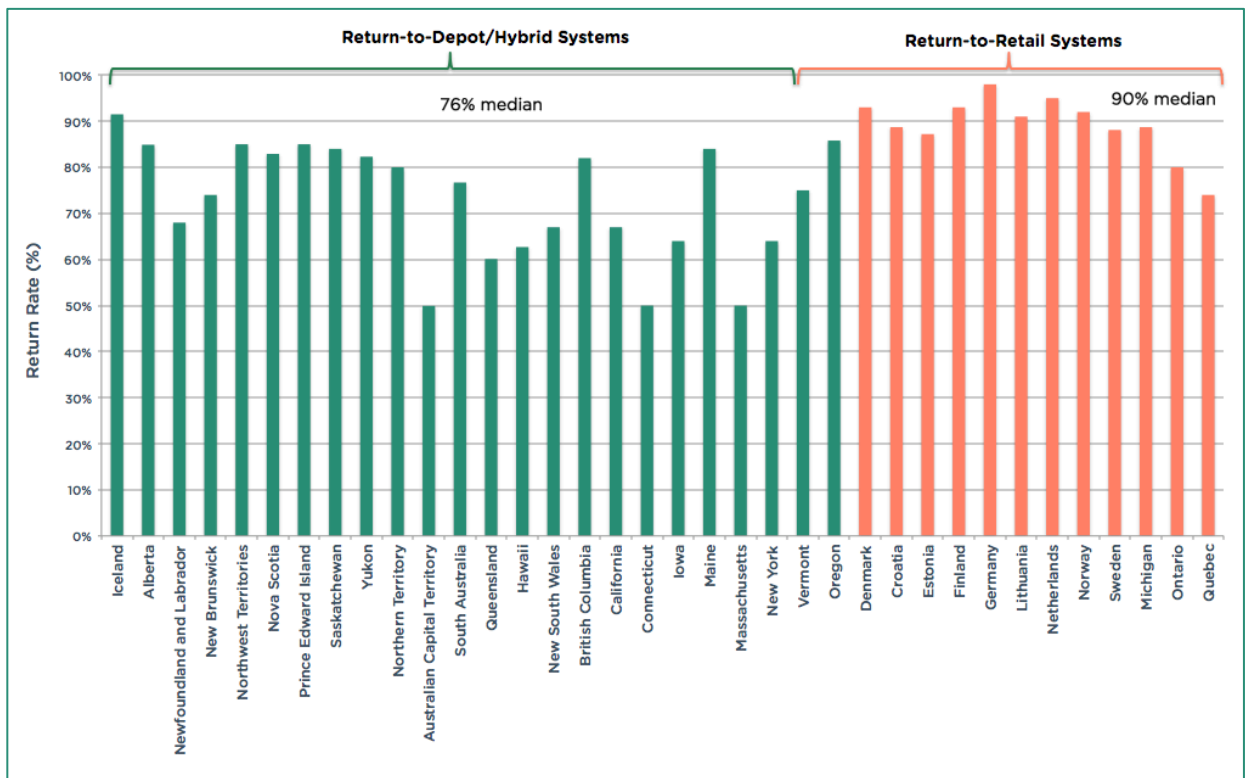
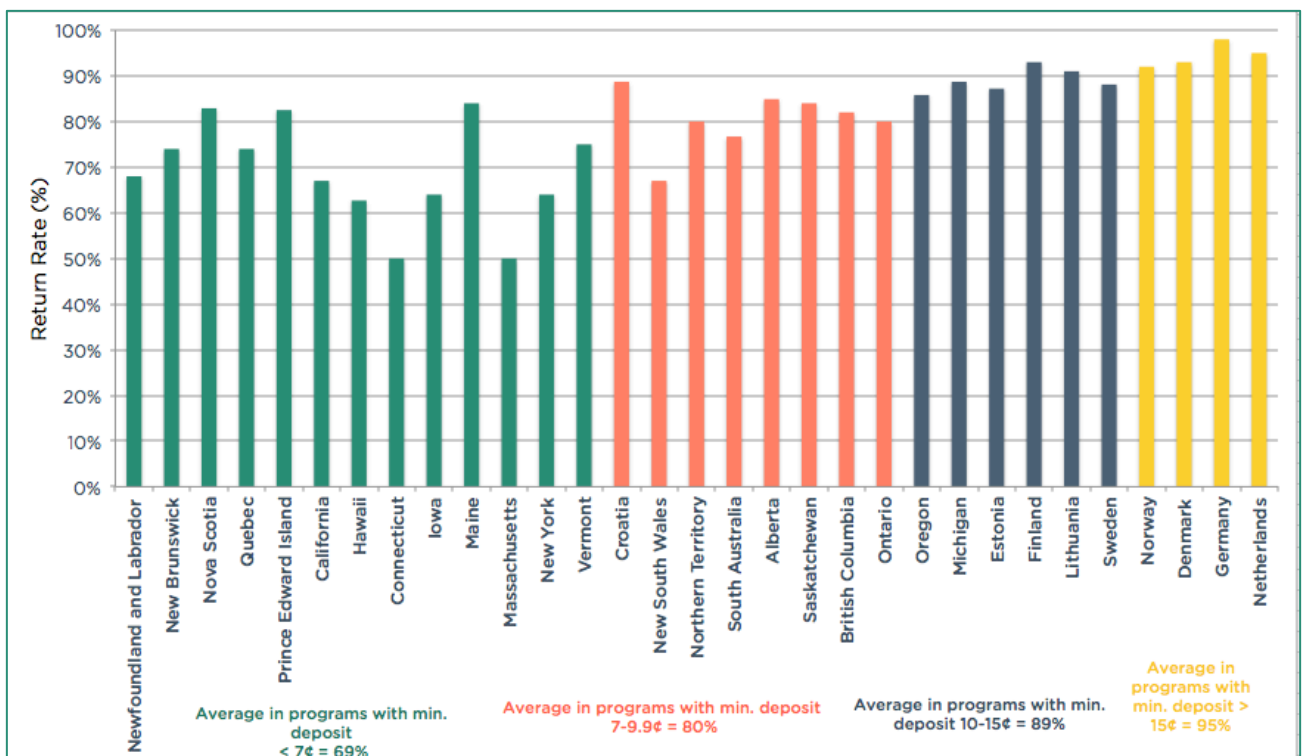


Figure 3 Latest Return Rates in Deposit Return Systems by Minimum Deposit Value (USD)



Conclusion

From North America to Australia and across Europe, global momentum for deposit return continues to grow. DRSs achieve high performance, produce higher quality recyclates, and promote the transition to a circular economy. Given these benefits and the often poor performance of multi-material curbside programs, more and more beverage companies are considering it to be the best solution to manage their empty containers in a circular way and to tackle the growing problems of land-based and marine litter.

Endnotes

ⁱ Container Recycling Institute. 2013. "Bottled Up: Beverage Container Recycling Stagnates"
ⁱⁱ Ministry of the Environment of the Croatia Republic. Data provided to Reloop via e-mail correspondence April 7, 2020.

ⁱⁱⁱ Dansk Retursystem. Årsrapport 2020. Accessed from
<<https://danskretursystem.dk/app/uploads/2021/03/Aarsrapport-2020-pr.-10.03.2021-inkl.-grafik-1.pdf>>

^{iv} Personal communication with Rauno Raal, Eesti Pandipakend OÜ, September 15, 2020

^v Personal communication with Tommi Vihavainen (Suomen Palautuspakkaus Oy), April 10, 2021

^{vi} ACR+. January 2019. "Deposit-Refund Systems in Europe for One-Way Beverage Packaging." <https://www.acrplus.org/images/technical-reports/2019_ACR_Deposit-refund_systems_in_Europe_Report.pdf>

^{vii} Personal communication with Helgi Lárusson, Managing Director at Framkvaemdastjóri, April 12, 2021.

^{viii} Return rate for containers recovered through deposit system only. An additional 2.1% of containers are recovered through other systems such as Green Dot programs. If these containers are included, the total beverage container return rate is 93.6% (91.5% + 2.1%).

^{ix} Personal communication with Gintaras Varnas, USAD, 13 April 2021.

^x Personal communication with Raymond Gianotten, SRN, 7 May 2020.

^{xi} Infinitum. Årsrapport 2020. Accessed from
<https://infinitum.no/media/zs4jr4go/infinitum_a-rsrapport_2020_web.pdf>

^{xii} Returpack Svenska AB. "Pantstatistik." Accessed from
<<https://pantamera.nu/sv/privatperson/fakta--statistik/pantstatistik/>>

^{xiii} Redemption rate reflects direct CRV redemption. In 2018, curbside programs collected an additional 9% of CRV beverage containers sold.

^{xiv} "Redemption Rates and Other Features of 10 U.S. State Deposit Programs." Document provided by Susan Collins, Container Recycling Institute. 19 August 2020.

^{xv} Before water bottles were added to the deposit system in 2009, redemption rates were higher (in the range of 65-70%).

^{xvi} Container Recycling Institute. Bottle Bill Resource Guide: Connecticut. Accessed from
<<http://www.bottlebill.org/index.php/current-and-proposed-laws/usa/Connecticut>>

^{xvii} Deposit containers collected at curbside (in Honolulu only) are already included in the statewide redemption rates.

^{xviii} Personal communication with Jaylen Ehara, Hawaii State Department of Health, 17 January 2020.

^{xix} Recycling rate is 71%; estimate of 7% is through kerbside and other programmes.

^{xx} "Redemption Rates and Other Features of 10 U.S. State Deposit Programs." Document provided by Susan Collins, Container Recycling Institute, 19 August 2020.

^{xxi} *ibid.*

^{xxii} *ibid.*

^{xxiii} Michigan Department of Treasury, Office of Revenue and Tax Analysis. May 27, 2020. "Bottle Deposit Information." Accessed from

<https://www.michigan.gov/documents/treasury/Bottle_Deposit_Information_6-17-20_694088_7.pdf>

^{xxiv}“Redemption Rates and Other Features of 10 U.S. State Deposit Programs.” Document provided by Susan Collins, Container Recycling Institute, 19 August 2020.

^{xxv}Oregon Liquor Control Commission. “2019 Beverage Container Return Data.” Accessed from <www.oregon.gov/olcc/Docs/bottle_bill/2019_BeverageContainerReturnData.pdf>

^{xxvi}Deposit initiators within the Oregon Beverage Recycling Cooperative (OBRC), which covers the vast majority of deposit containers sold in the state, reported a 2019 return rate of 90%.

“Redemption Rates and Other Features of 10 U.S. State Deposit Programs.” Document provided by Susan Collins, Container Recycling Institute. 19 August 2020.

^{xxviii}CM Consulting. November 2020. “Who Pays What: An Analysis of Beverage Container Collection and Costs in Canada.” Accessed from <<https://www.cmconsultinginc.com/wp-content/uploads/2021/02/WPW-2020-FINAL-JAN-30.pdf>>

^{xxix}On November 1, 2019, Encorp Pacific, BC’s DRS system operator, raised the deposit on all non-alcoholic beverage containers under and including 1L from 5¢ to 10¢. Then, on October 1, 2020, deposits on beverage containers over 1L decreased from 20¢ to 10¢. This means that all containers registered in BC’s DRS now have a unified deposit of 10¢.

^{xxx} Encorp Pacific (Canada). 25 Years: 2019 Annual Report. Accessed from <https://www.return-it.ca/ar2019/pdf/Encorp_AR2019_AnnualReport.pdf>

^{xxxi}Personal communication with Brewers Distributors Limited.

^{xxxii}CM Consulting. November 2020. “Who Pays What: An Analysis of Beverage Container Collection and Costs in Canada.” Accessed from <<https://www.cmconsultinginc.com/wp-content/uploads/2021/02/WPW-2020-FINAL-JAN-30.pdf>>

^{xxxiii}If refillable containers are included, Newfoundland’s total return rate is actually 75% in 2019 (refillable beer containers were returned at a rate of 97%).

^{xxxiv}Personal communication with Gordon Wall at Multi Material Stewardship Board, September 2020.

^{xxxv}If refillable containers are included, New Brunswick’s total return rate is actually 75% in 2018/19 (refillable beer containers were returned at a rate of 97%).

^{xxxvi}CM Consulting Inc. November 2020. “Who Pays What: An Analysis of Beverage Container Collection and Costs in Canada.” <<https://www.cmconsultinginc.com/wp-content/uploads/2021/02/WPW-2020-FINAL-JAN-30.pdf>>

^{xxxvii}ibid.

^{xxxviii}If refillable containers are included, Nova Scotia’s total return rate is actually 84% in 2018/19 (refillable beer containers were returned at a rate of 97%).

^{xxxix}CM Consulting Inc. November 2020. “Who Pays What: An Analysis of Beverage Container Collection and Costs in Canada.” Accessed from <<https://www.cmconsultinginc.com/wp-content/uploads/2021/02/WPW-2020-FINAL-JAN-30.pdf>>

^{xl}If refillable containers are included, Ontario’s total return rate is actually 83% in 2019 (refillable beer containers were returned at a rate of 97%).

^{xli}CM Consulting Inc. November 2020. “Who Pays What: An Analysis of Beverage Container Collection and Costs in Canada.” Accessed from <<https://www.cmconsultinginc.com/wp-content/uploads/2021/02/WPW-2020-FINAL-JAN-30.pdf>>

^{xlii}If refillable containers are included, PEI’s total return rate is actually 86% in 2019 (refillable beer containers were returned at a rate of 97%).

^{xliii}CM Consulting Inc. November 2020. “Who Pays What: An Analysis of Beverage Container Collection and Costs in Canada.” Accessed from <<https://www.cmconsultinginc.com/wp-content/uploads/2021/02/WPW-2020-FINAL-JAN-30.pdf>>

^{xliv}ibid.

^{xlv}ibid.

^{xlvi}ibid.

^{xlvii}“Return and Earn Annual Statutory Report 2019-20.”

<<https://www.parliament.nsw.gov.au/tp/files/79418/Return%20and%20Earn%20Annual%20Statutory%20Report%202019-20.PDF>>

^{xlviii} Includes returns through the DRS network and curbside recycling programs (MRF operators)

^{xlix} Container Exchange (CoEX). "Annual Report 2019-2020."

<<https://containerexchange.com.au/wp-content/themes/coex160620/annual-report/dist/img/ce-report.pdf>>

ⁱ Northern Territory Environment Protection Authority. 18 September 2020. Environment Protection (Beverage Containers and Plastic Bags) Act - Annual Report 2019-20.

<https://ntepa.nt.gov.au/__data/assets/pdf_file/0004/946093/cds-2019-2020-annual-report.pdf>

ⁱⁱ ACT Government. "ACT Container Deposit Scheme Annual Statutory Report 2019-20." Accessed from <https://www.exchangeforchange.com.au/who-we-are/publications-and-reports.html>

ⁱⁱⁱ South Australia Environmental Protection Authority. "Container Deposits." www.epa.sa.gov.au/environmental_info/container_deposit

ⁱⁱⁱ Personal communication with Carmit Bardugo, Asofta Recycling Corporation, October 7, 2019.

^{liv} Kosrae State Solid Waste Management Strategy 2018-2027 (Action Plan: 2018-2022). <<https://www.sprep.org/attachments/VirLib/Palau/kosrae-solid-waste-management-strategy.pdf>>

^{lv} Republic of Palau, Division of Solid Waste Management Bureau of Public Works. "Beverage Container Recycling Program Annual Report FY-2018."

^{lv} Report provided by Alice Leney (alice@coolcard.co.nz) in April 2020 titled "Annual Report to the Nitijela for the CDL Recycling Sysm for Year 2019"

^{lv} Personal communication with Alice Leney (alice@coolcard.co.nz), April 2020