



FACT SHEET

Deposit return systems: How they perform

May 2024

reloop resources
remain
resources

Deposit return systems: How they perform

- › **Jurisdictions with deposit return systems (DRS) consistently achieve higher recycling rates** for drinks containers than those relying solely on municipal kerbside collection programmes.
- › Generally, **a direct correlation exists between the deposit value and the return rate**—higher deposits typically foster increased participation in the scheme, resulting in higher returns.
- › **The highest performing systems are those utilising a return-to-retail (R2R) redemption model**, where retailers selling deposit-bearing drinks are legally obligated to accept empty containers from consumers and refund the deposit.

Introduction

Over the past decade, there has been a remarkable surge in the adoption of deposit return systems (DRSs) aimed at collecting and recycling single-use drinks containers, spanning 56 jurisdictions as of May 2024. The Republic of Ireland (February 2024), Hungary (January 2024), Romania (November 2023), and Victoria (Australia) (November 2023) mark the latest additions to this expanding trend.

The driving force behind the expanding presence of deposit systems worldwide lies in their proven effectiveness in attaining high recycling rates.

Modern deposit systems, like those in Europe, can achieve a 90% recycling rate, with minimal subsequent production losses. In contrast, even in the most favourable scenarios for beverage container collection via kerbside recycling programmes, achieving a 60% recycling rate is virtually impossible after factoring in loss rates.

The Canadian province of Ontario (population 15.9 million) offers a real-world example of this phenomenon. There, alcoholic beverages are covered by the province's DRS, which achieved a 75% rate of return in 2023. The remaining beverage containers, which are recovered via municipal kerbside systems, are returned at a rate less than 50%. In Europe, the average recycling rate for PET beverage bottles in kerbside collection systems stands at 47%, versus 94% for deposit systems.¹ A recent report by Eunomia Research and Consulting found that nine of the 10 US states with the highest recycling rates have a DRS.²

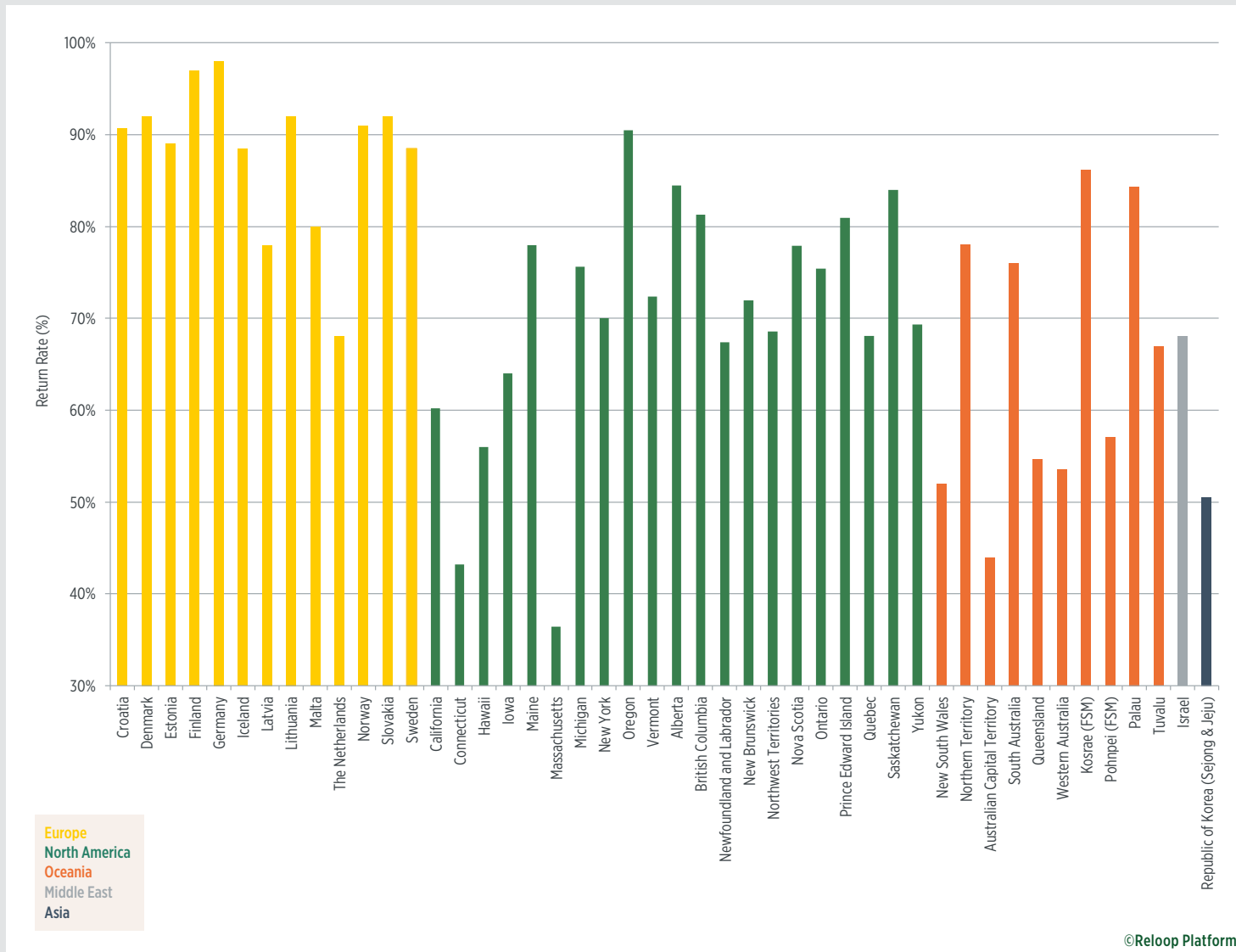
Higher recycling rates directly translate to a reduction in the number of containers going to waste. According to data from Reloop's [What We Waste report](#), in 2017, jurisdictions with a DRS experienced wastage levels that were on average 78.6% lower than comparable jurisdictions without deposits.³ To put it in per capita terms, deposit jurisdictions exhibited an average wastage rate of 24 containers per person annually, contrasting starkly with the non-DRS jurisdictions, where this rate soared to over four and a half times higher at 112 containers per person per year.⁴

The EU's new Packaging and Packaging Waste Regulation (PPWR), provisionally agreed to by the European Parliament and Council in the spring of 2024, represents a significant milestone in the global recognition of the effectiveness of DRS. This regulation mandates Member States to establish a DRS for beverage cans and plastic bottles, aiming to achieve a 90% collection for recycling rate by 2029. This provision reinforces the acknowledgement of DRS as the most effective method for achieving high levels of collection and recycling of beverage packaging.

Figure 1 presents the overall beverage container return rates for DRSs globally as of April 2024 (with data primarily from 2022 and 2023).



Figure 1
Latest Return Rates for Single-Use Drinks Containers in Deposit Return Systems Worldwide



How is performance measured?

In a deposit system, performance is typically measured using the collection rate, which represents the number of containers collected for recycling in a specific jurisdiction versus the number of containers sold. Calculating the collection rate in a DRS is straightforward due to the deposit/refund mechanism, which allows for precise tracking of sales and collections down to the last unit. In contrast, assessing the performance of kerbside collection programmes is more complex because drinks packaging is collected alongside other materials like paper and non-drinks containers. This is why collection rates for non-DRS containers tend to be over-estimated, as they report on collection rather than what is actually recycled. Moreover, these rates may not consider free-riders and may include the tonnage of imported recyclables. In a DRS, collection is synonymous with recycling because contamination is low and quality is high. Additionally, DRS collection rates are typically based on unit counts, not on weight, providing a more accurate reflection of recycling outcomes. In some cases, tonnage data is also available, presenting a valuable cross-checking opportunity to verify the data, further supporting accurate reporting and fraud mitigation.

What factors have the most impact on performance?

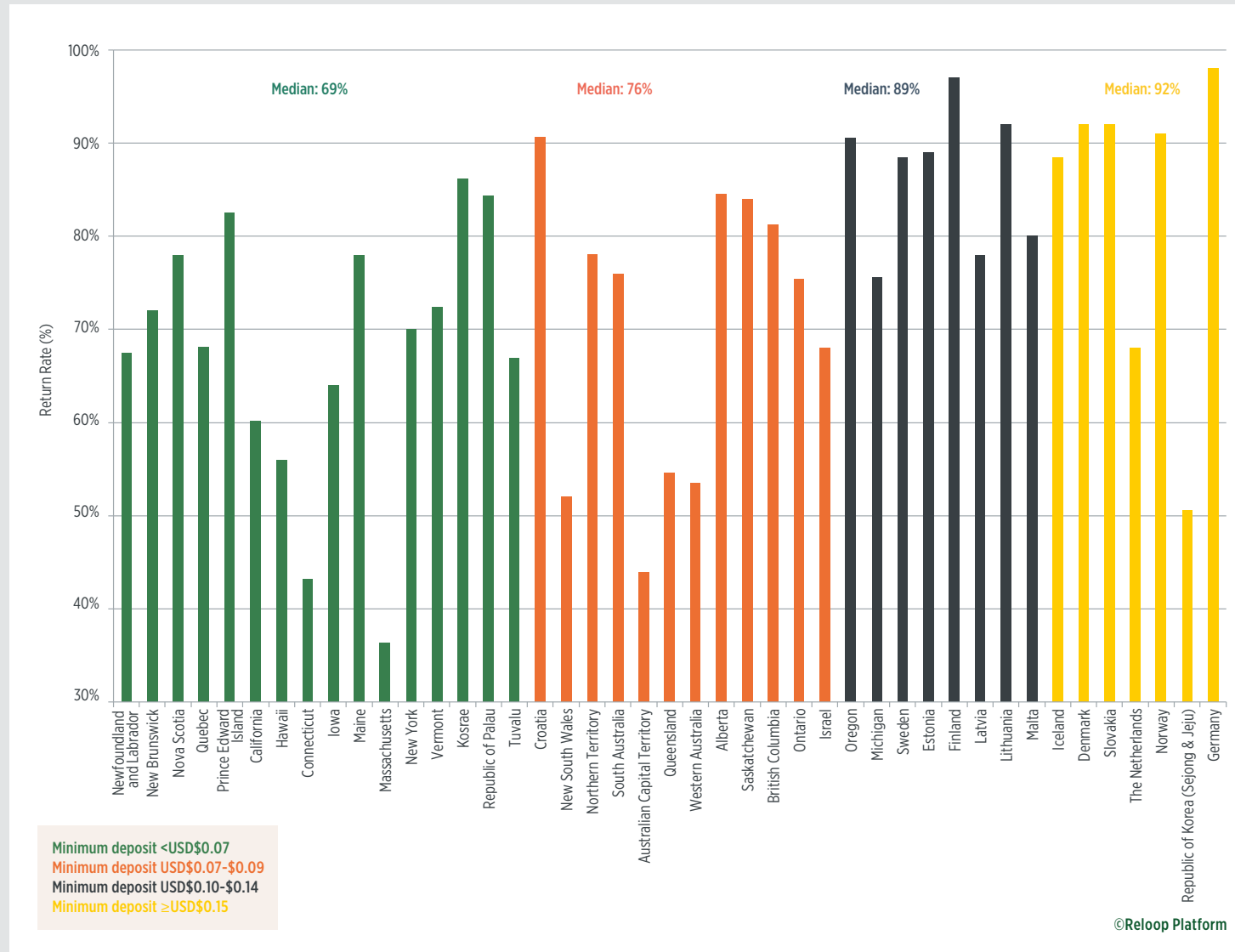
DEPOSIT VALUE

While various factors can impact system performance, evidence from systems in place around the world indicates that the value of the deposit/refund plays a significant role, with higher values correlated to increased collection rates.

When the deposit is set too low, consumers may experience “return fatigue,” questioning the effort required to return empty containers for minimal financial reward. In today’s context, a 5-cent deposit holds little incentive, whereas a 10-cent deposit presents a different narrative. All research data on DRS in action suggests that beverage container deposits should be set at a minimum of 10-cents to effectively drive participation and returns.

Figure 2 shows return rates in DRS jurisdictions by minimum deposit value (USD). It is evident that lower return rates in Canada, the US, and Australia are associated with lower deposit values. Based on the latest available data, our research indicates that the median return rate in jurisdictions with a minimum deposit of USD\$0.06 (€0.06) or less was just 69%. This rate increases to 76% for programmes with a minimum deposit of between USD\$0.07 (€0.07) and USD\$0.09 (€0.09), and to 89% for programmes where the minimum deposit is USD\$0.10 (€0.10) or higher. The highest median return rate (92%) can be seen in jurisdictions that charge a deposit of at least USD\$0.15 (€0.15) (nearly all of these programmes are in Europe).

Figure 2
Latest Return Rates in Deposit Return Systems, Globally, by Minimum Deposit Value (USD)



Some of the most robust evidence that deposit levels have an impact on beverage container return rates comes from programmes that have increased deposits over time. The next section will present a series of case studies exemplifying this dynamic relationship.

Case studies

Norway

In 2017, Norway's deposit system achieved return rates of 84.3% for cans and 87.8% for plastic bottles. Still, around 180 million cans and bottles were not being returned for recycling. To further enhance return rates, the deposit on bottles and cans smaller than 500ml doubled from NOK 1 to NOK 2 in September 2018, marking the first increase since the programme's inception in 1990. The deposit on bottles and cans larger than 500ml also rose from NOK 2 to NOK 3. Return rates surged to 93% cans and 92% for plastic bottles by the end of 2020—just two years post the deposit increase.

Oregon, US

In April 2017, Oregon doubled the deposit value on all drinks containers from USD\$0.05 to USD\$0.10. This increase together with enhanced return options such as drop-and-go bags, had an immediate and significant impact, with the return rate soaring to 73% by the end of 2017, escalating further to 81% in 2018 and reaching 86% by the close of 2019.

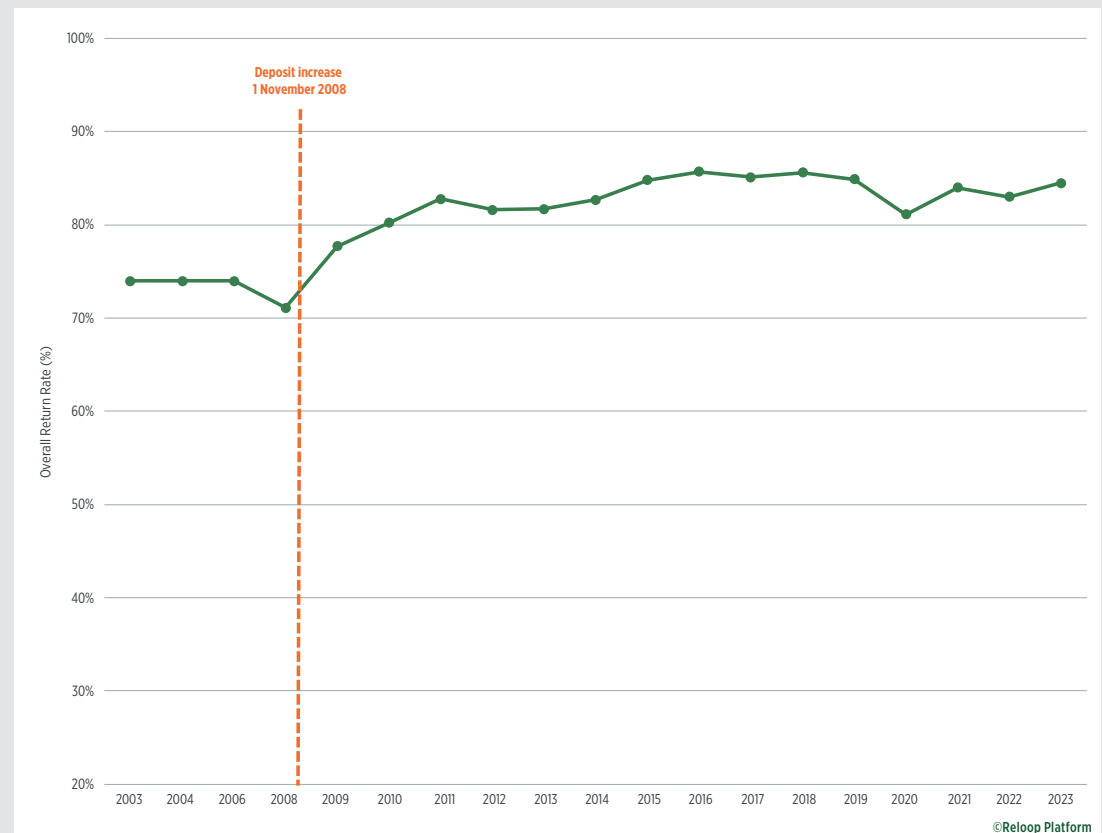
Despite a temporary decline in 2020 due to the pandemic, the return rate rebounded to 90.5% in 2023, solidifying Oregon's position as the US state with the highest return rate. It's worth noting that in 2023 (most recent year for which return rate data is available), Oregon was only one of two states (Michigan being the other) with a USD\$0.10 minimum deposit value.¹ As of the end of 2019, these two states showed the highest return rates in the country.

¹In January 2024, the state of Connecticut, which historically has had one of the lowest return rates in the US, increased the deposit from 5-cents to 10-cents. Though data is not yet available, this increase will most certainly result in higher returns.

Alberta, Canada

In 2008, Alberta increased the deposit on all drinks containers to CAD\$0.10 (up from CAD\$0.05) for containers 1L and under, and CAD\$0.25 (up from CAD\$0.20) for containers over 1L. Within just three years, the overall return rate increased by approximately 12 percentage points (see Figure 3).

Figure 3
Return Rates for Alberta (Canada)'s Deposit Return System (2003-2023)



LEVEL OF CONVENIENCE

In addition to the deposit value, the convenience level, or how easily consumers can participate, is a crucial factor influencing system performance. The world's top-performing deposit systems prioritise consumer accessibility, ensuring that returning containers is as convenient as the initial purchase.

Systems employing a return-to-retail (R2R) redemption model, where retailers are legally obligated to redeem empty containers and refund deposits, exhibit the highest return rates. Our research indicates a median return rate of 89%^{ii,iii} in DRS jurisdictions utilising a R2R redemption model, compared to just 69% in those employing a return-to-depot (redemption centre) model or hybrid system (see Figure 4).

R2R models, predominant in Europe, offer the most convenience for consumers, allowing them to return containers during shopping (or, if they are consuming their beverage outside of the home, to the nearest convenient location, which may be a shop or other local hub), enhancing participation without the need for expensive system-specific infrastructure.

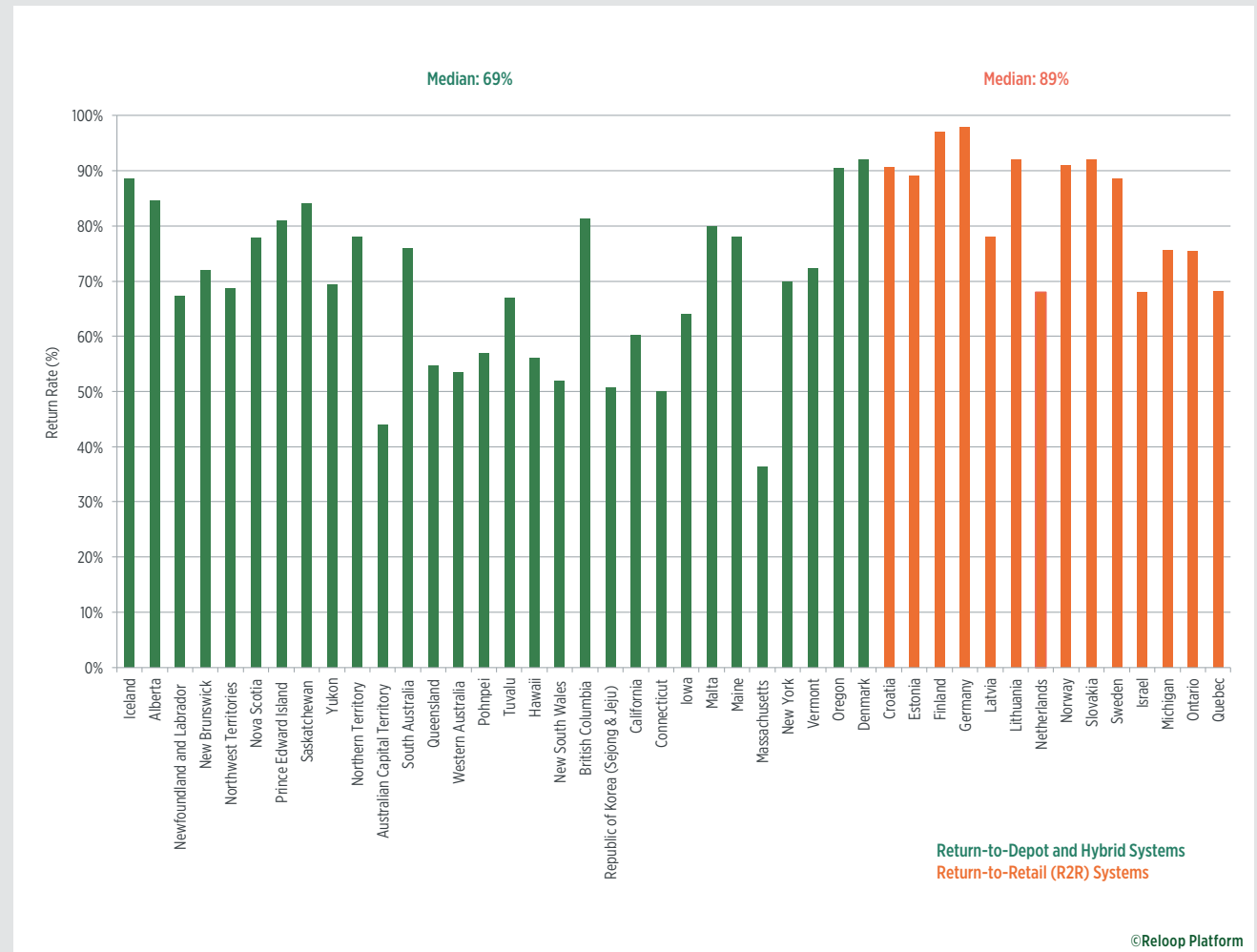
This understanding sets the stage for the case studies to follow, which illustrate the impact of convenient redemption options on return rates through real-world examples.

ⁱⁱ Since November 1, 2023, Quebec's DRS has been transitioning towards a hybrid redemption model, although it still predominantly operates as a return-to-retail (R2R) system. As of the time of publication of this fact sheet, the infrastructure for hybrid depots is not yet in place. Prior to this transition (including 2022, the latest year for which return rate data is available), it functioned solely on the R2R model. The transition involves expanding to include non-retail return locations as well.

ⁱⁱⁱ The median return rate for R2R jurisdictions is expected to increase over the next couple years due to recent developments, such as the Netherlands adding cans to its programme in 2023. Additionally, Latvia's system established in 2022, is still in its nascent stages. As it matures, we anticipate that it will achieve higher rates of return, thereby positively impacting the median rate for R2R jurisdictions.

Figure 4

Latest Return Rates for Single-Use Drinks Containers in Deposit Return Systems, by Redemption Model



Case studies

Germany

In Germany, retailers and other final distributors of deposit-bearing beverages are obligated to accept the same type of containers they sell (e.g., a retailer exclusively selling PET bottles is required to take back all PET bottles, irrespective of size or brand, but is not obliged to take back aluminium or glass containers). Small retailers (with a floor area less than 2,150 square feet) are only required to take back containers of the beverages they sell, with no limit. Germany boasts around 130,000 redemption locations, which translates into a ratio of one return point for every 640 residents. The success of this system is evident in the country's outstanding 98% return rate, the highest in Europe.

Norway

In Norway, legislation mandates that all retailers selling deposit-bearing beverages must accept empty containers, fostering a remarkably convenient redemption network. With over 15,000 return points distributed across the country, equating to one for every 360 persons, consumers enjoy ease in redeeming deposits without having to travel far, undertake a special journey to return their empties, or sort their containers and return to a number of shops with different brands. Adding to the convenience, Norway further facilitates redemption through a home delivery service offered by retailers, accommodating even online shoppers. Despite less than 1% of retail sales occurring online, the Norwegian system extends its accessibility to online purchasers of beverages, with delivery drivers readily accepting empty containers.⁷ This high level of convenience contributes to Norway's impressive overall return rate of 92% for 2023.

Michigan, US

Until COVID-19 forced a system shutdown, Michigan's redemption rate was nearly 90%, the highest in the US. The success of Michigan's container deposit law can be attributed, in part, to the fact that it utilises a R2R redemption model (the only US state to do so). All beverage retailers are required to take back empty containers of the same kind, size, and brand that they sell; there are no opt-out provisions.

California, US

California serves as a stark example of how an inconvenient redemption system can undermine overall performance. The state operates a hybrid redemption model, where redemption centres operate alongside retail stores to accept returns, with no take-back obligation for retailers. Retailers are only required to accept empties if they fall outside a designated "convenience zone," determined by the distance from a redemption centre. Moreover, retailers can opt out by paying a daily fee of USD\$100 to the system operator^{iv}, a provision that is largely unenforced in practice.

With a mere 1,219 redemption centres across the state, translating to less than one per 30,000 residents, California's inconvenient redemption network hinders residents from easily obtaining refunds, essentially turning the deposit into a tax. As the number of redemption centres dwindled in recent years, the state's redemption rate witnessed a consistent decline, dropping from 74% in 2013 to a mere 60% in 2022 (excluding containers placed in kerbside recycling bins).

^{iv} Starting on January 1, 2025, retailers will no longer have this option. As of this date, retailers in areas without redemption centres must either redeem containers in-store or join new dealer (retailer) cooperatives. They will also be required to submit a plan to CalRecycle (the system operator) on how they will buy back containers, assess fees on dealers, report to CalRecycle, and meet standards for convenient redemption and material recycling.

Programme scope

The performance of a DRS is also influenced by the beverages, container sizes, and material types included in the programme. In general, the wider the scope of the DRS, the more effective it will be.

Excluding even a single type of material or beverage could result in the wastage and littering of millions of recyclable containers. A comprehensive programme scope minimises consumer confusion regarding which containers are eligible for a refund, thereby fostering increased participation. Including all container types also helps to create a fair playing field among beverage producers, and avoids the possibility of consumers switching to container types excluded from the DRS to avoid perceived price increases.¹⁰

With regards to material type, most programmes in operation today include plastic, metal (aluminium and steel), and glass. Several programmes also include liquid paperboard (LPB) (i.e., cartons) and multi-material pouches. LPB is currently included in most Canadian DRSs as well as several Australian programmes and there is a growing trend to include such containers in upcoming new DRSs. Modern reverse vending technology is equipped to handle all varieties of drink containers, thereby expanding the scope of collectible items. This advancement not only accommodates current material types but also paves the way for incorporating new materials into future DRSs.

In some jurisdictions, DRS legislation is more restrictive and only includes certain material types. For example, glass bottles are not covered by deposit in the Netherlands, Norway, Republic of Ireland, Slovakia, or Sweden. In Malta, drinks packaged in cartons, pouches, or HDPE containers are excluded. Up until recently (January 2023), HDPE containers were also excluded from Connecticut's DRS, but this is no longer the case. The Netherlands' DRS used to exclude metal, however, the system expanded to drinks cans in 2023.

Just as including a wide scope of container types is important, so is ensuring that the programme covers a wide range of beverage types. Most deposit systems include a range of alcoholic and non-alcoholic beverages, including bottled water (still and sparkling), carbonated soft drinks, sports drinks, juices and nectars, beer, hard cider, wine, spirits, plant-based beverages. Although milk and dairy drinks are still excluded from many programmes, more and more are beginning to add them (e.g. Germany in 2024). Legislation should be designed in a way that empowers the regulatory authority or managing body to ensure that new beverages placed on the market can be added to the programme.

As for container size, the typical size range for DRS eligible containers is 100ml up to 3L (0.03-0.79 gallons). Size determinations are usually guided by the prevalence of commonly consumed volumes and the technological capabilities for efficiently redeeming containers.¹¹

Case studies

Queensland, Australia

In November 2023, the Queensland Government expanded its DRS to include glass wine and spirit bottles. Between then and March 2024, the scheme recorded a 13.5% increase in the number of glass bottles returned for recycling.⁸

Denmark

Despite having one of the world's highest rates of beverage packaging recycling in 2018 at 90%, the Danish Government was still unsatisfied. To collect even more beverage containers, it expanded the DRS to include single-use juice and concentrate bottles starting in 2020. This decision was expected to lead to an additional 52 million bottles being recycled annually and an increase in the volume of recyclable packaging in the system by 4-5%.⁹

Below are some examples of DRSs that encompass both a well-defined and broad scope of containers and beverages. These systems effectively cover the range of beverages and containers sold today, distinguishing themselves from some deposit systems that have remained unchanged in scope since their inception in the 1970s and 80s.

	Oregon (US)	British Columbia (Canada)	Romania	Hungary
Beverage type	<p>Dependent on container size:</p> <p><u>Containers 118ml to 1.5L (0.03 gal to 0.4 gal):</u> coffee/tea (even if they contain milk), energy and sports drinks, fruit and vegetable juice (even if not 100%), juice smoothies, coconut water, non-alcohol wine, hard cider if alcohol content $\leq 8.5\%$, marijuana drinks, protein shakes (unless marketed as a meal replacement), Kombucha, cocktail mixers.</p> <p><u>Containers $\leq 3L$ (0.79 gal):</u> soda (carbonated/sparkling drinks), beer, water</p> <p>Excluded: Distilled liquor, wine, dairy or plant-based drinks where milk (or milk substitute) is the first ingredient, infant formula, meal-replacement drinks, concentrates, growlers</p>	<p>All sealed, ready-to-drink alcohol and non-alcohol drinks</p> <p>Excluded: Infant formula, meal replacements, dietary supplements, coffee cream and other coffee additives, whipping cream, buttermilk, drinkable yogurt and kefir</p>	<p>Beer, beer mixes, alcohol beverage mixes, cider, other fermented drinks, juices, nectars, soft drinks, water (all types), wines and spirits</p> <p>Excluded: Milk and other milk-based drinks</p>	<p>All ready-to-drink or concentrated beverages</p> <p>Excluded: Milk and milk-based beverages, bottles of special shapes and sizes that cannot be returned by RVMs</p>
Container material type	Plastic, metal, glass	Plastic (including polystyrene cups), metal (aluminium, bimetal), glass, gable top, aseptic, pouches, bag-in-box	Plastic, metal, glass	Plastic, metal, glass
Container size range	118ml to 3L (0.03 gal to 0.79 gal) (dependent on content)	All	100ml to 3L (0.02 gal to 0.79 gal)	100ml to 3L (0.03 to 0.79 gal)

A closer look at the performance of deposit systems by global region

This section offers a detailed breakdown of performance by global region. When analysing the data, it's crucial to acknowledge the variations in performance measurement methodologies across jurisdictions; while some system operators report a 'collection rate', others report a 'recycling' or 'redemption rate.' For the sake of consistency and because it's often unclear how performance is measured in each programme, this fact sheet uses the term 'return rate' for analysis purposes.

Furthermore, it's noteworthy that while certain operators calculate performance based on weight (e.g. Estonia), most systems measure and report return rates on a unit basis, dividing units returned by units sold. Some operators, like Infinitum in Norway and Encorp Pacific in British Columbia, provide data on both weight-based and unit-based return rates. Considering the minimal process loss observed in DRSs, as discussed earlier, any discrepancies between these rates are generally insignificant.

Another consideration is that some programmes choose to include deposit containers collected through other means, such as kerbside systems and mixed waste sorting, in their overall return rate. Based on our existing knowledge, this reporting practice is used in some North American programmes like British Columbia and California. It's worth mentioning that while all programmes inevitably collect some deposit containers through other means, only a few programmes explicitly measure that and provide a breakdown of how many containers were collected in each system. This is the case in Australia, for example, as well as Newfoundland and Labrador (Canada), Iceland, and Norway. This variation in reporting practices emphasises the need for careful interpretation and consideration when comparing return rates across different jurisdictions.

Europe

Based on the latest data available, the median return rate in European countries with DRS is 91%. Several countries consistently achieve annual return rates above 90%, with Germany leading at an impressive 98% (see Table 1 and Figure 5). Other countries with return rates in the 90s include Finland, Norway, Denmark, Croatia, Lithuania, and Slovakia.

Slovakia stands out as a notable success story. The country's DRS was introduced in January 2022, and its collection target for the first year of operation was set at 60%. Remarkably, it not only met but exceeded this goal by achieving an impressive collection rate of 71%. In 2023, the system's second year, a remarkable 92% of all deposit-bearing containers were collected, surpassing the legislated 90% target for 2025, accomplishing this feat two years ahead of schedule.

A comparable success trajectory unfolded in Lithuania. Before the February 2016 launch of its DRS, only one-third of all beverage containers were recycled. The system operator aimed for a 55% return rate in 2016 and far exceeded that mark, achieving a 74% return rate by the end of the first year. By the end of the second year, the return rate had further soared to an impressive 92%.

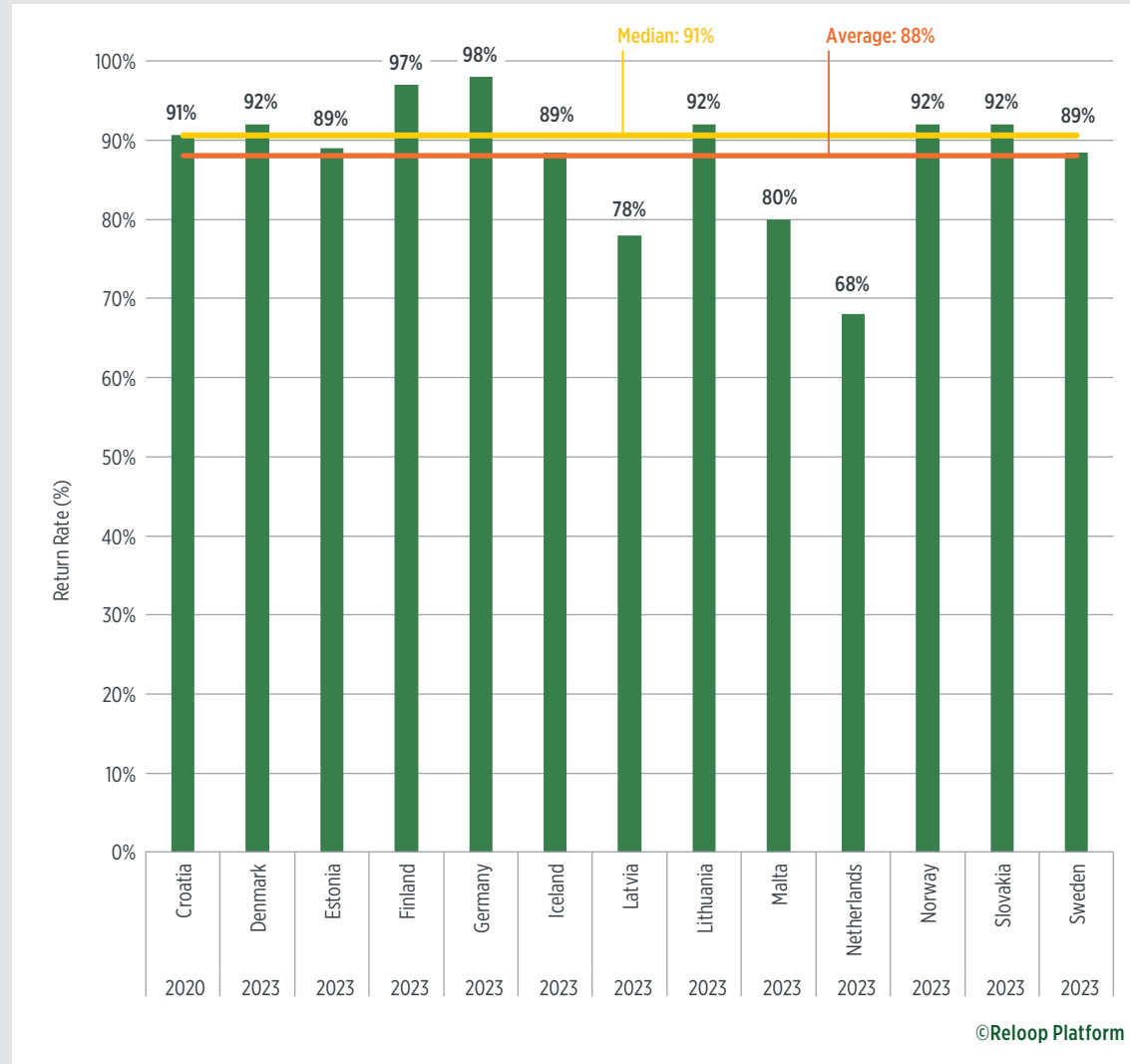
Latvia presents yet another compelling success story, underscoring the transformative potential of DRS in meeting and exceeding recycling targets. Prior to the scheme's implementation in February 2022, the collection rate for plastic bottles stood at 45%. Within a mere two years of the programme's operation, by February 2024, the PET bottle return rate surged to 82%. Refillables have also witnessed a substantial increase, jumping from 50% before the scheme's implementation to an outstanding 90% by February 2024. With this, Latvia has already surpassed the EU Single-Use Plastic Directive's 77% return rate target for 2025, achieving this milestone two years ahead of schedule.

Table 1
Return Rates for Single-Use Drinks Containers in Deposit Return Systems in Europe

Country	Data Year	Refund Value	Redemption System	Total Return Rate	Material Specific Return Rates
Croatia	2020	0.5 HRK (€0.07, USD\$0.07)	R2R	91% ¹⁴	Metal (81%), PET (88%), Single-use glass (93%)
Denmark	2023	1-3 DKK (€0.13-€0.40, USD\$0.14-\$0.43)	R2R	92% ¹⁵	Metal (93%), PET (91%), Single-use glass (88%)
Estonia	2023	€0.10 (USD\$0.11)	R2R	89% ¹⁶	Metal (85%), PET (89%), Single-use glass (90%)
Finland	2023	€0.10-€0.40 (USD\$0.11-\$0.43)	R2R	97% ¹⁷	Metal (98%), PET (90%), Single-use glass (99%)
Germany	2023	€0.25 (USD\$0.27)	R2R	98% ¹⁸	Not available
Hungary	-	HUF 50 (€0.13, USD\$0.14)	R2R	Not available	Not available
Iceland	2023	20 ISK (€0.12, USD\$0.13)	Depot	89% ^{19,20}	Metal (90%), PET (88%), Single-use glass (84%)
Latvia	2023	€0.10 (USD\$0.11)	R2R	78% ²¹	Metal (73%), PET (82%), Single-use glass (73%)
Lithuania	2023	€0.10 (USD\$0.11)	R2R	92% ²²	Metal (94%), PET (91%), Single-use glass (89%)
Malta	2023	€0.10 (USD\$0.11)	Hybrid	80% ²³	Metal (80%), PET (81%), Single-use glass (74%)
The Netherlands	2023	€0.15-€0.25 (USD\$0.16-\$0.27)	R2R	68% ^{24,25}	Metal (50%), Plastic <1L (70%), Plastic 1-3L (88%)
Norway	2023	2-3 NOK (€0.17-€0.26, USD\$0.19-\$0.28)	R2R	92% ²⁶	Metal (92%), PET (91%)
Republic of Ireland	-	€0.15-€0.25 (USD\$0.16-\$0.27)	R2R	Not available	Not available
Romania	-	0.50 RON (€0.10, USD\$0.11)	R2R	Not available	Not available
Slovakia	2023	€0.15 (USD\$0.16)	R2R	92% ²⁷	Metal (93%), Plastic (92%)
Sweden	2023	1-2 SEK (€0.09-€0.18, USD\$0.09-\$0.19)	R2R	89% ²⁸	Metal (90%), PET (86%)

*Exchange rate conversion as of February 5, 2024.

Figure 5
Overall Return Rates for Single-Use Drinks Containers in Deposit Return Systems in Europe, by Country



North America

In North America, our analysis indicates that the median return rate in US states with DRS stands at 67%, with Oregon leading the way at an impressive 91% (see Figure 6). Currently, no other state currently boasts a return rate of 80% or higher, with Michigan being the next top performer after Oregon, achieving a 76% rate of return in 2022. On the other end of the spectrum, Massachusetts and Connecticut record the lowest return rates in the US, at 36% and 43%, respectively. It's important to highlight that Connecticut is poised to witness an uptick in return rates in the coming years, given its recent decision to double the deposit value from USD\$0.05 to \$0.10 in January 2024.

If we look at material-specific return rates, analysis by the Container Recycling Institute²⁹ (CRI) reveals that more than three quarters (77%) of aluminium cans with a deposit were returned nationwide in 2019, compared to 36% of cans lacking a deposit. And according to CRI, the differences for bottles are even more pronounced: 57% for PET bottles on deposit vs. 17% for non-deposit PET plastic, and 66% vs. 22% for non-deposit glass containers.

Table 2
Return Rates for Single-Use Drinks Containers in Deposit Return Systems in the United States

State	Data Year	Refund Value (USD)	Redemption System	Total Return Rate	Material Specific Return Rates
California	2022	\$0.05-\$0.10 (€0.05-€0.09)	Hybrid	60% ³⁰	Aluminium (67%), PET (62%), HDPE (49%), Single-use glass (58%)
Connecticut	2023	\$0.10** (€0.10)	Hybrid	43% ³¹	Not available
Hawaii	2022-23	\$0.05 (€0.05)	Redemption Centre	56% ³²	Not available
Iowa	2016	\$0.05 (€0.05)	Hybrid	65% ³⁴	Metal (62%), PET (51%), Single-use glass (80%)
Maine	2022	\$0.05-\$0.15 (€0.05-€0.14)	Hybrid	78% ³⁵	Not available
Massachusetts	2023	\$0.05 (€0.05)	Hybrid	36% ³⁶	Not available
Michigan	2022	\$0.10 (€0.09)	R2R	76% ^{37,38}	Not available
New York	2022	\$0.05 (€0.05)	Hybrid	70% ³⁹	Not available
Oregon	2023	\$0.10 (€0.09)	Hybrid	91% ⁴⁰	Not available
Vermont	2022	\$0.05-\$0.15 (€0.05-€0.14)	Hybrid	72% ⁴¹	Not available

*Exchange rate conversion as of February 5, 2024.

**On January 1, 2024, the deposit/refund amount on beverage containers sold in Connecticut increased from USD\$0.05 to USD\$0.10, which will likely result in higher return rates in the coming years.

Figure 6
Overall Return Rates for Single-Use Drinks Containers in Deposit Return Systems in the US, by State



In Canada, provinces and territories employing DRS achieve a median return rate of 75% for eligible single-use drinks containers (see Table 3 and Figure 7). A number of provinces, including Alberta (85%), British Columbia (81%), Prince Edward Island (81%), and Saskatchewan (84%) attain even higher rates of return.

Table 3
Return Rates for Single-Use Drinks Containers in Deposit Return Systems in Canada

Province / Territory	Data Year	Refund Value (CAD\$)	Redemption System	Total Return Rate	Material Specific Return Rates
Alberta	2023	\$0.10-\$0.25 (€0.07-€0.17, USD\$0.07-\$0.18)	Depot	85% ⁴²	Aluminium (89%), Bi-metal (96%), Plastic (82%), Single-use glass (89%), Tetra (72%), Gable top (76%), Pouches (58%), Bag-in-box (52%)
British Columbia	2022	\$0.10 (€0.07, USD\$0.07)	Hybrid	81% ^{43, 44}	Aluminium (87%), Bi-metal (84%), Plastic (74%), Single-use glass (87%), Tetra (56%), Gable top (65%), Pouches (21%), Bag-in-box (49%)
Newfoundland and Labrador	2022-23	\$0.05-\$0.10 (€0.03-€0.07, USD\$0.04-\$0.07)	Depot	67% ⁴⁵	Aluminum (70%), Bi-metal (40%), PET (70%), Other plastics (25%), Single-use glass (105%), Tetra (37%), Gable top (39%)
New Brunswick [1]	2022	\$0.05-\$0.10 (€0.03-€0.07, USD\$0.04-\$0.07)	Depot	72% ⁴⁶	Aluminium (78%), Steel (53%), Plastic (68%), Single-use glass (80%), Tetra/Gable top (32%), Other (34%)
Northwest Territories	2022-23	\$0.10-\$0.25 (€0.07-€0.17, USD\$0.07-\$0.18)	Depot	69% ⁴⁷	Aluminium (74%), Bi-metal (47%), Plastic (66%), Single-use glass (89%), Tetra/Gable top (43%), Pouches (33%) Bag-in-box (28%)
Nova Scotia	2022-23	\$0.05-\$0.10 (€0.03-€0.07, USD\$0.04-\$0.07)	Depot	78% ⁴⁸	Aluminium (85%), Bi-metal (54%), PET/HDPE (75%), Single-use glass (81%), Tetra (37%), Gable top (50%), Other (27%)
Ontario	2023	\$0.10-\$0.20 (€0.07-€0.13, USD\$0.10-\$0.15)	R2R	75% ⁴⁹	Aluminium (76%), PET (42%), Single-use glass (77%), Tetra/Bag-in-box (26%)
Prince Edward Island [2]	2022	\$0.05-\$0.10 (€0.03-€0.07, USD\$0.04-\$0.07)	Depot	81% ⁵⁰	Aluminium (87%), Steel (13%), PET (76%), Single-use glass (78%), Tetra/Gable top (26%), Other (55%)
Quebec [3]	2022	\$0.10-\$0.25 (€0.07-€0.17, USD\$0.07-\$0.18)	Prior to 1 November 2023: R2R Since 1 November 2023: Transitioning to a hybrid system	68% ⁵¹	Metal (71%), Plastic (54%), Single-use glass (56%)
Saskatchewan	2022-23	\$0.05-\$0.40 (€0.03-€0.27, USD\$0.04-\$0.29)	Depot	84% ⁵²	Aluminium/tin (90%), Plastic (80%), Single-use glass (92%), Cartons (59%)
Yukon	2022	\$0.05-\$0.25 (€0.03-€0.17, USD\$0.04-\$0.18)	Depot	69% ⁵³	Not available

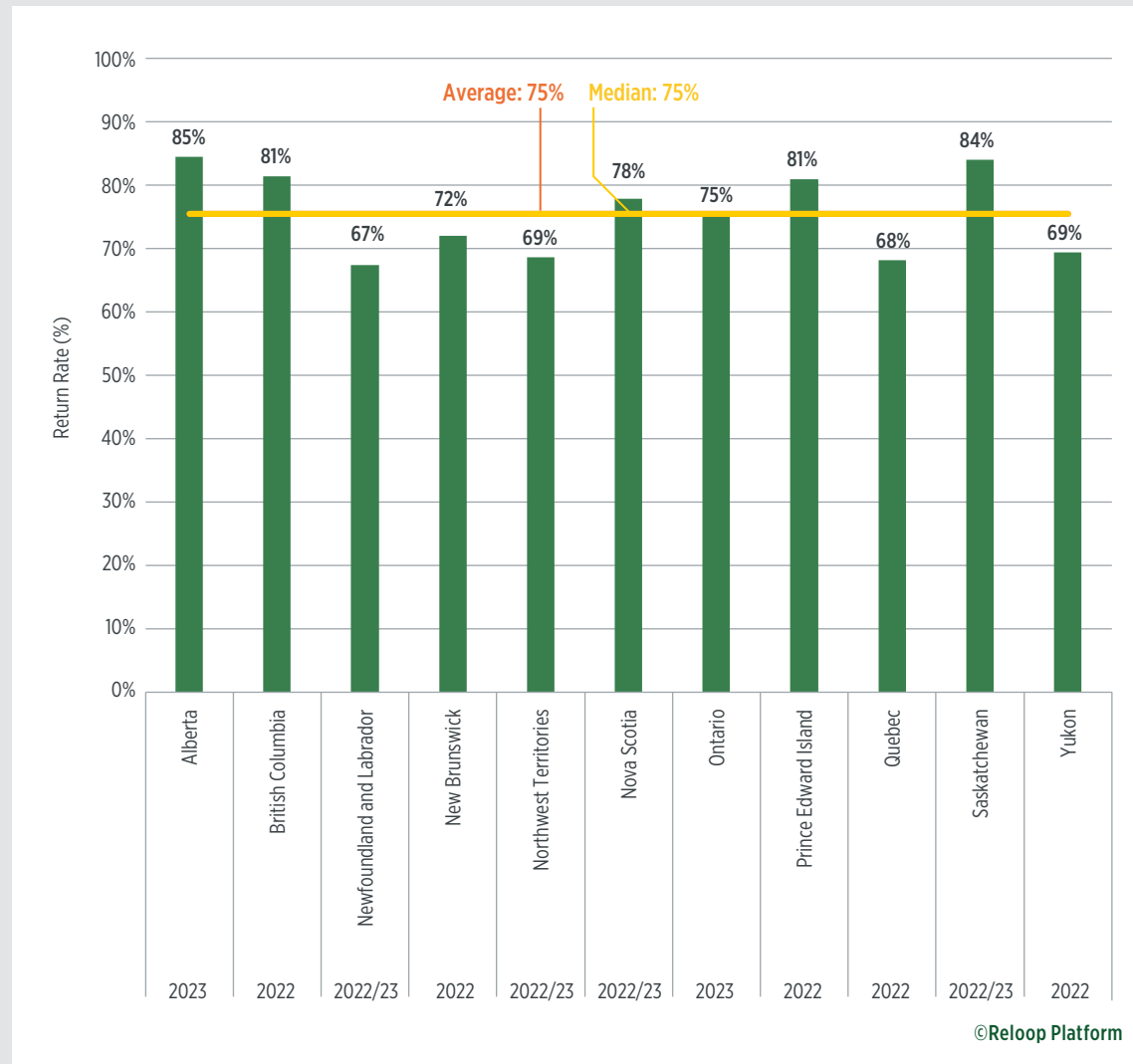
*Exchange rate conversion as of February 5, 2024.

[1] New Brunswick's migration of its DRS to a full extended producer responsibility model took effect on April 1, 2024. Prior to this, the province operated a 'half-back' deposit system, under which customers received only half of their deposit back (CAD\$0.025 or \$0.05 depending on size), when returning containers. In accordance with section 50.961(1) and (2) of the Regulation, the programme now operates as a full-back deposit system for all beverage containers.

[2] On February 29, 2024, PEI's Environment Minister announced plans were underway to double the deposit on beverage containers in order to encourage higher return rates. It is anticipated the new rates will come into effect by August 2024.⁵⁴

[3] Under Quebec's new DRS regulations which came into effect on November 1, 2023, the amount of the deposit rose to \$0.10 for most containers and \$0.25 for those 500ml or larger, and glass containers. Prior to this, the deposit ranged from \$0.05 to \$0.20. The new regulations also mean that the redemption model will be undergoing changes. Since November 1, 2023, the system is transitioning from a 100% return-to-retail model to a hybrid system with a mix of return points.

Figure 7
Overall Return Rates for Single-Use Drinks Containers in Deposit Return Systems in Canada, by Province/Territory

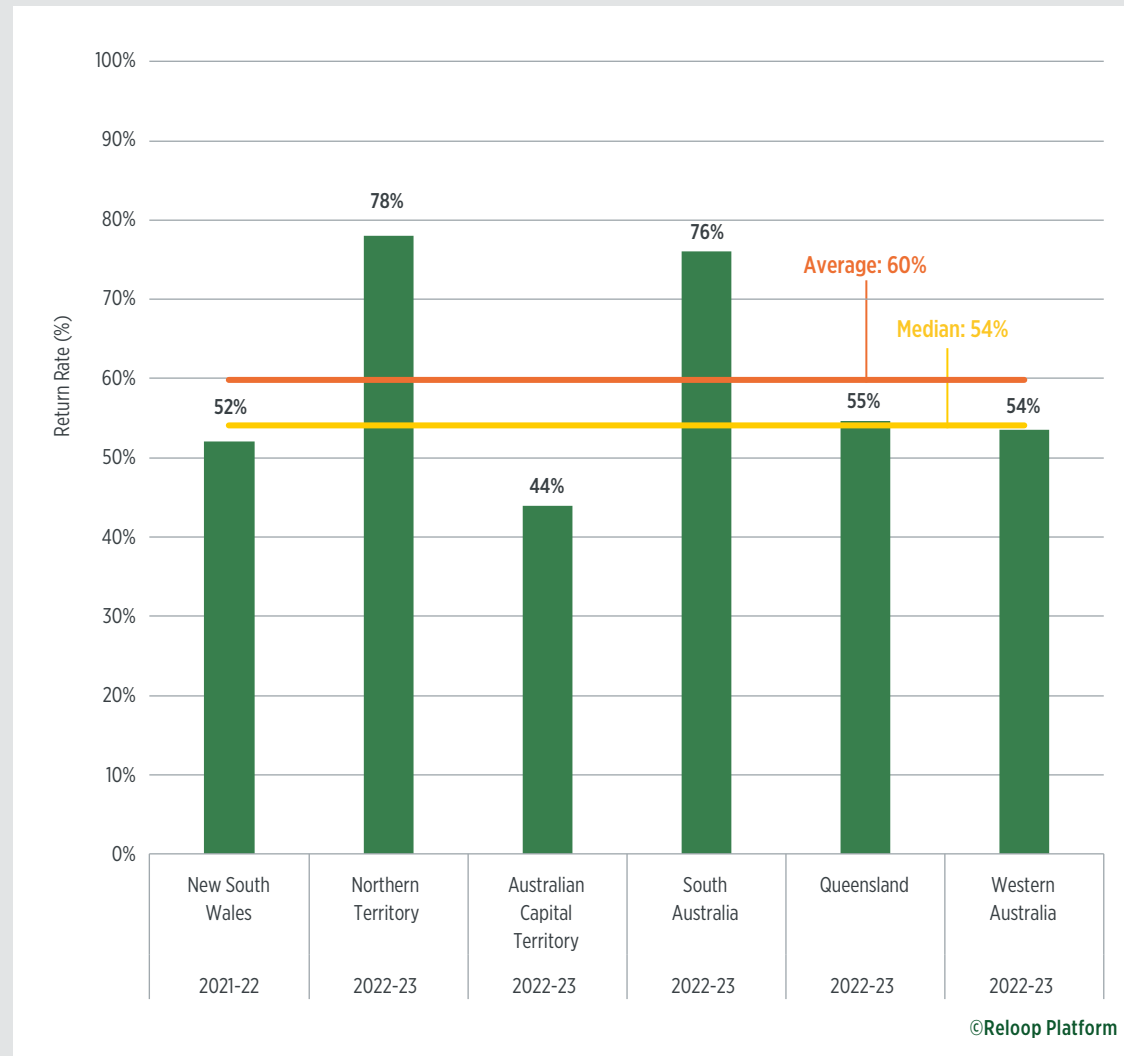


Australia

The latest data shows that in Australia, states with DRS exhibit a median return rate of 54% (see Figure 8), a figure notably lower than the median return rates observed in European or North American programmes. This discrepancy can be attributed, in part, to the recent implementation of three programmes—Queensland, Australian Capital Territory, and Western Australia—in 2018, 2018, and 2020, respectively. As these programmes mature and consumer awareness increases, return rates can be expected to rise. It is important to note that the figure excludes data from Victoria's system, launched in November 2023, as relevant data is not yet available.

Figure 8

Overall Return Rates for Single-Use Drinks Containers in Deposit Return Systems in Australia, by State



Note: The return rates shown for Northern Territory and South Australia include beverage containers collected via kerbside recycling bins and MRF operations, as these states do not provide a breakdown of return rates by collection channel (kerbside recycling vs. deposit return network only)

Table 4
Return Rates for Single-Use Drinks Containers in Deposit Return Systems in Australia

State	Data Year	Refund Value (AUD\$)	Redemption System	Total Return Rate (all collection channels)	Total Return Rate (DRS network only)	Material-Specific Return Rates (all collection channels)	Material-Specific Return Rates (DRS network only)
New South Wales	2021-22	\$0.10 (€0.06, USD \$0.07)	Hybrid	65% ⁵⁵	52% ⁵⁶	Aluminium (68%), Steel (31%), Single-use glass (75%), PET (62%), HDPE (45%), Other plastics (3%), Liquid paperboard (17%), Other material (10%)	Aluminium (57%), Steel (31%), Single-use glass (55%), PET (48%), HDPE (26%), Other plastics (3%), Liquid paperboard (17%), Other material (10%)
Queensland	2022-23	\$0.10 (€0.06, USD \$0.07)	Depot	64% ⁵⁷	55% ⁵⁸	Not available	Not available
Northern Territory	2022-23	\$0.10 (€0.06, USD \$0.07)	Depot	78% ⁵⁹	Not available	Aluminium (87%), Steel/other (27%), Single-use glass (101%), PET (58%), HDPE (25%), Liquid paperboard (41%)	Not available
Australian Capital Territory	2022-23	\$0.10 (€0.06, USD \$0.07)	Depot	70% ⁶⁰	44% ⁶¹	Aluminium (82%), Steel (7%), Single-use glass (69%), PET (65%), HDPE (87%), Other plastics (0%), Liquid paperboard (21%), Other materials (0%)	Aluminium (56%), Steel (7%), Single-use glass (43%), PET (35%), HDPE (37%), Other plastics (0%), Liquid paperboard (21%), Other materials (0%)
South Australia	2022-23	\$0.10 (€0.06, USD \$0.07)	Depot	76% ⁶²	Not available	Aluminium (81%), Single-use glass (86%), PET (67%), HDPE (63%), Liquid paperboard (51%)	Not available
Western Australia	2022-23	\$0.10 (€0.06, USD \$0.07)	Depot	63% ⁶³	54% ⁶⁴	Aluminium (65%), Steel (57%), Single-use glass (78%), PET (56%), HDPE (50%), Liquid paperboard (24%), Other materials (28%)	Aluminium (57%), Steel (57%), Single-use glass (64%), PET (48%), HDPE (31%), Liquid paperboard (24%), Other materials (28%)
Victoria	-	\$0.10 (€0.06, USD \$0.07)	Hybrid	Not available	Not available	Not available	Not available

*Exchange rate conversion as of February 5, 2024.

Pacific Island States

Despite their small size, several small Pacific islands have implemented DRS since 2017. According to the latest figures available, return rates in these island nations have ranged from 57% to approximately 86%.

Table 5
Return Rates for Single-Use Drinks Containers in Deposit Return Systems in Pacific Island Countries

State	Data Year	Refund Value (USD\$)	Redemption System	Total Return Rate	Material Specific Return Rates
Kosrae (FSM)	2017	\$0.05 (€0.05)	Depot	86% ⁶⁵	Aluminium (67%), PET (62%), HDPE (49%), Single-use glass (58%)
Pohnpei (FSM)	2017	\$0.05 (€0.05)	Depot	57% ⁶⁶	Not available
Republic of Palau	2020	\$0.05 (€0.05)	Depot	84% ⁶⁷	Not available
Tuvalu	2021	\$0.05 (€0.05)	Depot	67% ⁶⁸	Metal (62%), PET (51%), Single-use glass (80%)
Republic of Marshall Islands	2019	\$0.05 (€0.05)	Depot	Around 85% ⁶⁹	Not available
Yap (FSM)	2021	\$0.05 (€0.05)	Depot	114%**	Not available

*Exchange rate conversion as of February 5, 2024.

**Yap State return rate includes PET cooking oil bottles, which are also part of the DRS.

Middle East

In the Middle East, Israel stands as the sole country to have implemented a DRS. With a deposit of 0.3 ILS, the system applies to all PET, metal, and glass containers, irrespective of beverage type (though milk and dairy remain excluded). The latest available data indicates an overall return rate of 68%.

Table 6
Return Rate for Single-Use Drinks Containers in Israel's Deposit Return System

Country	Data Year	Refund Value (USD\$)	Redemption System	Total Return Rate	Material Specific Return Rates
Israel	2023	0.3 ILS (€0.08, USD\$0.08)	Return-to-retail	68% ⁷⁰	PET (68%), Metal (68%), Single-use glass (68%)

*Exchange rate conversion as of February 5, 2024.

Asia

The two regions of Sejong City and Jeju Island in the Republic of Korea have had a mandatory deposit system for single-use take-away cups since December 2022. In 2023, the first full year of operation, Jeju Island collected 52.8% of deposit bearing cups, while Sejong City collected 39.4%. The combined return rate for the two regions is 51%.

Table 7
Return Rate for Single-Use Drinks Containers in the Republic of Korea's Deposit Return System

Country	Data Year	Refund Value (USD\$)	Redemption System	Total Return Rate	Material Specific Return Rates
Republic of Korea (Sejong City & Jeju Island)	2023	300 KRW (€0.21, USD\$0.22)	Hybrid	51% ⁷¹	Not available

*Exchange rate conversion as of February 5, 2024.

Endnotes

- ¹ TOMRA. “Rewarding Recycling: Learnings from the World’s Highest Performing Deposit Return Systems.” https://8151194.fs1.hubspotusercontent-na1.net/hubfs/8151194/TOMRA_Rewarding_Recycling%20-%20English.pdf?hsCtaTracking=73985247-01ba-4cee-88c9-4e2851d68e6e%7C6ef0539a-aa2e-4747-b976-e36218b134cc
- ² Economia Research and Consulting. “50 States of Recycling 2.0.” <https://www.ball.com/sustainability/real-circularity/50-states-of-recycling>
- ³ Changing Markets Foundation, Break Free From Plastic, and Deutsche Umwelthilfe. “New data shows how European countries can cut 75% of drinks container waste and meet EU plastic targets.” <http://changingmarkets.org/wp-content/uploads/2021/04/What-We-Waste-European-Press-Release.pdf>
- ⁴ Reloop Platform. “What We Waste.” <https://www.reloopplatform.org/wp-content/uploads/2023/04/What-We-Waste-Reloop-Report-April-2021-1.pdf>
- ⁵ Infinitum. Annual Report 2017. https://issuu.com/infinitum-norway/docs/infinitum_annual_report_2017_pages
- ⁶ Container Recycling Institute. “California’s Container Deposit System Crisis.” <https://www.container-recycling.org/index.php/issues/the-california-crisis>
- ⁷ Valpak. “Norwegian-style Deposit Return Scheme – does the UK have the bottle?” <https://www.valpak.co.uk/norwegian-style-deposit-return-scheme-does-the-uk-have-the-bottle/>
- ⁸ Korycki, L. 25 March 2024. “Eight billion containers returned through Queensland refund scheme.” Waste Management Review. <https://wastemanagementreview.com.au/queensland-containers-refund-scheme-tops-eight-billion/>
- ⁹ The Danish Government, Ministry of Environment and Food. “Plastics Without Waste: The Danish Government’s Plastics Action Plan.” https://en.fvm.dk/fileadmin/user_upload/ENGLISH_FVM.DK/Regeringens_plastikhandlingsplan_UK.pdf
- ¹⁰ TOMRA. 9 September 2022. “Beverage Container Materials in Deposit Return Systems.” <https://circular.tomra.com/explore/recyclable-materials-in-deposit-return-schemes>
- ¹¹ TOMRA. 14 June 2021. “Key elements of high-performing deposit return systems: #1 – Broad scope of beverages and containers.” <https://www.tomra.com/en/reverse-vending/media-center/feature-articles/key-elements-of-high-performing-deposit-return-systems-one#Read%20more%20about%20scope%20of%20containers>
- ¹² “Recycling: Lithuania deposit system exceeds all expectations.” 24 April 2018. Open Access Government. <https://www.openaccessgovernment.org/recycling-lithuania-deposit-system-exceeds-all-expectations/45003/#:~:text=Container%20deposit%20system%20snapshot%3A&text=Eligible%20containers%3A%20Glass%20and%20non,end%20of%20the%20second%20year.>
- ¹³ TOMRA. 5 February 2024. “Latvia’s deposit return scheme achieves 80% return rate at two-year anniversary.” <https://www.tomra.com/en/reverse-vending/media-center/feature-articles/latvia-deposit-return-scheme>
- ¹⁴ Environmental Protection and Energy Efficiency Fund (FZOEU)
- ¹⁵ Dansk Retursystem. Årsrapport 2023. <https://danskretursystem.dk/app/uploads/2024/03/Aarsrapport-2023-samlet.pdf>
- ¹⁶ Personal communication with Kaupo Karba, CEO of Eesti Pandipakend, 6 March 2024.
- ¹⁷ Personal communication with Tommi Vihavainen (Suomen Palautuspakkaus Oy), 8 March 2024.
- ¹⁸ Personal communication with Michael Löwe, Vice President, Public Affairs, Head of System Design, TOMRA, April 2024
- ¹⁹ Personal communication with Helgi Lárusson, Managing Director at Framkvaemastjóri, 27 February 2024
- ²⁰ An additional 4% of deposit-bearing containers are collected via other systems (e.g. Green Dot).
- ²¹ Personal communication with Miks Sturitis, DIO, 6 March 2024
- ²² Personal communication with Gintaras Varnas, USA, 5 March 2024.
- ²³ https://www.linkedin.com/posts/bcrs-malta-ltd_bcrsmalta-beveragecollectionscheme-sustainability-activity-7168938267302703105-hE2V?utm_source=share&utm_medium=member_desktop
- ²⁴ Personal communication with Suze Govers, Recycling Network Beneflux, 3 April 2024.
- ²⁵ Afvalfonds verpakkingen. “Op weg naar fossielvrij en circulair verpakken: Recycling en hergebruik verpakkingen Nederland 2022.” www.afvalfondsverpakkingen.nl/sites/default/files/2023-08/Op%20weg%20naar%20fossielvrij%20en%20circulair%20verpakken.pdf
- ²⁶ https://infinitum.no/media/n0lozqt2/infinitum_a-rsrapport_2023_interaktiv.pdf
- ²⁷ <https://www.spravcazalo.sk/D%C3%A1ta%20za%20rok%202023%20v%20agregovanej%20podobe.pdf>
- ²⁸ Personal communication with Lil Berger, Returpack Svenska AB, 11 March 2024.
- ²⁹ Container Recycling Institute (CRI). 17 January 2022. “CRI Supports HB 1652 – New Hampshire January 17th, 2022.” https://www.container-recycling.org/images/stories/PDF/CRI%20supports%20HB1652_NH_Jan2022.pdf
- ³⁰ Container Recycling Institute. “Bottle Bill Resource Guide: California” <https://www.bottlebill.org/index.php/current-and-proposed-laws/usa/california>
- ³¹ Personal communication with Chris Nelson, Supervising Environmental Analyst, CT Department of Energy & Environmental Protection (DEEP), 23 April 2024
- ³² State of Hawaii Department of Health, Office of Solid Waste Management. December 2023. “Office of Solid Waste Management Annual Report to the Thirty-Second Legislature State of Hawaii 2024.” https://www.capitol.hawaii.gov/reportstoleg/reportuploads/AnnualReportonOfficeofSolidWasteManagement2023_12-29-2023-0.pdf
- ³³ Recycling rate is 71%; estimate of 7% is through kerbside and other programmes.
- ³⁴ Container Recycling Institute. “Bottle Bill Resource Guide: Iowa.” Last updated 1 August 2023. <https://www.bottlebill.org/index.php/current-and-proposed-laws/usa/iowa>
- ³⁵ Container Recycling Institute. “Bottle Bill Resource Guide: Maine.” Last updated 3 January 2024. <https://www.bottlebill.org/index.php/current-and-proposed-laws/usa/maine>
- ³⁶ Personal communication with Sean Sylver, Massachusetts Department of Environmental Protection, 2 April 2024
- ³⁷ Personal communication with Howard Heideman, Michigan Department of Treasury, 7 July 2023.
- ³⁸ Redemption rates in Michigan have been unnaturally low post-pandemic. Prior to COVID-19, Michigan’s redemption rate was at 89% (in 2019), the highest of all U.S. deposit programmes. However, during the onset of the pandemic, the Governor mandated all redemption locations to cease redemption for multiple months and redemption was authorised again—though only at locations with RVMs—for a transitional period. Whereas Michigan made it illegal to redeem containers during this time, all other US states simply allowed retailers to stop redeeming containers.
- ³⁹ Personal communication with Jennifer Kruman, Bureau of Waste Reduction & Recycling, NY Department of Environmental Conservation, 13 June 2023.
- ⁴⁰ Oregon Beverage Recycling Cooperative. “Delivering Results for Oregon: 2023 Annual Report.” https://obrc.com/wp-content/uploads/2024/03/About_Reports_2023_Annual.pdf
- ⁴¹ Container Recycling Institute. “Bottle Bill Resource Guide: Vermont.” Last updated 1 August 2023. <https://www.bottlebill.org/index.php/current-and-proposed-laws/usa/vermont>
- ⁴² Personal communication with Guy West, Alberta Beverage Container Recycling Corporation, 28 March 2024.
- ⁴³ Encorp Pacific (Canada). 2022 Annual Report. https://ar.return-it.ca/ar2022/pdf/Return-It_2022_Annual_Report.pdf
- ⁴⁴ BC Brewers Recycled Container Collection Council. 2022 Annual Report to the Director. https://envirobeerbc.ca/wp-content/uploads/2023/06/BC_StewardshipReport2022_FINAL.pdf
- ⁴⁵ Personal communication with Gordon Wall, Field Operations Officer, Multi Material Stewardship Board, 29 August 2023.
- ⁴⁶ Encorp Atlantic/Atlantique. “Stewardship Plan – New Brunswick Beverage Containers Program – Submitted to Recycle NB – August 1, 2023. Finalized January 30, 2024.” <https://www.recyclenb.com/static/site-content/files/management-plans/encorp-atlantic/encorp-stewardship-plan-to-recycle-nb-final.pdf>
- ⁴⁷ Government of Northwest Territories. “Waste Reduction and Recovery Program: 2022-2023 Annual Report.” https://www.gov.nt.ca/ecc/sites/ecc/files/resources/waste_annualreport_2022-23_web.pdf
- ⁴⁸ Personal communication with Dale Lyon, Divert NS, 5 June 2023.
- ⁴⁹ Brewers Retail Inc. 2024. “The Beer Store Responsible Stewardship 2023:

Endnotes

- Championing Sustainability in Ontario.” <https://www.thebeerstore.ca/api/images/wyfly6gekqxs8/13rUGbx9Nm8JVx2zhAA9lo/614e6efd24cdb72a41515e8f9a555334/pdfresizer.com-pdf-resize.pdf>
- ⁵⁰ Personal communication with Mike Cheverie, Program Coordinator, Beverage Containers Program, 8 May 2023
- ⁵¹ Recyc-Quebec. “Tableau des ventes et de la recuperation des contenants consignes (Biere et Boissons gazeuses).” <https://www.recyc-quebec.gouv.qc.ca/sites/default/files/documents/statistiques-ventes-recuperation-cru.pdf>
- ⁵² SARC. “Annual Report 2022-2023.” https://issuu.com/sarcsarcan/docs/sarc_annual_report_2022_-_2023_final?fr=sY2VkMTQ20Tcw
- ⁵³ Personal communication with Natalia Baranova, Environmental Protection Analyst, Yukon Government, 9 May 2023.
- ⁵⁴ MacLeod, N. 1 March 2024. “P.E.I. plans to hike deposits and refunds on bottles and cans this summer.” CBC News. <https://www.cbc.ca/news/canada/prince-edward-island/pei-bottle-can-deposit-refund-up-1.7130255#:text=Deposits%20paid%20at%20the%20cash%20on%20each%20bottle%20or%20can.5%20cents%20to%2015%20cents>.
- ⁵⁵ Exchange for Change. “2021-2022 NSW CDS (Return and Earn) Annual Statutory Report.” <https://www.exchangeforchange.com.au/who-we-are/publications-and-reports.html>
- ⁵⁶ Exchange for Change. “2021-2022 NSW CDS (Return and Earn) Annual Statutory Report.” <https://www.exchangeforchange.com.au/who-we-are/publications-and-reports.html>
- ⁵⁷ Container Exchange (CoEX). “Annual Report 2022-2023.” <<https://containerexchange.com.au/wp-content/uploads/2023/10/Container-Exchange-Annual-Report-2023.pdf>>
- ⁵⁸ Container Exchange (CoEX). “Annual Report 2022-2023.” <<https://containerexchange.com.au/wp-content/uploads/2023/10/Container-Exchange-Annual-Report-2023.pdf>>
- ⁵⁹ Northern Territory Environment Protection Authority. Environment Protection (Beverage Containers and Plastic Bags) Act 2011: Annual Report 2023. <https://ntepa.nt.gov.au/_data/assets/pdf_file/0008/1285523/annual-report-2023-environment-protection-act-2011.PDF>
- ⁶⁰ Exchange for Change. “ACT Container Deposit Scheme 22/23 Annual Statutory Report.” <https://www.exchangeforchange.com.au/who-we-are/publications-and-reports.html>
- ⁶¹ Exchange for Change. “ACT Container Deposit Scheme 22/23 Annual Statutory Report.” <https://www.exchangeforchange.com.au/who-we-are/publications-and-reports.html>
- ⁶² South Australia Environmental Protection Authority. “Container Deposits.” www.epa.sa.gov.au/environmental_info/container_deposit
- ⁶³ Western Australia Return Recycle Renew. “Annual Report 2022-2023.” <https://cdn.warrri.com.au/2024/03/2022-23-Annual-Report-1.pdf>
- ⁶⁴ Western Australia Return Recycle Renew. “Annual Report 2022-2023.” <https://cdn.warrri.com.au/2024/03/2022-23-Annual-Report-1.pdf>
- ⁶⁵ 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>
- ⁶⁶ Japanese Technical Cooperation Project for Promotion of Regional Initiative on Solid Waste Management in Pacific Island Countries, Phase II (J-PRISM II), Japan International Cooperation Agency (JICA). March 2022. “Container Deposit Schemes in the Pacific Islands: A Guide for Policy Makers.” <https://www.sprep.org/sites/default/files/documents/publications/%E5%88%A5%E6%B7%BB%EF%BC%91%E3%80%80Final%20Copy%20CDS%20Guide.pdf>
- ⁶⁷ Ibid.
- ⁶⁸ Ibid.
- ⁶⁹ According to one source (https://www.sprep.org/sites/default/files/documents/publications/%E3%80%90FIN%E3%80%91_JPRISM_Good_Practice_RMI%20CDS_web.pdf), the recovery rate “is not absolutely clear due to the ongoing presence of ‘legacy waste’ during FY’19 but appears to be of the order of 85%.”
- ⁷⁰ Personal communication with Carmit Bardugo, ASOFTA Recycling Corporation, March 2024
- ⁷¹ Personal communication with Serah Son, Reloop Collaborating Partner, 4 April 2024

reloop resources
remain
resources

www.reloopplatform.org

Follow us