FACT SHEET

Mixed deposit return systems: Case studies

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Mixed deposit return systems: Case studies

Deposit return systems (DRS) are expanding rapidly across the world as governments seek to improve collection rates, reduce litter, and support a transition to more circular packaging systems. In some jurisdictions, deposit systems for both single-use and reusable containers operate in parallel, allowing consumers to return both container types to the same collection points. While the degree of integration between these systems varies across jurisdictions, together they represent what we refer to as a "**mixed DRS**."

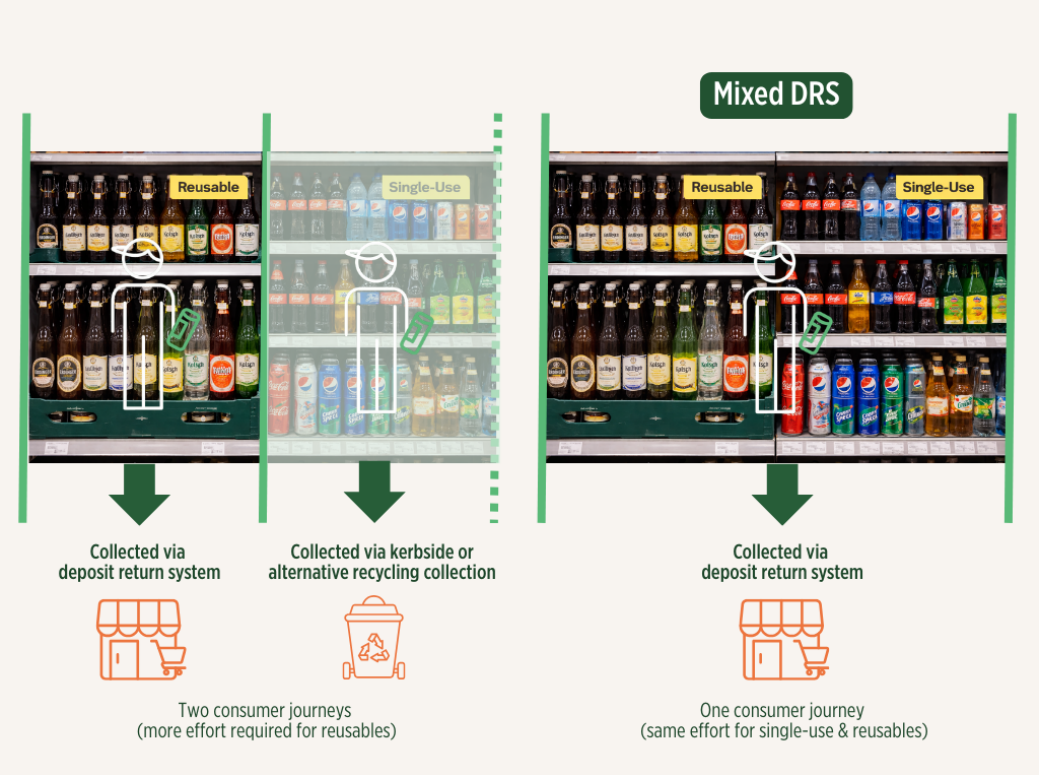

Figure 1 Consumer journeys under separate versus mixed DRS collection models. Left: reusable containers are returned through a DRS while single-use containers are collected via kerbside or other systems, requiring two consumer journeys and greater overall effort for reusables.. Right: a mixed DRS captures both reusable and single-use containers within one system, simplifying participation and aligning effort across container types.

This fact sheet presents a series of case studies from jurisdictions across Europe and North America to illustrate how deposit systems for reusable and single-use containers can be designed and operated as integrated, mutually reinforcing 'mixed' systems. The case studies highlight different approaches to sharing collection infrastructure, and, in some cases, additional system components, to create synergies that reduce system-wide costs and improve convenience for consumers.

Europe

Austria

On 1 January 2025, Austria became the 17th European country to launch a national DRS for single-use beverage containers. The system covers PET bottles and aluminium cans ranging from 0.1L to 3L. The system is administered by EWP Recycling Pfand Österreich, which oversees operations, collects returned containers, and resells the material to producers for closed-loop recycling.

Consumers pay a €0.25 deposit, which is refunded upon return of the empty container to any retail outlet selling deposit-eligible beverages. All containers in the system are clearly marked with a deposit logo (see Figure 2), and the infrastructure allows for returns through both RVMs and manual collection points.

Figure 2 Deposit logo used in Austria on single-use containers

System performance has been strong from the outset. Austria's DRS legislation set a collection target of 80% in the first year of operation, rising to 90% by 2027. In 2025, the system achieved an 81.5% collection rate, exceeding the first-year legal requirement.[1] Convenient access to returns has been a key driver of these results. The DRS includes around 16,300 return points nationwide. Austria has one of the highest supermarket densities in Europe and correspondingly a very high density of RVMs: consumers have access to more than 6,400 reverse vending machines, enabling fast and convenient returns. As a result, 98% of containers are returned via automated machines, while only about 2% are returned through manual collection points.

Figure 3 Optional logo for refillable bottles in Austria

Austria's single-use DRS operates alongside a long-established, industry-led deposit system for refillable containers. Reusable glass bottles have been widely used in Austria since at least the 1960s and 1970s, and refillable PET bottles were also prominent in the market in earlier decades, supported by major beverage producers, including soft drink and bottled water brands. While refillable systems remained strong through the 1980s, their market share began to decline in the 1990s with the rapid expansion of single-use PET containers. By the 2000s, refillable PET had largely exited the market, and refillable glass increasingly shifted toward a premium product segment.

Unlike the single-use DRS, deposits on reusable glass bottles are not mandated by law but are instead governed through industry agreements, coordinated with the Austrian Chamber of Commerce, to ensure alignment across producers and retailers. These arrangements have historically supported high levels of reuse but have not prevented a gradual erosion of refillable market share over time.

To help stabilise and rebuild reuse, Austria has introduced mandatory refillable market share quotas of 25% by 2025 and 30% by 2030, with certain exemptions (e.g. non-alcoholic drinks in containers under 0.5L). As of 2024, refillable bottles held a 27%

market share across all beverage categories.

In February 2025, the deposit on reusable glass bottles increased for the first time in more than 40 years. The deposit rose from €0.09 to €0.20 per bottle.[2] According to the Austrian Brewery Association, this change primarily affects 0.5L and 0.33L beer bottles, as well as certain white glass bottles with screw caps, together representing around 90% of all reusable glass bottles in the market.[3] The Association has noted that the long-standing low deposit value reduced the incentive for consumers to return bottles, leading to higher losses and increasing replacement costs for producers. The higher deposit is expected to improve return rates and reduce the number of reusable bottles incorrectly placed in glass recycling streams. Each reusable glass bottle can typically be refilled up to 40 times, delivering substantial energy and material savings compared with single-use glass.

Retailers are required to clearly label containers as either “ONE WAY” (single-use) or “REUSABLE” and may limit manual returns to the types and quantities of containers they sell. However, most RVMs are designed to accept both single-use and refillable containers, enabling a mixed return infrastructure that supports consumer convenience and system efficiency.

Denmark

Denmark has a long history with DRS, dating back to the early 20th century. The country’s culture of 'flaskepant,' or bottle deposit, began when dairies and breweries first introduced deposits on their glass bottles to ensure they were returned for cleaning and refill. By 1890, Holmegaard Glassworks began producing standardised bottles for beer and carbonated soft drinks (typically 330 ml for beer and 250 ml for soft drinks), which breweries were required to use.[4] This standardisation created a unified bottle pool that allowed any producer to refill bottles collected from the market.

Throughout the 1920s and 1930s, the deposit system expanded as refillable bottles became the dominant beverage packaging format in Denmark. Standardised bottles and crates enabled an efficient, highly effective reuse system, with near-perfect return rates.[5] Reuse was deeply embedded across production, retail, and logistics networks: breweries collected, washed, and refilled bottles, while retailers served as the main return points. Bottles were reused up to 30 times before being recycled, making Denmark an early example of a closed-loop, circular packaging system driven initially by practical resource conservation rather than formal environmental policy.[6]

From the 1970s onwards, environmental policy became an explicit driver of packaging management. The Danish government introduced a ban on single-use beverage packaging for beer and carbonated soft drinks in 1977 under the Environmental Protection Act[7], followed by a ban on aluminium cans in 1982. This made it mandatory for domestic producers to use reusable packaging whilst the policy allowed for single-use packaging (glass and plastic) for imported beer and other drinks on the condition they were covered by a DRS and with a limit of 3,000 hectolitres.[8]

Actors outside Denmark, mostly notably in Germany, argued that establishing a collection system would be administratively difficult and costly, prohibiting foreign producers from entering the market. Similarly, the Association of European Producers of Steel for Packaging argued that the standards were discriminatory and subjectively prioritised one environmental impact factor over another. The ‘can ban’ was also criticised by retailers, the packaging industry, importers, and even producers themselves who became keen on removing the ban on single-use packaging for domestic production.[9] Furthermore, the growing variety of bottle designs led to a growing complexity in sorting and returning bottles to beverage manufacturers, with retailers calling for a handling fee to be applied to compensate for this.[10] Meanwhile, the European Commission

challenged Denmark's aluminium can ban as a potential trade barrier, raising legal concerns under EU packaging directives.[11] These combined pressures highlighted the need to move beyond a purely reuse-based system to one that could include both single-use and reusable containers

In response, the Danish government together with industry stakeholders collaborated to create a national, mandatory DRS. Dansk Retursystem was established in 2000 as a non-profit operator jointly owned by producers, importers, and retailers, under the oversight of the Danish Environmental Protection Agency to operate the system.[12] In 2002, the aluminium can ban was repealed, allowing a free choice of packaging as long as all containers were covered by a DRS. The DRS was formally launched nationwide that year, integrating single-use PET, glass, and aluminium containers with the existing model for reuse.

While single-use containers carry a deposit mark (either printed directly on the bottle or can, or applied as a small sticker) (see Figure 4) reusable bottles do not. The current deposit values by container type are as follows[13]:

- **Single-use containers:**
  - Glass and aluminium <1L: 1 DKK (approximately €0.13)
  - Plastic <1L: 1.5 DKK (approximately €0.20)
  - Glass, plastic, aluminium 1-20L: 3 DKK (approximately €0.40)
- **Reusable containers:**
  - Glass <500ml: 1 DKK (approximately €0.13)
  - Glass >500ml: 3 DKK (approximately €0.40)
  - Plastic <1L: 1.5 DKK (approximately €0.20)
  - Plastic >1L: 3 DKK (approximately €0.40)

Reusable transport crates used for beer, soft drinks, and other beverages are not regulated under the Statutory Order. As a result, retailers are free to set the deposit amount for these crates.

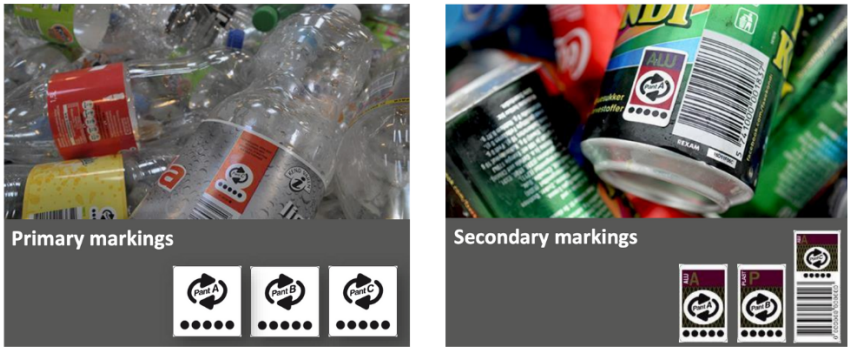

Figure 4 Deposit markings required on single-use containers in Denmark's DRS[14]

As of 2025, nearly 3,000 stores throughout Denmark are equipped with RVMs that accept single-use bottles and cans for recycling.[15] Reusable bottles can be returned to locations that sell the same shape bottle. While Dansk Retursystem manages deposit clearing and handling fees for both container types, the practical operations of collecting and washing reusable bottles remain the responsibility of individual producers (see Figure 5).

Behind the scenes of Denmark's mixed DRS:
Shared (and separate) processes for single-use and reusable containers

Step in the DRS value chain	Single-use containers	Reusable containers
Registration and reporting	Dansk Retursystem	
Handling fees	Dansk Retursystem	
Deposit validation	Dansk Retursystem	
Logistics from retailers	Dansk Retursystem	Producers
Deposit collection and payment	Dansk Retursystem	Producers
Reuse or recycling	Dansk Retursystem (recycling)	Producers (washing for reuse)

Figure 5 Division of responsibilities for single-use and reusable deposit containers in Denmark[16]

With regards to financing, the Danish DRS is funded by fees that producers and importers must pay for each deposit-bearing beverage container they sell, supply, or otherwise transfer on the Danish market. The amount of these fees depends on the material of the container (e.g., glass, plastic), the volume of the container, and whether it is refillable or single-use (with materials that are more difficult to recycle [e.g. PVC bottle] subject to an additional surcharge). With reusable bottles, the fee covers handling compensation paid by Dansk Retursystem to stores for accepting and processing returns. Table 1 compares the fees by container type.

Table 1 Producer (operating) fees in Denmark's DRS (2026) [17]

Container type		Operating fee/unit
Single-use containers	Plastic	5 øre to 145 øre (approximately €0.01-€0.13)
	Aluminium	None
	Steel	0-4 øre (approximately €0.00-€0.01)
	Single-use glass	22 øre to 554 øre (approximately €0.03-€0.78)
Reusable containers	Plastic and glass	7 øre (approximately €0.01)

With return rates of 92% for single-use cans and bottles and 100% for reusable glass, Denmark's DRS remains a leading example of how a system can evolve from a reuse-only model to a mixed deposit framework. As of 2026, refillable bottles account for 10% of all beverage containers sold in Denmark.[18]

Table 2 Return rates for beverage containers in Denmark's DRS (2025)[19]

Container type	Return rate
Plastic (PET)	92%
Metal	92%
Single-use glass	92%
Total single-use	**92%**
Reusable glass	**100%**

Estonia

Since 2005, Estonia has had a mandatory DRS covering both single-use and reusable beverage packaging. The DRS is administered by Eesti Pandipakend (EPP), a producer responsibility organisation (PRO) established by beverage producers, importers, and retailers. EPP operates the DRS for single-use containers and performs an administrative role for reusable packaging within the same regulatory framework.

When the system was first introduced, deposit values varied by container size. In 2015, the Minister of Environment, acting on EPP's recommendation, implemented a uniform €0.10 deposit for all beverage containers, regardless of size, material, or whether they are single-use or refillable.[1]

From the consumer perspective, returns are fully integrated: both single-use and reusable containers are returned at retail outlets, where deposits are refunded. Behind the scenes, however, physical and financial flows differ by container type. To support this operational separation, reusable and single-use glass containers are clearly differentiated through distinct markings and labels (see Figure 16). Single-use containers move through the DRS, with EPP responsible for transport, counting, sorting, and directing materials to recycling. Refillable bottles, on the other hand, circulate directly between producers and retailers under contractual agreements. EPP's role in relation to reusable packaging is limited to system coordination and data management, including maintaining the national packaging register and updating RVM databases to ensure reusable containers are recognised at the point of return. For this service, producers pay EPP a nominal administrative fee of €0.0001 per reusable bottle. Producers retain full responsibility for the logistics of reusable packaging, including collection, washing[2], refilling, and redistribution, and pay retail handling fees directly to stores.

While historically, a wide range of bottle shapes existed in the market (17 different bottle types used by five to six producers[20]), today the number of producers using refillable glass has declined and the range of bottle types has narrowed (only two producers and seven bottle types remain in circulation).[21] New reusable bottles introduced to the Estonian market are subject to strict eligibility criteria designed to limit fragmentation and support efficient system operation.[22] Producers may continue to use historically existing reusable bottle designs that pre-date the current framework, but any new reusable bottle format must meet three core requirements. First, the bottle must reach a minimum annual market volume of at least 2 million units, ensuring that only high-volume formats are introduced and that reuse systems benefit from economies of scale. Second, non-standard bottle designs are prohibited for new formats; bottles must be generic in shape and appearance, preventing proprietary designs that would require separate handling or return loops. Third, producers introducing a new reusable bottle must grant EPP the right to use the bottle design, including the right to sublicense it to other producers. This provision effectively enables bottle pooling by allowing multiple producers to use the same bottle format over time, even if it was initially introduced by a single company.

With respect to handling fees, fees differ between single-use and reusable containers. For reusable packaging, producers pay handling fees directly to retail outlets, rather than through the DRS operator. In 2025, the retail handling fee for reusable bottles was set at €0.057 per unit. By contrast, handling fees for single-use containers are paid to retailers through the system operator. Fees are lower for manual collection, with €0.0157 per unit for glass and €0.0140 per unit for plastic and metal. Automated collection via RVMs commands higher fees: €0.0502 per unit for glass, €0.0386 for plastic, and €0.0337 for metal.

[1]For single-use and reusable packaging for which a deposit amount has not been established by the Minister of the Environment, the producer may independently establish the amount of the deposit if the producer has a DRS in place, based on which the quantities of packaging placed on the market and taken back can be monitored.
[2]There is no centralised washing facility, and each producer retrieves, washes, and refills their own bottles.

The system has achieved consistently high performance. Return rates for single-use containers in 2024 were 89% for PET, 85% for metal, and 91% for single-use glass, with an overall single-use return rate of 90%. For refillable glass bottles, the estimated return rate is nearly 100%, with each bottle completing about 20 refill cycles before recycling.

Table 3 Return Rates for Beverage Containers in Estonia's Deposit Return System (2024)[23]

	Return rate
Plastic (PET)	89%
Metal	85%
Single-use glass	91%
Total single-use	**90%**
Reusable glass	**~100% (estimated)**

Figure 6 Mandatory container label for single-use glass packaging (left) and reusable glass packaging (right)

Finland

A DRS for glass refillable bottles has existed in Finland since 1952, when Coca-Cola introduced a local return system for its refillable glass bottles during the Helsinki Summer Olympics.[24] As single-use packaging began to emerge in later decades, waste volumes increased rapidly, prompting government intervention. In 1983, Finland introduced legislation establishing a beverage packaging tax (€0.51/L) on soft and alcoholic drink containers; this tax was explicitly designed to encourage the use of deposit systems as packaging included within an approved DRS was exempt from the tax, a system that remains in place today.[25]

At the time, the deposit system for alcoholic beverages was operated by Alko Oy, the state-owned alcohol monopoly, which also dictated packaging requirements. However, Finland's accession to the EU in 1995 brought an end to Alko's regulatory authority, creating space for alternative packaging formats and a broader, industry-led approach to deposit systems. [26] In response, the private sector mobilised quickly, united by a shared interest in avoiding packaging taxes while maintaining efficient recovery systems.

In 1996, three retailers (Alko Oy, Inex Partners Oy, and Kesko Oyj) and three breweries (Hartwall Ab, Olvi Oyj, and Sinebrychoff Supply Company Oy) collaborated to establishe Suomen Palautuspakkaus Oy (Palpa) as a non-profit operator to manage a DRS for aluminium cans. [27] Over time, this system was expanded to include PET bottles (2008) and single-use glass bottles (2012), creating a comprehensive single-use DRS covering cans, plastic, and glass.

In parallel, the same breweries and retailers operate Ekopulloyhdistys ry (Ekopullo), a non-profit association established in 2004 (and approved as the official return system by the Pirkanmaa Centre for Economic Development, Transport, and the Environment) to manage reusable beverage packaging (primarily covering drinks such as beer, mineral water, and milk).[28] Ekopullo administers a shared (pooled) reuse system for standard brown glass bottles, along with associated transport packaging such as crates, trays, pallets, and dollies.

While the refillable and single-use systems are managed by separate organisations, they are closely integrated operationally. Ekopullo acquires human resources and services from Palpa and operates within Palpa's premises. Ekopullo's transport units are also primarily used to deliver packaging associated with Palpa's single-use DRS, creating shared logistics, infrastructure efficiencies, and reduced transport emissions. From a consumers' point of view, the system is simple as all containers (single-use and reusable) can be returned to the same retail outlets, where RVMs sort the containers on-site and issue a refund to the consumer. Palpa contracts companies to pickup the sorted bottles and cans and transport them to a centralised processing facility. After processing, the materials are sent to either recyclers or packed in crates and transported directly back to breweries (see Figure 7[29]) where they are washed and refilled approximately 33 times before being recycled as glass material.[30]

With regards to deposits, deposit values are set by government decree and vary by material and size. The deposit on reusable and single-use glass bottles is the same (€0.10). A €0.10 deposit also applies to cans and small PET bottles (up to 1L), whereas larger PET bottles (over 1L) carry a €0.20 deposit.

Figure 7 Reusable standard bottles in crate, Finland

Together, Finland's deposit systems consistently achieve some of the highest return rates in Europe. In 2025, 94% of all single-use deposit containers were collected for recycling, including 95% of aluminium cans, 93% of PET bottles, and 90% of single-use glass.[31] Refillable bottles also perform strongly, with consumers returning approximately 97% of refillable glass bottles placed on the market. Despite this strong performance, reusable bottles accounted for only around 2% of Finland's total beverage market in 2025.

Latvia

In 2019, in response to the EU Single-Use Plastic Directive, the Latvian parliament passed an amendment to the Packaging Law to introduce a mandatory, nationwide DRS for all beverage containers. The DRS launched on 1 February 2022 and covers plastic bottles, aluminium cans, and both single-use and reusable glass bottles 100ml to 3L. Since its launch, the collection rate for PET containers has increased from 45%[32] to 82% in less than 3 years. The system has also had a positive impact on reuse, with the collection rate for refillable bottles increasing from 50% before implementation to 90% within two years.[33]

Table 4 Return Rates for Beverage Containers in Latvia's Deposit Return System (2024)[34]

Container type	Material	Return rate

Single-use	Plastic	86%
	Metal	76%
	Glass	81%
	Total	82%
Reusable	Standard glass bottle	90%
	Non-standard glass bottle	88%
Total		83%

Under Latvia's DRS, all containers, regardless of whether they are single-use or refillable, are subject to a €0.10 refundable deposit. Deposit containers must display a mandatory mark, with distinct labels for single-use and reusable packaging, as shown in Figure 8.

The entire system is managed by a single non-profit entity, SIA Depozīta Iepakojuma Operators (DIO), a private company bringing together local and Baltic beverage manufacturers and retailers, along with AS PET Baltija, the Baltics' largest PET recycler. From the consumer perspective, the system is fully integrated: retailers are required to accept both single-use and reusable bottles, and all containers are returned through the same infrastructure, including shared RVMs, which are equipped with soft-drop modules for reusable glass. Even the counting centre is shared; it handles sorting and preparation of single-use containers for recycling, as well as the inventory and storage of refillable glass bottles.[35]

When it comes to reusable glass bottles, producers have a choice between standard bottles and non-standard bottles. As of 2024, reusable glass represented approximately 15% of all deposit containers placed on the market, with industry-standard bottles accounting for around 12% and individual design bottles for 3%.[36]

Figure 8 Container Markings Required in Latvia's DRS (logo for reusable containers on the left; logo for single-use containers on the right)[1]

Producers using standard bottles benefit from full integration into DIO's centralised logistics and accounting system. More than 28 producers[37] currently use industry-standard bottle formats. After return, bottles are placed in durable plastic crates (the same crates used to transport full bottles) and moved through the shared reverse-logistics network to the central counting centre (see Figure 9). There, bottles are inventoried, stored, and counted to verify producer reporting before being redistributed to breweries based on market share and return rates. Breweries then wash and refill the bottles in-house. Producers without washing facilities are required to sell returned bottles to breweries that do have washing capacity, ensuring access to refillable packaging for smaller producers. [38] This approach has helped reduce the number of refillable glass bottle shapes on the market from roughly 30 to 14, improving system efficiency and compatibility.

Producers that opt for non-standard reusable bottles (created for specific brands) operate under a more decentralised model. These producers enter into agreements with both DIO and collection points, while DIO ensures that their bottles are compatible with the system, including recognition by RVMs. Although these bottles are returned through the same RVMs (and benefit from the same identification technology), the logistics diverge once collection occurs. Producers are responsible for transporting bottles from collection points to their own washing and refilling facilities, bypassing DIO's central counting centre. Nonetheless, these producers must meet the same reporting obligations as users of standardised bottles, submitting monthly data on reuse volumes, with DIO responsible for verifying accuracy through bottle counts conducted at the collection stage.

Figure 9 Reusable and single-use containers at a shared DIO counting centre in Latvia

The system as a whole is supported by multiple revenue streams that cover each system costs separately, avoiding cross-subsidisation between container types. For single-use containers, revenues are broadly balanced across industry fees (approximately 30%), material sales (30%), and unredeemed deposits (40%).[39] In contrast, standardised reusable glass bottles are financed primarily through producer fees (around 89%), with the remaining 11% coming from unredeemed deposits, [40] reflecting the high return rates achieved for refillable packaging.[41]

When it comes to producer fees, the fees vary by container type (Table 5). For single-use containers, fees are differentiated by material and, in some cases, offset by material value. For reusable glass bottles, fees are structured to reflect two distinct models:

- **Standard reusable bottles** carry a higher producer fee, as this includes full system services provided by DIO, including automated collection, sorting at retail, centralised logistics, counting, and redistribution.
- **Non-standard reusable bottles** have a lower producer fee, as producers retain responsibility for transport, washing, and refilling, with DIO covering only automated collection and shared administrative costs.

Table 5 Producer fees charged in Latvia's DRS (effective 1 January 2026)[42]

Container type		Producer fee
Single-use containers	Clear PET plastic	€0.0199
	Coloured PET plastic	€0.0271
	Aluminium	-€0.0095
	Steel	€0
	Single-use glass	€0.0491
Reusable containers	Standard glass bottle	€0.0722 (full service to producers included - collection in RVMs, sorting at retail, logistics)
	Non-standard glass bottle	€0.0138 (only collection in RVMs and share of administration costs included)

Like producer fees, handling fees paid to retailers also vary by container type and are slightly higher for reusable bottles, particularly when bottles are returned via automated collection (Table 6).

Table 6 Retail handling fees for single-use and reusable containers in Latvia's DRS (effective 1 January 2026)[43]

	Plastic (PET)	Metal	Single-use glass	Reusable glass
Automated collection (RVM)	€0.0159 to €0.0383	€0.0130 to €0.0366	€0.0364 to €0.0724	€0.0404 to €0.0759
Manual collection	€0.0263	€0.0253	€0.0466	€0.0494

It's worth noting that before the introduction of its national DRS, Latvia had a long tradition of reusable glass bottle circulation dating back to the post-Soviet period (after 1991). However, this was not a formal deposit system. Instead, a decentralised network of small businesses and some retailers bought back used reusable glass bottles from consumers for a small amount (typically 3-5 cents per bottle, depending on the season) and resold them to breweries. The largest breweries, equipped with bottle washing lines, purchased these used bottles directly or through intermediaries. At its peak, there were an estimated 200 such buy-back points across the country, though no official figures exist. On average, around 50% of refillable bottles were returned through this informal system. The main reason reusables maintained a relatively high market share in Latvia was economic: for breweries, reusable glass packaging was considerably more cost-effective than single-use glass. As of 2025, the market share for refillables was 15%.[44]

Lithuania

Lithuania has a long history with refillable beverage packaging. For many years, the country had a voluntary buy-back system for refillable glass beer bottles, with nearly all retailers participating and all collections conducted manually.[45] At the time, brewers largely relied on standardised reusable bottles, and there were only five types of reusable glass bottles in circulation.

A mandatory DRS for reusable beverage containers was passed into law in 2004, covering beer and other alcoholic beverages, soft drinks, mineral water, and juice. Administered by Depozito Sistemos Administratorius (DESA), a non-profit founded by five breweries, the system became operational in 2006 and achieved strong return rates of 85-90%.[46,47] Initially, there were 7 breweries participating in the system and there was only one standardised bottle format. Over time, however, marketing considerations increased the number of distinct reusable bottle types: by 2007, there were 6 types of reusable bottles, by 2018 there were 30[48], and today 35 different formats are in circulation.[49] To prevent uncontrolled proliferation of new formats, any producer wishing to introduce a new bottle design is now required to remove an existing one.[50] Until 2016, collection of reusable glass bottles was 100% manual.

Ten years after the reusable DRS was introduced, on 1 February 2016, Lithuania launched a mandatory DRS for single-use beverage containers and appointed Užstato Sistemos Administratorius (USAD) as the system operator. From the outset, USAD and DESA collaborated to integrate the collection of reusable and single-use containers through a unified return network, both at manual return points and automated reverse vending machines (RVMs). Despite having separate regulatory and administrative frameworks, the two systems are fully integrated from the consumer perspective: both single-use and reusable containers carry a fixed deposit of €0.10 and can be returned at the same collection locations. Individuals do not need to sort or distinguish between container types, and most are unaware that two separate DRSs are in place. The only visible distinction is the container marking, which varies by container type (see Figure 11).

Figure 111 Container markings on single-use containers (left) and reusable containers (right) in Lithuania's DRS

Figure 102

Behind the scenes, after acceptance at the retailers, the two streams diverge. While single-use containers (both compacted and non-compacted) are sorted into special bags provided by USAD and transported for counting (if collected manually) and processing (with transport being provided by USAD), reusable containers are placed into dedicated crates and returned to producers for washing and refilling, with transportation arranged by the producers. In some cases, USAD is contracted by producers to manage the reverse logistics and sorting on their behalf.[51] USAD then separates them and ships them back to the beverage companies so that they can be reused.

Handling fees for beverage containers differ depending on whether the container is single-use or reusable, as well as by material and collection method. For single-use bottles and cans, retailers are reimbursed by USAD based on counted returns. The fees vary depending on the container material (PET, metal, glass) and the method of return (manual collection vs. RVMs, with or without compaction). For reusable glass bottles, producers are responsible for paying handling fees directly to retailers. DESA negotiates these fees on behalf of all producers of reusable glass bottles, ensuring consistently across the system. It's worth noting that these fees do not include the cost of purchasing or renting RVMs. Producers of reusable containers pay a separate RVM usage fee of €0.0147 per container (as of 1 January 2026), calculated by USAD. The table below summarises the handling fees for single-use and reusable beverage packaging, broken down by material and collection method.

Table 7 Retail handling fees for single-use and reusable containers in Lithuania's DRS (effective 1 January 2026)[52,53]

	Plastic (PET)	Metal	Single-use glass	Reusable glass
RVM with compaction/crushing	€0.0323	€0.0227	€0.0524	€0.0830
Manual or non-compacting/crushing RVM	€0.0294	€0.0243	€0.0325	€0.0428

The seamless user experience provided by Lithuania's mixed DRS has helped drive strong return rates: prior to the introduction of deposit on single-use containers, the collection rate for PET was just 35%; by the end of the first year, this rose to 74%.[54] As of 2024, PET bottle collection rates reached 89%, with an overall single-use container collection rate of 92%. Although their overall market share was only 14%[55] in 2025, reusable containers continue to be returned at high rates (92%) (see Table 8).

Table 8 Return rates for beverage containers in Lithuania's DRS (2024)[56,57]

	Return rate
Plastic (PET)	89%
Aluminium	91%
Steel	98%
Single-use glass	86%
Total single-use	**90%**
Total reusable	**92%**

Germany

Germany is widely recognised as a global leader in beverage container reuse and recycling, with one of the world's highest return rates for single-use packaging.[3] The country also maintains the largest market share for reusable bottles: in 2025, roughly 50% of beverages sold were in reusable containers.[58] Figure 13 shows sales of reusable (glass and plastic) versus single-use beverage containers in billions of units from 1999 to 2024. While the share of reusables has declined over time, Germany remains the global leader in reusable bottle market share, with half of all beverage sales still packaged in refillable containers in 2025.

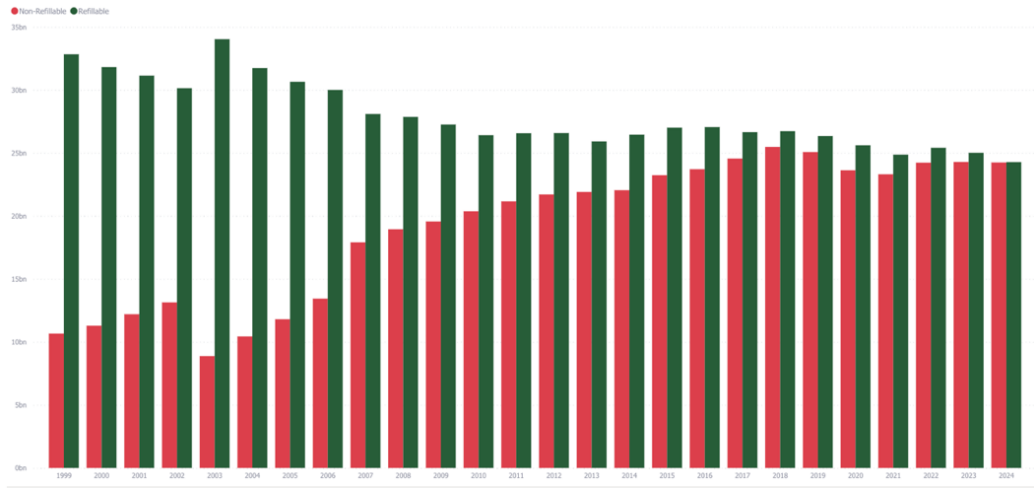

Figure 12 Unit sales (billions) of single-use (red bars) vs. reusable (green bars) beverage containers in Germany, 1999 to 2024

[3]Although DPG reports an overall return rate of 98%, Germany's decentralised DRS does not provide the transparency needed to verify how this figure is calculated. In October 2023, DPG confirmed to the Container Recycling Institute that return rates are not calculated in Germany because the necessary underlying data on beverage container sales and returns are not collected. A true return rate would require a central body to gather audited sales and return data from all operators.

Germany's system for reusable beverage packaging traces its roots back to the 1920s, when the first deposit systems for reusable containers were introduced. The system became more structured in 1969 with the launch of a standardised glass reuse scheme for clear mineral water bottles, followed by the introduction of the green glass bottle in the 1970s for sparkling water. PET refillables entered the market in the 1990s (first for non-alcoholic beverages and later for water), and in 2019, a new line of standardised reusable glass and PET bottles for water and soft drinks was introduced to make bottles lighter and easier to handle. While older models continue to circulate, the 2019 update has helped to slightly increase the market share of reusable bottles, especially as consumers increasingly favour glass over plastic.

Figure 13 Single-use containers sold alongside reusable containers on store shelves in Germany

The reusable DRS is decentralised, with distributors and producers operating without statutory obligations. Instead, it is coordinated through industry associations. The German Beverage Association (GDB) manages deposits for water and soft drinks, while the German Fruit Juice Federation oversees the deposit system for fruit juices. Although the system has existed for decades, it remains somewhat opaque, with private contracts governing many logistical and financial arrangements.

For water and soft drinks, GDB administers deposits for both glass and PET bottles. The deposit is set at €0.15 per bottle, covering ten standardised formats ranging from 0.5L to 1L for glass and 0.5L to 1.5L for PET. Bottles are typically sold in crates of either 8 or 12 glass bottles, or 6 or 12 PET bottles (see Figure 14).[59] These standardised formats represent about 72% of the reusable mineral water market and 41% of the total bottled water market, with the remainder made up of proprietary bottles from individual producers.[60]

For fruit juices, the deposit system is managed by the German Fruit Juice Federation, which defines the rules for deposits (i.e. how many bottles must be replaced each year, and how crates should be). A €1.50 deposit applies per crate, complemented by bottle-specific deposits: €0.15 for 1 L bottles, €0.08 for 0.7L bottles, and €0.08 for 0.2L bottles, the latter mainly used in hotels, restaurants, and cafés. Two crate formats (six bottles each) and three standardized bottle sizes (1L, 0.7L, and 0.2L) are used, and the containers are marked by a distinctive green colour code for identification. On average, glass bottles can be reused around 50 times, while PET bottles are reused about 20 times before being recycled.

Figure 14 Range of GDB refillable pool bottles[1]

Germany's modern reuse and recycling framework was significantly shaped by the 1991 Packaging Act (VerpackV), which introduced a deposit for recycling aimed at protecting the well-established and financially stable reuse market. The law stipulated that if the market share of reuse fell below 72%, a mandatory deposit would apply to single-use beverage packaging within the same product categories. When reuse rates dropped below this threshold, the mandatory single-use DRS was introduced in

2003, followed by the creation of Deutsche Pfandsystem GmbH (DPG) in 2005 to manage it.[61] Under the Packaging Ordinance, the single-use DRS applies a flat €0.25 deposit for PET, glass, and metal beverage containers between 0.1L and 3L.

While there is no mandatory labelling scheme for refillables, containers are typically marked with the word *Mehrweg* or feature symbols such as the Blue Angel logo (see Figure 16).[xlvi]

Figure 15 Labels Used to Identify Refillable Containers in Germany's DRS

Germany's refillable system includes more than 800 unique bottle shapes and over 3,000 crate designs. In practice, most retailers accept only the refillable containers of brands they stock, though some opt to accept a broader range as a customer service. Beverage deliveries, and container returns, are primarily handled through a well-established network of wholesalers. These wholesalers deliver full crates to retailers and simultaneously collect empty ones, reimbursing retailers for returned deposits. After sorting empty bottles by brand and size, the wholesalers send them back to the appropriate beverage producers, where containers are washed, inspected, refilled, or recycled if damaged. Bottles and crates under the GDB system are embossed with the GDB logo for traceability, even though logo use is not legally required. Fruit juice producers wash and refill bottles at their own facilities and can join a "Closed Pool System," which allows access to standardised bottles and crates in exchange for a per-unit contribution.[62]

Although administratively distinct from the industry-led reusable DRS, Germany's national DRS for single-use containers relies heavily on the same return infrastructure that supports reusables. Retailers that sell both reusable and single-use beverages typically accept returns of both types (either manually or via reverse vending machines [RVMs]) (note: retailers are obligated to take back single-use containers of the same material they sell, although smaller shops (under 200m^2) are only required to accept the brands they carry). RVMs are programmed to distinguish between the two types of packaging: single-use containers are crushed immediately, while reusable containers are set aside intact. Reusables are sent back to the appropriate wholesalers, while single-use containers are shipped to central warehouses for processing. For fruit juices in reusable bottles, transport from the collection point is managed by the producers or the reverse logistics company.[63] For water and soft drinks, service providers (wholesalers) are involved in supermarket logistics by delivering full bottles (from producers) and collecting empty bottles in crates; transporting them to their warehouses where most of the sorting operations are carried out, the logistics company receives €1 per crate of bottles; at the warehouse, the crates are sorted by sector and then delivered to the various producers.[64] Large distributors have their own sorting centres.

Due to the decentralised nature of Germany's DRS for single-use containers, comprehensive performance data is unavailable and there is no transparency on how the return rate is calculated. However, based on data from the German Federal Environmental Agency, the overall return rate is estimated to be between 98% and 99%.[65] The return rate for refillable packaging is also high at 99.4% (2020).[66]

Poland

Poland launched its national DRS for single-use beverage containers on 1 October 2025. At launch, the system covered single-use plastic PET bottles up to 3L and metal cans up to 1L.

Under amendments to the Act of Law of 13 July 2023, adopted in Q4 2025, the scope of the DRS was expanded to include reusable glass beverage containers up to 1.5 litres. These reusable containers were scheduled to become subject to the deposit system as of 1 January 2026. However, as of the time of writing of this fact sheet (Q1 2026), legislative proceedings are ongoing in the Polish Parliament to delay the mandatory inclusion of reusable glass bottles until the end of 2028. Until these proceedings are concluded, the integration of reusable glass into the national DRS remains pending.

Once implemented, the inclusion of reusable glass bottles would place Poland among a small but growing group of jurisdictions integrating reuse within deposit return systems that already cover single-use containers. Single-use glass bottles, beverage cartons, and containers used for dairy products are currently excluded from the system.

The legislated deposit value is set at 0.50 PLN (€0.12) for single-use containers and 1 PLN (€0.24) for reusable glass bottles. The DRS operates under a decentralised model, allowing multiple system operators to function within the country. Poland's DRS operates under a decentralised model, allowing multiple licensed system operators to operate in parallel. These operators are responsible for organising selective collection to meet statutory targets, collecting containers from retail and other designated return points, managing transport to producers and processing facilities, and settling deposits with retailers and other collection points.

Container returns follow a return-to-retail (R2R) model. Retailers with a sales area exceeding 200m^2 are required to accept all deposit-marked containers and refund the deposit. Smaller retailers are required to charge the deposit but may opt out of accepting plastic bottles and metal cans; however, they remain obliged to accept reusable glass bottles that they sell (once the obligation for reusable glass is implemented, subject to the outcome of the ongoing legislative process).

Sweden

Sweden has one of the longest histories with DRS in the world. Its DRS for reusable glass bottles was introduced in 1886, a full century before the launch of the country's single-use DRS. The system emerged from a practical need: glass bottles were hand-blown and therefore expensive, so brewers needed a reliable way to recover them.[67] Reverse logistics became the solution; customers paid a deposit when purchasing beverages and received it back upon returning the bottles. Brewers inspected, washed, and refilled the bottles for resale.

This early reuse system required cooperation within the brewing industry and led to the creation in 1885 of Sveriges Bryggerier (the Swedish Brewers' Association; today, its members represent approximately 88% of all beer, cider, water, and soft drinks producers in the country).[68] To make reuse possible at scale, the Association created the world's first standardised refillable bottle, the 330 ml "Stockholm bottle."[69] Over time, standard reusable bottles expanded to cover virtually all beverage types in Sweden, including beer, soft drinks, and carbonated water. A 500ml refillable bottle was added in 1994.[70]

The transition to single-use packaging and away from reusables began in 1955 with the introduction of steel cans to the Swedish market. When the production of cans shifted material from steel to aluminium in 1981, the government formed an agreement with a multi-national beverage producer which required the producer to introduce a DRS as a condition of scaling up can production. This led to the introduction of a deposit system for aluminium cans in 1984. The scope was later expanded to include single-use PET bottles in 1994.

Today, Sweden's voluntary reusable glass bottle system continues to operate alongside the national DRS for single-use containers operated by Returpack. From the consumer perspective, the system is seamless: the same return points and RVMs are used for single-use and reusable containers. But behind the scenes, the systems diverge, and reusable bottles are separated from single-use plastic and cans. Whereas the logistics of the single-use DRS are managed by Returpack, the logistics of reusable glass bottles are handled by individual beverage producers. The smaller 330ml bottles are returned to producers in blue crates (20 per crate) and 500ml bottles in red crates (15 per crate). Because bottles are standardised, producers redistribute crates among themselves when too many accumulate at a single location. Brewers handle the washing of bottles at their own facilities; Sweden does not operate a centralised cleaning plant.

Deposit values also differ by container type. As of September 2025, deposit values for single-use containers are SEK 2 (approximately €0.19) for aluminium cans and small PET bottles, and SEK 3 (approximately €0.28) for large PET bottles. These rates are set by Returpack. In contrast, the deposit values for reusables are set by beverage producers and retailers. As of 1 June 2025, the deposit on both 330ml and 500ml reusable bottles is 3 SEK (€0.28) from 1 June 2025. [71] Deposits also apply to the reusable crates used to transport the bottles: 22.40 SEK (approximately €2.90) for red crates and 28 SEK (approximately €2.61) for blue crates.[72]

Handling fees for retailers apply to both reusable and single-use returns. For single-use containers, these are set by Returpack and are published on its website, whereas for reusable bottles they are negotiated and confidential.

One of the reasons for Sweden's relatively smooth transition to a single-use DRS was the early timing of its implementation, before single-use packaging had become dominant. This allowed for cost savings by leveraging the return infrastructure that was already in place for reusable containers (see Figure 17). [xlv] Moreover, consumer habits around returning empty containers, regardless of whether they were reusable or disposable, remained intact, supporting a high level of participation as the system evolved.

Figure 16 Consumer-facing Return Point for Both Refillable and Single-Use Containers in Sweden

According to the Swedish Brewers Association, reusable bottles account for only 2% of Sweden's beverage container market, a significant decline from earlier decades.[73] With that said, return rates remain high: 330 ml bottles achieve a 98% return rate and are reused an average of 40[74] times, while 500 ml bottles reach a 90% return rate and are reused around 8 times before being crushed and used to make new bottles. The difference is because the small bottle is more common in restaurants, which purchase and return full crates. The large bottle, on the other hand, is more common among consumers who tend to buy

single bottles. These bottles are often mistakenly sent for recycling rather than returned to a store for reuse.[75] Return rates for single-use cans and plastic bottles are also high at 89% and 88% (2025), respectively.

Table 9 Return rates for beverage containers in Sweden's DRS (2025)[76,77]

	Return rate
Plastic (PET)	88%
Metal	89%
Single-use glass	N/A - Not included in DRS
Total single-use	88%
Reusable glass	98% for 330ml bottles 90% for 500ml bottles

Figure 17 Deposit symbol on reusable bottles

North America

Oregon, US

In 1971, the Oregon Legislature passed the United States' first DRS to prevent litter caused by single-use beverage containers, which was becoming a growing litter problem along Oregon beaches, highways, and other public areas. Over its 40-year history, this landmark legislation has undergone several significant updates and changes, including several scope expansions, and most recently, an increase to the deposit value in 2017. Under the current law, consumers pay a USD$0.10 deposit on eligible beverage containers, which is refunded in full when they return the empty cans and bottles to stores and designated redemption centres. The system is run by beverage distributors through a not-for-profit distributor cooperative, the Oregon Beverage Recycling Cooperative (OBRC). Unless a distributor is part of the cooperative, it is each individual distributor's responsibility to manage the flow of deposits and refunds, collect the empties that are returned for recycling, and ensure that they are sorted, processed and recycled.[78]

In 2018, the Oregon Beverage Recycling Cooperative (OBRC) decided to launch the nation's first statewide refillable programme (the 'BottleDrop' program), alongside the existing system for single-use containers. Together with Owens-Illinois (O-I), a major glass bottle manufacturer, the OBRC created two custom bottles (12-ounce and 500ml) for breweries across the state. The reusable bottles, which are embossed with the words "Bottle Drop" and debossed with the words "Refillable" and "Please return," do not require any extra time or hassle for consumers as they can be returned through the same return infrastructure as other deposit containers, including through the Green and Blue Bag programmes. These distinct bottles are sorted and separated during OBRC's processing, then washed and inspected before being delivered back to Oregon's craft beverage producers for reuse.[79]

Table 10 Return Rates for Beverage Containers in Oregon's Deposit Return System (2024)[80]

	Return rate
Plastic	86%
Metal	90%
Single-use glass	75%
Total single-use	87%
Reusable glass	Unknown

Ontario, Canada

Ontario offers a compelling example of how reusable and single-use beverage container systems can operate together within an integrated deposit-return framework. The system is built around two complementary deposit programmes: The Beer Store's (TBS) longstanding deposit system and the Ontario Deposit Return Program (ODRP).

TBS has operated since 1927 as a brewer cooperative, warehousing, distributing, and selling beer and malt-based beverages on behalf of its member brewers. From the outset, the system was designed to encourage the reuse of refillable containers, including both the Industry Standard Bottle (ISB), which can be reused an average of 15 times, and steel kegs. Brewers may share standard bottles or use proprietary (non-standard) bottles to differentiate their brands while still benefiting from the economic and environmental efficiencies of reuse. Each year, around 210 million refillable bottles are returned washed, and refilled by brewers. This collection is alongside the collection of approximately 1.8 billion recyclable single use cans and glass bottles. After approximately 15 cycles, these bottles are recycled into new glass bottles or other products, completing the reuse loop.

In 2007, when the Ontario government launched the ODRP, TBS was contracted to manage the collection and recycling of containers not covered by its own system. The ODRP applies to all packaged alcohol not sold through TBS (like wine, coolers & spirits) while containers sold by TBS, even those also sold through other authorised channels such as LCBO or grocery stores, are treated as part of the TBS deposit system. Deposit values are determined by container size rather than whether a container is reusable or single-use: a CAD$0.10 deposit for plastic and glass bottles that are 630 ml or less and cans that are 1L, and a CAD$0.20 deposit for containers larger than these sizes. For kegs, a CAD$20 deposit is applied to those between 12L and 30L, and a $50 deposit for those 30L or more.

Both single-use and refillable containers flow through TBS' shared return infrastructure, which includes 1,291 redemption locations across the province (as of December 2024). These locations comprise TBS retail stores, on-site brewery retail stores, LCBO convenience outlets, contracted empty bottle dealers, and grocery stores. Once collected, containers follow separate pathways depending on type. Both Standard and non-standard reusable bottles are sorted and returned to brewers for washing and refilling, while single-use glass is sorted into clear and coloured streams and sent to recycling facilities where it is made into new bottles, fibreglass insulation, and other glass products. Aluminium cans are densified into bales and recycled into new aluminium cans, while associated packaging such as corrugated cardboard and boxboard is also collected and sent for recycling.

As of December 2024, return rates for single-use containers were 82% for glass, 73% for cans, and 41% for PET, while reusable glass bottles achieved an 89% return rate (see Table 11).[81] In total, the programme collected 104,502 tonnes of material in 2024, of which 51,234 tonnes of glass were reused by brewers.[82]

Looking ahead, return rates are expected to decline as beverage alcohol sales expand to additional retail channels, while the number of dedicated return locations, primarily TBS outlets, continues to decline. At the same time, the share of refillable bottles in the system is decreasing, reflecting a shift toward single-use containers and the absence of policy or financial incentives to maintain refillable packaging.

Table 11 Performance of Ontario's deposit return system, 2024[83]

	Ontario Deposit Return Program (ODRP) Containers – Return Rate	The Beer Store (TBS) Containers – Return Rate	Combined Return Rate
Single-use glass	82.6%	81.4%	82.2%
PET	41.1%	N/A	41.1%
Tetra/Bag-in-box	26.7%	N/A	26.7%
Aluminium	72.9%	72.9%	72.9%
Total single-use	73.8%	73.6%	73.7%
Reusable glass		88.8%	88.8%
Total single-use + reusable containers combined		76.0%	75.4%

Quebec, Canada

Beer producers have operated a DRS in Quebec since 1808[84]. Under this voluntary system, glass beer bottles are collected from retailers and licensed establishments, washed, and reused up to 15 times before being sent for recycling. This system was fully funded and managed by the province's major brewers, and because it operated as a private, producer-led initiative, reporting and transparency has historically been limited.

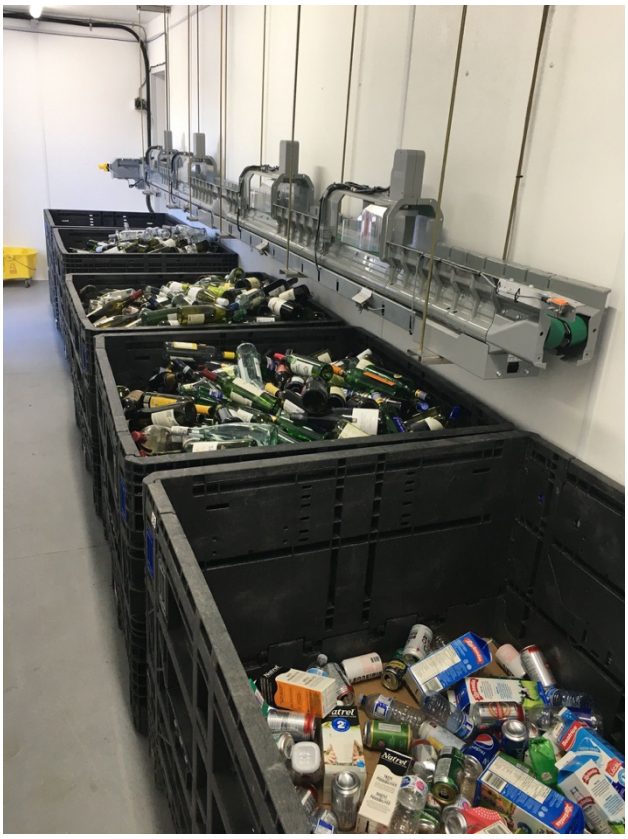

Figure 18 Storage of single-use and reusable deposit containers in Quebec, Canada

Quebec's mandatory DRS for single-use containers was established much later, in 1984, under the *Environment Quality Act*. For decades, the system applied only to soft drinks and beer containers. Soft drinks (regardless of material) were subject to a flat deposit of CAD$0.05 (€0.03), while the deposit on beer cans and bottles varied depending on size and material. Although both single-use and reusable containers were returned at the same locations (retailers), the two systems operated largely independently, with limited administrative integration.

A major modernisation of Quebec's DRS began on 1 November 2023, creating a more integrated framework for both single-use and reusable containers and significantly expanding the scope of the system. The expansion is being implemented in phases:

- **Phase 1 (November 2023):** Inclusion of all aluminium beverage containers between 100 ml and 2 L.
- **Phase 2 (March 2025):** Expansion to all plastic beverage containers in the same size range, including water.
- **Phase 3 (March 2027):** Extension of deposits to wine and spirits in glass bottles, as well as multilayer cartons.

Quebec's new DRS regulations also simplified and harmonised deposit values. Deposits no longer vary by beverage type but are determined by container material and size, and are now aligned across single-use and reusable containers of the same size (see Table 12). Importantly, the regulations require that deposits on reusable containers be equal to or higher than those applied to comparable single-use containers.

Table 12 Deposit values for single-use and reusable containers in Quebec (as of 1 March 2026)[85]

Container type	Material	Size	Deposit
Single-use	Metal (all beverages)	100 ml–2L	$0.10 (€0.06)
	Plastic (all beverages)	100 ml–2L	$0.10 (€0.06)
	Glass (soft drink & beer)	100–499 ml	$0.10 (€0.06)
	Glass (soft drink & beer)	500 ml–2L	$0.25 (€0.15)
Reusable	Glass (soft drink & beer)	100–499 ml	$0.10 (€0.06)
	Glass (soft drink & beer)	500 ml–2L	$0.25 (€0.15)

The reform also brought reusable and single-use containers under a single administrative framework. The Quebec Beverage Container Recycling Association (QBCRA), designated as the province's producer responsibility organisation in 2022, is now responsible for overseeing collection, reuse, and recycling on behalf of all producers, with all reporting consolidated through QBCRA.

Transport logistics differ by container type. QBCRA manages the logistics of single-use containers from both retailers and depots. For reusable bottles, brewers continue to collect containers directly from retailers through established reverse logistics arrangements. However, reusable bottles returned to stand-alone bottle depots, introduced as part of the expanded collection network in November 2023, are collected by QBCRA and returned to producers, creating greater operational alignment between the two systems.

Producer fees, collected by QBCRA, vary by container material and type. Fees in effect as of March 2026 are shown in Table 13.[86]

Table 13 Producer fees charged in Quebec for single-use and reusable beverage contains (as of 1 March 2026)[87]

Material	Size	Producer Fee
Metal (all beverages)	100 ml–2L	$0.02 (€0.013)
Plastic (all beverages)	100 ml–2L	$0.02 (€0.013)
Single-use glass (soft drinks & beer)	100ml–2L	$0.04 (€0.025)
Reusable glass (soft drinks &beer)	100ml-2L	$0.02 (€0.013)

Quebec's integrated approach has delivered strong performance. In 2023–24, single-use containers achieved an overall return rate of 63%, with 64% of metal cans, 58% of plastic bottles, and 53% of single-use glass returned[88] Reusable bottles achieved a return rate of 106.9%, reflecting multiple recirculation cycles within the reuse system.

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